

Tackling Tobacco: An exploration of social and community service organisations as a way of reaching the socially disadvantaged for smoking cessation

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Statement of Originality

This thesis contains no material which has been accepted for the award of any other degree or diploma in any university or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text. I give consent to this copy of my thesis, when deposited in the University Library**, being made available for loan and photocopying subject to the provisions of the Copyright Act 1968.

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I hereby certify that this thesis is in the form of a series of published papers of which I am a joint author. I have included as part of the thesis a written statement from each co-author, endorsed by the Faculty Assistant Dean (Research Training), attesting to my contribution to the joint publications.

Jamie Bryant

Date

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Synopsis

This thesis by publication is composed of an introduction, six papers, and a final chapter providing conclusions. All papers relate to exploring the potential of a novel setting- social and community service organisations- for addressing smoking among severely disadvantaged, low socioeconomic status groups in Australia. At the time of submission, all six papers have been accepted for publication in peer reviewed journals.

The **Introduction** provides an overview of the global smoking epidemic, including the well documented socio-economic gradient in smoking prevalence. It provides a discussion of the social determinants of health framework, a summary of smoking prevalence in socially disadvantaged and severely disadvantaged groups, and a rationale for why social and community service organisations hold potential for being a highly valuable setting in increasing the reach of smoking cessation support to disadvantaged smokers. This chapter gives focus to smoking prevalence in Australia and other western developed countries (particularly the United States, Canada, the United Kingdom and New Zealand) who have similar smoking prevalence rates and socioeconomic gradients in tobacco use.

Paper one, *"A survey of smoking prevalence and interest in quitting among social and community service organisation clients: a unique opportunity for reaching the highly disadvantaged"*, reports the results of a touch-screen computer survey of 383 clients accessing three community service organisations in New South Wales, Australia, over a nine-month period. More than 61% of participants surveyed were daily or occasional smokers. Most (77%) had tried to quit smoking in the past and a substantial proportion (53%) wanted to receive support from the community service organisation. These results provide evidence of the

potential uptake of smoking cessation support delivered in the community service setting. This paper has been published in BMC Public Health.

Paper two, *“Developing cessation interventions for the social and community service setting: A qualitative study of barriers to quitting among disadvantaged Australian smokers”* is a qualitative paper exploring the barriers to quitting smoking in the Australian context. Focus groups were conducted with thirty-two clients of social and community service organisations in New South Wales, Australia. Findings show that disadvantaged smokers in Australia, like those in other countries, find quitting difficult for a number of reasons, including poor self-efficacy, poor knowledge of available support, limited provision of support, the high cost of nicotine replacement therapy, and pro-smoking community norms. The paper concludes that multi-component interventions providing information about the availability of quit support, practical strategies for engaging disadvantaged smokers with available quit support, and access to free or subsidized nicotine replacement therapy are needed to overcome barriers to quitting among disadvantaged smokers. This paper has been published in BMC Public Health.

Paper three, *“Delivering smoking cessation support to disadvantaged groups: A qualitative study of the potential of community welfare organisations”* is a qualitative paper examining the feasibility and acceptability of the community service sector for providing individuals with smoking cessation support from the perspectives of both clients and staff. Results showed the acceptability of providing and receiving cessation support in the community service setting was high from both staff and clients. Staff perceived the provision of quit support to be compatible with their role but reported barriers to providing care including competing priorities, insufficient resources, and inadequate staff training. Brief intervention approaches were preferred by managers and staff, while financial incentives and access to free or

subsidised nicotine replacement therapy were desired by clients. This paper has been published in Health Education Research.

Paper four *“A systematic review and meta-analysis of the effectiveness of behavioural smoking cessation interventions in selected disadvantaged groups”* presents the results of a systematic review and meta-analysis of behavioural cessation interventions targeted at six severely disadvantaged groups: the homeless, prisoners, indigenous populations, at-risk youth, individuals with low socio-economic status, and individuals with a mental illness. The review shows that while few high-quality trials of the effectiveness of smoking cessation interventions for disadvantaged groups have been published, behavioural interventions do hold promise of effectiveness. No studies were conducted in the social and community service organisation setting, indicating a gap in knowledge requiring some attention. This paper has been published in Addiction.

Paper five, *“Assessing smoking status in disadvantaged populations: is computer administered self-report an accurate and acceptable measure”* examined the validity and acceptability of touch-screen computer administered self-report of smoking status among clients attending community service organisations for welfare support. It finds that self-report of smoking status in the community service sector is accurate, with less than 7% of participants misreporting their smoking status. The study also found good acceptability for the use of touch-screen computers for assessing the health of low income individuals in a community welfare setting, with high consent rates (69%) and most participants reporting that the touch screen survey was both enjoyable (79%) and easy (88%) to complete. This paper has been published in BMC Medical Research Methodology.

Paper six is the final paper of the thesis *“Implementing a smoking cessation program in social and community service organisations: A feasibility and acceptability trial”*. It reports the results of a pilot trial examining the acceptability and feasibility of integrating the delivery of quit smoking support into a community service organisation providing support to individuals with a mental illness. The study found that community service organisations are both willing to and capable of providing smoking cessation support to clients. The intervention increased mean time spent addressing client smoking from 3.8 minutes per visit at baseline (SD=2.6, range 0-7.5 minutes) to 15.5 minutes per visit at six months follow-up (SD=8.7, range 7.5-30 minutes). Receiving support was acceptable to clients and resulted in a significant reduction in the number of cigarettes smoked by participants from 20.5 cigarettes per day (SD=9.9, range 8-45) at baseline to 15 cigarettes per day (SD=9.3, range 4-40) at six months follow-up ($t= 2.26$, $p= 0.04$). This paper has been accepted for publication in Drug and Alcohol Review.

In conclusion, this program of research provided formative assessment of the potential of social and community service organisations for addressing smoking among disadvantaged groups within Australia. It has provided information about the prevalence of smoking and interest in quitting among clients of social and community service organisations, as well as the acceptability and feasibility of integrating the provision of support into the social and community service setting. A methodologically rigorous trial of the effectiveness and cost of this approach is now needed.

List of citations for papers included in this thesis

Paper one: Bryant J, Bonevski B, Paul C. A survey of smoking prevalence and interest in quitting among social and community service organisation clients in Australia: a unique opportunity for reaching the disadvantaged. BMC Public Health, 2011; 11:827.
Doi:10.1186/1471-2458-11-827.

Paper two: Bryant J, Bonevski B, Paul C, O'Brien J, Oakes W. Developing cessation interventions for the social and community service setting: A qualitative study of barriers to quitting among disadvantaged Australian smokers. BMC Public Health, 2011; 11:493. Doi: 10.1186/1471-2458-11-493.

Paper three: Bryant J, Bonevski B, Paul C, O'Brien J, Oakes W. Delivering smoking cessation support to disadvantaged groups: A qualitative study of the potential of community welfare organisations. Health Education Research, 2010; 25(6):979-990. Doi: 10.1093/her/cyq051.

Paper four: Bryant J, Bonevski B, Paul C, Mcelduff, P, Attia J. A systematic review and meta-analysis of the effectiveness of behavioural smoking cessation interventions in selected disadvantaged groups. Addiction, 2011; 106(9), 1568-1585. Doi: 10.1111/j.1360-0443.2011.03467.x.

Paper five: Bryant J, Bonevski B, Paul C, Lecathelinais C. Assessing smoking status in disadvantaged populations: Is computer-administered self-report an accurate and acceptable measure? BMC Medical Research Methodology, 2011; 11:153, Doi: 10.1186/1471-2288-11-153.

Paper six: Bryant J, Bonevski B, Paul C, Hull P, O'Brien J. Implementing a smoking cessation program in social and community service organisations: A feasibility and acceptability trial. Drug and Alcohol Review, 2011. In press. Doi: 10.1111/j.1465-3362.2011.00391.x.

INTRODUCTION

**Smoking, social disadvantage and the promise
of novel settings**

Health, health disparities and the social determinants of health

According to the World Health Organization, health can be defined as a state of “*complete physical, mental, and social well-being and not merely the absence of disease or infirmity*” ¹.

Attainment of good health, including access to healthcare, medical care and health protection, are considered fundamental human rights ^{2,3}.

Despite the pursuit of good health for all, disparities both between and within countries exist. Health disparities, also known as health inequalities, are differences in health status or health outcomes between different groups of the community, which are considered unfair and unjust, and are avoidable by reasonable action ⁴⁻⁷. There is clear evidence, for example, that people living in wealthier countries have better health than those in poorer countries. Children born in 2009 in Sweden can expect to live for 81.3 years, while those born in Malawi can expect to live for only 47 years ⁸. Within countries, there also exists a clear socio-economic gradient that is closely linked to degrees of social disadvantage. Whether measured by income, occupational grade, educational attainment or ethnicity, individuals of lower socio-economic status are more likely to suffer negative health outcomes, have overall poorer health and have higher prevalence of behavioural health risk factors, compared with individuals of higher socio-economic status ^{9,10}. Epidemiological studies have confirmed socio-economic inequalities in a wide range of health behaviours and outcomes, including obesity, diabetes mellitus ¹¹, cardiovascular disease ¹², chronic obstructive pulmonary disease ¹³, cancer incidence and survival ^{14,15} and preventive cancer screening ¹⁶.

Social determinants of health framework

Accumulating evidence of the influence of the socio-economic environment on the health of individuals and populations led to the development of the social determinants of health

framework¹⁰. This framework posits that the conditions in which people are born, grow, live, work and age (which are shaped by the distribution of money, power and resources at global, national and local levels) have a significant impact on health and the development of health disparities¹⁰. Factors including stress, early life circumstances, social exclusion, unemployment, social support, food, addiction and transport have been identified as the principal drivers of socio-economic disparities in health¹⁷, although the degree to which social factors can explain differentials in morbidity and mortality varies between countries¹⁸.

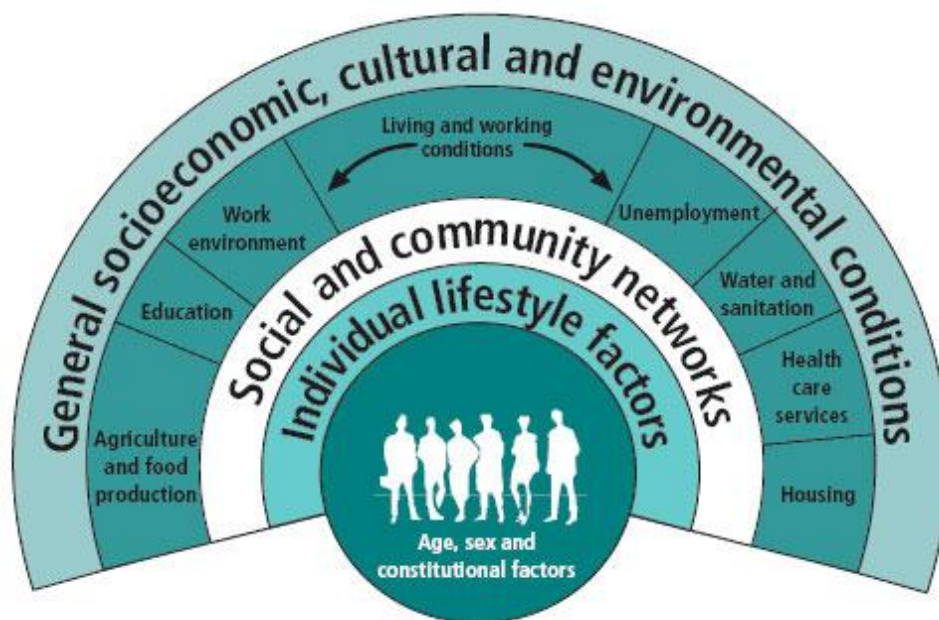


Figure 1.1. Social determinants of health framework. Adapted from Dahlgren and Whitehead, 1992¹⁹

In 2008, the World Health Organization Commission on Social Determinants of Health called for the closing of the gap in a generation⁷. It made three recommendations: 1) improving the living conditions of daily life; 2) tackling the unequal distribution of power, money and resources; and 3) taking steps to measure and understand socio-economic differences to evaluate the impact of actions. A significant contributor to health disparities, accounting for up

to a third of all differences between those of low and high socio-economic status²⁰, is tobacco use²¹⁻²³.

The global burden of tobacco use

Tobacco use is the leading cause of premature mortality and preventable morbidity worldwide. Globally, the prevalence of smoking in adults is estimated at 25%, which means that approximately one billion males and 250 million females smoke²⁴. According to the World Health Organization, tobacco is responsible for more than five million deaths worldwide each year, killing one person every six seconds^{25, 26}.

Tobacco use is a risk factor in the development of a wide range of diseases, including cardiovascular disease, respiratory diseases and up to 90% of all lung cancers²⁷⁻³¹. If current trends in smoking prevalence continue, the number of tobacco-attributable deaths is expected to rise to between 8 and 10 million deaths annually by 2030^{24, 25, 32}, or more than one billion deaths in the 21st century³³. Among those who start smoking as young adults, half will die as a result of a tobacco-related disease³⁴⁻³⁶. About half of these smokers will die in middle age (aged 35-69), resulting in an average loss of 16-22 years of life. Seventy percent of these deaths will occur in developing countries³⁷.

In Australia, tobacco is estimated to be responsible for 7.8% of the total burden of disease³⁸. One in six adults aged 14 years or older smokes tobacco daily³⁹. In 2004-2005 smoking caused more than 15,000 deaths (primarily from cancer and cardiovascular disease) and resulted in more than 750,000 hospital bed days and \$669 million dollars in healthcare costs to the hospital system alone⁴⁰. When taking into account the tangible (e.g. direct healthcare costs and loss of productivity) and intangible (e.g. psychological costs of premature death) costs of

tobacco, in 2004-2005 the total burden of tobacco was more than \$31.5 billion dollars ⁴⁰, representing one of the most preventable causes of premature morbidity and mortality.

Shifting prevalence in tobacco consumption

The use of tobacco has largely followed the global pattern of economic development ²⁴. While the prevalence of smoking is currently on the rise in low- and middle-income countries, which are now home to 80% of the world's smokers ²⁴, it is decreasing in the developed world ²⁵. In Western developed countries, including the United Kingdom (UK), United States (US), Canada, New Zealand and Australia, smoking rates have fallen considerably over the past three decades. Adult smoking prevalence in New Zealand, the US and Canada currently sits between 17% and 24% ⁴¹⁻⁴³. In Australia, smoking rates have steadily declined from an estimated 72% among men and 26% among women in 1945 ⁴⁴ to 15.1% in 2010 ⁴⁵. Figure 1.2 shows this decline for males, females and the Australian population from 1945 to 2010. These declines have been the result of greater knowledge and awareness of the health consequences of tobacco use since the release of the Surgeon General's report on smoking and health in 1964 ⁴⁶, as well as the development and implementation of tobacco control policies and programs which are evidence-based, informed by theories of behaviour change, well-funded relative to other countries and reasonably comprehensive, both in terms of the number of strategies used and implementation across states and territories ^{47, 48}.

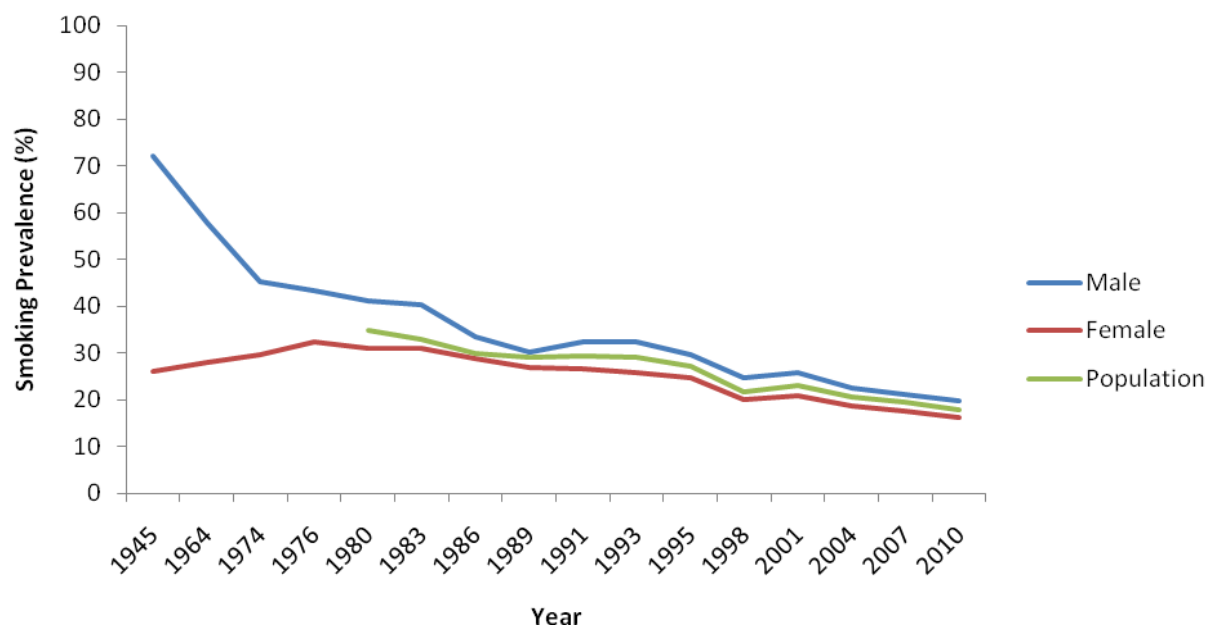


Figure 1.2: Smoking prevalence among Australians 1945-2010^{39, 44, 45, 49-53}

Data from 1945 and 1964: age range not specified. Data from 1974 to 1989 include cigarette, cigar and pipe smokers aged 16+ years. Data from 1991 to 2010 include daily and occasional smokers aged 14+ years

The socio-economic gradient in smoking

While rates of smoking in most developed countries have steadily decreased, the decline has not been equal across all population groups. A clear socio-economic gradient exists, with individuals who are socially and economically disadvantaged^a having up to twice the odds of smoking, compared with those of higher socio-economic status²². This gradient persists whether disadvantage is measured by individual level indicators such as income, education,

^a Social disadvantage can be defined in several ways. Throughout this thesis the terms, “disadvantaged individuals” and “disadvantaged smokers”, will be used to refer to a number of low socio-economic status groups that are defined by characteristics that include but are not limited to income, occupation, education and social exclusion. The specific groups that are the focus of this thesis are defined in the following section of this introduction.

occupation, ethnicity, race or lone parenthood, group or area levels of disadvantage such as area of residence or neighbourhood disadvantage, or measures reflecting material conditions such as housing tenure, car ownership, financial stress and living in crowded conditions ⁵⁴⁻⁶¹. For example, in Australia in 2010, individuals who were unemployed (27.6%), in the lowest socio-economic quintile (measured by the Index of Relative Socio-economic Disadvantage, a summary measure of disadvantage derived from census information including low income, low educational attainment, unemployment and dwellings without motor vehicles ⁶²) (24.6%) or of Aboriginal or Torres Strait Islander origin (37.6%), reported smoking prevalence 1.6-2.5 times higher than the general population rate of 15.1% ⁴⁵ (see Figure 1.3).

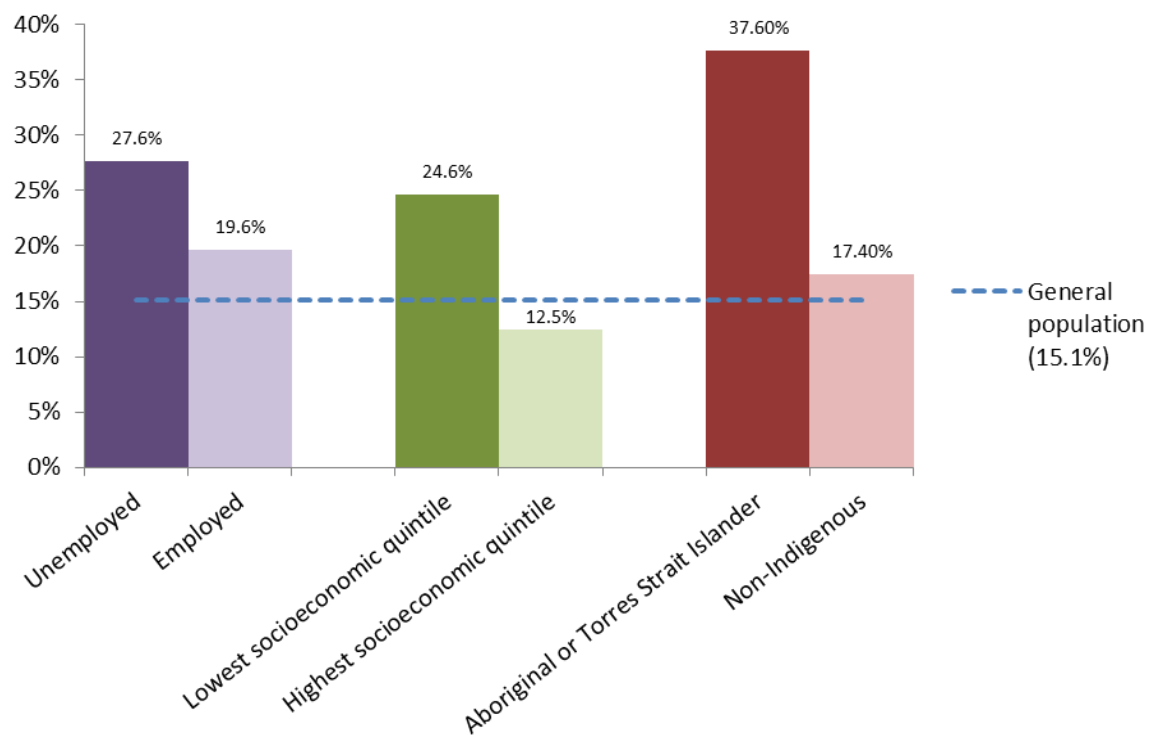


Figure 1.3: *Smoking prevalence in the Australian general population compared with selected disadvantaged groups* ⁴⁵

Disadvantaged individuals are not only more likely to smoke, but they are more likely to initiate smoking earlier^{63, 64}, smoke for longer from initiation to cessation⁶⁵, be more heavily addicted²², and be more likely to be exposed to second-hand tobacco smoke⁶⁶⁻⁶⁹. This means the overall burden of smoking falls most heavily on disadvantaged groups. Tobacco use contributes to the gap in life expectancy between the most and least advantaged more than any other identifiable factor, and is one of the most significant contributors to health disparities in morbidity and premature mortality in Western developed countries^{7, 22, 70}.

Smoking prevalence in severely disadvantaged groups

Social and economic disadvantage often co-occur within individuals and accumulate over the life course¹⁷. Some groups are at particular risk of experiencing multiple forms of social disadvantage, economic disadvantage, psychological disadvantage and social exclusion, and it is these groups that often experience the highest rates of smoking. The additive effect of social disadvantage on smoking prevalence is best demonstrated by work conducted in the UK with disadvantaged women. Of women who had experienced childhood disadvantage, educational disadvantage, early motherhood and current financial hardship, 62.5% were current smokers, compared with 18% who had not experienced any disadvantage⁷¹. A clear gradient was found, with smoking rates of 35.9%, 44.1% and 54.6% among those who had experienced one, two and three forms of disadvantage respectively. This finding has been replicated among African-American women in the US, with almost half of women who lived in poverty as children, dropped out of school, became teen mothers, and were poor as young adults currently smoking, compared with only 22% of women with none of these indicators⁷².

In Australia, groups that experience multiple forms of social disadvantage and have disproportionately high rates of smoking compared with the general population include

Aboriginal and Torres Strait Islanders, individuals who are homeless, individuals with mental illness, prisoners and those on a very low income⁷³. Given that population-based surveys of smoking prevalence rarely include the imprisoned, inpatients of mental health hospitals, the homeless living on the street or in shelters, or remote Indigenous communities⁴⁵, information about smoking prevalence in these groups largely comes from cross-sectional surveys of variable size and quality. The following section will summarise these findings for five selected highly disadvantaged groups: individuals with mental illness, Aboriginal and Torres Strait Islanders, the homeless, prisoners and low socio-economic status groups (see Table 1.1).

Individuals with mental illness

Mental illness can be defined as *“the existence of a clinically recognisable set of symptoms or behaviours associated in most cases with distress and with interference with personal functions”* (page 5)⁷⁴. Worldwide, individuals with mental illness are twice as likely to smoke, compared with those without mental illness⁷⁵. Data from population surveys show that in Australia, 36.2% of individuals with mental illness are current daily smokers⁷⁶, with similar rates found in the US⁷⁶ and the UK⁷⁷. Smoking rates tend to be higher for individuals with acute psychotic illnesses such as schizophrenia (an international meta-analysis found an average smoking rate of 62%⁷⁸) and inpatients, and lower among individuals with common mental illness (such as generalised anxiety or depression) or those with transitory rather than chronic mental illness^{79, 80}. Individuals with mental illness tend to smoke heavily, consuming up to half of all cigarettes sold in the US⁷⁵ and 42% of all cigarettes smoked in Australia (this figure includes those with psychotic disorders, common mental illness and drug/alcohol dependence)⁸¹. Smokers with schizophrenia spend up to 30% of their income on cigarettes⁸². It is common for smokers with mental illness to have co-morbid drug and alcohol disorders,

and tobacco use has been found to increase psychiatric symptoms and necessitate increased doses of antipsychotic medication ⁸⁰.

Indigenous groups

Consistently high rates of tobacco use are found for Indigenous populations across almost all developed nations. In New Zealand, smoking rates among the indigenous Maori population (45.1%) are more than double those in the general population (19.2%) ⁴³. Similarly, high rates are found among Canadian First Nation and Inuit populations (59%) ⁸³, and among Native American Indians (32.4%) ⁴¹. In Australia, Aboriginal and Torres Strait Islanders are more than twice as likely to smoke (37.6%-47%) ^{84 45} compared with the general population (15.1%) ⁴⁵. Tobacco use remains the biggest contributing factor to excess mortality and morbidity among Aboriginal and Torres Strait Islanders, and was responsible for one-fifth of all deaths among Indigenous people in 2003 ⁸⁵. Up to 68% of all Aboriginal and Torres Strait Islander people aged 15 years and over live in households containing adult smokers ⁸⁴, and smoking has strong social meaning and a strong presence in Aboriginal and Torres Strait Islander communities ⁸⁶. More than 50% of Aboriginal and Torres Strait Islander pregnant women continue to smoke throughout pregnancy ⁸⁷.

Homeless

In 2006, there were approximately 105,000 people homeless in Australia ⁸⁸. Limited research has explored the prevalence of smoking among the homeless. Australian data on this topic are now more than 15 years old, but suggest that between 66% and 89% of homeless adults smoke ⁸⁹, with rates of up to 93% among homeless individuals sleeping on the street ⁹⁰. Similar rates are found throughout the developed world, with a recent survey of 966 homeless adults in the US finding the prevalence of current smoking to be 73% ⁹¹. Individuals who are homeless

tend to initiate smoking earlier in life, smoke more cigarettes per day and smoke for longer from initiation to cessation than non-homeless smokers⁹². This significantly increases the harm caused by tobacco, which is compounded by poor nutrition, poor hygiene, inadequate access to healthcare, mental health disorders and concurrent drug and substance use disorders, which are common among the homeless^{93,94}. Smokers who are homeless are also more likely to engage in high-risk smoking practices, including sharing cigarettes, smoking cigarettes remade from discarded cigarette butts and filters, removing filter vents and using substances such as drugs in remaking cigarettes, thus significantly increasing the risk of exposure to harmful toxins and the transmission of infectious disease⁹⁵.

Prisoners

Illicit drug users, individuals with mental illness and Aboriginal and Torres Strait Islanders are over-represented in Australian prisons^{96,97}. Cross-sectional surveys undertaken between 1996 and 2001 suggest that smoking rates have remained stable among Australian prisoners at between 77% and 79%, despite a 5% drop in smoking rates in the Australian population over the same time period^{98,99}. Surveys conducted in prisons in New South Wales, Australia, show that 24%-50% of prisoners attempt to quit smoking each year^{97,99}. Cigarettes are often used as a social currency in prisons, and smoking cessation programs are not routinely available⁷³.

Low socio-economic status

Individuals of low socio-economic status are defined differently in different countries. In Australia and New Zealand, individuals of low socio-economic status are defined as those in the lowest socio-economic quintile. In the UK, socio-economic status is often defined as the lowest manual occupation group, and in the US by the federal poverty level. These varying definitions mean smoking rates between countries are not directly comparable.

In Australia in 2010, smoking rates were 24.6% among individuals in the lowest socio-economic quintile, compared with 12.5% among those in the highest socio-economic quintile ⁴⁵. Similar rates (between 26% and 35%) are found in the US, UK and New Zealand ^{43, 100, 101}. Smokers of low socio-economic status are more likely to initiate smoking at an earlier age and smoke more heavily, and are less likely to quit, compared with smokers of higher socio-economic position ^{63, 64}.

Table 1.1: *Smoking prevalence among severely disadvantaged populations in selected developed countries**

Smoking prevalence					
	Australia	UK	US	Canada	New Zealand
	%	%	%	%	%
General population	15.1 ⁴⁵	21 ¹⁰¹	19.8 ¹⁰²	18 ⁴²	19.2 ⁴³
Homeless	77-89 ^{89, 90}	70 ¹⁰³	68-75 ^{91, 104-107}	80.8 ¹⁰⁸	No data
Indigenous	37.6-47 ^{45, 84}	NA	32.4 ⁴¹	33-59.8 ¹⁰⁹	45.1 ⁴³
Mentally ill	36.2 ⁷⁶	30 ¹¹⁰	40.1 ⁷⁶	41-62 ^{75, 78}	32.3 ¹¹¹
Low income	24.6 ^{45*}	26 ^{101#}	31.1 ^{100^}	No data	35 ⁴³⁺
Prisoners	77-82.9 ^{99, 112, 113}	85 ¹¹⁴	74-79.8 ¹¹⁵⁻¹¹⁷	No data	71.7-84 ^{118, 119}

* Defined as lowest socio-economic quintile (based on Australian Bureau of Statistics

Socioeconomic Index Areas (SEIFA)). # Defined as lowest manual or routine occupation group

^Defined as persons below the federal poverty level. + Defined as those in the lowest quintile as defined by the New Zealand Index of Deprivation (as a proxy for individual socioeconomic position)

Is the gap in smoking prevalence reducing, staying the same or widening?

Overall mortality rates have declined in developed countries over the past two decades,

including in Australia where there has been an absolute reduction in avoidable mortality since

1985¹²⁰. There is clear evidence, however, that socio-economic disparities in smoking rates persist, and may have even widened in some countries. For example, while smoking prevalence declined from 24% in 1999 to 18% in 2006 in Canada, there was no decrease in the disparity in smoking by educational level¹²¹. Similarly, there has been a widening in the gap in smoking prevalence between manual and non-manual groups in the UK, despite an overall reduction in smoking rates since the 1970s¹²². Widening of disparities in smoking prevalence has also been reported in relation to education across Europe and the US^{123, 124}, and in New Zealand according to education, income and ethnicity during the 1980s and 1990s¹²⁵.

A similar pattern is found in Australia. An analysis of smoking rates from 1989/1990 to 2001 (measured by the Index of Relative Socio-economic Disadvantage⁶²) found that the socio-economic gradient was maintained for women and increased for men, with males from the most socio-economically disadvantaged quintile reporting the smallest decreases in smoking prevalence, compared with the most socio-economically advantaged quintiles¹²⁶. More recent smoking prevalence data suggest that this gap has continued to widen. Between 1998 and 2010, smoking prevalence among the most disadvantaged individuals in Australia, measured by quintile of disadvantage (levels of relative socio-economic status; quintile one represents those of lowest socio-economic status and quintile five represents those of highest socio-economic status³⁹) fell from 30% in 1998 to 24.6% in 2010 (a reduction of 5.4%). However, across the same period, rates fell from 23.1% to 12.5% among those in the highest socio-economic quintile (a reduction of 10.6%). Figure 1.4 shows the relative widening of the socio-economic gradient in smoking prevalence, while Figure 1.5 shows increases in smoking among Aboriginal and Torres Strait Islanders and those unable to work. While increasing inequalities in tobacco use are occurring within the overall context of falling smoking rates across all groups, disparities which are persisting or widening underscore the need for special efforts to

design and implement strategies that disproportionately benefit disadvantaged groups, in order to close the gap in smoking rates ¹²⁶.

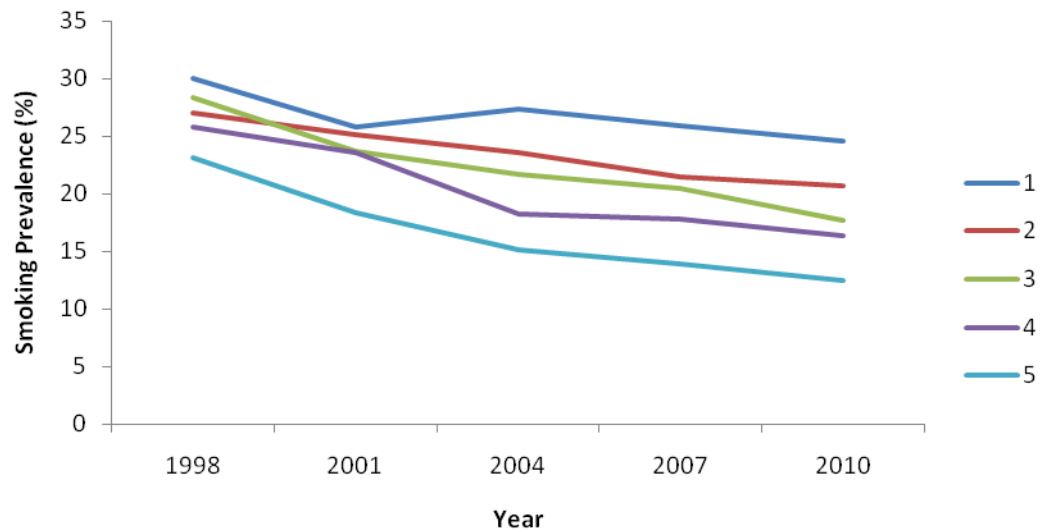


Figure 1.4: *Changes in smoking prevalence (daily and occasional) from 1998 to 2010 by socioeconomic quintile (1 - most disadvantaged, to 5 - least disadvantaged ^{39, 45, 49-51})*

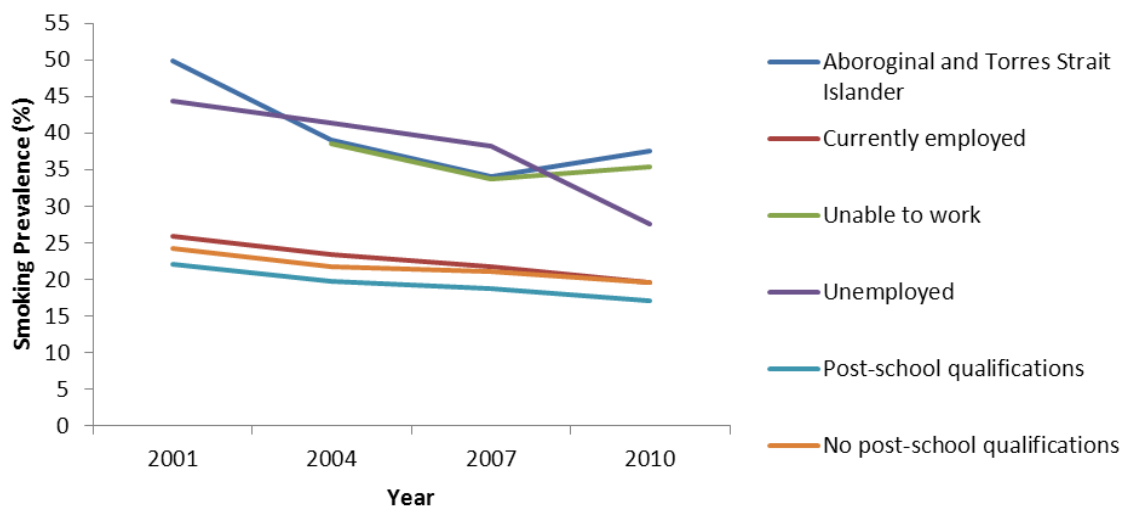


Figure 1.5: *Changes in smoking prevalence (daily and occasional) from 2001 to 2010 by various socio-demographic characteristics ^{39, 45, 50, 51}*

The cycle of smoking and disadvantage

As a result of higher smoking prevalence, disadvantaged groups bear a disproportionate share of the overall burden of tobacco in terms of mortality, morbidity and the financial burden of smoking.

Mortality

There is a clear socio-economic gradient in mortality by socio-economic quintile. In Australia in 2003, those in the highest socio-economic quintile were expected to live to 82.7 years, compared with only 79.6 years among those in the lowest quintile ³⁸. Longitudinal analysis of the Whitehall data shows that four health behaviours (smoking, physical activity, alcohol consumption and diet) explain 72% of the association between socio-economic position and all-cause mortality ²⁰, with smoking accounting for 35% of the association, well ahead of physical activity (21%), diet (17%) and alcohol consumption (12%). Analysis suggests that an 8% reduction in smoking in Australia would result in 5,000 fewer deaths annually ¹²⁷.

Morbidity

In Australia, tobacco use is the leading cause of disease, accounting for 7.8% of the total burden ³⁸, and is the single biggest contributor to the development of cancer ¹²⁸. This burden falls most heavily on the disadvantaged, with those of lower socio-economic status experiencing 31.7% greater burden of disease ³⁸. Men from socio-economically disadvantaged areas experience higher rates of cancer, diseases of the respiratory system, hypertension and bronchitis/emphysema ^{129, 130}, while women experience greater prevalence of lung cancer, asthma, hypertension and diabetes ^{129, 130}. Tobacco use contributes 17% of the gap in morbidity between Aboriginal and non-Aboriginal Australians, ahead of high body mass (16%), physical inactivity (12%), high blood cholesterol (7%) and alcohol use (4%) ¹³¹. In Australia, a

recent economic analysis found that an absolute reduction in smoking prevalence from 23% to 15% would have significant health and economic benefits, including 158,000 fewer cases of smoking-related disease, 5,000 fewer deaths annually, 2.2 million fewer lost working days, 3,000 fewer early retirements and a reduction in healthcare costs by AUD\$491 million ¹²⁷.

Financial burden

In addition to its direct impact on health, disadvantaged smokers are also most vulnerable to material hardship and financial stress. Households headed by individuals with no educational qualifications spend 34% more on tobacco than households headed by individuals with a university degree ¹³². Similarly, blue-collar households spend 23% more on tobacco than professional households. Households in the first and second income quintile (the most disadvantaged) spend 62% and 77% more respectively of household expenditure on smoking, compared with households in the fifth quintile (the least disadvantaged) ¹³². This suggests that those who are least able to afford it smoke the most. Research indicates that 42% of low-income smokers report spending money on cigarettes rather than on essentials such as food ⁵⁸, and conversely, households reporting any expenditure on tobacco are more likely to experience financial stress, including going without meals or being unable to heat the home ⁵⁹. Smokers with financial stress are approximately 13% less likely to successfully quit smoking, and more likely to relapse ⁵⁸.

Why do socio-economic disparities in smoking rates exist?

Smoking is a complex behaviour with deeply embedded interacting influences. Knowledge of the causes of socio-economic disparities in smoking prevalence requires understanding of the social, cultural, economic and individual factors that facilitate smoking uptake and act as barriers to cessation across the life-span.

Upstream determinants: the social, cultural and economic contexts

The broader social and economic environment influences the socio-economic gradient in smoking on multiple interacting levels. At the individual level, smoking is a socially and culturally reinforced behaviour with patterns of consumption deeply embedded in individual relationships and the wider social environment. Given the high prevalence of smoking in disadvantaged groups, smoking is a social norm and takes on a social meaning in family, peer and social networks. This collective aspect of smoking - sharing, lending and borrowing of cigarettes - is a means of fostering social participation and expressing identity and belonging¹³³. At the community/neighbourhood level, coping with stress caused by an impoverished and under-resourced material environment and isolation from wider community smoking norms are two factors which have been proposed to account for higher smoking prevalence among disadvantaged neighbourhoods, which persists independently of individual smoking status¹³³. Additionally, in some countries there are a greater number of retail outlets offering tobacco, more point-of-sale tobacco advertisements^{134, 135} and greater marketing of tobacco in low-income and disadvantaged communities¹³⁵. Analysis of tobacco marketing documents shows clear targeting of homeless smokers, adolescents and the mentally ill throughout the 1990s through donation of cigarettes, distribution of merchandise (including branded blankets to the street homeless) and charitable donations to psychiatric institutions, homeless shelters, nursing homes and drug treatment centres¹³⁶. As a result, disadvantaged groups are much more likely to experience an environment where smoking is normalised to a much greater degree than for the general community.

Downstream determinants: individual factors that influence uptake and cessation

Higher uptake of smoking in adolescence: Smoking in adolescence is associated with a broad spectrum of personal and social disadvantage. A number of prospective studies have identified

a strong socio-economic gradient in smoking uptake. Adolescents of lower socio-economic status and lower education are more likely to initiate smoking, start smoking at a younger age and smoke more heavily than adolescents of higher socio-economic position^{63, 64, 137, 138}. An association has also been found between parental socio-economic status and smoking, with rates of adolescent smoking increasing with decreasing parental education and parental household income¹³⁹. Disadvantaged children and adolescents are also disproportionately exposed to tobacco, being more likely to have peers, parents and siblings who smoke. This is an independent predictor of both smoking initiation and progression to daily smoking¹⁴⁰⁻¹⁴⁶, with a recent systematic review and meta-analysis finding that the relative odds of smoking uptake among adolescents increased significantly if one parent smoked (OR 1.72, 95% CI 1.59-1.86), if both parents smoked (OR 2.73, 95% CI 2.28-3.28) or if a sibling smoked (OR 2.30, 95% CI 1.85-2.86)¹⁴⁷. This suggests a strong behavioural-modelling effect.

Higher levels of nicotine dependence: Nicotine dependence is characterised by the DSM-IV by seven clinical features of dependence: tolerance; withdrawal; smoking in larger amounts or for longer than intended; persistent desire or unsuccessful efforts to cut down; significant time spent obtaining, using or recovering from tobacco use; social, occupational or recreational activities being given up or reduced; and continued use despite knowledge of physical or psychological problems known to be caused or exacerbated by tobacco use¹⁴⁸. Levels of nicotine dependence increase systematically with levels of social disadvantage. Disadvantaged smokers tend to smoke more cigarettes, smoke sooner after waking, smoke for longer from initiation to cessation, and report higher rates of nicotine dependence as assessed by the Fagerstrom test for nicotine dependence^{65, 92, 149, 150}. Given that addiction plays a mediating role in predicting quit success, disadvantaged smokers are likely to find quitting more difficult, and nicotine dependence has been found to explain at least some of the relationship between socio-economic status and quitting^{151, 152}.

Socio-economic variation in successful smoking cessation: A significant contributor to disparities in tobacco use is variation in smoking cessation. Approximately 70% of smokers in the general population are interested in quitting ¹⁵³. Similar high rates are found among disadvantaged groups ¹⁵⁴. For example, 37%-75% of homeless smokers ^{104, 155, 156}, 59% of smokers with a mental illness ¹⁵⁷, 42% of Indigenous smokers ¹⁵⁸ and 58%-76% of prisoners ^{99, 159} report wanting to quit smoking. While disadvantaged smokers make attempts to quit at a similar rate to mainstream population groups, those of lower socio-economic position ^{65, 151, 160-162} with poorer education ^{60, 124, 163-165}, of lower income ^{60, 152, 166} and with fewer social networks ¹⁶⁷ are less likely to succeed. One US study found that while 40%-50% of smokers across different educational, occupational and income groups attempted to quit smoking, success was highly positively related to socio-economic position ⁶⁰. Other studies have also found that individuals from lower socio-economic status groups are only half as likely to quit successfully as their higher socio-economic counterparts ¹⁶¹. Additionally, there is consistent international evidence that cessation rates among individuals with mental illness are lower than those among the general population ^{168, 169}. One study found the proportion of ex-smokers among those with severe mental illness (29%) was significantly lower than the proportion of ex-smokers in the general population (49%) ¹⁶⁸.

Disparities in quit success are underpinned by a number of factors. Factors contributing to smoking maintenance include a perception of smoking as a way of coping with stress, relieving boredom and providing opportunities for relaxation ^{86, 143, 170-172}. Low self-efficacy ^{143, 150, 172}, poor social support from friends and family to quit, living in impoverished environments with fewer social and material resources ^{133, 162}, living in households with other smokers ¹⁵¹ and having social networks that include a high proportion of smokers ¹⁷¹ are all factors reported to undermine quitting.

Disadvantaged smokers also face unique barriers to receiving and accessing cessation support. Younger smokers, African-American smokers and those with a high or middle level of socio-economic disadvantage are less likely to report receiving health provider assistance to quit during clinical encounters¹⁷³. This is consistent with the inverse care law, which states that *“the availability of good medical care tends to vary inversely with the need for it in the population served”*¹⁷⁴. Studies have also identified lack of knowledge about available cessation services as well as misconceptions about support as barriers to accessing cessation services¹⁷⁵. The structure of support services, including the methods of referral, the timing of support and the way it is delivered, may also favour more advantaged groups¹⁷⁶, and disadvantaged smokers are also less likely to comply with treatment. A study examining quitting among individuals attending National Health Service Stop Smoking Services in England and Glasgow found that smokers of lower socio-economic position tended to attend fewer sessions and use nicotine replacement therapy (NRT) for a shorter duration than more advantaged smokers, factors which predicted lower success in quitting¹⁷⁶. Two recent studies have also identified differences in triggers in attempts to quit smoking by socio-economic status, with those of lower socio-economic status more likely to report cost and current health problems as triggers for quit attempts, and with those of higher socio-economic status reporting greater concern for future health issues^{177, 178}.

Approaches to reducing smoking in severely disadvantaged groups

Quitting smoking significantly reduces the risk of tobacco-related morbidity and mortality, and has significant health and financial benefits. Widespread efforts to reduce cigarette smoking began in most developed countries in the 1960s following the release of the Surgeon General’s report which linked cigarette smoking to lung cancer⁴⁶. Over the last 30 years there have been

increased calls for action to reduce inequalities in health, and the importance of addressing disparities in smoking has garnered increased research and political attention.

The dual goal of reducing population smoking rates and addressing socio-economic disparities is now a key target of many developed nations. The US government has set targets that include the reduction of smoking prevalence to 12% by 2020, and a focus on policies and strategies to increase access, affordability and use of smoking cessation services and treatments¹⁷⁹. The UK has also set targets for a reduction in smoking prevalence to 10% or less by 2020, and halving of smoking rates for routine and manual workers, pregnant women and those living in the most disadvantaged areas¹⁸⁰. National Health Service Stop Smoking Services in the UK have a particular focus on providing support to disadvantaged smokers¹⁸¹.

Recently in Australia, the National Preventive Health Taskforce released the report, “Australia: the healthiest country by 2020”, which recommended that daily smoking prevalence be reduced to less than 10% by 2020¹⁸². In doing so, it acknowledged that “*a special focus on working with and supporting disadvantaged groups and communities*” would be needed to achieve this target (page 170). Among the key action areas identified, two focused specifically on addressing smoking in disadvantaged groups:

- 1) Key action area 7: Work in partnership with Indigenous groups to boost efforts to reduce smoking and exposure to passive smoking among Indigenous Australians
- 2) Key action area 8: Boost efforts to discourage smoking among people in other highly disadvantaged groups.

Strategies proposed to achieve these goals largely focus on improving access to and increasing the reach of evidence-based cessation support to disadvantaged groups. This includes

enhancing social marketing campaigns to reach disadvantaged groups more effectively, establishing community-based tobacco control projects in Aboriginal communities, providing training to Aboriginal and Torres Strait Islander health workers and other health professionals working in Aboriginal and Torres Strait Islander health services, increasing efforts to discourage smoking in highly disadvantaged neighbourhoods by surveillance and enforcement regarding sales to minors, encouraging general practitioners and other health professionals in disadvantaged areas to refer to Quitline, improving access to information, treatment and cessation services for the mentally ill, and ensuring all state-funded human service agencies are smoke-free and provide appropriate cessation support. However, for Australia to meet the National Preventive Health Taskforce target of 10% smoking prevalence by 2020, smoking cessation rates will need to double ¹⁸³.

In 2005, the World Health Organization Framework Convention on Tobacco Control was enacted in response to the increasing global burden of tobacco use ¹⁸⁴. The framework aims to promote tangible reductions in the prevalence of smoking in signatory countries by setting legally binding tobacco control targets for signatory countries that run the full gamut of tobacco control measures. These include measures to reduce exposure to tobacco smoke, regulate the content and labelling of tobacco products, eliminate tobacco advertising, promote education and awareness about the dangers of tobacco, and encourage tobacco dependence treatment and smoking cessation. Two approaches to tobacco prevention and cessation form part of a comprehensive tobacco control framework: an upstream public health approach which includes population-wide tobacco control initiatives; and a downstream health-systems approach that aims to treat tobacco dependence and increase chances of quit success ¹⁸⁵.

Population-based public health approach

Population-based tobacco control initiatives are those that target the whole population (rather than specific groups, settings or individuals ¹⁸⁶) by seeking changes to the *“social, physical, economic or legislative environment to make them less conducive to smoking”* (page 231) ¹⁸⁷.

While there is some overlap, population-based approaches can generally be distinguished as those that regulate the sale and consumption of tobacco products (e.g. restrictions on advertising and promotion, policies to prohibit smoking in public places, bans on the sale of tobacco to minors and restrictions on the trade of tobacco) and those that aim to increase public awareness and promotion of the health consequences of tobacco (e.g. the promotion of mass media campaigns and mandatory product health warnings).

Australia is a world leader in the implementation of population-based tobacco control strategies. Core elements of population-based strategies have included comprehensive bans on advertising and tobacco sponsorship since 1976 ^{188, 189}, increases in the real price of cigarettes through increases in taxation ¹⁹⁰⁻¹⁹², placement of prominent graphic health warnings on tobacco packets ¹⁹³, large well-funded national social media campaigns ¹⁹⁰ and bans on smoking in public places, including inside buildings, in pubs and clubs and increasingly in outdoor areas such as beaches and playgrounds. More recently, legislative changes have led to a phasing out of tobacco product displays at the point of sale, as well as plans to introduce plain packaging of tobacco in 2012. These measures are expected to reduce population smoking rates further ¹⁹⁴.

There is clear evidence of the effectiveness of population-based strategies in reducing overall smoking rates. A recent review concluded that mass media campaigns both prevent uptake of smoking in adolescence and promote smoking cessation ¹¹⁴. There is also evidence that graphic

health warnings on tobacco packaging increases knowledge of the health consequences of smoking, with highly visceral messages usually shown to have the greatest impact^{195, 196}. Evidence to support the relative effectiveness of population-based initiatives in reducing socio-economic disparities in smoking prevalence is, however, less well-defined¹⁸⁷. For example, while there is strong international consensus that increases in the real price of cigarettes are one of the most effective tools for reducing the socio-economic gradient in smoking prevalence¹⁹⁷, some have expressed concern that increasing tobacco prices is economically regressive as it disproportionately imposes a significant financial burden on those of the lowest socio-economic status^{198, 199}. Smokers under financial stress are less likely to make a quit attempt and less likely to succeed, compared with those not under financial stress²⁰⁰, suggesting that increases to the cost of tobacco may be counter-productive for some of the most disadvantaged smokers. This is supported by a recent study modelling the predicted impact of price increases in the US and Australia, which found that taking into account the effect of financial stress when calculating price elasticity reduced the overall effectiveness of price increases²⁰¹. This finding has led to calls for price increases to be implemented only in tandem with other measures that support disadvantaged and low socio-economic status smokers to quit¹⁸⁷.

There is similar concern about the relative effectiveness of mass media campaigns. Greater exposure to mass media campaigns predicts greater quit prevalence among adults, and messages containing highly emotional elements or personal stories have been found to be more effective among those with low and middle socio-economic status than among high socio-economic status groups²⁰². However a recent systematic review of the effectiveness of mass media campaigns in promoting smoking cessation among socio-economically disadvantaged populations in the US, Canada, Australia and Western European countries

concluded that “*media campaigns to promote smoking cessation are often less effective, sometimes equally effective, and rarely more effective among socioeconomically disadvantaged populations relative to more advantaged populations*” (page 1343). There is also little evidence of the differential effects of graphic health warnings by income, occupation or ethnicity ¹⁸⁷, and some evidence that smokers with psychosis perceive mass media messages as exaggerated and can actually provide cues to smoke ²⁰⁴.

These findings carry a number of implications. Despite widespread implementation of comprehensive population-wide tobacco control strategies in Australia, socio-economic disparities in smoking prevalence persist or are widening ¹²⁶, suggesting that current population-based strategies may not have reached sub-groups with the highest smoking rates. While further research to explore and enhance the effectiveness of population-based strategies among disadvantaged groups is needed, there have been calls to target disadvantaged and minority groups specifically, through the delivery of best practice cessation services, in addition to population-based strategies ⁷³.

Health systems approach

Although population-based strategies seek to create an environment where smoking uptake is discouraged and smoking cessation encouraged, those who attempt to quit unassisted have a lower chance of success, compared with those who quit using evidence-based strategies ²⁰⁵.

Health-systems approaches can be defined as measures which provide smoking cessation treatment on a one-to-one or group basis, with the aim of increasing quit success and changing the smoking behaviours of individuals ²⁰⁶. These approaches generally include the use of pharmacotherapy and behavioural strategies, such as brief advice, motivational interviewing, group and individual counselling, and self-help. Within Australia, health-systems approaches have largely been implemented through the establishment of telephone Quitlines ²⁰⁷, through

integration of smoking cessation treatment into care provided by healthcare professionals, and most recently by the addition of NRT to the Pharmaceutical Benefits Scheme.

Telephone-based Quitlines are one of the principal strategies used to deliver one-on-one quit advice and support on a population-wide basis in Australia. The first widely accessible state-based telephone Quitline was established in Victoria, Australia, in 1985, and services have since been established in more than 40 countries around the world ²⁰⁸. The current format of Quitline provides information and advice about quitting, including information about available pharmacotherapy, self-help materials, assistance in developing a quit plan, and telephone and call-back counselling. While there is a clear positive relationship between advertisement of Quitline and call volume, only 4%-11% of smokers call Quitlines in Australia ²⁰⁹, the US ⁷⁷, England ²¹⁰ and New Zealand ²¹¹ each year. Evidence of the relative effectiveness of telephone Quitline services among disadvantaged groups is mixed. Studies have shown no differences in use of the Quitline or quit success among Canadian Aboriginal smokers and Canadian non-Aboriginal smokers ²¹², or by ethnicity or income in the US ²¹³, though international evidence suggests that targeting of the Quitline service can increase calls from disadvantaged groups, including African-American smokers in the US and Maori smokers in New Zealand ²¹¹. Within Australia, however, there is empirical evidence to suggest that lower socio-economic status groups are less likely to call Quitline than higher socio-economic status groups ²¹⁴, and qualitative evidence that disadvantaged sub-groups, including Aboriginal and Torres Strait Islanders, do not perceive Quitline to be personally relevant ²⁰³. Use of the telephone Quitline requires access to a telephone and other resources that are not always available to smokers of low socio-economic status ²¹⁵.

Integration of care into existing healthcare pathways, in primary care, hospitals, pharmacies and dental settings, is also seen as appropriate for providing cessation support. These settings

have the potential to reach wide numbers of smokers, are cost-effective, do not require large amounts of health provider time or resources, enable the provision of information from a credible source, and create a “teachable moment” when individuals tend to be sensitive to advice and recommendations about their health ²⁰⁶. There is also evidence to support the effectiveness of these approaches. Cochrane reviews have found that physician brief advice can increase rates of cessation by 1%-3% ²¹⁶, and a 2004 review found there is adequate evidence that nurse-delivered smoking cessation interventions are effective ²¹⁷. A recent trial also found that the implementation of a multi-strategic intervention based on strategies recommended by smoking care guidelines increased the provision of NRT, provision of written resources and recording of smoking management in medical records ²¹⁸.

While smoking has been shown to be associated with higher healthcare utilisation among current and former smokers compared with never smokers ²¹⁹, there is clear and consistent evidence from the US that African-American, Hispanic and low socio-economic status smokers are less likely to receive healthcare provider advice or assistance to quit smoking ^{173, 220-223}. This pattern has been shown to hold even when adjusting for number of cigarettes smoked, time since last healthcare provider visit, income, the presence of co-morbidities, health insurance, gender and age ²²¹.

Accumulating evidence of disparities in access to and use of available smoking cessation services has resulted in calls for prevention and intervention strategies specifically to target

those with the highest smoking rates ^{73, 224} and to explore the use of novel treatment delivery settings to reach disadvantaged groups.

Novel settings to increase the reach of interventions

In 2008, the US guidelines for tobacco dependence treatment called for future research to explore the “*effectiveness and utilization of novel treatment delivery settings (e.g., pharmacy-based, community-based, worksite)*” (page 152) among low socio-economic status smokers and those with limited formal education as a way of reducing tobacco-related health disparities ²²⁵. This recommendation seeks to target disadvantaged smokers in the environments they frequent, a tactic which is consistent with the social determinants of health framework ⁷, as well as more recent recommendations made by the National Preventive Health Taskforce which recognised the need to engage communities in the most relevant settings where they “live, work and play” (page 40) ¹⁸².

Evidence about how to target and deliver smoking cessation services effectively to disadvantaged groups in community settings has largely come from research conducted in the UK. In 1998, publication of the White Paper, “Smoking Kills”, in the UK led to the establishment of the National Health Service Stop Smoking Services ⁸⁰. These services, set up across England, provide group or individual meetings with a trained smoking cessation adviser who provides both behavioural therapy and access to pharmacotherapy (NRT, bupropion or varenicline). Services have a specific mandate to target disadvantaged groups, alongside youth and pregnant women, and have demonstrated greater reach into disadvantaged communities and higher quit success among smokers living in the most disadvantaged areas, compared with those living in the most advantaged areas (8.8% vs. 7.8%) ²²⁶. Qualitative work has suggested that accessibility of the services, flexibility of appointments and the provision of one-on-one

support that included additional support between sessions are valued elements of the service provided ²²⁷.

In Australia, few dedicated smoking cessation services exist, and the challenge of how to deliver support effectively to disadvantaged smokers remains. One avenue of significant potential is to capitalise on existing non-healthcare settings that are heavily accessed by disadvantaged smokers.

The potential of social and community service organisations

Recognising the need to address high rates of smoking among the most marginalised groups, in 2006 the Cancer Council New South Wales, together with the Council of Social Services New South Wales, committed to a five-year program of work designed to “lift the burden” of tobacco-related harms among low-income and socially disadvantaged groups in New South Wales (NSW) ²²⁸. The aim of the strategy, which became known as the “Tackling Tobacco” Program, was to partner with non-government social and community service organisations to broaden the provider/client interface to include non-healthcare professionals who already work directly with the most vulnerable and disadvantaged groups. Social and community service organisations are non-government, not-for-profit services that provide welfare support, including financial and family counselling, temporary accommodation, food and material aid, and child and family support. They have existing contact with a large number of disadvantaged groups, including the homeless, individuals with mental illness, the unemployed and Aboriginal and Torres Strait Islanders ²²⁹. The program aims to promote smoking as both a public health and a social justice issue, and to build the capacity of organisations to support clients to quit by developing and implementing effective approaches to tobacco control.

To achieve this aim, the Tackling Tobacco Program has employed multiple strategies: raising awareness of the issue of smoking and social disadvantage by presenting at community sector workshops; developing partnerships with relevant social welfare organisations, including the Council of Social Services New South Wales, the Mental Health Coordinating Council and the Association of Children's Welfare Agencies; developing and disseminating resources including a policy toolkit, a group smoking-cessation program and a casework resource to assist workers to provide quit support to clients; providing funding and support for more than 75 smoking-care projects involving more than 100 social and community service organisations and providing smoking care training seminars to more than 1500 case workers within the community service sector across the five years of the program; and an action research component which aims to develop evidence of the acceptability and effectiveness of this approach. The research contained within this thesis relates to the action research component of the Tackling Tobacco Program.

Defining the social and community service sector

The social and community services sector encompasses a large number of non-government organisations that provide a variety of services to different population groups. The National Classification of Community Services classifies organisations and the services they provide into eight categories²³⁰. Services are defined as those providing:

- I. *Personal and social support*: Provision of advice and referral to community services, consumer and legal information, financial advice, housing/tenancy information, advocacy and counselling, assistance with personal tasks (e.g. showering, dressing and grooming) and domestic tasks (e.g. washing, cooking, cleaning, shopping, gardening), assistance in locating suitable accommodation.

- II. Support for children, families and carers: Provision of long day care, preschool and occasional care for children, investigation of child abuse, intensive case management and family support, assessment, management and follow-up of adoption placements, family counselling.
- III. Training, vocational rehabilitation and employment: Job search skills, job placement and support.
- IV. Financial and material assistance: Provision of cash grants and financial subsidies for food, clothing, medicine, education, books, travel, utilities and accommodation; provision of household goods, clothing, furniture, meals, food hampers and vouchers to people in crisis or in emergencies.
- V. Residential care and supported accommodation: Provision of accommodation, personal care, healthcare, treatment and supervision for the aged and disabled; short-term accommodation for people who are homeless or in a crisis situation or environment.
- VI. Corrective services: Supervision in compliance with court supervision or probation orders, provision of structured rehabilitative activities.
- VII. Service and community development and support: Developing and facilitating improved quality of community services, improving effectiveness and cost of service provision; promotion of social issues, development and support of local community centre based activities, special interest groups and cultural groups.
- VIII. Other community services activities not otherwise described: Services falling outside the definitions provided above.

Organisations may provide services that fall into one or more of these classifications. This thesis describes work conducted with services providing personal and social support, as well as financial and material assistance.

Advantages of partnering with the social and community service sector

The social and community service sector represents a novel and innovative setting for increasing the reach of smoking cessation support to disadvantaged groups in Australia.

Advantages of partnering with social and community service organisations include 1) the size of the sector, 2) their reach into disadvantaged groups, 3) the sustainability and cost-effectiveness of the approach, 4) the counselling and behaviour change skills of staff, 5) the concordance of improving client health with the mission of organisations and 6) the alignment of this approach with the social determinants of health framework.

Size of the sector

Social and community service organisations have established contact with the most disadvantaged population groups in Australia²³¹. There are more than 5,800 not-for-profit social and community service organisations operating across Australia²³², employing more than 335,000 persons and receiving assistance from more than 325,000 volunteers²³². In 2009-2010, the Australian Council of Social Services estimated that organisations provided services to individuals in need on more than 6 million occasions²³³.

Ongoing contact with a large number of disadvantaged groups

One of the main advantages of partnering with the social and community service sector is their capacity to engage with the most disadvantaged groups in the community²³⁴. Highly disadvantaged groups are over-represented among the clients of social and community service

organisations . Single parents are nearly 12 times more likely to access community services than their representation in the community would suggest, and Indigenous people 6.5 times more likely than their representation in the community would suggest ²²⁹ (see Table 1.2). Recipients of all types of social welfare payments are also over-represented as service users ²²⁹ . A large proportion of services also see clients regularly, with 60% of organisations having contact with clients for 6 months or more, and 77% seeing clients on a weekly basis ⁸⁷ .

Sustainability and cost-effectiveness

Smoking cessation is one of the most cost-effective health interventions, with estimates of the cost of tobacco dependence treatments ranging from \$883 to \$3827 per year of life saved ²³⁵⁻²³⁹ . This falls below the National Institute for Health and Clinical Excellence (NICE) threshold for cost-effective health service treatments ²⁴⁰ . Integration of smoking cessation into routine care within existing services further capitalises on the cost-effectiveness of cessation interventions, and delivers a cessation intervention likely to be sustainable over time.

Table 1.2: *Service users by population group (adapted from Australian Council of Social Service, 2010 ²²⁹)*

Population group	Percentage of the Australian population	Percentage of service users	Ratio
Single parents	2.4%	28%	11.7
Indigenous	2.3%	15%	6.5
Non-Australian citizens	4.6%	8%	1.7
Individuals with a disability	20%	29%	1.5
Unemployed	34.5%	51%	1.5

Skills of organisations and their staff

Social workers are also highly skilled in promoting behaviour change among marginalised groups²⁴¹ and have a tradition of encouraging health and lifestyle changes which can be rapidly applied to treating nicotine dependence²⁴¹. Social and community service organisations adopt a strengths-based approach to service provision, emphasising self-determination, empowerment and resilience²⁴², qualities which are well-suited to addressing smoking. Social workers are in the position to work holistically and address smoking alongside housing, employment, financial and relationship issues that may also be relevant for their clients, providing a “one-stop shop” which reduces barriers to accessing other support available in specialty clinics, primary care-based support and telephone support.

Concordance with organisational mission

Provision of support is also consistent with the overall mission of organisations to improve the wellbeing of their clients. Organisations are increasingly recognising that they are ideally placed to provide referral and intervention to reduce the harms caused by tobacco use²⁴³. A recent survey conducted with 149 Chief Executive Officers (CEOs) and program managers of social and community service organisations operating in NSW, Australia, found there is awareness of the impact of smoking on disadvantage, with agreement by 78% of CEOs and managers that “smoking increases our clients’ disadvantage”. Ninety percent of CEO and program managers also agreed that “disadvantaged people who smoke should receive help to quit”, and 68% agreed that the provision of smoking cessation support should be part of usual care provided by social and community service organisations. Importantly, 65% of respondents agreed that staff have the confidence to provide cessation support to clients.

Evidence for social and community service delivered smoking cessation

In 1994, Valentich²⁴¹ identified the potential of social workers in addressing smoking among disadvantaged population groups, suggesting they have a role to play in introducing smoke-free policies, providing cessation programs for clients and helping clients deal with stress that may underlie addiction to tobacco²⁴¹. Very little research since has explored the role of social and community service organisations in providing smoking cessation support. Two studies conducted in Hong Kong explored the provision of smoking cessation support by social workers working with elderly clients^{231, 244}. While few social workers were found currently to provide advice and support to quit²⁴⁴, a nine-hour social worker training program resulted in modest increases to knowledge about the health impacts of smoking, positively shifted attitudes towards smoking, tobacco advertising and smoking cessation, increased self-rated competence in delivering support and increased frequency of delivery of the 4 As (Ask, Advise, Assist, Arrange)²³¹.

Only two studies have explored the acceptability and effectiveness of cessation programs delivered to disadvantaged clients in community welfare settings, both with promising results. One study conducted in the US explored whether a very brief 30-second intervention provided to clients by Salvation Army staff following regular visits to receive assistance was acceptable to staff and clients and resulted in changes in smokers' motivation to quit²⁴⁵. No differences were found between the intervention and control groups for service satisfaction or willingness to return to the service in the future. Importantly, staff delivering the intervention agreed that clients wanted to quit smoking and needed help, and that providing cessation support complemented the mission of the Salvation Army. They also disagreed that asking about tobacco use frustrated, angered or alienated clients or that tobacco-related activities would drain resources from their core mission. A second Australian study explored the effectiveness

of a group smoking cessation program conducted in three social and community service organisations providing support to individuals with drug and alcohol dependence, Aboriginal and Torres Strait Islanders, and individuals with mental illness²⁴⁶. Clients accessing these services were provided with a 6-8 week cessation program which included access to NRT. At program completion, 30.0%-46.8% of participants were abstinent (defined as carbon monoxide (CO) levels <8 ppm), and 9.5% remained abstinent at six month follow-up. Although only a small pilot study, these findings are encouraging and suggest that social and community service organisations are able to deliver effective programs that are acceptable to clients.

Existing challenges and research aims

Despite a clear mandate to explore the use of novel treatment delivery settings to reach disadvantaged smokers and the potential of social and community service organisations, very little research has explored the role of social and community service organisations in providing smoking cessation support to clients. A number of barriers to implementation also exist; support is currently not routinely provided, with less than a quarter of organisations asking clients about their smoking status or recording client smoking status in case notes²¹⁰. Few clients present to social and community service organisations specifically to address tobacco issues, and there is a reluctance to raise the issue of smoking^{241 243}, with up to 45% of organisation CEOs and program managers believing that smoking is a client's personal choice and that it is not their place to interfere²¹⁰. Additionally, smoking is often not viewed as a priority, with issues of domestic violence, homelessness and other illicit drug and alcohol use issues seen to be of greater importance. There is also some anecdotal evidence that smoking is used as a way to build relationships between staff and clients.

Given that there is 1) limited evidence of these organisations' interest in addressing smoking or the acceptability of these notions, 2) no Australian evidence of the interest of clients in receiving this type of support and 3) little knowledge of the effectiveness of smoking cessation training for non-traditional healthcare providers, testing of the acceptability and feasibility of this approach is needed prior to the development of a randomised controlled trial. In order to test feasibility, acceptability and limited efficacy of a proposed trial, two sources of guidance were consulted to aid development of a best-chance intervention and evaluation framework: the Medical Research Council (MRC) guidelines for the development and evaluation of complex interventions ²⁴⁷; and a framework for designing feasibility studies ²⁴⁸. The MRC guidelines suggest that when developing a complex intervention, a theoretical understanding is needed of how the intervention may cause change so that weaknesses may be identified and strengthened. Furthermore, key uncertainties should be trialled during a pilot study. Key areas of focus for feasibility studies include studies assessing acceptability, demand, implementation, practicality, adaptation, integration, expansion and efficacy (see Table 1.3)

²⁴⁸ .

Each paper in this dissertation aims to address one or several of these key feasibility concepts by exploring social and community service organisations as novel settings for the delivery of smoking cessation support to disadvantaged smokers. This work aims to aid the development of a randomised controlled trial. Specifically, this dissertation aims to:

1. Examine the prevalence of smoking and attitudes towards quitting among clients attending social and community service organisations (Paper One, published)
2. Examine the barriers to quitting among highly disadvantaged smokers in the Australian context (Paper Two, published)

3. Determine the acceptability and feasibility of the social and community service sector for integrating the delivery of smoking cessation support into usual care (Paper Three, published)
4. Critically review the literature and assess the effectiveness of behavioural smoking cessation interventions for severely disadvantaged groups (Paper Four, published)
5. Assess the accuracy and acceptability of computer-administered self-report of smoking status among highly disadvantaged smokers attending a social and community service organisation (Paper Five, published)
6. Explore the acceptability and feasibility of community service delivered intervention (Paper Six, accepted- in press).

To my knowledge, this is the first body of work to attempt to obtain an in-depth understanding of smoking among severely disadvantaged individuals in Australia, and to consider how the social and community service sector could be involved in increasing the reach of evidence-based smoking cessation support.

Table 1.3: *How the thesis papers address key areas of focus for feasibility studies (adapted from Bowen et al., 2009²⁴⁸)*

Area of focus	Purpose of study	Potential designs	Thesis papers
Demand	To assess potential uptake and use of the selected or proposed intervention activities in the defined target population	Survey	One
Acceptability	To determine how the intended recipients and those involved in implementing the program react to the intervention	Focus groups	Two, Three
Integration	To assess the level of system change needed to integrate a new program or process into an existing infrastructure or program	Focus groups, quasi-experimental or uncontrolled pre-post study	Two, Three, Six
Adaptation	To determine the need to change program contents or procedures to be appropriate in a new situation	Quasi-experimental or uncontrolled pre-post study	Six
Limited-efficacy testing	To test an intervention in a limited way. Such tests may be conducted in a convenience sample, with intermediate rather than final outcomes, with shorter follow-up periods or with limited statistical power	Quasi-experimental or uncontrolled pre-post study	Six
Implementation	To determine the extent, likelihood and manner in which an intervention can be fully implemented in the way proposed	Quasi-experimental or uncontrolled pre-post study	Six

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PAPER ONE

**A survey of smoking prevalence and interest in quitting among
social and community service organisation clients in Australia:**

A unique opportunity for reaching the disadvantaged

Introduction to Paper One

Smoking rates are unacceptably high among a number of disadvantaged and vulnerable groups including those of low socioeconomic position, Aboriginal and Torres Strait Islanders¹, the homeless^{2,3}, individuals with a mental illness⁴ and prisoners⁵⁻⁷. An emerging setting for the delivery of smoking cessation support with considerable potential is social and community service organisations. These organisations have ongoing contact with a significant proportion of the most disadvantaged smokers in Australia⁸, and have staff highly skilled in promoting behaviour change. In 2009-2010, the Australian Council of Social Services estimated that organisations provided services to individuals in need on more than 6 million occasions, with single parents, Aboriginal and Torres Strait Islanders, the unemployed and individuals receiving welfare payments over represented as service users⁸.

To date, two small studies have explored the acceptability and effectiveness of cessation programs offered in social and community service organisations^{10, 11}. One study reported that the provision of brief advice to clients attending a Salvation Army service for emergency relief was acceptable to both service users and staff¹⁰, while another providing a 6-8 week cessation program to individuals with drug and alcohol dependence, Aboriginal and Torres Strait Islanders, and individuals with a mental illness found an abstinence rate of 9.5% at six-months follow-up¹¹. While these are promising findings, no data exists about the prevalence of smoking among clients attending social and community service organisations within Australia, the number who want to quit smoking, or the number that are likely to accept smoking cessation support if offered. This information is important to gauge the likely reach and uptake of community service organisation delivered cessation support.

Aims and purpose

The following study aimed to provide data about smoking prevalence, interest in quitting and interest in receiving smoking cessation support among clients accessing social and community service organisations for welfare support in New South Wales, Australia. This is the first manuscript of the thesis and has been published in BMC Public Health, citation: Bryant J, Bonevski B, Paul C. A survey of smoking prevalence and interest in quitting among social and community service organisation clients in Australia: a unique opportunity for reaching the disadvantaged. BMC Public Health, 2011; 11:827. Doi:10.1186/1471-2458-11-827. [Appendix 1.1].

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**A survey of smoking prevalence and interest in quitting among
social and community service organisation clients in Australia:
A unique opportunity for reaching the disadvantaged**

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Abstract

Background: Social and community service organisations are non-government, not-for-profit organisations that provide welfare services to disadvantaged individuals. These organisations hold considerable potential for providing smoking cessation support to disadvantaged smokers. This study aimed to establish the prevalence of smoking, interest in quitting, and interest in receiving cessation support among clients accessing social and community service organisations.

Methods: Clients attending three social and community service organisations in NSW, Australia, between February and October 2010 were invited to complete a 60-item touch screen computer health survey, presented using Digivey survey software. A total of 552 clients were approached to participate during the study period. Of these, 383 provided consent and completed the survey (69% consent rate).

Results: Daily smoking was reported by 53.5% of participants. Occasional smoking (non-daily smoking) was reported by a further 7.9% of participants. Most participants (77%) had tried to quit smoking in the past and had made an average of two quit attempts ($SD=3.2$) lasting longer than 24 hours in the previous 12 months. More than half of all participants (52.8%) reported that they would like help from social and community service organisation staff to quit smoking. For those interested in receiving help, the preferred types of help were access to free nicotine replacement therapy (77%), cash rewards (52%) and non-cash rewards (47%) for quitting, and to receive support and encouragement from social and community service organisation staff to quit (45%).

Conclusions: Smoking rates among clients accessing social and community service organisations are substantially higher than the general population rate of 15.1%. A substantial proportion of clients are interested in quitting and want support from the social and community service organisation to do so.

Introduction

In 2009, the National Preventative Taskforce recommended that daily smoking prevalence in Australia be reduced to less than 10% by 2020 ¹. In recognition of high smoking rates among disadvantaged groups ^{2,3}, the taskforce acknowledged that *“a special focus on working with and supporting disadvantaged groups and communities”* would be needed to achieve this target ¹. There has also been increasing international recognition of the need for policies and strategies to increase access, affordability and use of smoking cessation services and treatments by disadvantaged smokers ^{2,4-6}. While the importance of a comprehensive population-level approach to tobacco control cannot be overstated, in 2008 the United States guidelines for tobacco dependence treatment called for research to explore the effectiveness of novel treatment delivery settings, including community-based settings, for reaching low socio-economic status smokers and those with limited formal education ⁷. One novel setting with considerable potential in Australia is social and community service organisations.

Social and community service organisations are non-government, not-for-profit organisations that provide welfare services, including financial and family counselling, temporary accommodation, food and material aid, and child and family support. They have existing contact with a large number of disadvantaged groups, including the homeless, individuals with mental illness, the unemployed and Aboriginal and Torres Strait Islanders ⁸, and are uniquely placed to provide smoking cessation support to disadvantaged smokers. They are able to address smoking in a holistic way alongside other issues faced by their clients, can provide personalised ongoing support, and have demonstrated growing interest in this opportunity via participation in programs such as the Cancer Council NSW’s Tackling Tobacco Program (see <http://www.cancercouncil.com.au/editorial.asp?pageid=2210>). Qualitative and quantitative work has established the acceptability of providing and receiving smoking cessation support in the social and community service setting ^{9,10}. A small pilot study has also shown that providing

training to staff of social and community service organisations develops confidence, skills and knowledge in addressing tobacco issues ¹¹, overcoming some of the identified barriers to providing support in this setting ⁹. While social and community service organisations appear to be a promising setting for targeting disadvantaged smokers, no data exist to describe the prevalence of smoking and interest in quitting among clients attending social and community service organisations, to allow judgements about the potential reach of this approach.

Objective

To describe the smoking prevalence, interest in quitting and interest in receiving smoking cessation support among clients accessing social and community service organisations for welfare support.

Method

Design and sample

A cross-sectional health survey was conducted between February and October 2010 in two social and community service organisations located in Sydney, and one social and community service organisation located in a regional area of New South Wales (NSW), Australia.

Participants were clients seeking financial or material assistance, such as food vouchers, free grocery items, or assistance paying bills or purchasing medications, from the social and community service organisation. Clients who were aged over 18 years, able to speak and/or read English, and not judged to be distressed or ill by the caseworker recruiting participants, were eligible to participate.

Recruitment and procedure

The organisation was selected on the basis of existing research partnerships. Once consent was obtained from the Chief Executive Officer for the organisation to participate in this research, a top-down approach to recruitment was used, with managers of services contacted and their willingness to be involved in the research confirmed. Eligible service attendees were invited by their caseworkers at the end of their appointments seeking financial or material assistance to complete a confidential and anonymous touch screen computer health survey [Appendix 1.2]. Gender and date of birth of non-consenting clients were collected to assess participation bias. Support to read and/or complete the touch screen computer survey of health status was provided by a research assistant when necessary. Ethics approval was provided by the University of Newcastle Human Research Ethics Committee [Appendix 1.3].

Measures

Participants completed a 60-item general health survey [Appendix 1.4] which included items on smoking, fruit and vegetable consumption, sun protection, physical activity, alcohol consumption and cancer screening. Only items related to smoking will be reported here. All questions were presented on a touch screen computer using Digivey survey software ¹².

Questions related to:

1. **Socio-demographic data:** Items included gender, age, income, Aboriginal or Torres Strait islander status, employment and highest level of education.
2. **Smoking behaviours:** Smoking status was assessed by asking, “Do you currently smoke tobacco products?” with response options, “Yes, daily”, “Yes, at least once a week”, “Yes, but less often than once per week” and “No, not at all”. Those reporting daily or occasional smoking were asked about the type of tobacco used and the average amount spent (\$AUD) on tobacco each week. Those reporting daily smoking were asked the age they first started smoking daily and, to enable the calculation of the

heaviness of smoking index (HSI), were asked to report the number of cigarettes smoked each day and the time to first cigarette after waking ¹³. Those who reported not smoking were asked if they had ever been a daily smoker (“Yes” or “No”) and, if so, how long ago they had quit.

3. **Smoking-induced financial deprivation:** This was assessed by asking participants, “In the last six months, have you spent money on cigarettes that you knew would be better spent on household essentials like food?” (“Yes” or “No”) ¹⁴.
4. **Quitting behaviours:** Current smokers were asked whether they had ever tried to quit smoking (“Yes” or “No”), the number of quit attempts lasting at least 24 hours in the past 12 months, who had advised to them to quit smoking, what strategies they had used to try to quit in the past, their interest in quitting, and their intention to quit.
5. **Interest in receiving quit support from social and community service organisations:** Current smokers were asked whether they would be interested in receiving support to quit smoking from organisation staff (“Yes” or “No”) and the type of support wanted (12 possible response options).

Statistical analysis

Frequencies were calculated and Chi-square tests used to examine differences between smokers and non-smokers, using categorical data. The heaviness of smoking index was calculated to give a score with a range of 0 (low dependence) to 6 (high dependence). Statistical analysis was conducted using STATA version 11.0 ¹⁵.

Results

Characteristics of the sample

A total of 552 clients were approached to participate during the study period. Of these, 383 completed the survey (69% consent rate). There were no differences in age between those

who did ($M=43$, $SD=12.6$) and did not ($M=42.9$, $SD=12.3$) consent to participate. However, male participants were more likely than female participants to agree to participate (76% vs. 67% respectively, $\chi^2=5.5$, $p=0.02$). Demographic details are reported in Table 2.1. Fifty-five percent of participants reported an income of less than AUD\$300 per week, 48.5% were unemployed and 72.4% reported primary or secondary school as their highest levels of education.

Smoking behaviours

Smoking characteristics of the sample are reported in Tables 2.1 and 2.2. More than half of all participants (53.5%) reported daily smoking. A further 7.9% were occasional smokers. Of those who reported being ex-smokers, the majority (57.4%) had quit smoking more than 5 years before. Males were more likely to be smokers than females (67% v. 54%). Younger participants, those who were never married or single, and those with a high school year 7-10 education were also significantly more likely to smoke than their counterparts. Ex-smokers were more likely to be female ($\chi^2=4.7$, $p=0.03$). Seventy-eight percent of participants reported that they had been near others who were smoking in the past 24 hours, and 61% of smokers reported that they had spent money on cigarettes they knew would be better spent on household essentials such as food in the past six months.

Quitting

Quitting behaviours are reported in Table 2.3. Overall, 77% of participants had tried to quit smoking in the past. Participants had made an average of 2.1 quit attempts lasting longer than 24 hours in the previous 12 months ($SD=3.2$). The majority (74%) had attempted to quit “cold turkey”. A minority had used nicotine replacement therapy (NRT) (32.9%), or called Quitline (7.7%). More than half of participants (56.6%) were “very” or “quite” interested in quitting smoking. However, relatively few (16.2%) intended to quit in the next 30 days.

Table 2.1: Demographic characteristics of respondents (N=383)

	Smokers	Non-smokers	Total sample	χ^2
	(n=235)	(n=148)	(N=383)	
	% (95% CI)	% (95% CI)	% (95% CI)	
Gender				
Male	60.4 (54.1-66.7)	46.6 (38.5-54.7)	55.1 (50.1-60.1)	$\chi^2=7,$ p<0.01
Female	39.6 (33.3-45.9)	53.4 (45.3-61.5)	44.9 (39.9-49.9)	
Age				
<29	13.2 (8.8-17.5)	12.8 (7.3-18.3)	13.0 (9.7-16.4)	$\chi^2=18.5,$ p<0.01
30-39	28.9 (23.1-34.8)	21.6 (14.9-28.3)	26.1 (21.7-30.5)	
40-49	31.5 (25.5-37.5)	23.6 (16.8-30.5)	28.5 (23.9-33.0)	
50-59	20.4 (15.2-25.6)	23.6 (16.8-30.5)	21.7 (17.5-25.8)	
60-69	4.3 (1.7-6.8)	9.5 (4.7-14.2)	6.3 (3.8-8.7)	
70+	1.7 (0.04-3.4)	8.8 (4.2-13.4)	4.4 (2.4-6.5)	
Aboriginal or Torres Strait Islander				
Yes	12.3 (8.1-16.6)	8.8 (4.2-13.4)	11 (7.8-14.1)	$\chi^2=1.2,$ p=0.28
No	87.7 (83.4-91.9)	91.2 (86.6-95.8)	89 (85.9-92.1)	
Marital status				
Married	5.5 (2.6-8.5)	11.5 (6.3-16.7)	7.8 (5.1-10.5)	$\chi^2=16.4,$ p<0.01
De facto	8.5 (4.9-12.1)	5.4 (1.7-9.1)	7.3 (4.7-9.9)	
Separated/divorced	23 (17.6-28.4)	27.7 (20.4-34.9)	24.8 (20.5-29.1)	
Never married	59.6 (53.3-65.9)	45.3 (37.2-53.3)	54.0 (49.0-59.0)	
Widowed	3.4 (1.1-5.7)	10.1 (5.2-15.0)	6.0 (3.6-8.4)	
Education				
Primary school	3 (0.7-5.2)	2.7 (0.07-5.3)	2.9 (1.2-4.6)	$\chi^2=13.4,$ p<0.01
High school 7-10	53.2 (46.8-59.6)	35.1 (27.4-42.9)	46.2 (41.2-51.2)	
High school 11-12				

	Smokers	Non-smokers	Total sample	χ^2
	(n=235)	(n=148)	(N=383)	
	% (95% CI)	% (95% CI)	% (95% CI)	
TAFE	16.2 (11.4-20.9)	19.7 (13.2-26.1)	17.5 (13.7-21.3)	
University degree	15.3 (10.7-19.9)	21.6 (14.9-28.3)	17.7 (13.9-21.6)	
	12.3 (8.1-16.6)	20.9 (14.3-27.5)	15.7 (12.0-19.3)	
Income				
<\$200	18.3 (13.3-23.3)	12.8 (7.4-18.3)	16.2 (12.5-19.9)	$\chi^2=3.9$, p=0.42
\$200-\$300	36.2 (30.0-42.3)	38.5 (30.6-46.4)	37.1 (32.2-41.9)	
\$300-\$400	25.5 (19.9-31.1)	24.3 (17.4-31.3)	25.1 (20.7-29.4)	
\$400-\$500	9.4 (5.6-13.1)	8.1 (3.7-12.5)	8.9 (6.0-11.7)	
>\$500	5.1 (2.3-7.9)	8.9 (4.2-13.4)	6.5 (4.0-9.0)	
Missing	5.5 (2.6-8.5)	7.4 (3.2-11.7)	6.2 (3.8-8.7)	
Employment				
Full-time	1.3 (0.3-3.7)	0.7 (0.2-3.7)	1.0 (0.02-2.1)	$\chi^2=8.2$, p=0.32
Part-time or casual	6.4 (3.2-9.5)	7.4 (3.2-11.7)	6.8 (4.3-9.3)	
Unemployed	48.5 (42.1-54.9)	49.3 (41.2-57.4)	48.8 (43.8-53.9)	
Student	4.2 (1.7-6.8)	6.0 (2.2-10.0)	5.0 (2.8-7.1)	
Retired	2.9 (0.8-5.2)	7.4 (3.2-11.7)	4.8 (2.6-6.8)	
Unable to work	12.8 (8.5-17.1)	12.2 (6.9-17.5)	12.5 (9.2-15.9)	
Home duties	11.1 (7.0-15.1)	10.1 (5.2-15.0)	10.7 (7.6-13.8)	
Other	12.8 (8.5-17.1)	6.9 (2.7-10.8)	10.4 (7.4-13.5)	

Table 2.2: *Smoking characteristics of the study sample (n=235)*

	% (95% CI)
Smoking status	
Daily	53.5 (48.5-58.5)
Weekly	4.2 (2.2-6.2)
Less than weekly	3.7 (1.8-5.5)
Never smoker	22.4 (18.3-26.7)
Ex-smoker	16.2 (12.5-19.9)
Heaviness of smoking index	
Low	36.5 (29.8-43.1)
Moderate	44.3 (37.4-51.2)
High	19.2 (13.7-24.7)
Smoking-induced financial deprivation	
Yes	61.3 (55-67.6)
No	38.7 (32.4-45.0)
	Mean (SD)
Age started smoking	
Males	15.7 (4.4)
Females	17.7 (7)
Number of cigarettes smoked daily	16.8 (10.6)
Amount spent on cigarettes weekly (\$AUD)	42.9 (31.1)

Table 2.3: *Quitting behaviours and intentions among a sample of daily and occasional smokers**(n=235 unless otherwise noted)*

	% (95% CI)
Interest in quitting	
Very interested	36.2 (30.0-42.4)
Quite interested	20.4 (15.2-25.6)
A little bit interested	19.6 (14.5-24.7)
Not at all interested	23.8 (18.3-29.3)
Intention to quit	
Next 30 days	16.2 (11.4-20.9)
Next 6 months	25.9 (20.3-31.6)
Quit, but not in next 6 months	17.9 (12.9-22.8)
Never quit	6.8 (3.7-10.0)
Don't know	33.2 (27.1-39.3)
Who has advised to quit*	
Doctor	38.7 (32.4-45.0)
Family member	38.7 (32.4-45.0)
No one	37.0 (30.8-43.2)
Friend	26.4 (20.7-32.1)
Other	11.1 (7.0-15.1)
Nurse	6.0 (2.9-9.0)
Caseworker	6.0 (2.9-9.0)
Teacher	2.1 (0.2-4.0)
Boss	3.4 (1.2-5.7)
Quit strategies used in the past*^	
"Cold turkey"	74 (67.6-80.5)
Nicotine replacement therapy	39.2 (32.0-46.4)
Other	

	% (95% CI)
Received support from family/friends	19.3 (13.5-25.1)
Called Quitline	8.3 (4.2-12.3)
Acupuncture or hypnosis	7.7 (3.8-11.7)
Individual counselling	5.0 (1.7-8.2)
Group quit program	2.8 (0.3-5.2)
	0.5 (0.04-1.6)

**Participants could select more than one response. Percentages do not add to 100%.*

^ Answered only by participants who reported making a quit attempt (n=181).

Table 2.4: *Types of quit support most desired by clients who wanted support from social and community service organisation staff to quit (n=124)*

	% (95% CI)
Be given free nicotine patches or gum	77.4 (70.0-84.9)
Be given cash rewards for quitting	52.4 (43.5-61.3)
Be given non-cash rewards for quitting	46.8 (37.9-55.7)
Get support and encouragement from staff to quit	45.2 (36.3-54.1)
Alternative therapy such as acupuncture or hypnosis	38.7 (30.0-47.4)
Receive advice or counselling	31.5 (23.2-39.7)
Be asked by staff if I would like help to quit	31.5 (23.2-39.7)
Be given pamphlets about quitting	23.4 (15.8-30.9)
Computer- or internet-based quit program	15.3 (8.9-21.8)
Video or DVD about quitting	14.5 (8.2-20.8)
Quit help <i>via</i> SMS messages	12.9 (6.9-18.9)
Be put in touch with Quitline	11.3 (5.6-16.9)

Interest in receiving quit support from social and community service organisations

Just over half of all participants (52.8%) reported that they would like help from community service staff to quit smoking. Types of help wanted are shown in Table 2.4. For those wanting support, the most desired types were access to free NRT (77.4%), cash rewards (52.4%) and non-cash rewards (46.8%) for quitting, and to receive support and encouragement from social and community service organisation staff to quit (45.2%). The least desired types of support were to be put in touch with the telephone Quitline (11.3%) and to receive quit help *via* SMS messages (12.9%).

Discussion

The rate of current daily smoking at 53.5% was more than three times higher than the Australian population rate of 15.1%¹⁶, and comparable to that documented in other severely disadvantaged groups such as those attending a psychiatric rehabilitation support service¹⁷. Daily consumption of cigarettes at 16.7 per day was slightly higher than the general population consumption of 13.9 cigarettes per day¹⁸. A considerably smaller proportion of participants were never smokers compared with the general population¹⁸. These data confirm that social and community service organisation clients have rates of smoking and nicotine dependence similar to that of the most disadvantaged groups in Australia.

A high proportion of smokers had attempted to quit in the previous year, adding further support to evidence that disadvantaged smokers have a desire to quit smoking that is comparable to the general population¹⁹. However, a relatively small proportion of participants reported using strategies known to increase quit success, including using NRT and behavioural support. Few participants had contacted the telephone Quitline, and few showed interest in receiving this type of support. Alarming, over a third of respondents wanted help from the

social and community service organisation to access acupuncture and hypnosis, despite there being no evidence of the effectiveness of these types of support ²⁰. While the cost of NRT is sometimes reported as a barrier to use among disadvantaged smokers and could explain this finding ²¹, further exploration of the reasons why disadvantaged smokers do not use other available services such as the telephone Quitline is needed. Such work would help inform the development of strategies to increase engagement of disadvantaged smokers with evidence-based cessation interventions that would increase the likelihood of quit success.

More than half of smokers wanted support from the social and community service organisation to quit, highlighting the potential of social and community service organisations to reach disadvantaged smokers. The Australian Council of Social Services reports that member social and community service organisations provided services to disadvantaged clients on more than 4.3 million occasions in 2009 ⁸. Assuming a smoking rate of 62% and that 53% of clients would accept support, social and community service organisations could provide support to smokers on nearly 1.5 million occasions each year. Client populations of social and community service organisations contain over-representations of single parents, Aboriginal and Torres Strait Islanders, and those receiving social welfare payments ⁸, providing a unique way to access the most disadvantaged smokers in the community. It is likely, however, that the actual utilisation of help provided by social and community service organisations would be considerably less than 53%, and given barriers to participation, large randomised controlled trials are needed to examine the uptake of support by clients in this setting, and the effectiveness of this approach in increasing smoking cessation. A trial examining the efficacy of a client-centred, caseworker-delivered cessation support intervention is currently underway ²².

Conclusions

Smoking rates among clients accessing social and community organisations are markedly higher than those for the general population. Given that a high proportion of smokers are interested in receiving quit support from social and community organisations, the effectiveness of integrating the delivery of evidence-based support into care provided by social and community organisations should be further explored.

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PAPER TWO

**Developing cessation interventions for the social and community
service setting: A qualitative study of barriers to quitting among
disadvantaged Australian smokers**

Introduction to Paper Two

Smoking is a behaviour that is strongly influenced by social, cultural and environmental factors. Understanding these factors is critical to the success of smoking cessation programs. Thorough formative research is essential if cessation programs are to be acceptable, tailored to the cultural norms of the target population, and able to address normative beliefs and perceived barriers to change ¹⁻³.

A considerable amount of research has explored barriers to quitting smoking, including among specific disadvantaged sub-groups such as those living in socio-economically deprived areas, institutionalised public mental health patients ⁴, and pregnant Aboriginal and Torres Strait Islander women ⁵. Disadvantaged smokers report many of the same reasons for smoking as other smokers, with reasons generally including poor self-efficacy, lack of knowledge, and lack of willpower. However, other factors have been shown to contribute to differing degrees to smoking prevalence, including pro-smoking community norms and barriers to accessing support ⁶⁻⁹.

Further research using qualitative methods is needed to inform intervention and policy development in novel settings such as social and community service organisations. Focus groups are an established and effective way of exploring participants' knowledge, attitudes and experiences in their own words ¹⁰. Focus groups are able to enrich understanding of the complex and multi-factorial nature of smoking, including potential barriers to change, and can help define relevant intervention components that closely fit the needs of the target population ¹¹. This study was designed as a first step towards understanding what may be needed to create maximally effective smoking cessation interventions among severely disadvantaged individuals attending social and community service organisations for support.

Using theory to develop behaviour change interventions

There is increasing recognition that behaviour change interventions should draw on theory in their development^{11,12}. Interventions are more likely to be effective if they target causal determinants of behaviour change¹², and effective interventions are more likely to be implemented into usual care if they are based on the systematic use of theory in development and implementation¹³. Interventions that are culturally appropriate and acceptable to the target group are thought to help reduce health disparities¹⁴.

A widely used framework for guiding the development of interventions is the PRECEDE-PROCEED model¹⁵. This program planning model incorporates epidemiological, social and behavioural theory¹⁶, and provides a logical framework for identifying the multiple factors that influence behaviour and the subset of factors that should be targeted by interventions¹⁶.

These factors are grouped into:

- **Predisposing factors:** personal factors that influence motivation and capacity for change
- **Enabling factors:** factors that support change, such as resources, skills and barriers
- **Reinforcing factors:** feedback that strengthens or weakens the changed behaviour.

Benefits of using the PRECEDE-PROCEED model to develop interventions include improving the likelihood that relevant factors will be identified and ensuring that interventions adequately address these factors in design, implementation and evaluation.

Aims and purpose

Paper one clearly outlined the potential reach of smoking cessation support delivered *via* CSCOs to disadvantaged smokers. This chapter presents the first of two qualitative papers exploring barriers to quitting, and the acceptability of cessation support offered in the social

and community service setting among highly disadvantaged smokers. Specifically, this paper aims to explore barriers to quitting among clients attending community welfare organisations and their implications for developing cessation interventions.

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**Developing cessation interventions for the social and community
service setting: A qualitative study of barriers to quitting
among disadvantaged Australian smokers**

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11-493. [Appendix 2.1]

Abstract

Background: Smoking rates remain unacceptably high among individuals who are socially disadvantaged. Social and community service organisations are increasingly interested in providing smoking cessation support to clients. However, little is known about the best way to assist disadvantaged smokers to quit in this setting. This study aimed to explore barriers and facilitators to quitting, within the conceptual framework of the PRECEDE-PROCEED model, to identify possible interventions appropriate to the social and community service setting.

Methods: Semi-structured focus groups were conducted with clients attending five community welfare organisations located in New South Wales, Australia. Thirty-two clients participated in six focus groups. A discussion guide was used to explore the barriers and facilitators to smoking and smoking cessation, including current smoking behaviour, motivation to quit, past quit attempts, barriers to quitting, and preferences for cessation support. Focus groups were audio-taped, transcribed and analysed using thematic analysis techniques.

Results: Participants were current smokers, most of whom expressed a desire to quit. Factors predisposing continued smoking included perceived benefits of smoking for stress relief, doubting ability to quit, fear of gaining weight, and poor knowledge of and scepticism about available quit support. The high cost of nicotine replacement therapy was a barrier to its use. Continual exposure to smoking in personal relationships and in the community reinforced smoking. Participants expressed a strong preference for personalised quit support.

Conclusions: Disadvantaged smokers in Australia express a desire to quit smoking, but find quitting difficult for a number of reasons. Social and community service organisations may

have a role in providing information about the availability of quit support, engaging disadvantaged smokers with available quit support, and providing personalised, ongoing support.

Introduction

According to the World Health Organization, tobacco is the single greatest preventable cause of death and disease worldwide ¹. It is a leading risk factor in the development of chronic diseases, including cancer, lung diseases and cardiovascular disease, and is responsible for more than 5 million deaths each year ¹. If current trends continue, the number of deaths caused as a result of tobacco is expected to rise to between 8 and 10 million deaths annually by 2030 ²⁻⁴. Within Australia, tobacco is estimated to be responsible for 7.8% of the total burden of disease ⁵ and costs the economy more than \$31.5 billion dollars each year ⁶.

Public health campaigns, tobacco control programs and tobacco control policies have resulted in significant declines in the prevalence of tobacco use in many developed countries in recent decades ⁷⁻⁹. Currently, prevalence of daily smoking in Australia is 16.9%, declining more than 30% since 1991 ¹⁰. However, despite this overall decline, smoking rates remain unacceptably high among those who are both socially excluded and socio-economically disadvantaged. For example, smoking rates are markedly higher among low-income single women (46% ¹¹), individuals with mental illness (41%– 62% ^{12, 13}) and the homeless (66%– 77% ¹⁴⁻¹⁷).

Although disadvantaged smokers attempt to quit at rates similar to those of other smokers ¹⁸, they are less likely to succeed ¹⁸⁻²¹. Social and community service organisations are emerging as a novel and viable setting for targeting socially disadvantaged and marginalised groups for smoking cessation ²²⁻²⁴. These organisations provide welfare services to socially disadvantaged individuals across a broad range of areas, including support in accessing accommodation, emergency relief (e.g. groceries and assistance with paying bills), financial and relationship counselling, family support and support for individuals with mental illness. These organisations are increasingly aware of the contribution of tobacco use to social exclusion, poverty and

health disparities, and are interested in developing interventions addressing smoking cessation among their clients²⁵.

Developing effective interventions for novel settings requires thorough formative research to determine the normative beliefs and perceived barriers to change among the population to be targeted, and to ensure culturally relevant and acceptable interventions are developed^{26, 27}. A considerable amount of research has explored barriers to quitting smoking, including among specific disadvantaged sub-groups (e.g. those living in socio-economically deprived areas, institutionalised public mental health patients²⁸, and pregnant Aboriginal and Torres Strait Islander women²⁹). Barriers, including poor self-efficacy, lack of knowledge, lack of willpower, pro-smoking community norms and barriers to accessing support, are frequently identified³⁰⁻³³. However, health behaviours are embedded within social and cultural contexts³⁴, an especially important consideration when attempting to address health disparities in vulnerable or marginalised groups³⁵. A limited amount of research has explored barriers to cessation among disadvantaged Australian smokers, identifying stress as a barrier to quitting, and resilience as an important factor for quitting and maintaining abstinence^{28, 36-38}. However, no research has explored barriers to quitting among severely disadvantaged individuals accessing social and community service organisations, or examined these factors within a conceptual framework to identify appropriate individual-level intervention strategies appropriate to the social and community service setting³⁹.

The PRECEDE-PROCEED model⁴⁰ is a particularly valuable and widely applied framework for guiding the development of interventions⁴¹. Within the PRECEDE-PROCEED framework, factors contributing to health behaviours are classified as those that predispose, enable and reinforce behaviour. Predisposing factors are antecedents to behaviour, including attitudes, knowledge, beliefs and self-efficacy for change. Enabling factors are those, such as availability of resources,

that help facilitate behaviour change. Reinforcing factors include rewards, social support and attitudes of significant others that facilitate and reward change ⁴². The PRECEDE-PROCEED model has been used extensively to guide planning of health behaviour interventions ⁴¹, including developing smoking cessation interventions to increase the provision of quit smoking counselling by primary care physicians ⁴³. It has also been applied to changing other health behaviours in disadvantaged groups, including routine cancer screening and prevention of ischaemic heart disease through changes to smoking, diet and physical activity ^{44, 45}. The utility of the PRECEDE-PROCEED model is its capacity to consider in a proactive and systematic way the factors that influence health behaviours. This, in turn, allows identification and implementation of appropriate and effective strategies for behaviour change ³⁹.

This study sought to describe the smoking behaviours and attitudes of disadvantaged Australian smokers attending social and community service organisations, including past experiences of quitting, preferences for quit support, and perceived barriers to quitting. These perceptions and experiences were considered within the conceptual framework of the PRECEDE-PROCEED model to provide recommendations for the development of appropriate individual-level interventions in the social and community service setting.

Method

Design

As part of a study examining the acceptability of the social and community service setting for providing smoking cessation support, semi-structured focus groups were conducted with clients attending five non-government community organisations for welfare support. Focus groups are integral to developing and tailoring complex interventions to address individual

needs in different settings ⁴⁶ and are well-suited to in-depth exploration and understanding of underlying issues embedded within social contexts ³⁵.

Sampling

Chief Executive Officers (CEOs) of social and community service organisations in New South Wales, Australia, were approached for permission for their organisations to participate in a study examining smoking and quitting among disadvantaged clients [Appendix 2.2]. Social and community service organisations are non-government organisations that provide welfare services to individuals in need in the communities in which they are based. Purposeful sampling was used to ensure inclusion of a diverse range of service and client types ⁴⁷.

Following verbal or written consent, CEOs nominated services within their organisations to participate. Co-ordinators of services were briefed about the study and asked to distribute study information and consent statements to eligible clients. Clients who were in contact with the social and community service organisation and reported that they smoked tobacco were eligible to participate in a one-hour focus group. Sampling continued until both facilitators agreed that saturation had been reached and that no new insights or themes were identified by participants ^{48, 49}.

Procedure

Focus groups were conducted between December 2008 and March 2009 by two facilitators, one with training in behavioural science (JB) and one with experience working in the community service sector (JO). Each focus group was conducted at the participating community organisation in a private room. Prior to commencement of the research, participants were given Information Statements and consent forms, and also had information about the study explained verbally [Appendices 2.3 and 2.4]. Participants were informed that the discussion would be audio-taped, but that only de-identified quotes would be used in

reports arising from the research. Participants provided written informed consent prior to the commencement of discussions and were provided with \$50 gift vouchers as reimbursement for their time and travel costs. The study gained ethics approval from the University of Newcastle Human Research Ethics Committee [Appendix 2.5]. Each participating social and community service organisation also provided approval for involvement of the organisation.

Discussion guide

A semi-structured focus group protocol was used to guide discussions [Appendix 2.6]. Focus group questions were developed by the research team, based on a review of the literature and consideration of the key research questions. Questions were designed to explore the barriers and facilitators to smoking and smoking cessation. Participants were asked about their current smoking behaviour (e.g. type of tobacco used, number of cigarettes used each day and times when they smoked more or less) and current motivation to quit. The focus groups allowed participants the opportunity to detail past quit attempts, including the type of help or support used, and what facilitated or undermined each quit attempt. Participants were asked about their preferences for cessation support, including whether they would like help to quit, perceptions of the role of the social and community service organisation in providing support, and details about specific types of support they would or would not like to receive.

Analysis

Discussions were audio-taped and transcribed *verbatim*. All transcripts were checked by the first author (JB) for typographical errors. Transcripts were analysed using thematic analysis techniques by reviewing each transcript and noting emergent themes. To establish reliability and validity of emergent themes, two transcripts were independently analysed by both facilitators (JB and JO), and identified themes were compared and reconciled with input from the second author (BB) where necessary⁵⁰. Analysis of the remaining transcripts was

conducted by JB using Nvivo version 8. The following results are presented thematically, with barriers to quitting considered within the context of the PRECEDE-PROCEED model. De-identified quotes presented in subsequent analysis are followed by parentheses which describe the service the client attended (A– F: see Table 3.1) and the gender (Male or Female) of the speaker.

Table 3.1: *Focus group participant number and gender by service type*

Service	Total	Female
	<i>N</i>	<i>N</i>
Service A: Child, youth and family early intervention	5	5
Service B: Community care centre	6	2
Service C: Residential drug and alcohol program	8	8
Service D: Residential adolescent life management service	3	0
Service E: Infants and child services	6	5
Service F : Outreach service for homeless youth	4	2
Total participants	32	22

Results

Participant and group characteristics

Six services from within five social and community service organisations participated. Details of service and participant involvement are presented in Table 3.1. Participating services included two early intervention services for teenage mothers, one residential youth drug and alcohol rehabilitation service, one adult residential drug and alcohol rehabilitation service, one outreach service for homeless youth, and one community care drop-in service that provided counselling and crisis relief services. Thirty-two clients, 22 female and 10 male, participated in six separate focus groups. Other demographic characteristics were not collected, as individual-

level and sub-group comparisons were not the aim of this study. All participants were aged over 16 years. Focus groups lasted between thirty-four minutes and one hour ($M=50.33$ minutes), and comprised between 3 and 8 participants. All participants were current daily or occasional smokers and were either attending the social and community service organisation or had attended in the past.

Smoking behaviour

Most participants reported initiating smoking in their early teen years. One client reported starting smoking at the age of five or six years. The main reasons for initiating smoking included fitting in with friends, and having brothers, sisters and parents who smoked. About one-third of participants reported smoking between 10 and 15 cigarettes per day, and a similar proportion reported smoking between 15 and 20 cigarettes per day or smoking one pack or more per day. Participants reported that the amount they smoked increased markedly when they were socialising with friends and family who were also smokers and when drinking alcohol. The majority of participants seemed heavily addicted to smoking, reflected by most participants' reporting that they smoked their first cigarette soon after waking or even that they woke up during the night to smoke. Participants perceived themselves as highly addicted, describing smoking as having *"a hold on me"* (E, Female) and being *"part of my life now"* (E, Female).

Most participants reported multiple past attempts to quit smoking. Many reported trying to quit "cold turkey" without support or use of cessation aids such as nicotine replacement therapy (NRT). Nicotine replacement therapy had been used by some participants, but was generally considered ineffective. One participant said, *"I have used all sorts of things, patches, the nicotine gum.... They don't work"* (F, Male). Three clients reported that they had tried Varenecline with some success. *"Last year I was taking Champix [Varenecline].... Yeah, they*

were really good. Um, I gave up for 10 weeks and I wasn't cranky or anything" (C, Female).

Several participants reported contacting Quitline, but few perceived the support offered to be useful. *"I rang them ages ago, but it didn't really do anything" (D, Male).*

Barriers and facilitators to quitting smoking

Barriers to quitting smoking identified by participants were analysed thematically. Themes were then categorised as those predisposing, enabling and reinforcing continued smoking.

Predisposing factors

Strong motivation to quit: The majority of participants reported a strong desire to quit smoking. Short- and long-term health benefits such as feeling fitter and being healthier, and a fear of smoking-related diseases such as emphysema and lung cancer were the main reasons given for wanting to quit. *"I've quit many times. I'm at the point now nearly that I'm going to quit for good. I feel as though I'm sick of all me mates dying around me because of lung cancer" (F, Male).* The high cost of smoking was another strong motivating factor, with participants reporting that finding money to smoke was a continual source of stress, given their low incomes. *"It gets pretty hard after a while thinking, 'How am I going to get my next pack of durries [cigarettes]?' Or when you run out it's like, what do I do? How am I going to get my next lot of money to get them?" (F, Male).*

Beliefs in the benefits of smoking for stress relief: Although the financial and health consequences of smoking were well understood by participants, many participants held a strong belief that smoking had many benefits. Smoking was described as relaxing, calming, a good way to relieve boredom, and a *"best friend"* and a *"superglue"* that could hold a person together during stressful times. One participant said, *"I need it to help me stress less and yeah, take my mind off a lot of things" (D, Male).* Many participants used stress as a strong

justification for continuing to smoke. *"I need to stop.... But at the moment I'm very stressed out. So I don't think I should stop at the moment. It does help me with stress relief heaps"* (B, Female). The use of smoking as a form of stress relief was also a commonly cited reason for relapse. *"I gave it away and then 7th of July last year, went off for four months and then me nerves played up on me. So I went back on"* (B, Male).

Doubting ability to quit: Despite a strong reported desire to quit smoking, many participants expressed doubt in their ability to successfully quit. *"I would like to quit but I honestly, I know this sounds bad, I honestly don't think I have the willpower to do it. I honestly don't think I do"* (E, Female). Participants desecrated quitting as *"impossible"*, and the idea of making a quit attempt was often intimidating. *"I know I want to quit – it's just hard to do. I'm scared to do it"* (A, Female). Feeling *"ready"* and having willpower to quit were identified as the key to success. *"I think you've got to be ready as well. You've got to want to feel ready within yourself. I know that's hard to say, 'Well, when are you going to be ready to actually want to do it?' You've got to think hard about it"* (A, Female).

Poor knowledge of available quit support: Participants' overall knowledge about the availability of quit support was poor. Many participants who had used NRT reported that it did not effectively reduce cravings, but often reported not wearing patches as prescribed and not using recommended doses of gum, and were unaware of recommendations to use stronger doses of NRT or multiple forms if they were heavy smokers. Several participants reported being told by others that NRT is ineffective, and this perception had discouraged some from using NRT during a quit attempt. One participant said, *"I've been told that those stupid Nicorette patches don't work, and the gum's gross and it doesn't work. So, there's no point in even wasting your money on buying them if they're not going to help you"* (A, Female). The majority of participants had no knowledge about what Varenicline was, how to access it, or its

cost. Knowledge of other support services such as the telephone quit service, Quitline, was also poor. While many participants had heard of Quitline, which is heavily advertised on television, many were unsure about the type of support Quitline provided, such as the provision of the call-back service, or that the service is free.

Fear of gaining weight: Among many female participants, fear of gaining weight was also a barrier to making a quit attempt. Participants recounted stories about friends and family members who had given up smoking and then gained weight, or reported that they had experienced weight gain themselves during previous quit attempts. *"I gave up for five months last year and gained about forty kilos. Um, yeah, and just took it back up again"* (C, Female). One participant who had recently started smoking after a long period of abstinence reported losing ten kilograms when she began smoking again, a fact which she described as *"a nice side-effect"* (B, Female).

Enabling factors

Limited provision of cessation support: Some participants had received advice from their general practitioner (GP) about the use of Bupropion or Varenicline, but most were unaware that prescription-only cessation medications were available through their GPs. Some clients reported *"being told"* or lectured by their GPs to quit smoking, without the offer of support to quit. *"Most doctors just tell me, 'It's bad for your health. You've got to stop. I advise you to quit'"* (A, Female). Young mothers who had recently had repeated contact with physicians during prenatal and antenatal care reported being given educational pamphlets and advice to stop smoking, but felt they were not offered genuine support or assistance to quit. *"Yep, that's the most they give you. A pamphlet"* (A, Female). As a result, most reported that they continued to smoke throughout their pregnancies.

Limited use of available quit support: Despite awareness of the existence of the telephone Quitline, only three clients reported having contacted Quitline in the past. There was strong scepticism among participants that support provided over the telephone would be useful in aiding a quit attempt. Young participants were particularly doubtful about the motivations and ability of a person who did not know them personally helping them to quit smoking. The following two quotes illustrate this point: *"It's a bit weird talking to some random person. You're like, oh yeah, I want to quit and you know what I mean? They might not really care. They're just doing it for a job."* (D, Male). *"Nup. Wouldn't want to waste my time. Because they're getting paid to give you useful advice and they're not really supportive"*(D, Male).

High cost of nicotine replacement therapy: Nicotine replacement therapy was perceived as an expensive and ineffective substitute for smoking that would require a large initial outlay of money. *"I've looked at the patches occasionally and thought, 'I'm not paying \$32 or \$35 for a box.' It's just too expensive"* (B, Female). Because of doubts about the effectiveness of NRT, many participants did not recognise that if they were successful at quitting smoking, NRT would not be an ongoing cost. *"If they don't work, then it's a waste of \$50"*. When asked, the majority of participants agreed that if NRT was free or available at a heavily subsidised rate, they would consider using it. *"I'd take it for sure.... If you said patches they are for free or \$2.50, I'm telling you there would be way more people having a crack at giving up"* (E, Female). *"Subsidise the quit smoking products.... maybe someone could subsidise these products so that they're affordable"* (C, Female).

Reinforcing factors

Smoking and social norms: Repeated social and environmental exposure to smoking was also a barrier to quitting smoking for many participants. Smoking was reported as a normal part of social interaction, with participants stating that the majority of their partners, family and

friends also smoked. *"You've got your family and your friends come over and they're, like, oh yeah, and they light up"* (A, Female); *"You always know someone that smokes"* (A, Female). Participants spoke about smoking being depicted on television and seeing people smoking when walking down the street, and commented that, *"You see them everywhere you go"* (A, Female). Not only did this strong presence of smoking in the community make it less likely for participants to make a quit attempt, it also served as a powerful trigger for relapse. *"Yeah, given up about 20 times in that time but yeah, for some reason just don't work because everyone else around me smokes and it's hard to quit"* (F, Male). One participant reported being strongly motivated to quit and had tried setting quit dates in the past, but found quitting impossible because of the continued exposure to second-hand smoke at home. *"Well, I have been trying to give it up. I sort of set today as a give-up target, but I'm going to find it so hard because people are smoking outside my room at home"* (B, Male). Several participants mentioned changing social norms about smoking, such as restrictions on smoking at shopping centres and at pubs, often made them feel *"uncomfortable"* and *"ashamed"* of their smoking. However, no participants identified this as a factor motivating them to quit.

Preferences for quit support

When asked about the type of support they would like to receive to quit smoking, participants emphasised the need for personalised, ongoing support. *"Support... I don't know, just a social worker to come around and, you know, just have a bit of a chat ... meet them at the park or something"* (A, Female). Several participants emphasised the importance of having someone who genuinely cared about them providing support to quit. *"I'd like to go to someone for some serious advice, you know, someone who actually cares and will support you"* (D, Male). *"Yeah, someone you can talk to and you're not going to talk to once and then they're not going to be there again."* (D, Male). Family and friends who often were also smokers were considered a poor source of support.

Discussion

This qualitative study extends knowledge of barriers to quitting smoking by examining barriers and facilitators among disadvantaged smokers attending social and community service organisations in Australia. Identifying factors that predispose, enable and reinforce a particular behaviour within the framework of the PRECEDE-PROCEED model provide a basis for the development of appropriate interventions for specifically targeting barriers to behaviour change.

While most participants reported a strong desire to quit smoking and had made multiple past quit attempts, predisposing factors acting as barriers to quitting included using smoking as a way of coping with stress, poor self-efficacy, and fear of gaining weight. These findings confirm individual-level barriers to quitting smoking among disadvantaged smokers both in Australia ³⁶⁻³⁸ and the UK ^{31, 32, 51}, and particularly highlight the perceived role of stress and coping in continuing to smoke ^{31, 32, 38, 52}, and the perception of willpower as the key to successful quitting ³².

Poor knowledge about and low utilisation of available quit support were reported across the focus groups. Few participants reported ever receiving help to quit smoking from their GPs and few had called Quitline, apparently due to a lack of understanding about the type of support offered. Despite Varenicline being available in Australia as a prescription-only smoking cessation treatment since January 2008 at a minimal cost for low-income smokers ^{53, 54}, few participants knew that this support was available or had accessed it. While participants had good knowledge of the availability of NRT, there were misconceptions about its use and effectiveness, and the cost was perceived as prohibitive. The availability of free or subsidised NRT was strongly supported. Participants strongly articulated a preference for ongoing, personalised support.

The predisposing, enabling and reinforcing factors identified suggest that strategies to increase knowledge of and engagement with evidence-based smoking cessation strategies may be crucial to overcoming barriers to quitting for disadvantaged smokers. Access to services is recognised as an important barrier for smokers in lower socio-economic groups attempting to quit^{30, 55}. Integration of referral and direct provision of smoking cessation support into the social and community service setting may also hold significant potential for addressing key barriers identified by social and community service organisation clients. Social and community service organisations are increasingly interested in addressing aspects of physical health that impact on wellbeing, and are well-placed to provide cessation support, given that they are heavily utilised by disadvantaged smokers (there are more than 5,700 social and community service organisations in Australia^{22, 23}). Recent research has noted the acceptability of providing support in the social and community service setting²²⁻²⁴. Interventions provided in social and community service organisations should focus on enhancing client access to existing services, including Quitline and subsidised pharmacotherapy, and address individual barriers to quitting through integration of brief advice as part of usual care. A large randomised controlled trial to examine the effectiveness of providing brief advice, access to NRT, and referral in the social and community service organisation setting is planned⁵⁶.

Study strengths and weaknesses

A number of limitations regarding recruitment and sampling should be considered when interpreting the results of this study. While care was taken to recruit a range of organisations offering a variety of services to a cross-section of disadvantaged individuals, as a result of our sampling approach our findings are indicative only of the opinions of disadvantaged smokers who access social and community service organisations. Secondly, potential bias in the inclusion of organisations and clients should be considered. While the majority of services contacted agreed to take part, it may have been that only those services interested in smoking

cessation agreed to their clients being contacted as part of the study. We did not collect detailed demographic information from participants. Furthermore, as clients were recruited by staff of social and community service organisations with no involvement from researchers, this may have resulted in the selection only of clients known to be interested in smoking cessation. Finally, although the PRECEDE-PROCEED theory was chosen *a priori* to explore data, the researchers were cautious not to impose bias on data analysis. All themes emerged from the data and were not pre-determined by the theory. As a result of using this framework, which is behavioural in nature, structural barriers to quitting may not have been identified.

Conclusions

This is the first study to explore smoking behaviours, past quit attempts and barriers to quitting among disadvantaged smokers attending social and community service organisations for welfare support in Australia. Our findings identify multiple complex barriers to quitting, but suggest that social and community service organisations may have a role in increasing knowledge and use of available cessation support, and providing direct, personalised and ongoing support to disadvantaged Australian smokers. Further research is needed to explore the effectiveness of these approaches.

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PAPER THREE

Delivering smoking cessation support to disadvantaged groups:

**A qualitative study of the potential of community welfare
organisations**

Introduction to Paper Three

In 1979, Russell's landmark study demonstrated that routine provision of advice to quit smoking by general practitioners (GPs) had the potential to create half a million ex-smokers each year if all were to adopt the practice in the United Kingdom ¹. Smoking cessation guidelines now routinely recommend that health professionals assess smoking status and provide advice and support for quitting at every appropriate opportunity ²⁻⁵.

The implementation of smoking cessation advice as part of routine care in both general practice and hospital settings has been challenging. Despite the existence of level one evidence that brief advice from GPs increases cessation rates, GPs typically identify less than half of all smokers as part of routine care ⁶⁻⁸. A recent systematic review of beliefs and attitudes of GPs and family physicians towards providing smoking cessation advice revealed that 42% found the provision of cessation advice too time-consuming, 38% perceived the provision of advice as ineffective, 22% had no confidence in their ability to provide advice, 18% had a previous unpleasant experience and 16% reported low confidence in knowledge ⁹. Similar barriers to integration of smoking cessation support have been identified in the hospital setting ^{10 11}, as well as organisational, clinical and cultural barriers to changing whole healthcare systems.

In order to achieve change, it is essential to have an understanding of the organisational context, and for barriers to change to be identified and addressed. Assessing the acceptability of an intervention prior to implementation is therefore considered critical to the success of behavioural research ¹². Papers One and Two clearly showed the high prevalence of smoking among clients attending social and community service organisations, that many desire support to quit, and that more than half desired help from social and community service organisations to quit. However, the provision of smoking cessation support is not currently part of routine

care in these organisations. The integration of cessation support will require both behavioural and organisational change techniques, and the first step is to explore manager, staff and client receptivity to the integration of support provided in this unique setting.

Aims and purpose

The following paper reports the results of a series of qualitative focus groups exploring the perceptions and attitudes of social and community service organisation managers, staff and clients towards integrating smoking cessation support into the community service setting.

The paper has been published in the journal, *Health Education Research*, citation: Bryant J, Bonevski B, Paul C, O'Brien J, Oakes W. Delivering smoking cessation support to disadvantaged groups: A qualitative study of the potential of community welfare organisations. *Health Education Research* 2010;25(6):979-990. [Appendix 3.1]

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**Delivering smoking cessation support to disadvantaged groups:
A qualitative study of the potential of community welfare
organisations**

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Abstract

Background: Reaching disadvantaged groups for smoking cessation represents a significant challenge. While not-for-profit social and community service organisations represent a promising setting for the delivery of quit smoking support to disadvantaged smokers, their potential has not yet been explored. This qualitative study examined the acceptability of social and community service organisation delivered smoking cessation care.

Methods: In-depth interviews and focus groups were conducted with 8 managers, 35 staff and 32 clients of social and community service organisations between December 2008 and March 2009 in New South Wales, Australia. Discussions were audio-taped, transcribed and analysed using thematic analysis techniques. Quantitative surveys were also conducted to explore preferences for cessation support.

Results: Results showed that the acceptability of providing and receiving cessation support in the social and community service setting was high. Staff perceived the provision of quit support to be compatible with their role, but reported barriers to providing care, including competing priorities, insufficient resources and inadequate staff training. Brief intervention approaches were preferred by managers and staff, while financial incentives and access to free or subsidised nicotine replacement therapy were desired by clients.

Conclusions: The social and community service setting represents a promising access point for engaging disadvantaged smokers for cessation. Further research exploring the effectiveness of support delivered in this setting is clearly warranted.

Introduction

Tobacco smoking is the single greatest preventable cause of death and disease worldwide, and is currently responsible for more than 5 million deaths each year ¹. Despite significant reductions in smoking prevalence in Western developed countries over the past several decades, ²⁻⁴ smoking remains highly prevalent among some sub-groups of the population. Severely disadvantaged and marginalised groups, such as the homeless, prisoners, the Indigenous, individuals with low incomes and individuals with mental illness, are consistently found to have significantly higher rates of tobacco use. For example, compared with current smoking prevalence of 16%-20% in Western developed countries, cross-sectional and national health surveys have found rates between 26% and 30% among individuals with low incomes ^{5,6} (i.e. individuals with the lowest socio-economic status or living at or below the poverty level), between 32% and 50% for Indigenous groups ^{6,7}, between 69% and 70% for individuals who are homeless ^{8,9}, between 35% and 90% for individuals with mental illness ¹⁰⁻¹² and between 72% and 79% among prisoner populations ¹³⁻¹⁵. As a result of these significantly higher smoking rates, disadvantaged groups suffer disproportionately from tobacco-related death and disease.

Accessing and engaging disadvantaged groups for smoking cessation represents a significant challenge ¹⁶. Despite the fact that disadvantaged groups have some of the highest rates of smoking, they are less likely to access preventive healthcare services such as smoking cessation programs, are less likely to receive advice and support to quit smoking from primary care providers ¹⁷, and are less likely to access telephone Quitlines, even during mass media campaigns ¹⁸. Innovative approaches to engage these smokers with cessation services are needed, and one emerging approach is the integration of quit smoking support into existing networks of disadvantaged smokers ^{19,20}. England's National Health Service Stop Smoking Services, which are dedicated cessation clinics set up in response to English health policy targets to reduce tobacco-related health inequalities ²¹, have recently reported success in

targeting low-income, pregnant and young smokers in intensive cessation services by delivering care in easily accessible local community settings such as community centres and libraries²². This targeted approach found that 32.3% of all smokers accessing cessation services lived in the most disadvantaged areas, compared with 9.6% of smokers who lived in the most advantaged areas²³. This novel approach represents a significant change from support traditionally delivered by physicians and other healthcare workers in primary care settings. Within Australia, social and community service organisations represent a similarly innovative community-based setting for the delivery of smoking cessation care to hard-to-reach smokers.

Social and community service organisations are non-government, not-for-profit organisations that provide welfare services in the communities in which they are based. They provide a range of services, including financial and family counselling, temporary accommodation, food and material aid, and child and family support, to individuals in need. Within Australia the social and community service sector is large, with recent reports estimating a throughput of more than 3 million people each year²⁴. Social and community service organisations have a number of characteristics which suggest they are well-placed to provide smoking cessation support to disadvantaged smokers: they have existing established contact with a large number of disadvantaged smokers; they are uniquely placed to address smoking in a holistic way alongside other issues faced by their clients; and they are in a position to provide personalised and ongoing support. The potential for integrating cessation care into existing social and community service organisations also means that they represent a potentially sustainable and cost-effective access point.

Despite the difficulty of accessing and engaging with disadvantaged smokers and the potential of social and community service organisations to target disadvantaged smokers effectively for

cessation, little research has examined the use of the social and community service organisation setting as an access point for delivering cessation support. One study has provided some evidence of potential effectiveness, with a recent pilot study reporting a verified 6-month quit rate of 7.5% among clients following a group quit program delivered by a social and community service organisation. While a quit rate of this size may seem low, and the study had a number of limitations including a small sample size, this rate is comparable to cessation rates found with other hard-to-treat disadvantaged smokers^{25, 26}, providing evidence of the potential population impact of smoking cessation care delivered in this setting.

Despite this potential, little is known about the current provision of smoking cessation care by social and community service organisations, or their openness to delivering such support routinely in a community-based welfare setting. This qualitative study aimed to explore the perceptions of social and community service organisation managers, staff and clients about 1) the acceptability of providing and receiving cessation support, 2) organisational barriers to providing support and 3) the types of support considered appropriate and feasible.

Method

Design

This study used a qualitative research design. A purposive maximum-variation sampling approach was used to ensure representation from the widest possible range of service types, staff and clients. Separate focus groups were conducted with clients and with staff of social and community service organisations. In-depth interviews were conducted with managers. All participants also completed a brief pen-and-paper exit survey at the conclusion of the focus group or interview.

Setting

Eleven social services offered by six non-government community welfare organisations operating in New South Wales (NSW), Australia, participated. The types of services included child, youth and family early intervention services, community care centres, residential drug and alcohol services and outreach services for homeless young people. Some services were “drop-in” services, and some provided ongoing casework and counselling support. There was also considerable range in the size and types of support the services provided; some of the more intensive early intervention services had capacity for 15 clients, while some community care centres which provided material aid and referral assisted over 1000 clients per year.

Recruitment

According to the Australian Council of Social Service Australian community sector survey ²⁷, there are over 5,800 not-for-profit social services in Australia. Seven of the largest social and community service organisations in terms of the range, number and types of services they provide, that operate in NSW, Australia, were invited to an information meeting to discuss involvement in the research. Representatives from five organisations attended this meeting, and all expressed interest in being involved in the research. A top-down approach to recruitment was then used. The Chief Executive Officer (CEO) of each organisation was contacted by telephone and invited to participate in the research [Appendix 2.2]. All provided consent. The CEOs were then asked to provide the details of area managers who could nominate services within the organisations for participation. The managers of the nominated services were then contacted and given the opportunity for their services to be involved in client focus groups, staff focus groups and/or telephone interviews with service managers, dependent on availability of staff and clients and the number of hours they were able to commit to the research. One additional organisation was recruited after hearing about the research from another organisation and expressing an interest in being involved. Table 4.1

shows the range of focus groups and interviews selected by services. Purposeful sampling was used to ensure inclusion of a diverse range of service and client types²⁸.

Procedure

Client focus groups

Clients who smoked tobacco and were aged over 16 years were eligible to participate. Clients were identified by service staff and invited by letter to participate in one-hour group discussions [Appendix 2.3]. Clients provided written consent to participate [Appendix 2.4]. Client focus groups were conducted in a private room by two facilitators. Clients were provided with reimbursement for participation.

Staff focus groups

Staff who had contact at least weekly with clients at the service were eligible to participate. All eligible staff employed at each participating service were invited to participate in a one-hour focus group, *via* a letter from the research team that was distributed by the service manager [Appendix 3.2]. Staff provided written consent to participate [Appendix 3.3]. Staff focus groups were conducted in private rooms by two facilitators.

Manager interviews

Managers who were involved in the day-to-day running of their services were eligible to participate. All eligible managers employed at the services contacted were invited to participate in telephone interviews [Appendix 3.4]. Managers provided written consent to participate [Appendix 3.5]. Manager telephone interviews were conducted by one interviewer.

For all focus groups and interviews, sampling continued until saturation of the data was reached (i.e. when facilitators agreed that no new themes were emerging from the

discussions²⁹). All participants were informed that discussions would be audio-taped and that de-identified comments might be used for reporting purposes. This study had ethics approval from the University of Newcastle Human Research Ethics Committee [Appendix 2.5], and each organisation provided approval for participation.

Discussion guide

Semi-structured interview protocols were used to guide discussions. For clients, this involved discussion of current smoking behaviour, past quit attempts, motivation to quit, and attitudes and preferences for different types of cessation strategies [Appendix 2.6]. For managers and staff, this involved discussion of attitudes and service policies about smoking, types of cessation care currently offered, and attitudes and preferences for developing and implementing cessation strategies into routine care [Appendices 3.6 and 3.7].

Quantitative exit survey

At the conclusion of each focus group or interview, participants were asked to complete a brief exit survey assessing their attitudes towards a range of smoking cessation interventions.

Managers and staff were asked to rate the desirability (“Desirable”, “Not Desirable” or “Unsure”) and the feasibility (“Feasible”, “Not Feasible” or “Unsure”) of 17 possible smoking cessation strategies that could be offered to clients [Appendices 3.8 and 3.9]. Clients were asked to rate the acceptability (“Would Like”, “Wouldn’t Like” or “Don’t Care”) of 16 similar smoking cessation strategies that could be offered by social and community service organisations [Appendix 3.10]. Cessation strategies included in the survey were derived from strategies identified by the Cochrane Collaboration Tobacco Addiction Group that the authors identified as having the potential to be implemented in a social and community service environment³⁰.

Table 4.1: Focus group and interview participant number and gender by service type

	Manager interviews		Staff focus groups		Client focus groups	
	Total	Male or	Total	Female	Total	Female
	N	female	N	N	N	N
Service A: Child, youth and family early intervention	1	F	4	4	5	5
Service B: Community care centre	1	M	-	-	6	2
Service C: Community care centre	1	M	-	-	-	-
Service D: Infant and child service	-	-	2	2	-	-
Service E: Residential drug and alcohol program	-	-			8	8
Service F: Residential adolescent life management service	2*	M and F	7	4	3	0
Service G: Infant and child service	-	-	-	-	6	5
Service H: Family support service	1	F	5	4	-	-
Service I: Family support service^	1	F	6	6	-	-
Service J: Family support service^	1	F	7	6	-	-
Service K : Outreach service for homeless youth	-	-	4	4	4	2
Total participants	8		35	30	32	22

* As this service had recently undergone a policy change which banned smoking, manager interviews were conducted with both the current coordinator of the service, as well as the coordinator who was in charge at the time the ban was introduced.

^ Staff from these services participated in the same staff focus group.

Analysis

Qualitative data analysis

Discussions were audio-taped and transcribed *verbatim*, and the transcripts checked for errors. Data collection and analysis were conducted between December 2008 and March 2009. Data were analysed qualitatively using thematic analysis by one facilitator (JB) using NVivo version 8.0³¹. To establish inter-rater reliability, a proportion of transcripts were independently analysed by the second facilitator (JO), and emergent themes were compared and reconciled where necessary.

Quantitative exit survey analysis

For manager and staff surveys, proportions were calculated for each variable. Client survey ratings of “Would like” and “Don’t care” were combined to represent openness to receiving the type of quit smoking support from the social and community service organisation, and proportions calculated.

Results

Qualitative results

Sample

Eight telephone interviews lasting an average of 30 minutes were conducted with managers from seven services. Thirty-five staff members participated in six staff focus groups which lasted an average of 54 minutes. Thirty-two clients participated in six client focus groups which lasted an average of 50 minutes. Twenty-two clients and 35 staff and managers were female. Four staff members and one manager identified themselves as smokers. Two staff members identified themselves as ex-smokers.

Manager and staff results

Manager and staff attitudes towards smoking

Smoking was reported to be highly prevalent among clients, with estimates of smoking prevalence varying between 25% and 99%. Managers and staff were highly aware of the health consequences and financial impacts of smoking, especially for clients who were on limited incomes. Yet, smoking was accepted and considered “pretty normal”, and staff often reported turning a blind eye to smoking.

Manager and staff attitudes towards smoking

- “Well, I think we just turn a blind eye.... It’s a shame they do, but we accommodate it, I suppose. We’re conscious if we’re having a group, they need a break.”
(Female staff member, child and family early intervention service)
- “None of us kind of thinks smoking’s a good idea. It’s just that we kind of need to accommodate our clients.” (Female staff member, child and family early intervention service)
- “I think a lot of staff accept it due to the young people coming off harder drugs.... A lot of staff, including myself, don’t really frown upon it.” (Male staff member, residential adolescent life management service)

Current provision of cessation support: Most services did not provide quit smoking support to clients. For most, smoking had “just not been on our radar”. Two services reported routinely asking about and documenting new client smoking status. One residential youth drug and alcohol service offered subsidised courses of nicotine replacement therapy (NRT) to clients who expressed an interest in quitting smoking, but reported low uptake of the courses. Informal discussions about the benefits of quitting smoking and referral to telephone support such as Quitline or a general practitioner was sometimes provided opportunistically in

response to a client's request for help or support. Otherwise, the provision of smoking care was largely not seen as part of the staff members' role. In some instances, managers and staff reported discouraging clients from giving up smoking as it was perceived as the only effective coping mechanism available to clients who were stressed and in crisis.

Current provision of cessation support

- "If they asked for and wanted help with smoking then, yes, we would do that ... but we don't go in there and say, 'Oh gee, you should stop smoking'." (Female manager, family support service)
- "I've encouraged people but it's probably not really in my job description. If they talk about it, I will highlight the benefits of it and praise them and encourage them and stuff, but yeah, it's not something that I would say, 'Let's talk about your smoking'." (Female staff member, family support service)
- "There would be time when we would actually discourage families from giving up smoking at that particular point in time, because of the high stress they're under. And it's actually one of the only coping strategies that they have got." (Female manager, family support service)

Manager and staff attitudes towards the acceptability of providing quit support: Despite currently providing little quit smoking support to clients, there was strong agreement from staff and managers that social and community service organisations were an appropriate setting for the delivery of quit smoking care. Providing cessation support was considered highly relevant and a good fit with the organisation's focus on improving the health and wellbeing of clients. Trusting relationships between staff and clients and client familiarity in receiving support from the organisation were identified as the primary reasons the community service

setting was well-suited to providing quit smoking care. A minority of staff members were concerned that providing quit smoking support would negatively impact on the ability of the organisation to provide welfare support. While these staff members saw the social and community service organisation as a good place to identify clients who wanted to quit smoking, they believed support was more appropriately provided through external specialised services.

Manager and staff acceptability of providing quit support

- “I think it would be interesting to ask our clients about whether they smoke and if they wanted to talk about it and look at ways to manage it.... Because I don’t think we know enough about it.” (Female staff member, family support service)
- “If [*the client*] is willing to make that [*quitting smoking*] part of their goals, then we would help them work towards that.” (Female manager, child and family early intervention service)
- “Yeah, because smoking is not our core business. We are a welfare agency and we support families through crisis, but smoking is never a crisis.” (Female staff member, family support service)

Why the social and community service organisation is well-placed to provide cessation support

- “We see them for a long time and we get to know them quite intimately. So the barriers are let down after establishing a rapport.” (Female staff member, residential adolescent life management service)
- “I think we are well-placed because we have access to families and we’ve created our relationship with families, and so there’s that trust there.” (Male staff member, family service)
- “I think it would be a good thing because it provides an access point for them and a place where they feel comfortable and safe to go, rather than having to go somewhere strange with different people.” (Female staff member, family support service).

Perceived barriers to providing smoking cessation support to clients: Despite the high perceived benefit of providing cessation support to client, several barriers to providing support were identified. The most frequently reported barrier was low perceived priority. Clients were often in crisis when first in contact with the social and community service organisation and had immediate needs such as homelessness or domestic violence that needed to be addressed. Another barrier to the provision of quit smoking support was inadequate staff time. Services were often already working at capacity and reported to be “overloaded” and “burdened” with their current caseloads. Staff reported that they had inadequate training, skills and knowledge about how to address the issue of tobacco with their clients. There was also a reluctance to raise the issue of smoking with clients pro-actively. Smoking was viewed as a personal choice, and there was concern among managers and staff that clients might perceive advice to quit

smoking as judgemental, intrusive or “nagging”, and that the provision of this type of support might make clients hesitant to continue contact with the service.

Perceived barriers to providing smoking cessation support to clients

- “I guess we move in largely when there is a crisis in the household and quite possibly.... the crisis is not about smoking at that time. It’s about another issue.”
(Female manager, family support service)
- “Not with the current resources we have, no ... the staff has way too much to do already.” (Female manager, family support service)
- “I don’t know how well-skilled I am, confident I would feel, giving advice about stopping smoking.” (Female staff member, family support service)
- “If they feel like we’re trying to make them give up smoking, we’re potentially going to lose them. If they feel like we’re judging them, we’re going to lose them.” (Male manager, community care centre)

Types of cessation support considered appropriate to offer clients in the social and community service setting: There was variability among services in the types of support considered appropriate to offer clients; offering group quit smoking programs or integrating smoking care into existing programs were considered feasible by some services, but were considered resource-heavy and unrealistic by others. Offering vouchers for free or heavily subsidised NRT that could be redeemed at a nearby pharmacy was perceived to be of enormous benefit to clients who could not afford to access such support. Flexibility with the provision of services and ability to offer repeated opportunities for quitting following relapse were considered important. Staff and managers reported strong preferences for support that was tailored to the particular client group they were working with, and wanted clear guidance about the types of support they could provide that would be relevant to the unique needs of their clients.

Types of cessation support considered appropriate to offer clients in the social and community service setting

- “I think we need more than just general education ... we’re working with high-risk, a targeted group. It’s not the mainstream, you know, who respond well to public education, public health stuff. They’re a hard-to-reach target group – so how can we get a custom-made sort of program or strategies and guidelines for how we can implement them? Yeah. So something more than just, you know, a general public health program.” (Female staff member, child and family early intervention service)

Client results

Client acceptability of receiving cessation support from the social and community service

organisation: Most clients reported a desire to quit smoking and had made multiple failed attempts to quit in the past. Clients reported a strong desire for support and encouragement to quit smoking, but reported being unable to receive this from partners, family or friends who were often also smokers. The opportunity to receive support, encouragement and praise to quit smoking from staff at the social and community service organisation, alongside the support already provided, was viewed positively.

Client acceptability of receiving cessation support from the social and community service organisation

- “If I ever felt like quitting, yeah ... because then I’d know it would be good encouragement. I like speaking to the workers when I’m stressing. So I think it would be good.” (Male client, Residential adolescent life management service)
- “I reckon it would be all right as long as we weren’t feeling like we were getting pestered.” (Female client, young mothers’ service)
- “Yeah, it would be all right. They could ask.” (Male client, community service)

Again, there was variability in client preferences for support. Some wanted to attend quit smoking groups where they could meet and receive support from others who were also trying to quit smoking, while some preferred informal or one-on-one support. Clients acknowledged that quitting was likely to take multiple attempts, and reported a strong preference for personalised quit support that could be offered by a familiar person over an extended period of time. Telephone support such as Quitline was viewed with scepticism and perceived to be ineffective, despite the fact that the majority of clients acknowledged never having accessed this service.

Types of cessation support wanted by clients

- “Support ... I don’t know, just a social worker to come around and, you know, just have a bit of a chat ... meet them at the park or something.” (Female client, child and family early intervention service)
- “I’d like to go to someone for some serious advice, you know, someone who actually cares and will support you... I would prefer to get useful advice from a person, not over the phone.” (Male client, residential adolescent life management service)
- “If you were keen to give up, smoking groups would be great because then you would meet people doing the same thing.” (Female client, child and family early intervention service)
- “Maybe subsidise the quit smoking products. Maybe someone could subsidise these products so they’re affordable.” (Female client, residential drug and alcohol program)

Quantitative exit survey results

Sample

Exit surveys were completed and returned by all participants ($N=75$).

Manager and staff exit survey results

Manager and staff ratings of the desirability and feasibility of cessation strategies are reported in Table 4.2. Strategies rated most desirable and feasible were brief intervention and referral approaches. Strategies that were considered undesirable included offering clients individual quit smoking counselling (35.7%), providing non-financial incentives like shop vouchers (33.3%) or government-sponsored financial incentives (26.2%), and providing alternative therapies such as acupuncture (28.6%) and hypnosis (23.8%).

Table 4.2: *Manager and staff ratings of the ten most desirable and feasible cessation strategies ($N=43$)*

Cessation strategy	Desirable (%)	Not desirable (%)	Unsure (%)
Providing quit smoking pamphlets and information to clients	92.9	0	7.1
Referring clients to quit smoking services that provide telephone support (e.g. Quitline)	88.4	2.3	9.3
Developing policies about smoking at the organisation	88.1	0	11.9
Providing support and encouragement for clients who make quit smoking attempts	86.0	0	14.0
Providing brief verbal advice to clients about the negative effects of smoking and the benefits of quitting	78.6	4.8	16.6
Asking clients about their smoking status	74.4	14.0	11.6
Giving clients a video or DVD about quitting smoking	72.1	9.3	18.6
Recording smoking status in client records	62.8	20.9	16.3
Running a group quit smoking counselling program	60.5	20.9	18.6
Offering individual quit smoking counselling	54.8	35.7	9.5

	Feasible (%)	Not feasible (%)	Unsure (%)
Providing quit smoking pamphlets and information to clients	85.4	2.4	12.2
Referring clients to quit smoking services that provide telephone support (e.g. Quitline)	83.3	4.8	11.9
Providing support and encouragement for clients who make quit smoking attempts	81.0	2.4	16.6
Developing policies about smoking at the organisation	76.7	4.7	18.6
Asking clients about their smoking status	73.8	9.5	16.7
Providing brief verbal advice to clients about the negative effects of smoking and the benefits of quitting	67.4	7.0	25.6
Giving clients a video or DVD about quitting smoking	66.7	7.1	26.2
Recording smoking status in client records	61.9	11.9	26.2
Organising a quit smoking counsellor to make home visits to clients	39.5	16.3	44.2
Running a group quit smoking counselling program	38.1	23.8	38.1

Client exit survey results

Client ratings of the type of cessation support they would be open to receive are presented in Table 4.3. The strategies clients were most open to included being asked if they smoke cigarettes by staff at the social and community service organisation (100%), being asked if they are interested in quitting (94%), being given cash rewards (94%) or non-cash rewards for quitting (94%), and having access to free or subsidised NRT (88%).

Table 4.3: *Client ratings of cessation strategies (N=32)*

How would you feel if staff at [community service organisation]	Would like or Don't care (%)	Wouldn't like (%)
Asked you if you smoke cigarettes	100	0.0
Asked you if you were interested in quitting	93.8	6.2
Offered you cash rewards if you quit	93.7	6.3
Provided non-cash rewards like footy tickets or shop vouchers if you quit	93.7	6.3
Offered you free or cheap nicotine patches or gum	87.5	12.5
Offered you an alternative therapy such as hypnosis	87.5	12.5
Told you about ways to stop smoking	87.5	12.5
Ran a counselling group for smokers to help you quit	84.4	15.6
Offered you an alternative therapy such as acupuncture	81.3	18.7
Gave you a video or DVD about quitting smoking	81.3	18.7
Offered you quit smoking pamphlets	78.1	21.9
Gave you a computer- or internet-based program to help you quit	78.1	21.9
Offered you individual counselling to help you quit	68.8	31.2
Had a quit smoking counsellor who could visit you at home	62.5	37.5
Put you in touch with telephone quit help such as Quitline	53.1	46.9
Did not allow any smoking at the service	37.5	62.5

Discussion

Main findings

This qualitative study provides insight into the attitudes of managers, staff and clients of social and community service organisations in providing and receiving cessation support. Overall, managers and staff reported strong support for providing cessation care to clients: they acknowledged that smoking was detrimental to their clients' wellbeing and considered smoking care an appropriate component of their role as carers; and they expressed a willingness to provide certain types of client support, which primarily consisted of low-intensity strategies such as asking about and recording client smoking status, and providing

information, brief advice, general support and referral. Perceived barriers to providing support were similar across all services, and included smoking cessation being seen as a lower priority than the provision of other types of welfare support, and lack of resources, time and training to provide quit smoking services. Staff and managers were also concerned that raising the issue of smoking may appear judgemental or harm rapport with their clients. Providing training and education for staff about the importance of addressing smoking as a long-term health and financial issue and how to approach clients and provide support in a non-judgemental way, is likely to aid significantly in addressing these concerns.

Clients were also enthusiastic about receiving support from staff at the social and community service organisation. Clients spoke positively about the help and support they already received from social and community service organisations, including the provision of accommodation, life skills training and counselling, and reported that receiving support and encouragement would be of great benefit during quit attempts. Manager and staff perceptions that clients would find questions and advice about smoking intrusive and judgemental appeared largely unfounded.

Opportunities for intervention

Agreements in the types of cessation strategies managers and staff were willing to provide and the types of cessation support clients were open to, represent encouraging opportunities for intervention. Strategies considered acceptable to at least half of all managers, staff and clients included asking about smoking status, providing pamphlets and information about quitting, providing videos or DVDs about quitting, providing individual quit smoking counselling, and providing group quit smoking counselling. The provision of brief advice (i.e. asking about smoking status and providing pamphlets and information), group counselling and individual quit counselling all align with evidence-based practice for adult smoking cessation, and so are

likely to be good starting points for incorporation into routine care in the social and community service environment. Also strongly endorsed by a number of clients, staff and managers was the provision of free or subsidised NRT. Nicotine replacement therapy has been repeatedly shown to be cost-effective and to increase the success of quit attempts^{32, 33}. However, the cost is frequently prohibitive to smokers on low incomes. The willingness of social and community service organisations to facilitate access to free or subsidised NRT deserves further exploration, and may be a particularly important factor in effectively engaging disadvantaged smokers in smoking cessation programs³⁴ and increasing the success of quit attempts.

Further research

Russell's landmark 1979 study³⁵ suggested that smoking cessation was possible and efficacious in the general practice setting. However, research which followed identified many organisational, provider and patient barriers to the provision of cessation assistance in this setting, including time constraints³⁶⁻³⁹, lack of resources³⁶, lack of training³⁶⁻³⁹ and perceived lack of client motivation^{36, 38}. Among health professionals serving disadvantaged communities, additional barriers cited include the fact that patients often present in crisis and are often unable to pay for cessation treatment³⁶. Similar barriers were identified by social and community service organisation staff in this study. Research has helped identify strategies to overcome these barriers and improve rates of practitioner delivery of smoking cessation advice⁴⁰. Similar research into ways to overcome the barriers identified by staff and clients and to improve the effectiveness of social and community service organisation delivered support for highly addicted disadvantaged smokers is needed. It was noteworthy that managers and staff indicated an openness and willingness to work through identified barriers. Given the demonstrated acceptability of implementing cessation support in this setting, further research should develop and examine the effectiveness of interventions likely to be cost-effective and

successful within the social and community service setting. In particular, examination of strategies with high ratings of acceptability among managers, staff and clients is clearly warranted.

Implications for service providers and policy makers

This research demonstrates that social and community service organisations show significant promise in encouraging and supporting quit attempts among disadvantaged smokers.

Importantly, they provide an access point to a large number of disadvantaged smokers desiring help to quit, and are open to providing support if provided with the time, training and guidance to do so. Clients also appear motivated to quit smoking and are open to receiving personalised support from social and community service organisations. The fact that managers and staff often expressed different opinions about the type of delivery or intensity of support that they would like to provide is indicative of the large variability in the types of support services provided, the expertise of staff and the specific needs of clients receiving care. Tailoring cessation strategies for each organisation or offering a menu of evidence-based cessation strategies may be necessary for widespread uptake in these settings.

Study limitations and strengths

This study used qualitative methods to illustrate the views of disadvantaged welfare clients and their carers about assistance to quit smoking. Health services research tends to be dominated by quantitative approaches, and qualitative methods are often criticised for not being reliable, valid and objective ⁴¹. However, within the context of understanding underlying issues, the appropriateness of an intervention, and gaining a sense of the match between an intervention, a system and the user, qualitative methods are critical ⁴¹⁻⁴³.

Given the qualitative nature of the study and the purposive sampling used, the results cannot be considered representative or highly generalisable. The study sample was drawn only from non-government social and community service organisations operating in NSW, Australia, and therefore the results should be interpreted only in this context. Further research is required to generalise these findings to other types of community organisations operating in other areas. Further, we did not collect detailed demographic information from clients who participated in focus groups, and this lack of specific participant information limits the extent to which the findings can be generalised to disadvantaged sub-groups. In terms of analysis, thematic analysis has the potential to result in the de-contextualisation of the speakers' words. However, great care was taken to analyse the participants' words in their broader context. Finally, we have used some numerical data from exit surveys to help describe the prevalence of particular preferences and views within the samples interviewed. These should not be taken to imply statistical representation of the population under consideration, but are used to represent the diversity of views.

Conclusion

Social and community service organisations are providers of a mix of welfare services to a diverse range of disadvantaged individuals in the Australian community. These organisations are uniquely placed to tackle the high prevalence of smoking among their client populations, are considered appropriate for the delivery of cessation care by service providers to service users, and represent an innovative and promising point for accessing disadvantaged smokers. Further research which examines the effectiveness of support delivered in this setting is clearly warranted.

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PAPER FOUR

**A systematic review and meta-analysis of the effectiveness of
behavioural smoking cessation interventions in selected
disadvantaged groups**

Introduction to Paper Four

A considerable amount of research has investigated the effectiveness of a wide range of smoking cessation interventions. Cochrane reviews have established the effectiveness of antidepressants including bupropion and nortriptyline in aiding long-term smoking cessation ¹, and have found that nicotine replacement therapy (NRT) increases the rate of quitting by 50%-70% ². Group counselling, individual counselling and motivational interviewing have been shown to be more effective than less intensive interventions ³⁻⁵, and brief physician advice has been shown to increase cessation rates by 1%-3% above the unassisted quit rate ⁶. No evidence has supported the effectiveness of acupuncture ⁷ or hypnosis ⁸ for smoking cessation. However, interventions delivered over the internet and telephone have been shown to be effective, especially when frequent contact is ensured ^{9,10}.

After more than 50 years of research, current United States guidelines for tobacco dependence treatment recommend the combination of counselling (i.e. practical counselling and support and encouragement as part of treatment) and medication (i.e. NRT, Bupropion and Varenicline), and state that *“clinicians should encourage all individuals making a quit attempt to use both counselling and medication”* ¹¹. However, the literature addressing smoking cessation for individuals of low socio-economic position is less developed. It has only been in the last decade that researchers have begun to explore the challenges and complexities of addressing smoking cessation in groups with high prevalence rates. There is a paucity of methodologically rigorous trials evaluating the effectiveness of smoking cessation interventions among the socially disadvantaged ¹², and reviews have consistently noted the lack of evidence regarding strategies to recruit and retain disadvantaged smokers in cessation programs. Identifying strategies that are most effective among disadvantaged groups is critical to closing the gap in health inequalities caused by smoking.

Aims and purpose

In order to intervene with highly disadvantaged groups, the effectiveness of approaches and the cultural, environmental and social influences that may alter the effectiveness of an intervention need to be evaluated. The following systematic review and meta-analysis examines the effectiveness of smoking cessation interventions conducted with six highly disadvantaged groups: the homeless, prisoners, Indigenous populations, at-risk youth, individuals with low socio-economic status, and individuals with mental illness. This work raises important questions regarding the extent of our knowledge about assisting the most vulnerable to quit smoking. The findings of this systematic review and meta-analysis were deemed critical for guiding the design and implementation of a smoking intervention targeted at disadvantaged smokers.

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**A systematic review and meta-analysis of the effectiveness
of behavioural smoking cessation interventions
in selected disadvantaged groups**

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Abstract

Background: A systematic review and meta-analysis was conducted to assess the methodological quality and effectiveness of behavioural smoking cessation interventions targeted at six disadvantaged groups: the homeless, prisoners, Indigenous populations, at-risk youth, individuals with low socio-economic status and individuals with mental illness.

Methods: Medline, Embase, the Cochrane Library and PsycInfo databases were searched using MeSH and keywords for studies conducted in developed countries prior to October 2010. Included studies were assessed for methodological quality. A DerSimonian and Laird random effects meta-analysis was conducted, where possible, to explore the effectiveness of interventions for the different sub-groups. A narrative review was conducted for studies unable to be included in meta-analysis. Outcomes examined were abstinence rates at short-term (up to 3 months) and long-term (6 months or the longest) follow-up.

Results: Thirty-two relevant studies were identified. The majority ($N=20$) were rated low in methodological quality. Results of the meta-analysis showed significant increases in cessation for behavioural support interventions targeted at low-income female smokers at short-term follow-up (RR 1.68, CI 1.21-2.33) and for behavioural support interventions targeted at individuals with mental illness at long-term follow-up (RR 1.35, CI 1.01-1.81). Results of the narrative review showed several promising interventions that increased cessation rates at 6 months or longer follow-up.

Conclusions: Few well-controlled trials have examined the most effective smoking cessation strategies for highly disadvantaged groups, especially among the homeless, Indigenous people and prisoners. The use of behavioural smoking cessation interventions for

some socially disadvantaged groups appears promising. However, overall findings are inconsistent. Further research is needed to establish the most effective interventions for vulnerable high-risk groups. Special attention should be given to increasing sample size and power, and to sound evaluation methodology to overcome methodological limitations of conducting research with these high-risk groups.

Introduction

Compared with recent estimates of population smoking prevalence of about 20% in most developed countries ^{1, 2}, markedly higher smoking rates have been reported for disadvantaged groups. For example, rates of 26% to 30% have been found among individuals with low-income ^{2, 3}, rates of 32% to 50% have been found for Indigenous groups ^{3, 4}, rates of 69% to 70% have been found for homeless individuals ^{5, 6}, rates of 35% to 90% have been found for individuals with mental illness ⁷⁻⁹ and rates of 72% to 79% have been found among prisoner populations ¹⁰⁻¹².

Some studies have found that although smokers from disadvantaged groups are interested in quitting and attempt to quit at rates similar to those of other smokers, they are less likely to succeed ¹³⁻¹⁵. Smokers from disadvantaged groups face unique barriers to quitting, including high levels of dependence ¹⁶, high levels of stress, and pro-smoking community norms which both increase social pressure to smoke and increase exposure to triggers for smoking ¹⁷. As a result, the need for targeted efforts to increase cessation among highly disadvantaged groups has been identified as a public health priority in many countries ^{18, 19, 20}.

While the effectiveness of behavioural strategies for smoking cessation has been repeatedly and rigorously evaluated for the general population ²¹, limited attention has been given to determining the effectiveness of behavioural counselling interventions at achieving cessation with disadvantaged groups ²². Six reviews have synthesised the evidence related to smoking cessation in special populations, including some disadvantaged populations ²³⁻²⁸. Two reviews of population-based approaches found mixed results ^{27, 28}. Other reviews have highlighted difficulties disadvantaged groups have in accessing existing cessation support ²³, and have made recommendations about future research needs ²⁴⁻²⁶. No reviews have examined the effectiveness of behavioral counselling interventions among disadvantaged groups and, as a

result, few evidence-based recommendations for achieving cessation among disadvantaged groups exist. Additionally, few studies have examined the methodological quality of the evidence base in this area. Given that poor methodological quality has been associated with bias in estimates of treatment effect ²⁹ and that research with disadvantaged populations can be methodologically challenging ³⁰, it is critical that an assessment of quality be conducted.

This paper aimed to review the literature reporting the effectiveness of behavioural smoking cessation interventions among six disadvantaged groups known to have high smoking rates:

1) individuals who are homeless, 2) prisoners, 3) Indigenous populations, 4) at-risk youth (defined as young people and adolescents at higher risk of harm), 5) individuals with low incomes and 6) individuals with mental illness. Specifically, this review aimed to:

1. Assess the methodological quality of studies targeted at smoking cessation for disadvantaged groups using a methodological rating tool with demonstrated validity ³¹
2. Conduct a meta-analysis or, if not possible, a narrative review, to examine the effectiveness of behavioural cessation interventions in the selected disadvantaged groups.

Method

Literature search

Medline, The Cochrane Library, Embase and PsycInfo databases were searched for relevant studies published prior to October 2010. The MeSH terms [smoking OR smoking cessation] were combined with the following groups of words using the AND command: [vulnerable populations OR minority groups OR poverty OR socioeconomic factors OR homeless persons OR Oceanic Ancestry Group OR Central American Indians OR North American Indians OR Inuits OR First Nations OR mentally ill persons OR mental health OR schizophrenia OR anxiety OR

depression OR prison OR prisoner OR adolescent behaviour OR juvenile delinquency]. Tables of contents of relevant journals, *Tobacco Control*, *Nicotine and Tobacco Research* and the *Journal of Public Health*, were manually searched between 2005 and 2010. Previous reviews of relevant literature, the grey literature databases, GreyNet and OpenSIGLE, and the reference lists of retrieved articles were also searched. Several researchers known to be working in the areas of interest were also contacted to identify eligible studies.

Inclusion and exclusion criteria

Randomised controlled trials (RCTs) and clinical controlled trials (CCTs) that described evaluations of behavioural smoking cessation interventions published prior to October 2010 were included. To limit the scope of the review and minimise heterogeneity, only studies conducted in developed countries (i.e. United States, Canada, Australia, New Zealand, the United Kingdom and Western Europe) and reporting smoking cessation as an outcome measure were included. All types of behavioural interventions were considered for inclusion, and the control or comparison condition could include another behavioural intervention or usual care. Studies that included pharmacotherapy as a component of a behavioural intervention were included only when pharmacotherapy was not being tested for effectiveness. Studies that were not published in English, that were case reports or cross-sectional studies, or studies that reported on population-level public health campaigns or pharmacotherapies alone were excluded. Multiple risk factor interventions where smoking cessation was one of a number of health-related outcomes were excluded because of the inability to distinguish the impact of the smoking intervention alone.

Data extraction

The titles and abstracts of all identified papers were assessed for relevance by one reviewer (JB) and were rejected on initial screening if the reviewer could determine from the title and

abstract that the study did not meet inclusion criteria. Remaining studies were assessed against the inclusion and exclusion criteria by two reviewers (JB and BB). Studies that met all criteria were retained for full review. The characteristics of each study, including setting, country, participants, gender, age, intervention, follow-up period and study outcome measures, were examined.

Assessment of methodological quality

Studies included in the review were assessed for methodological quality using the Effective Public Health Practice Project Quality Assessment Tool for quantitative studies³¹⁻³³ [Appendices 4.2 and 4.3]. Study quality was assessed by one author (JB) and an independent second reviewer, and disagreement resolved through discussion. Studies were assessed on six domains: selection bias (the likelihood that participants were representative of the target population as well as the consent rate achieved in the study); study design; control of confounders; blinding (whether assessors were blind to participant condition and whether participants were blind to the research question); data collection methods (whether the data collection tools were both valid and reliable); and withdrawals and drop-outs (whether the reasons for attrition and final follow-up numbers were reported). Each study was given a rating of “strong”, “moderate” or “weak” in methodological quality for each domain, according to pre-defined criteria (see <http://www.ephpp.ca/Tools.html>), and then given an overall global rating; those with no weak ratings were given a rating of “strong”, those with one weak rating were given a rating of “moderate”, and those with two or more weak ratings across the six domains were given a rating of “weak”.

Classification of interventions

Cochrane reviews of smoking cessation interventions provided a framework for the classification of studies by the type of interventions used (see Table 5.1).

Table 5.1: *Criteria for classification of interventions included in meta-analysis*

Intervention type	Description	Number of studies; References
Brief advice	Verbal advice with a “Stop smoking” message	<i>N</i> =2 34, 35
Incentives for quitting	Incentive schemes (such as contingent reinforcement) for quitting	<i>N</i> =1 36
Self-help intervention	Any manual or program to be used by individuals to assist a quit attempt not aided by health professionals, counsellors or group support	<i>N</i> =2 37, 38
Behavioural support	Includes: 1) interventions based on identified motivational interviewing (MI) principles ³⁹ making explicit reference to exploring ambivalence, decision balance, assessment of motivation and confidence to quit, or motivational enhancement therapy; 2) behavioural counselling, including the provision of information, advice, support or encouragement, skills training, cognitive behavioural therapy or other counselling provided for smoking cessation	<i>N</i> =29 40-68

Meta-analysis

Given the potential statistical heterogeneity among studies, an estimate of the pooled effect size for each disadvantaged group using a defined intervention was calculated using a DerSimonian and Laird random effects model. Risk ratios, 95% confidence intervals and a statistical measure of heterogeneity (I^2) was calculated for each analysis using Revman⁶⁹. Three studies were not eligible to be included in meta-analysis because they did not report sufficient data or outcomes in a format suitable for inclusion in meta-analysis^{54, 61, 70}. The results of these studies are instead reported narratively.

Outcome measures

The primary outcome measure was smoking abstinence 6 months after the start of the intervention, or longer when data from longer follow-up points were available. Short-term abstinence at 3 months or less was also assessed. Biochemically validated quit rates were preferred over self-reported quit rates, and cotinine-confirmed measures were preferred over carbon monoxide (CO) measures. Self-reported quit rates were included where this was the only information available. For consistency, seven-day point prevalence abstinence rates were the preferred outcome measure, although continuous abstinence rates were used where this was the only outcome measure reported. An intention-to-treat approach was adopted where possible. Where studies had more than two experimental groups and these were similar^{49, 59}, the average effect of the two treatment groups was calculated and compared with the control group. For one four-arm trial, the most intensive condition was compared with the control group⁵⁶. Three studies were cluster-randomised trials^{44, 46, 47, 70}. One of these studies was not included in meta-analysis³⁷. We have adjusted for the study design of the two cluster-randomised trials included in meta-analysis^{44, 46, 47} by dividing the number of participants in each arm of the trial by the design effects of 3.98 and 1.26 respectively, which were estimates based on the intra-cluster correlation coefficient reported in Okuyemi et al⁴⁴.

Results

Search results

The initial search yielded 12,448 citations, of which 237 relevant articles were retained for further review. A flow chart describing article retrieval is provided in Figure 5.1. In total, 32 studies reported in 34 papers are included in the review. One study targeted homeless smokers⁴⁰, one study targeted prisoners⁵¹, two studies targeted Indigenous smokers^{62, 64}, six studies targeted at-risk adolescent smokers^{42, 43, 52, 54, 66, 70}, 12 studies targeted low-income smokers^{35, 37, 38, 41, 44-47, 56-59, 63, 65}, and ten studies targeted smokers with mental illness^{34, 36, 49, 50, 53, 55, 60, 61, 67, 68}.

Description of included studies

A detailed description of included studies is provided in Table 5.2. Included studies were published between 1997 and 2010. Thirteen RCTs^{37, 38, 44, 45, 50, 51, 53-57, 64, 65, 67}, sixteen CCTs^{34-36, 41-43, 49, 52, 58-63, 66, 68} (RCTs where the method of randomisation was not described) and three cluster RCTs were identified^{44, 46, 47, 70}. Studies were primarily conducted in primary and community healthcare clinics. Thirteen studies incorporated nicotine replacement therapy (NRT)^{35-38, 40, 43, 44, 50, 51, 55, 57, 60, 63, 68}. The majority of studies (91%) were conducted in the United States (US), with one study each conducted in Australia⁶⁸, New Zealand⁶⁴ and the United Kingdom (UK)^{37, 38}.

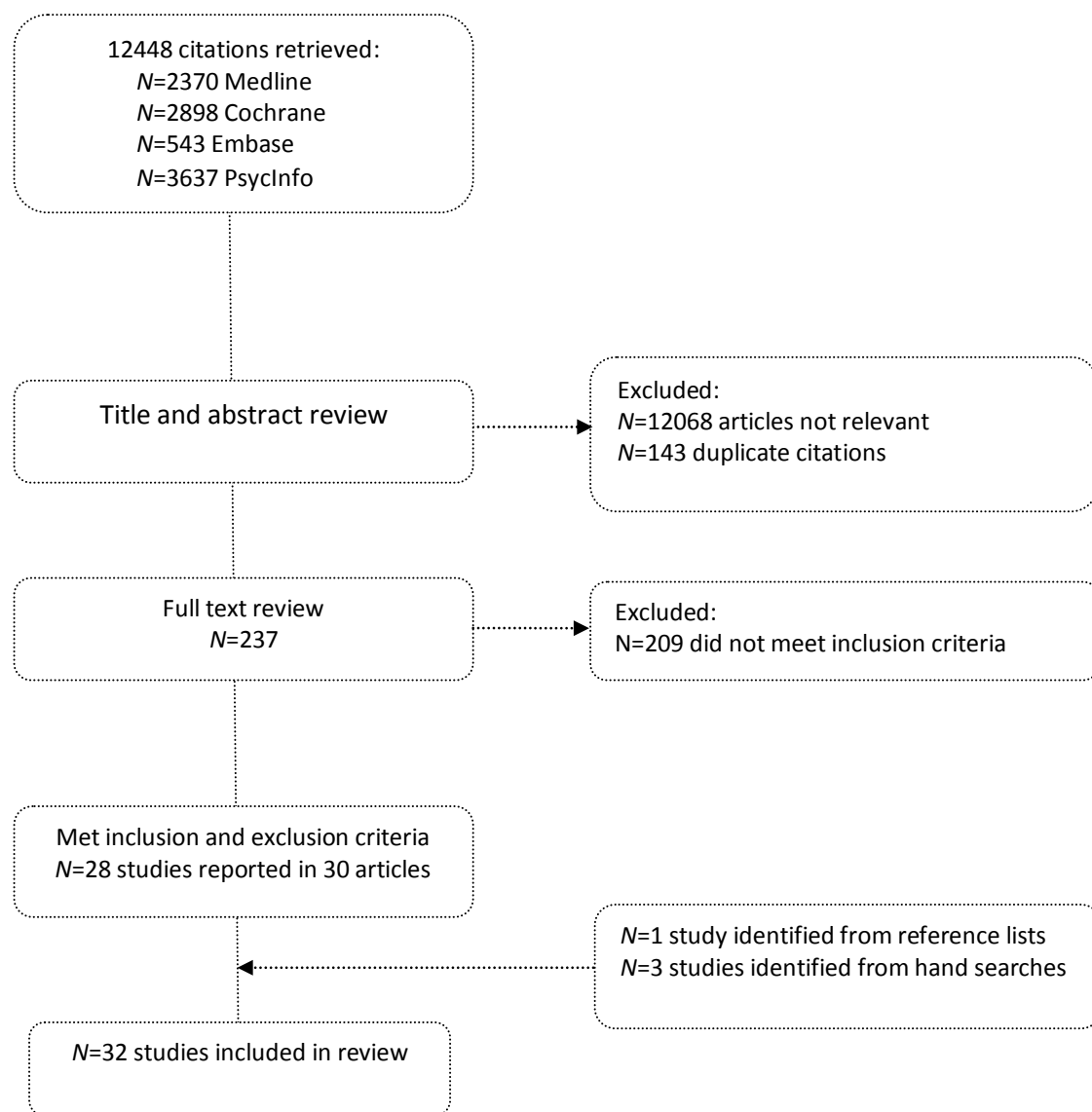


Figure 5.1: Flow chart of search strategy and study selection

Table 5.2: *Study characteristics by population group*

Study; Country	Design; Intervention setting	Participant group; N; Gender; Age	Intervention	Primary outcome measure; Follow-up	Results
Homeless					
Okuyemi et al, 2006 ⁴⁰ ; US	RCT; Homeless service facilities	Homeless smokers; N=46; 56.3% male smoking only group, 65.2% male smoking plus group; M=43.8 years (SD=9.4) (smoking only group), M=43.7 years (SD=9.8) (smoking plus group)	<u>Smoking only</u> : N=23; 5 individual MI sessions focusing exclusively on smoking behaviours, 6 group educational support sessions, group outings, 8-week course, NRT <u>Smoking plus</u> : N=23; as above, plus individual MI sessions focused on smoking behaviours and other barriers to quitting (e.g. other addictions)	7-day PPA; 8 and 26 weeks	ITT 7-day PPA: 17.4% smoking plus vs. 13% smoking only at 8 week follow-up (n.s.); 17.4% smoking plus and 8.7% smoking only at 26 week follow-up (n.s.)

Indigenous					
Bramley et al, 2005 ⁶⁴ ; New Zealand	RCT; Text message intervention	Maori and non-Maori smokers; N=1705 (355 Maori, 1350 non-Maori); 41.5% male; Median 22 years (inter-quartile range 19-30)	Intervention N=176 Maori, N=676 non-Maori; supportive text messages (tailored for Maori clients); 5 messages per day in first 6 weeks, 3 per week until 26 week follow-up <u>Control:</u> N=179 Maori, N=674 non-Maori, one fortnightly message not related to smoking (tailored for Maori participants)	7-day PPA; 6, 12 and 26 weeks	For Maori clients, ITT-verified quit rates: 26.1% (I) vs. 11.2% (C) at 6 week follow-up ($p<.01$); 26.7% (I) vs. 19.6% (C) at 12 week follow-up ($p=.11$); 21.6% (I) vs. 18.4% (C) at 26 week follow-up ($p=.46$)
Patten et al, 2010 ⁶² ; US	CCT; Prenatal and WIC clinic	Pregnant native Alaskan women; N=35; 100% female; M=25.4 years (SD=4.2) (I), M=24.8 years (SD=5) (C)	<u>Intervention:</u> N=17; 15-25 minutes of face-to-face counselling, four 10-15 minute telephone calls at 1, 2, 4 and 6 weeks, private viewing of video highlighting cessation stories, culturally sensitive cessation guide <u>2) Control:</u> N=18; Brief 5-minute face-to-face counselling	7-day PPA; Baseline and >60 days post-randomisation (average 82 days post-randomisation controls and 108 days intervention	ITT 7-day PPA-verified quit rates: 6% (I) vs. 0% (C) (n.s.)

			using the 5 As approach at the first visit and four visits during pregnancy, and culturally-specific information brochures	participants)	
Prisoners					
Cropsey et al, 2008 ⁵¹ ; US	RCT; Prison	Female prisoners; N=539; 100% female; M=33.8 years (SD=9)	<u>Intervention</u> : N=250; 10-session group intervention based on mood management, combined with NRT <u>Control</u> : N=289, no-advice wait-list control group	7-day PPA; Each weekly session and 3, 6 and 12 months	ITT 7-day PPA: 18.4% (I) at end of treatment; 16.8% (I) at 3-month follow-up; 14% (I) vs. 2.8% (C) at 6 month follow-up ($p<.001$) At 12 month follow-up, there was no control group but 11.6% (I) remained abstinent.
At-risk youth					
Albrecht et al, 1998 ⁵² ; US	CCT; Not reported	Pregnant teenage smokers; N=84; 100% female; Not reported	<u>TFS-B</u> : N=26; 8-week Teen FreshStart CBT group program with “buddy” support person <u>TFS</u> : N=29; 8-week Teen FreshStart CBT group program	Self-reported smoking; 4-6 weeks post-baseline	ITT-verified quit rates (TFS and UC groups were combined for analysis): Abstinance rates were 18.7% TFSB vs. 16.6% TFS and UC

			Usual care: N=29; 30-minute individual education session with a nurse, and written materials		groups (n.s.)
Albrecht et al, 2006 ⁵⁴ ; US	RCT; Not reported	Pregnant teenage smokers; N=142; 100% female; M=17 years (SD=1.3)	TFS-B: N=45; 8-week Teen FreshStart CBT group program with “buddy” support person TFS: N=47, 8-week Teen FreshStart CBT group program Usual care: N=50, educational materials	Self-reported smoking; 8 weeks and 1 year	Self-reported abstinence: At 8-week follow-up, greater abstinence in the TFS-B group than the UC group ($p=.01$). No differences between any of the three groups at 1 year follow-up
Brown et al, 2003 ⁴³ ; US	CCT; University psychiatric hospital	Adolescent smokers with psychiatric disorders; N=191; 37.7% male; M=15.4 years	Intervention: N=116; two 45-minute individual MI sessions, relapse prevention manual, “I Quit” self-help pamphlet, 8 weeks’ free nicotine patches, 6 telephone calls over 6 months to clients. Parents were also able to utilise 4 telephone calls over the same period. Control: N=75; 5-10 minute	7-day PPA; Baseline, 1, 3, 6, 9 and 12 months	Non-ITT-verified 7-day PPA: 11% (I) vs. 11% (C) at 1 month follow-up (n.s.); 13.3% (I) vs. 8.5% (C) at 6 month follow-up (n.s.); 14% (I) vs. 9.9% (C) at 12 month follow-up (n.s.)

			brief advice from study therapist and the “I Quit” self-help manual		
Helstrom et al, 2007 ⁴² ; US	CCT; Not reported	High-risk adolescent smokers; <i>N</i> =81; 58% male; <i>M</i> =15.98 years (<i>SD</i> =1.30) (I), <i>M</i> =15.97 years (<i>SD</i> =1.36) (C)	<u>Intervention</u> : <i>N</i> =45; 1 session of motivational enhancement therapy <u>Control</u> : <i>N</i> =36; 1 session of tobacco education based on American Cancer Society self-help pamphlet	Salivary-confirmed abstinence; 1 and 6 months	Non-ITT-verified quit rates: 10.5% (I) vs. 6.8% (C) at 1 month follow-up (n.s.); 9.5% (I) vs. 7.4% (C) at 6 month follow-up (n.s.)
Myers et al, 2005 ⁶⁶ ; US	CCT; Out-patient substance abuse centres	Adolescents in substance abuse treatment; <i>N</i> =54; 78% male; <i>M</i> =16.1 years	<u>Intervention</u> : <i>N</i> =26; 6 weekly 1-hour counselling sessions incorporating motivational enhancement, stimulus control, barriers to change, social support for quitting, and planning for quitting and relapse <u>Control</u> : <i>N</i> =28; wait-list control group	7-day PPA; end of treatment and 3 and 6 months	ITT-verified 7-day PPA: 19.2% (I) vs. 3.6% (C) at end of treatment (<i>p</i> =.012); 30.8% (I) vs. 3.6% (C) at 3 month follow-up (<i>p</i> =.004); 15.4% (I) vs. 3.6% (C) at 6 month follow-up (n.s.)
Prokhorov et al,	CCT;	10 th grade high school	<u>Intervention</u> : <i>N</i> =573;	7-day self-	Non-ITT:

2008 ⁷⁰ ; US	Not reported	students from schools located in ethnically diverse, socio-economically disadvantaged communities; <i>N</i> =1574. A small sub-sample of students (<i>N</i> =62) were smokers. 58.5% female; <i>M</i> =15.7 years (<i>SD</i> =.90)	Interactive computer program of 5 weekly sessions in one semester and 2 booster sessions in following semester. Sessions 30 minutes in duration <u>Control</u> : <i>N</i> =501; National Cancer Institute's "Clearing the Air" self-help booklet	reported PPA; 18 months	60.7% (I) vs. 61.8% (C) (n.s.)
Low income					
Bullock et al, 2009 ⁵⁶ ; US	RCT; 21 rural WIC Nutritional Supplement clinics in a US mid-west state	Low-income rural pregnant women; <i>N</i> =530; 100% female; <i>M</i> =22 years (<i>SD</i> =4.6)	<u>Social support plus booklet</u> : <i>N</i> =129; scheduled weekly telephone call with nurse plus "Stop smoking! A Special Program for Pregnant Women" booklet, plus 24/7 access to nurse <i>via</i> telephone <u>Social support without booklet</u> : <i>N</i> =132; scheduled weekly	PPA; Baseline (T1), 8 th month of pregnancy (T2) and 6 weeks <i>post partum</i> (T3)	ITT-verified abstinence: At T2, 17% in social support plus booklet group vs. 22% in social support alone group vs. 19.2% booklet alone vs. 17.2% control group were abstinent (all differences n.s.). At T3, 12.4% in social support

			telephone call with nurse plus 24/7 access to nurse <i>via</i> telephone <u>Booklet only:</u> N=141; 8 serialised “Quit Smoking for Good” booklets from American Heart Association <u>Usual care control group:</u> N=128; usual care plus a quit booklet		plus booklet group vs. 11.4% social support alone group vs. 13.5% in the booklet alone group vs. 13.3% in the control group were abstinent (all differences n.s.).
Curry et al, 2003 ⁴⁵ ; US	RCT; Four paediatric clinics serving low-income and ethnically diverse families	Low-income women; N=303; 100% female; M=34.2 years (SD=8.8) (I), M=33.6 years (SD=9.5) (C)	<u>Intervention:</u> N=156; brief motivational message from the child’s clinician, self-help guide to quitting, 10-minute motivational interview with nurse or research assistant and up to 3 outreach telephone calls <u>Control:</u> N=147; usual care	7-day self- reported PPA, sustained abstinence; 3 and 12 months	ITT 7-day PPA: 8% (I) vs. 3% (C) at 3 months (adjusted OR=2.4, n.s.); 14% (I) vs. 7% (C) at 12 months (adjusted OR=2.77, sig.)
Froelicher et al, 2010 ⁵⁷ ;	RCT; Public health	African-American smokers residing in a	<u>Intervention:</u> N=26; Industry and media intervention	7-day PPA; Baseline, 6	ITT-verified analyses: 13.6% (I) vs. 11.5% (C) at 6

US	centre located in a low-income area	low-income area; N=60; 80.8% female (I), 64.7% female (C); M=46.5 years (I), M=46.7 years (C)	program. 1-hour pre-class orientation, 5 weekly standard smoking cessation intervention sessions. NRT offered to those who requested it and to highly addicted smokers (defined as those reporting withdrawal and smoking ≥25 cigarettes per day) <u>Control:</u> N=34; 1-hour pre-class orientation session, 5 weekly group smoking cessation intervention sessions which included education and CBT strategies, plus NRT (as defined above) and edited smoking cessation guide	months and 12 months	month follow-up (n.s.); 15.8% (I) vs. 5.3% (C) at 12 month follow-up (n.s.)
Gielen et al, 1997 ⁵⁸ ; US	CCT; Public prenatal clinic servicing predominately low-income	Pregnant smokers, predominantly African-American with less than high school education;	<u>Intervention:</u> N=193; educational materials, 15-minute individual counselling and clinic reinforcement (written agreement to quit,	7-day PPA; 28 weeks gestation, 6 months <i>post partum</i>	Non-ITT-verified 7-day PPA: 6.2% (I) vs. 5.6% (C) (sig. not reported) at 28 weeks gestation. At 6 months <i>post partum</i> ,

	African-American smokers	N=391; 100% female; M=23.3 years (I), M=24.1 years (C)	two letters of encouragement and brief advice from clinic nurse) <u>Control:</u> N=198; usual brief advice		15% (I) vs. 4% (C) (sig .not reported), although only a small number of participants (27%) were followed up at this point
Glasgow et al, 2000 ⁶⁵ ; US	RCT; Four planned parenthood clinics	Low-income female smokers; N =1154; 100% female; M=24 years (SD=5)	<u>Intervention:</u> N=578; generic stop-smoking pamphlet, brief advice, educational video, 15-minute consultation with nurse, 2 follow-up telephone calls <u>Control:</u> N=576; generic stop-smoking brochure and brief advice	7-day PPA; 6 weeks and 6 months	ITT-verified 7-day PPA: 10.2% (I) vs. 6.9% (C) at 6 week follow-up (p<.05); 18.3% (I) vs. 14.9% (C) at 6 month follow-up (n.s.)
Gordon et al, 2010 ³⁵ ; US	CCT; 14 federally funded public health dental clinics serving diverse racial/ethnic groups	Low-income individuals (at or below 200% of the federal poverty threshold) attending public dental health clinics; N=2637;	<u>Intervention:</u> N=1434; practitioners provided 5 As, printed self-help materials and NRT <u>Control:</u> N=1203; usual care	7-day PPA abstinence at the 7.5 month follow-up; 6 weeks and 7.5 months post-enrolment	Non-ITT 7-day PPA: 11.3% (I) vs. 6.8% (C) (p<.05)

		57.2% female; M=40.5 years (SD=12.6)			
Lipkus et al, 1999 ⁵⁹ ; US	CCT; Community health centre	Low-income African American smokers; N=266 (160 completed final follow-up); 54% male; 56% aged <49 years	<u>Provider intervention</u> : N=53; computer-prompted provider advice <u>Provider intervention + tailored print</u> : N=55; as above, plus a tailored birthday card and newsletter <u>Provider intervention + tailored print + telephone counselling</u> : N=52; as above, plus one (for males) or two (for females) telephone counselling calls	7-day PPA; 16 months	ITT self-reported 7-day PPA: those receiving the provider intervention and tailored print communication sig. more likely to be abstinent (32.7%), compared with those receiving provider intervention alone (13.2%) or all three levels of the intervention (19.2%; $p<.05$)
Manfredi et al, 1999, 2004 ^{46, 47} ; US	CCT; 33 prenatal, family planning and paediatric services within 12 public health clinics	Low-income female smokers; N=1068; 100% female; Not reported	<u>Intervention</u> : N=527; video segment and posters in clinic waiting rooms, provider advice, motivational self-help booklet, patient-provider agreement form, provider reminder letter, one-off 15-minute motivational	7-day PPA; 2, 6, 12 and 18 months	Non-ITT self-reported 7-day PPA: 14.5% (I) vs. 7.68% (C) at 2 month follow-up ($p<.001$); 20.15% (I) vs. 11.49% (C) at 6 month follow-up ($p<.001$); 21.5% (I) vs. 17.73% (C) at 12

			telephone call <u>Control:</u> <i>N</i> =541; no intervention		month follow-up (n.s.); 26.11% (I) vs. 24.21% (C) at 18 month follow-up (n.s.)
Okuyemi et al, 2007 ⁴⁴ ; US	RCT; 20 low-income public housing developments	Low-income smokers; <i>N</i> =173; 30% male; <i>M</i> =43 years (SD=14.3) (I), <i>M</i> =48 years (SD=13.1) (C)	<u>Intervention:</u> <i>N</i> =66; educational materials, 8-week course of nicotine gum, 5 MI sessions on quitting smoking <u>Comparison:</u> <i>N</i> =107; educational materials and 5 MI sessions addressing fruit and vegetable consumption	7-day PPA; 8 weeks and 26 weeks	ITT-verified 7-day PPA quit rates: 6.1% (I) vs. 5.6% (C) at 8 week follow-up (n.s.); 7.6% (I) vs. 9.3% (C) at 26 week follow-up (n.s.)
Ruger et al, 2008 ⁴¹ ; US	CCT; Obstetric clinics	Low-income pregnant women; <i>N</i> =302; 100% female; <i>M</i> =25.6 years (I), <i>M</i> =25.7 years (C)	<u>Intervention:</u> <i>N</i> =156; 3 home visits providing individual MI sessions, feedback about household nicotine levels, and self-help materials. Visits lasted an average of 1 hour and were tailored to stage of change. <u>Control:</u> <i>N</i> =146; 5-minute brief intervention at clinic, and self- help materials	30-day PPA; 1 month post- intervention and 6 months <i>post partum</i>	Non-I TT self-reported 30-day point prevalence quit rates: 6.3% (I) vs. 8% (C) at 6 month follow-up (n.s.)
Sykes et al,	RCT;	Smokers from	<u>Intervention:</u> <i>N</i> =131; 3-month	7-day PPA;	Non-ITT verified PPA:

2001 ³⁸ ; Marks et al, 2002 ³⁷ ; UK	Smoking cessation clinic	deprived area of London; N=260; 36.2% male; Not reported	self-help CBT cessation and relapse prevention program ("Quit for Life") with optional NRT <u>Control</u> : N=129; Educational materials ("Stop Smoking Made Easier" program)	6 and 12 months	17.2% (I) vs. 5.6% (C) at 6 month follow-up (<.0001); 19.8% (I) vs. 5.7% (C) at 12 month follow-up (sig. not reported)
Wadland et al, 2001 ⁶³ ; US	CCT; Community health centres	Low-income smokers; N=238; 30% male; M=44 years (I), M=38.7 years (C)	<u>Intervention</u> : N=110; brief physician advice, 8 weeks' transdermal NRT; 6 telephone counselling sessions <u>Control</u> : N=123; brief physician advice, 8 weeks' transdermal NRT	7- day PPA; 3 months	ITT-verified 7-day PPA: 8.1% (C) vs. 21% (I) (p<.01) at 3 month follow-up
Mentally ill					
Baker et al, 2006; 2010 ⁶⁸ ; Australia	CCT; Research centre, community clinic or participants' homes	Smokers with non-acute psychotic disorder; N=298; 52.3% male; M=37.24 years (SD=11.09)	<u>Intervention</u> : N=147; 8 x 1-hour sessions (6 weekly sessions plus a booster at weeks 8 and 10) of MI and CBT, plus NRT and usual care (self-help pamphlets) <u>Control</u> : N=151; self-help	7-day PPA; 3 months, 6 months, 12 months and 4 years	ITT-verified 7-day PPA: 15% (I) vs. 6% (C) at 3 month follow-up (n.s.); 9.5% (I) vs. 4% (C) at 6 month follow-up (n.s.); 10.9% (I) vs. 6.6% (C) at 12 month follow-up (n.s.)

			pamphlets		Among a subsample completing follow-up at 4 years (n=164), there were no differences in 7-day PPA: 21% (C) vs. 15.7% (I).
Brown et al, 2001 ⁵³ ; US	RCT; Research centre	Smokers with a history of major depressive disorder; N=179; 40.2% male; M=45.1 years (SD=9.3)	<u>Intervention</u> : N=86; 8 sessions of CBT for depression, combined with homework assignments <u>Control</u> : N=93; 8 sessions of standard CBT, combined with homework assignments	7-day PPA; End of treatment and 1, 6 and 12 months	ITT-verified 7-day PPA: 37.6% (I) vs. 33.3% (C) at end of treatment (n.s.); 39.5% (I) vs. 30.1% (C) at 1 month follow-up (sig. level not reported); 24.4% (I) vs. 24.7% (C) at 6 month follow-up (n.s.); 32.5% (I) vs. 24.7% (C) at 12 month follow-up (n.s.)
Dixon et al, 2009 ³⁴ ; US	CCT; Out-patient mental health clinics	Smokers with a diagnosis of schizophrenia or affective and other psychoses; N=304; 47.7% female;	<u>Intervention</u> : N=156; 5 As for smoking cessation implemented at every patient visit for 12 months <u>Control</u> : N=148; Delayed control; physicians delivered 5 As for 6 months after a 6-	7-day PPA. Recent abstinence from smoking confirmed with CO; 6 and 12 months	Non-ITT 7-day PPA: At 6 month follow-up, 3.9% (I) vs. 1.6% (C) (n.s.)

		<i>M</i> =44.28 years (<i>SD</i> =9)	month delay control period		
Gallagher et al, 2007 ³⁶ ; US	CCT; Community healthcare organisation	Smokers with Schizophrenia; <i>N</i> =180 52% male; <i>M</i> =42.55 years (<i>SD</i> =0.43) (CR), <i>M</i> =43.55 years (<i>SD</i> =9.82 (CR + NRT), <i>M</i> =42.45 years (<i>SD</i> =10.35) (CI)	<u>CR</u> : <i>N</i> =60; financial incentive for abstinence <u>CR + NRT</u> : <i>N</i> =60; financial incentive for abstinence, plus 16 weeks of NRT <u>Control</u> : <i>N</i> =60; clients encouraged to use available community resources	“Abstinence”; 20 and 36 weeks	Cotinine-confirmed abstinence: 7% in CR, 0% in CR + NRT and 2% in Control at 20 week follow-up (n.s.); 7% in CR, 2% in CR + NRT and 5% in Control at 36 week follow-up (n.s.)
Gulliver, 2008 ⁴⁹ ; US	CCT; Not reported	Military veterans with variety of psychiatric diagnoses; <i>N</i> =208; 97% male; <i>M</i> =49.16 years (MI alone), <i>M</i> =49.6 years (MI/BI), <i>M</i> =47.5 years (MI/IS)	<u>MI alone</u> : <i>N</i> =67; single MI session 40-50 minutes in duration <u>MI/BI</u> : <i>N</i> =67; MI as above, plus instruction in deep breathing <u>MI/IS</u> : <i>N</i> =74; MI as above, plus instruction in the use of an incentive spirometer for practice in breath/ diaphragmatic control	Self-reported smoking abstinence on day of assessment; 1, 2, 3, 4, 5 and 6 months	ITT self-reported abstinence: MI alone: 0% 1 month, 0% 2 months, 4.5% 3 months, 4.5% 4 months, 3% 5 months, 6% 6 months MI/BI: 5.4% 1 month, 4% 2 months, 6.8% 3 months, 6.8% 4 months, 6.8% 5 months, 6.8% 6 months MI/IS: 3% 1 month, 3% 2 months, 4.5% 3 months,

					4.5% 4 months, 6% 5 months, 4.5% 6 months
Hall et al, 2006 ⁵⁵ ; US	RCT; University-based clinic	Smokers with current diagnosis of unipolar depression; N=322; 30.4% male; M=41.5 years (I), M=42.2 years (C)	<u>Intervention</u> : N=163; staged care intervention: individualised feedback on quitting smoking based on stages of change, 6 counselling sessions for clients who had reached contemplation, 10-week course of NRT <u>Control</u> : N=159; brief-contact control: list of smoking cessation programs, no other contact	7-day PPA, number of 24-hour quit attempts; Baseline, 3, 6, 12 and 18 months	ITT 7-day verified quit rates: 13.5% (I) vs. 9.34% (C) at 3 month follow-up (n.s.); 14.11% (I) vs. 15.73% (C) at 6 month follow-up (n.s.); 14.11% (I) vs. 9.43% (C) at 12 month follow-up (n.s.); 18.4% (I) vs. 13.21% (C) at 18 month follow-up (n.s.)
MacPherson, 2010 ⁶⁰ ; US	CCT; Not reported	Smokers with mildly elevated depressive symptoms (score ≥10 on Beck Depression Inventory-II); N=68; 48.6% female (I), 48.5% female (C);	<u>Intervention</u> N=35; 8 1-hour weekly group sessions. Intervention included 30 minutes of standard treatment and 30 minutes of Behavioural Activation Treatment for Smoking. NRT began on scheduled quit date (21mg for	7-day PPA; 1 week, 4 weeks, 16 weeks and 26 weeks post quit date	ITT: 1 week 9.1% (C) vs. 28.6% (I); 4 weeks 9.1% (C) vs. 17.1% (I); 16 weeks 3% (C) vs. 11.4% (I); 26 weeks 0% (C) vs. 14.3% (I) Interaction between

		M=45.0 years (SD=12.2) (I), M=42.6 years (SD=11.5) (C)	4 weeks, 14mg for 4 weeks and 7mg for 2 weeks) <u>Control:</u> N=33; 8 1-hour weekly group sessions including only standard treatment. NRT offered on same schedule as intervention group		treatment condition and time was non-significant (OR 16.4, $p=.24$).
McFall et al, 2005 ⁶¹ ; US	CCT; Outpatient PTSD clinic	Smokers with a diagnosis of PTSD; N=66; 92% male; M=52.9 years (I), M=52.3 years (C)	<u>Intervention:</u> N=33; 5 individual behavioural counselling sessions related to smoking, delivered by mental health providers along with PTSD care <u>Comparison:</u> N=33; PTSD care from normal providers, referred to external clinic for usual behavioural therapy	7-day PPA, repeated 7-day PPA; 2, 4, 6 and 9 month follow-up	ITT-verified 7-day repeated abstinence: 12% (I) vs. 3% (C) ($p=.20$) 7-day point prevalence abstinence: 18% (I) vs. 7% (C) (sig. not reported) At each assessment interval, odds of not smoking were 5.23 times greater for clients in the intervention group than for clients in the control group ($p<.002$).
Vickers et al, 2009 ⁶⁷ ;	RCT; Not reported	Depressed female smokers (score ≥ 16 on	<u>Intervention:</u> N=30; 10 weekly individually tailored exercise	7-day PPA; 10 weeks and 24	Non-ITT-verified 7-day PPA: 17% (I) vs. 23% (C) at 10 week

US		CES-D); N=60; 100% female; M=41.8 years (SD=12.1) (I), M=40.9 years (SD=11.8) (C)	counselling sessions designed to motivate increased regular physical activity and short bouts of exercise in response to urges to smoke <u>Control</u> : N=30; information on health topics including sleep, hygiene, nutrition and health screening tests for women; brief interventions of approximately 10 minutes at each visit	weeks	follow-up ($p=.75$); 6.3% (I) vs. 6.70% (C) at 24 week follow-up ($p=1.0$)
Williams et al, 2010 ⁵⁰ ; US	RCT; Outpatient mental health facilities	Individuals who met DSM-IV criteria for schizophrenia or schizo-affective disorder; N=87; 35.6% female (I), 38.1% female (C); M=43.5 years (SD=12.1) (I), M=47.1	<u>Intervention</u> : N=45; high- intensity “Treatment of Addiction to Nicotine in Schizophrenia” intervention. 24 45-minute sessions over 26 weeks incorporating MI, social skills training, use of NRT, relapse prevention techniques and nicotine patch use for 16 weeks beginning on the quit	Continuous abstinence (self- reported abstinence after the target quit date), 7-day PPA; 3, 6 and 12 months	ITT 7-day PPA: quit rates for both groups not reported; however, difference reported as not significant at 12 week follow- up ITT continuous abstinence: 15.6% (I) vs. 26.2% (C) at 12 weeks (n.s.) No differences at 6 or 12 month follow-up

years (SD=10.5) (C)	<p>date</p> <p><u>Comparison:</u> <i>N</i>=42; moderate-intensity “Medication Management” intervention.</p> <p>9 20-minute sessions over 26 weeks. Sessions focused on medication compliance, education about NRT and nicotine patch use for 16 weeks beginning on the quit date</p>
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Note: C: control; CBT: cognitive-behavioural therapy; CCT: clinical controlled trial; CES-D: Center for Epidemiologic Studies Depression Scale; CO: carbon monoxide; CR: contingent reinforcement; I: intervention; ITT: intention-to-treat; MI: motivational interviewing; MI/BI: motivational interviewing plus breathing instruction; MI/IS: motivational interviewing plus incentive spirometry; NRT: nicotine replacement; n.s. not significant; PPA: point prevalence abstinence; PTSD: post-traumatic stress disorder; RCT: randomised controlled trial; SD: standard deviation; TFS: Teen FreshStart; TFS-B: Teen FreshStart with “buddy”; WIC: Women, infants and children; 5 A’s: Ask, Assess, Advise, Assist, Arrange.

Methodological quality assessment

Individual ratings for each study against the six methodological criteria and the assigned global rating are reported in Table 5.3. Overall, two studies received a methodological rating of strong^{65, 66}, ten studies received a rating of moderate^{34, 35, 41, 43, 45, 50, 56, 61, 62, 68} and 20 studies received a rating of weak^{36-38, 40, 42, 44, 46, 47, 49, 51-55, 57-60, 63, 64, 67, 70}. Unrepresentative samples, non-reporting of consent rates, non-reporting of blinding of participants and outcome assessors, and high attrition rates were common issues across all studies. Four studies relied solely on self-reported smoking status^{35, 46, 47, 59, 70}. Twelve studies used CO to confirm smoking status^{34, 37, 38, 45, 49-52, 55, 61, 63, 67, 68}, nine used cotinine in saliva or urine^{41, 42, 54, 56-58, 62, 64, 65} and seven studies used a combination of CO and cotinine^{36, 40, 43, 44, 53, 60, 66}. Where reported, attrition rates varied from 8% to 77% at the longest follow-up point.

Narrative review and meta-analysis

Homeless smokers

Only one trial examined the effectiveness of a behavioural smoking cessation intervention targeted at homeless smokers⁴⁰. Okuyemi et al⁴⁰ examined the effectiveness of five individual motivational interviewing (MI) sessions focusing on smoking behaviours and barriers to quitting, combined with group educational support sessions, supportive group outings and an eight-week course of NRT, with a similar intervention where MI sessions focused only on smoking behaviours (and not barriers to quitting). No significant differences were found between the two interventions at 8 week (17.4% smoking plus vs. 13% smoking only) or 26 week follow-up (17.4% smoking plus vs. 8.7% smoking only).

Table 5.3: *Ratings of methodological quality: Strong, Moderate and Weak*

	Selection bias	Study design	Confounders	Blinding	Data collection	Withdrawals	Global rating
Okuyemi et al., 2006 ⁴⁰	W	S	W	W	S	M	W
Bramley et al., 2005 ⁶⁴	W	S	W	M	S	M	W
Patten et al., 2010 ⁶²	W	S	S	M	S	S	M
Cropsey, 2008 ⁵¹	W	S	S	M	S	W	W
Albrecht et al., 1998 ⁵²	W	S	W	M	S	W	W
Albrecht et al., 2006 ⁵⁴	M	S	W	M	S	W	W
Brown et al., 2003 ⁴³	W	S	S	M	S	S	M
Helstrom et al., 2007 ⁴²	W	S	W	M	S	S	W
Myers et al., 2005 ⁶⁶	M	S	S	M	S	M	S
Prokhorov et al., 2008 ⁷⁰	W	S	W	M	W	M	W
Bullock et al., 2009 ⁵⁶	M	S	W	M	S	S	M
Curry et al., 2003 ⁴⁵	W	S	S	M	S	S	M
Froelicher et al., 2010 ⁵⁷	W	S	W	M	S	M	W
Gielen et al., 1997 ⁵⁸	M	S	W	M	S	W	W
Glasgow et al., 2000. ⁶⁵	M	S	S	M	S	S	S
Gordon et al., 2010 ³⁵	M	S	S	M	W	M	M
Lipkus et al., 1999 ⁵⁹	M	S	W	M	W	M	W

	Selection bias	Study design	Confounders	Blinding	Data collection	Withdrawals	Global rating
Manfredi et al., 1999; 2004 ^{46, 47}	M	S	W	M	W	W	W
Okuyemi et al., 2007 ⁴⁴	W	S	W	M	S	M	W
Ruger et al., 2008 ⁴¹	M	S	W	M	S	M	M
Skyes et al., 2001; Marks 2002 ^{37, 38}	W	S	W	M	S	S	W
Wadland et al., 2001 ⁶³	W	S	W	M	S	M	W
Baker et al., 2006 ⁶⁸	M	S	W	M	S	S	M
Brown et al., 2001 ⁵³	W	S	W	M	S	S	W
Dixon et al., 2009 ³⁴	M	S	W	M	S	M	M
Gallagher et al., 2007 ³⁶	W	S	S	M	S	W	W
Gulliver et al., 2008 ⁴⁹	W	S	S	M	S	W	W
Hall et al., 2006 ⁵⁵	W	S	W	M	S	M	W
MacPherson et al., 2010 ⁶⁰	W	S	S	S	S	W	W
McFall et al., 2005 ⁶¹	W	S	S	M	S	S	M
Vickers et al., 2009 ⁶⁷	W	S	S	M	S	W	W
Williams et al., 2010 ⁵⁰	M	S	S	W	S	M	M

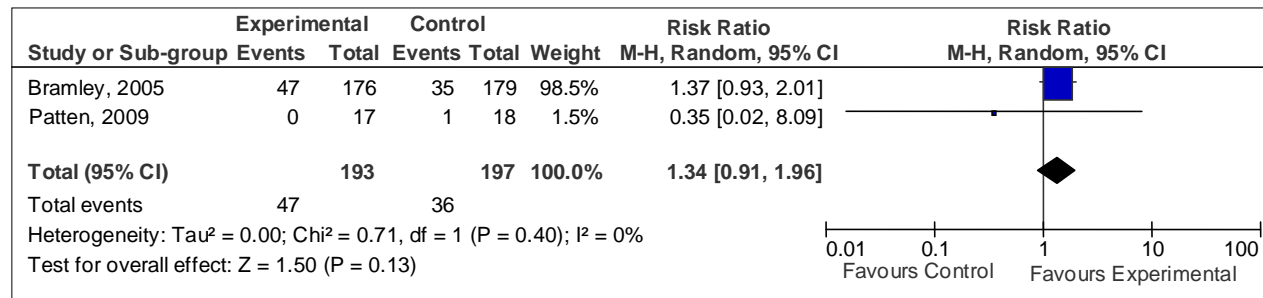
Indigenous smokers

Two trials examined cessation interventions targeted at Indigenous populations^{62, 64}. Bramley et al⁶⁴ examined the effectiveness of supportive quit smoking text messages compared with text messages not related to smoking among 355 Maori smokers over a six-month period (this study also examined the effectiveness for non-Maori smokers, but these results will not be reported here). Patten et al⁶² examined the effectiveness of a multi-component intervention consisting of face-to-face counselling, four telephone calls, a video highlighting personal stories of cessation, and a cessation guide on abstinence among pregnant Alaskan native women. Both studies were combined at short-term follow-up for meta-analysis. A non-significant effect was found (RR 1.34, CI 0.91-1.96, $I^2=0\%$) (See Figure 5.2a). Bramley⁶⁴ also assessed outcomes at six month follow-up and found no significant differences between those receiving smoking-related text messages and those receiving non-smoking-related messages.

Prisoners

One trial examined the effectiveness of a group behavioural mood management intervention among 250 female prisoners. Cropsey et al⁵¹ randomly assigned participants to a 10-week group mood management intervention incorporating transdermal nicotine or to a waiting-list control group. At six month follow-up, 14% of prisoners receiving the mood management intervention were abstinent, compared with 2.8% of control participants ($p<.001$). At 12 month follow-up there was no longer a comparison condition (as the waiting-list control group had crossed over to the active intervention condition). However, 11.6% of intervention participants maintained abstinence.

a) *Indigenous - Behavioural support - Short term*



b) *At-risk youth - Behavioural support - Short-term*

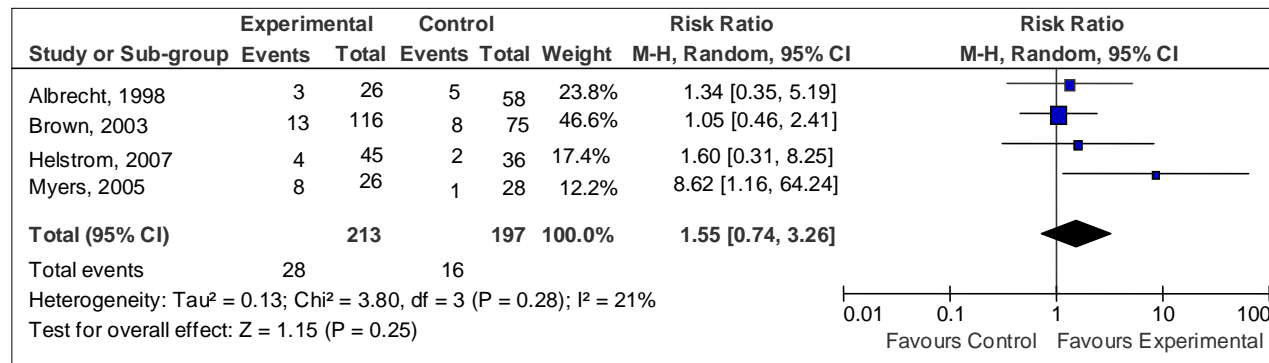
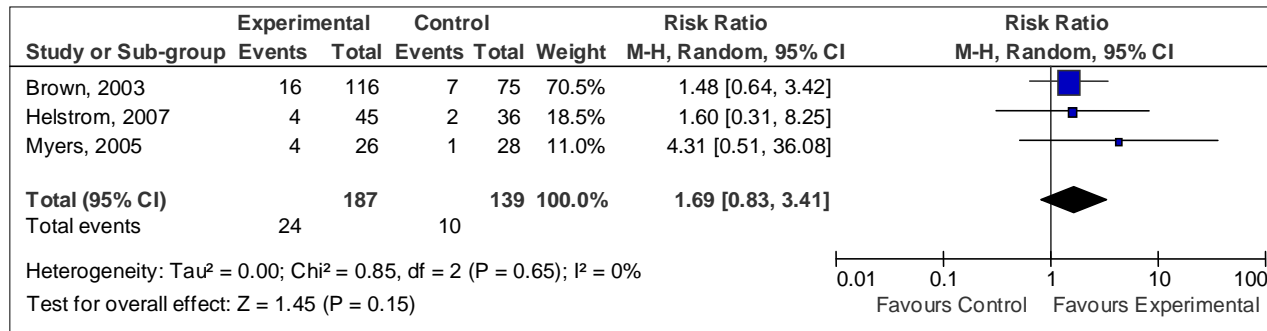


Figure 5.2 (a, b): *Forrest Plots: Intervention effectiveness at short- and long-term follow-up*

c) *At-risk youth - Behavioural support - Long-term*



d) *Low-income female - Behavioural support - Short-term*

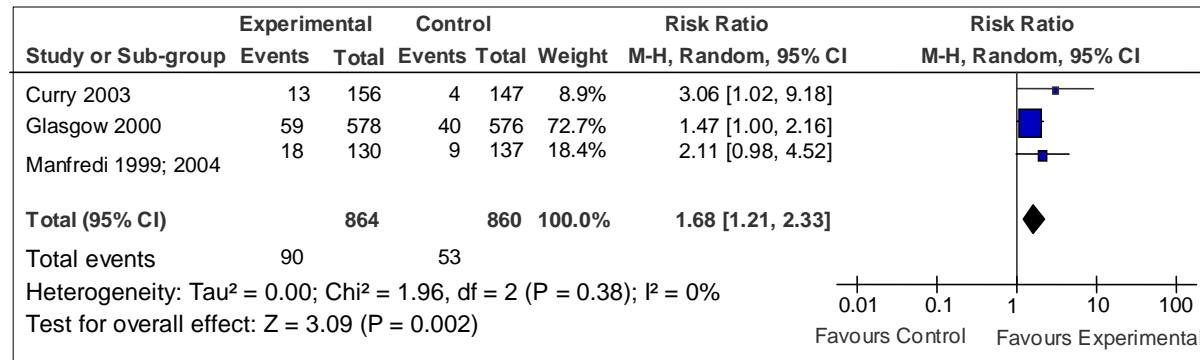
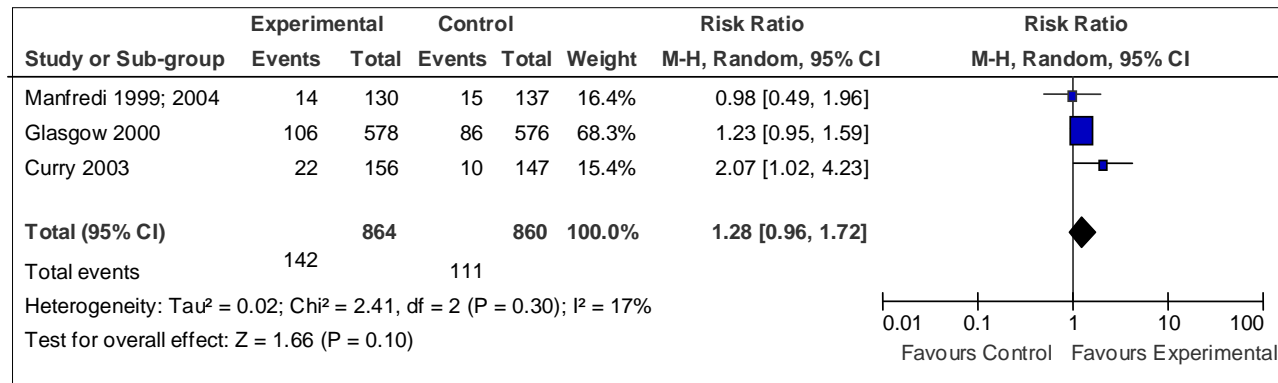


Figure 5.2 (c, d): Forrest Plots: Intervention effectiveness at short- and long-term follow-up

e) Low-income female - Behavioural support - Long-term



f) Pregnant women - Behavioural support - Third trimester

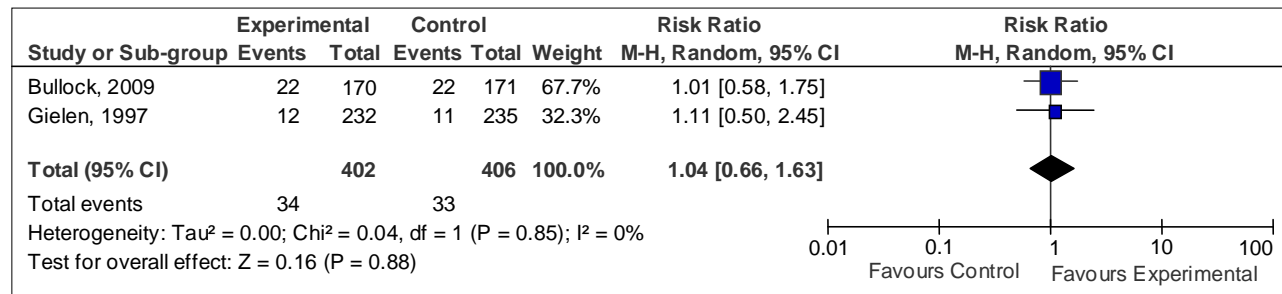
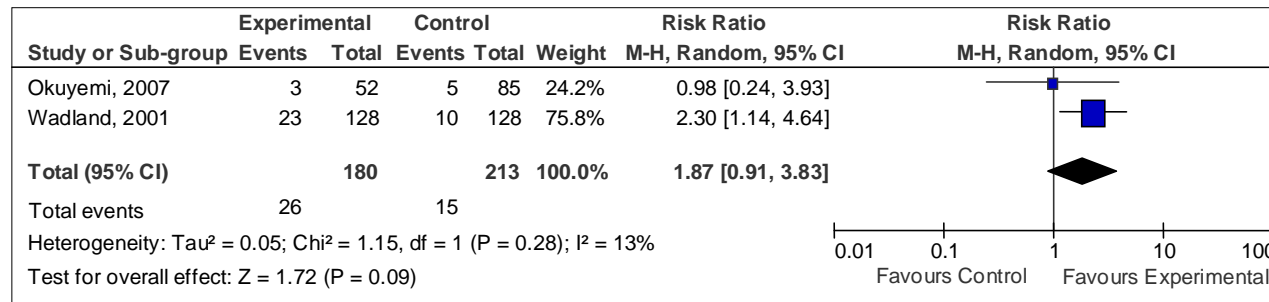


Figure 5.2 (e, f): Forrest Plots: Intervention effectiveness at short- and long-term follow-up

g) *Low-income individual living in deprived area - Behavioural support - Short-term*



h) *Low-income individual living in deprived area - Behavioural support - Long-term*

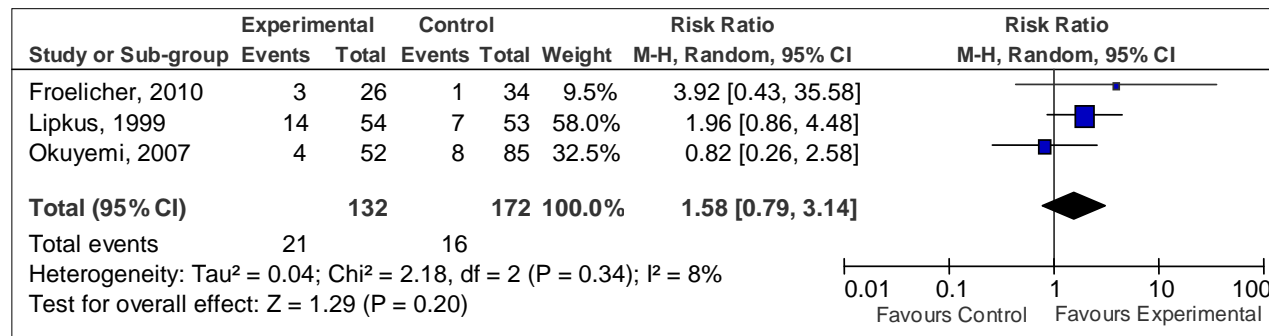
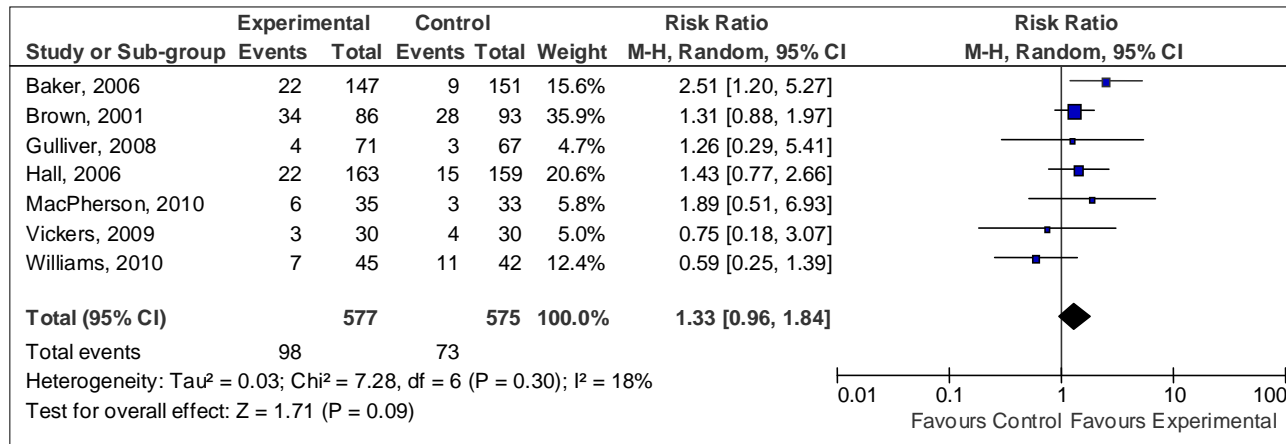


Figure 5.2 (g, h): *Forrest Plots: Intervention effectiveness at short- and long-term follow-up*

i) Mentally ill - Behavioural support - Short-term



j) Mentally ill - Behavioural support - Long-term

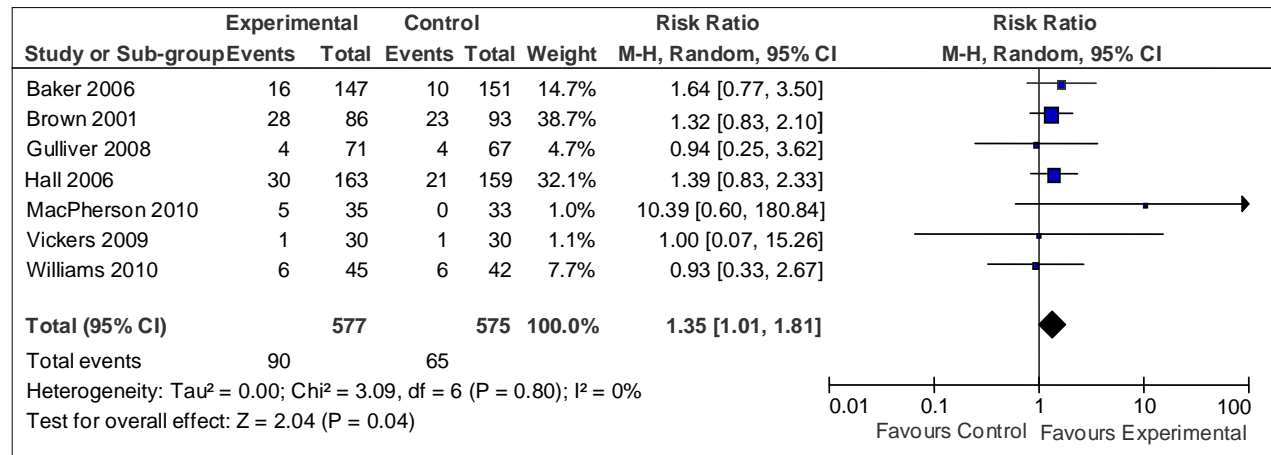


Figure 5.2 (i, j): Forrest Plots: Intervention effectiveness at short- and long-term follow-up

Youth

Six studies examined the effectiveness of cessation interventions for at-risk youth^{42, 43, 52, 54, 66, 70}. Four studies that used a behavioural support intervention were combined for meta-analysis^{42, 43, 52, 66}. At short-term follow-up a non-significant effect was found (RR 1.55, CI 0.74-3.26, $I^2=21\%$) (Figure 5.2b). Three studies pooled at long-term follow-up^{42, 43, 66} also showed a non-significant effect (RR 1.69, CI 0.83-3.41, $I^2=0\%$) (Figure 5.2c). Two studies also used a behavioural support intervention but could not be included in meta-analysis due to the methods for reporting results. Albrecht et al⁵⁴ examined the effectiveness of an eight-week group CBT group program for pregnant adolescents incorporating NRT and buddy support, compared with a CBT program alone and usual care. It appeared that the addition of a support person was of modest benefit, with a significant difference found at eight week follow-up ($p=.01$). No differences were found at one year follow-up. Prokhorov⁷⁰ examined the effectiveness of a computer-based smoking prevention and cessation program among disadvantaged high school students. No significant effects were found among a small sub-sample of adolescent smokers at 18 month follow-up⁷⁰.

Low-income smokers

Studies targeting low-income smokers were categorised as those targeting low-income women attending paediatric or planned parenthood clinics (three studies^{45-47, 65}), those targeting low-income pregnant women (three studies^{41, 56, 58}) and those targeting individuals from low-income areas (six studies^{35, 37, 38, 44, 57, 59, 63}).

Three studies compared a multi-component MI intervention with either usual care or brief advice among low-income female smokers accessing paediatric or planned parenthood clinics, and were combined for meta-analysis^{45-47, 65}. Combining the three studies at their shortest follow-up point (6-12 weeks) resulted in a significant effect (RR 1.68, CI 1.21-2.33, $I^2=0\%$)

(Figure 5.2d). At the longest follow-up point, a non-significant effect was found (RR 1.28, CI 0.96-1.72, $I^2=17\%$) (Figure 5.2e), although it should be noted that one study⁶⁵ was given the majority of the weight (68.3%) in the meta-analysis.

Three interventions targeted pregnant women^{41, 56, 58}: Gielen et al⁵⁸ examined the provision of educational materials, 15 minutes of individual counselling, verbal support from clinic staff and letters of encouragement, compared with brief advice; Bullock et al⁵⁶ tested intensive social support plus a cessation guide, compared with a cessation booklet alone, social support alone or usual care (only the comparison between social support and booklet compared with control is reported here); and Ruger et al⁴¹ tested the effectiveness of three home visits providing MI, feedback about household nicotine levels, and self-help materials, compared with a five-minute brief intervention and self-help materials provided at the prenatal clinic. Two studies were combined at the third trimester follow-up point^{56, 58}. No effect was found (RR 1.04, CI 0.66-1.63, $I^2=0\%$) (Figure 5.2f). Two studies^{41, 58} reporting 6 month *post partum* follow-up could not be combined due to heterogeneity ($I^2=61\%$). Both found no significant differences at the 6 month *post partum* follow-up. Bullock et al⁵⁶ also found no significant differences at 6 weeks *post partum*.

Six studies targeted low-income individuals living in deprived neighbourhoods or attending public health clinics^{35, 37, 38, 44, 57, 59, 63}. Four which provided a behavioural support intervention were combined for meta-analysis^{44, 57, 59, 63}. Combining two studies reporting short-term outcomes^{44, 63} and three studies reporting long-term outcomes^{44, 57, 59} showed no significant effects (RR 1.87, CI 0.91-3.83, $I^2=13\%$ and RR 1.58, CI 0.79-3.14, $I^2=8\%$ respectively) (Figures 5.2g and 5.2h respectively). Two additional studies targeting low-income individuals found significant effects: Sykes et al^{37, 38} found a self-help CBT cessation program was significantly more effective among smokers living in a deprived area of London, compared with educational

materials, at both 6 month follow-up (17.2% self-help program vs. 5.6% control; $p < .0001$) and 12 month follow-up (19.8% self-help program vs. 5.7% control; $p < .0001$). However, an “intention to treat” approach to analysis was not adopted in this study. Gordon et al³⁵ conducted a large trial to examine the effectiveness of dental practitioner brief advice using the 5 As approach (Assess, Advise, Agree, Assist, Arrange) and NRT, compared with usual care, among 2637 low-income smokers attending a public dental clinic. Significant differences were found at the 7.5 month follow-up (11.3% intervention compared with 6.8% control, $p < .05$).

Individuals with mental illness

Of the ten studies identified, three targeted smokers with schizophrenia or schizo-affective disorders^{34, 36, 71}, four targeted smokers with depression^{53, 55, 60, 67}, two studies included smokers with a variety of psychotic disorders^{49, 68} and one study targeted smokers with post-traumatic stress disorder⁶¹.

Seven studies^{49, 50, 53, 55, 60, 67, 68} which examined the effectiveness of behavioural support interventions were combined for meta-analysis. At short-term follow-up a non-significant effect was found (RR 1.33, CI 0.96-1.84, $I^2 = 18\%$) (Figure 5.2i). However, a significant effect was found at long-term follow-up (RR 1.35, CI 1.01-1.81, $I^2 = 0\%$) (Figure 5.2j). It should be noted that two studies^{60, 67} had extremely wide confidence intervals in the long-term analysis and only contributed 1% and 1.5% weight respectively to the meta-analysis. Two studies^{53, 60} also had moderately intensive control conditions, thus possibly reducing the effect size found.

One study targeting smokers with mental illness could not be included in meta-analysis due to the method of reporting of results. McFall et al⁶¹ found that integrating smoking care with PTSD treatment for smokers with a diagnosis of PTSD was more than five times more effective than referring smokers to external clinics to receive smoking care ($p < .002$). Dixon³⁴ found that

repeated brief advice (5 As) in an out-patient mental health clinic setting had no impact on abstinence rates compared with usual care. Gallagher et al³⁶ examined the use of contingent reinforcement for cessation, both with and without NRT, compared with a control group, in male smokers with schizophrenia. Smokers allocated to either of the contingent reinforcement conditions earned progressively larger cash rewards for abstinence, ranging between \$20 and \$80 per visit. There were no significant differences between conditions at 20 week or 36 week follow-up.

Discussion

The results of this review suggest that behavioural interventions may be effective among some disadvantaged groups. Meta-analysis showed promising point estimates for the effects of behavioural support interventions on abstinence among at-risk youth, but did not reach statistical significance due to small sample sizes and the small number of well-controlled RCTs pooled for analysis. A significant effect was found for behavioural support interventions targeted at low-income female smokers at short-term follow-up (RR 1.68, CI 1.21-2.33). While this comparison pooled only a small number of studies and gave the majority of weight in the meta-analysis to one large study, all three studies provided a similar multi-component clinic-based intervention to low socio-economic status women attending prenatal and paediatric clinics. Despite a reduced effect size and non-significant result at long-term follow-up, the significant short-term finding supports the implementation of evidence-based smoking cessation support in routine prenatal care. Behavioural support interventions targeted at individuals with mental illness at long-term follow-up also showed a significant effect (RR 1.35, CI 1.01-1.81).

The studies included in this meta-analysis incorporated a wide range of behavioural interventions and a varying number of intervention components, and the duration of

intervention delivery varied from one single session to high-intensity treatment of 24 sessions over 26 weeks. These findings must, therefore, be interpreted with caution. While further research that addresses barriers to quitting among individuals with mental illness is needed, this significant long-term finding provides support for research which shows that cessation interventions can assist individuals with mental illness to quit smoking ⁷². These two significant findings are, however, notable given that Cochrane reviews of counselling interventions in mainstream population groups show similar effect sizes for both individual and group behavioural counselling interventions of RR 1.39 and RR 1.98 respectively ^{73, 74}.

Of studies not included in meta-analysis, some showed promising results. Studies targeting low-income individuals from deprived areas showed the most success, with two different approaches (a self-help CBT program and brief advice integrated in dental care) demonstrating significant increases in smoking abstinence rates. Of particular note, of the six studies included in the review that specifically targeted pregnant smokers ^{41, 52, 54, 56, 58, 62}, only one study showed a significant impact on *post partum* abstinence rates. Studies targeting low-income pregnant women tended to focus on providing increased advice and support, both during the women's visits with healthcare providers and in their homes. None included NRT. A recent Cochrane review has shown that cessation interventions can reduce smoking during pregnancy by approximately 6% ⁷⁵. Given the high rates of smoking among disadvantaged pregnant women and the high risk of harm, it is crucial that increased efforts are given to reducing smoking among this high-risk group. The addition of NRT to behavioural support for pregnant smokers who smoke more than five cigarettes per day may increase cessation rates ⁷⁶.

A small number of studies targeted homeless smokers, Indigenous smokers or prisoners. Point estimates suggest that effective interventions exist for Indigenous smokers, but both of the included trials showed wide confidence intervals due to low power. Promising results were

found for a group mood management intervention delivered to female prisoners ⁵¹. Given the small number of studies, it appears efforts to promote cessation in these highly vulnerable groups have so far been relatively limited.

Methodological quality

The majority of studies included in the review performed poorly on ratings of methodological quality. Recurring methodological limitations included small sample sizes, high rates of attrition, and failure to report blinding of participants, clinical staff and outcome assessors. Intervening with hard-to-reach smokers and undertaking rigorously designed cessation interventions is challenging ⁷⁷. Trialling strategies to both recruit and retain representative samples of smokers is of critical importance, both to improve the quality of studies and to engage disadvantaged smokers with cessation trials. Robust methodologies which are culturally and politically sensitive to the needs of these populations are required. Extensive formative research would aid the development of stronger trials that can take account of methodological issues ⁷⁸.

Implications for research and practice

Some have argued that individuals from disadvantaged groups are more likely to be “hard core” smokers ⁷⁹, and therefore that special considerations for intervening with these groups are needed. While Cochrane reviews have shown that cessation interventions, including individual and group behavioural counselling ^{73, 74}, telephone counselling ⁸⁰ and physician advice ⁸¹, increase smoking cessation among mainstream population groups, there is less evidence about the effectiveness of behavioural interventions among disadvantaged groups. This meta-analysis found effect sizes broadly similar to those found with other populations, but in most cases the effects were not significant. There were notable exceptions, however,

with targeted behavioural interventions provided to low-income female smokers and individuals with mental illness showing significant effects in meta-analysis.

Additional large-scale RCTs should further examine the differential benefit of behavioural cessation interventions for disadvantaged groups. Such research is difficult to undertake and needs to be adequately resourced to ensure that sample sizes can yield adequate power to detect clinically meaningful effect sizes. There is also a clear need for further research using interventions that have so far received little attention. For example, while there have been recent calls for the use of financial incentives with disadvantaged groups^{82,83}, few studies that examined the effectiveness of this strategy were identified. Where financial incentives were used, wide confidence intervals were found, indicating the need for larger trials³⁶.

Attention should also be given to identifying novel settings for delivering cessation interventions to disadvantaged groups. Of the 32 studies included in this review, the majority were conducted in healthcare settings. Given evidence that disadvantaged groups are less likely to access healthcare and receive preventive advice⁸⁴, further research should explore the effectiveness of providing cessation support in settings familiar to and trusted by disadvantaged individuals, such as community social services^{85,86}.

Limitations

This review is limited by the small number of studies eligible for inclusion in the review and the small number of studies included in meta-analysis. It was not possible to compare interventions on the basis of intensity, duration or format of intervention delivery, and it is important that future reviews examine these constructs where possible. We were also unable to determine whether combining behavioural intervention with NRT increased smoking cessation above behavioural intervention alone. While a significant attempt was made to

identify all published studies by using comprehensive *a priori* search strategies, it is possible that relevant studies were not located. While a significant attempt was made to compare consistent outcome measures, due to the nature of the studies, a mix of validated and self-reported quit rates, seven-day point prevalence and continuous abstinence rates are included. Because only studies conducted in developed countries were included, results are not generalisable to developing countries. Finally, methodological quality was not used as an exclusion criterion for meta-analysis. Although there are conflicting views on how to deal with assessments of study quality^{87,88}, including poor quality studies in meta-analysis means that there is a risk that bias has been introduced.

Conclusions

Increasing rates of cessation among disadvantaged groups will make a significant contribution to reducing tobacco-related health inequalities⁸⁹. The results of this review indicate that behavioural interventions do show some benefit among disadvantaged and vulnerable subgroups. This is an important finding as it suggests that achieving cessation with disadvantaged groups is within reach. Further research that is adequately resourced and powered is needed to establish the most effective cessation interventions for vulnerable high-risk groups.

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PAPER FIVE

Assessing smoking status in disadvantaged populations:

**Is computer-administered self-report an accurate
and acceptable measure?**

Introduction to Paper Five

The accurate measurement of tobacco use is central to the monitoring of smoking prevalence over time, as well as the delivery and evaluation of smoking cessation interventions. In 2002, the Society for Research on Nicotine and Tobacco Subcommittee on Biochemical Verification recommended that the decision to verify self-report smoking status biochemically be based on three factors: the demand characteristics present in the situation; the type of study being undertaken; and the population being assessed ¹. It is now generally accepted that smoking status does not need to be verified in low-demand population-based surveys assessing smoking prevalence ^{1,2}. However, in clinical trials where accurate estimation of quit rates is critical, and in studies assessing special populations of smokers where there is an incentive to deceive, biochemical verification is strongly encouraged ^{1,2}. The need to establish the accuracy of self-report in special populations is largely due to differences in social desirability bias and demand characteristics. Special populations, including adolescents, pregnant smokers, medical patients and those with a history of alcohol use or depression, may be more likely to under-report smoking status ¹.

Methods of biochemically verifying smoking status

Smoking status is most often biochemically verified using three main techniques: cotinine, carbon monoxide (CO) and thiocyanate. Each of these methods has associated benefits and disadvantages (see Table 6.1), with the choice of biomarker largely dependent on theoretical and practical considerations ³. Carbon monoxide was considered the most useful measure of smoking among clients attending social and community service organisations, given that it is inexpensive, non-invasive and acceptably accurate, and has potential clinical utility in providing immediate feedback as part of a smoking cessation intervention.

Table 6.1: Advantages and disadvantages of cotinine, carbon monoxide and thiocyanate for use as biochemical markers of smoking status

Measure	Advantages	Disadvantages
<i>Cotinine</i> (in saliva, urine or blood)	<ul style="list-style-type: none"> – Considered the most accurate measure (96%-97% sensitivity and 99%-100% specificity ¹) ^{2, 4, 5} – Long half-life (approximately 20 hours) – High correlation between measurement in saliva, urine and blood ^{3, 4, 6} – Measurement in urine and saliva is non-invasive ¹ 	<ul style="list-style-type: none"> – Measurement in blood is invasive ^{3, 4}, requires trained medical staff ³ and has high refusal rates – Measurement in urine is difficult in the field – Analysis requires storage and transport of specimens to a laboratory, which can be expensive ⁴ – Not suitable for individuals using nicotine replacement therapy ¹
<i>Carbon monoxide</i> (in expired air)	<ul style="list-style-type: none"> – Non-invasive ^{4, 7} – Simple to use ^{4 8} – Inexpensive ^{1, 4, 7, 8} – Minimal training required ^{4, 7} – Acceptably accurate (approximately 90% sensitivity and specificity ⁴) – Compact and portable ^{7, 8} – Results obtained rapidly ^{1, 7} – Calibration required infrequently ⁸ 	<ul style="list-style-type: none"> – Not as accurate as cotinine ^{1, 5} – Measurement can be influenced by lactose intolerance ⁹ and environmental sources of CO (e.g. traffic, heating, cooking emissions) ¹ – Cannot detect smokeless tobacco use ¹ – Relatively short half-life (6-9 hours) ¹
<i>Thiocyanate</i> (in saliva, urine or blood)	<ul style="list-style-type: none"> – Reasonably specific for heavy smoking 	<ul style="list-style-type: none"> – Not accurate at detecting light smoking – Cannot detect smokeless tobacco use ¹ – Measurement can be affected by diet

Aims and purpose

The following study aimed to determine the accuracy and acceptability of computer-administered self-report of smoking status among a low socio-economic population attending a social and community service organisation. The findings of this study were deemed essential for confidence in future assessments of smoking status in this population.

The following paper has been accepted for publication in *BMC Medical Research Methodology*, citation: Bryant J, Bonevski B, Paul C, Lecathelinais C. Assessing smoking status in disadvantaged populations: Is computer-administered self-report an accurate and acceptable measure? *BMC Medical Research Methodology*, 2011, 11:153. Doi: 10.1186/1471-2288-11-153. [Appendix 5.1]

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**Assessing smoking status in disadvantaged populations:
Is computer-administered self-report an accurate
and acceptable measure?**

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Abstract

Background: Self-report of smoking status is potentially unreliable in certain situations and in high-risk populations. This study aimed to determine the accuracy and acceptability of computer-administered self-report of smoking status among a low socio-economic status (SES) population.

Methods: Clients attending a social and community service organisation for welfare support were invited to complete a cross-sectional touch screen computer health survey. Following survey completion, participants were invited to provide a breath sample to measure exposure to tobacco smoke in expired air. Sensitivity, specificity, positive predictive value and negative predictive value were calculated.

Results: Three hundred and eighty-three participants completed the health survey, and 330 (86%) provided a breath sample. Of participants included in the validation analysis, 59% reported being a daily or occasional smoker. Sensitivity was 94.4% and specificity 92.8%. The positive and negative predictive values were 94.9% and 92.0% respectively. The majority of participants reported that the touch screen survey was both enjoyable (79%) and easy (88%) to complete.

Conclusions: Computer-administered self-report is both acceptable and accurate as a method of assessing smoking status among low-SES smokers in a community setting. Routine collection of health information using touch screen computer has the potential to identify smokers and increase provision of support and referral in the community setting.

Introduction

Accurate assessment of smoking status is crucial not only for monitoring smoking prevalence, but also for assessing the effectiveness of smoking cessation interventions. Meta-analysis has shown that the accuracy of self-reported smoking status is high when assessed in the general population, particularly in community settings ¹. However, self-report tends to be compromised during smoking cessation trials where social desirability bias may influence self-report, and among particular population groups where smoking is seen as undesirable, including among pregnant women ²⁻⁵ and individuals with smoking-related medical conditions, including respiratory diseases ^{6,7} and cancer ⁸. It has therefore been recommended that smoking status be validated using a biochemical marker in certain circumstances, including when assessing smoking status in special populations and in situations where contextual demand characteristics may influence the accuracy of reporting ⁹.

As a result of a comprehensive population-based approach to tobacco control, smoking rates in Australia have declined from 28.4% in 1989-1990 ¹⁰ to 16.9% in 2007 ¹¹. While Australia now has one of the lowest smoking rates in the developed world, rates remain significantly high among some disadvantaged sub-groups of the community ¹². For example, compared with the whole-population smoking prevalence rate of 16.9% ¹¹, smoking rates reported in the 2007 National Drug Strategy Household survey were 9%-21% higher among disadvantaged sub-groups, including individuals in the lowest SES quintile (the most disadvantaged; 25.9%), the unemployed (38.2%) and Aboriginal and Torres Strait Islanders (34.1%) ¹¹. These estimates are, however, based on self-report, the accuracy of which has not been established in highly disadvantaged or very low socio-economic status (SES) populations.

It is important to establish the accuracy of self-report as a measure of smoking status among very low-SES populations for a number of reasons, including examining whether social

desirability bias may be more or less evident among low-SES groups than it is for the general population. Individuals receiving government welfare or community social support may perceive a level of disapproval from others if such support is spent on tobacco products, thereby increasing the likelihood of falsely reporting to be a non-smoker. Alternatively, the greater prevalence of smoking in low-SES groups, as well as social norms conducive to smoking, may reduce such social desirability bias. In the absence of relevant data, it is difficult to know whether self-report data for disadvantaged populations provide over-estimates or under-estimates of the true prevalence of smoking in this population.

One method of assessing smoking status is using touch screen computer technology. Touch screen computers are an efficient and cost-effective way of collecting health information, often preferred over pen-and-paper methods ¹³. Touch screen computers have been found to be acceptable in a wide range of settings and population groups, including among patients in cancer treatment and rheumatology clinics ^{14,15}, clients of community drug and alcohol treatment centres ¹⁶, and in general practice ¹⁷. While the use of touch screen computers has been found to be acceptable among low-income populations in primary care ¹⁸, no studies have explored the accuracy or acceptability of computer technology for assessing smoking status in non-health settings.

This study aimed to determine the accuracy (i.e. sensitivity, specificity, positive predictive value and negative predictive value) and acceptability of computer-administered self-report of smoking among socially disadvantaged individuals accessing a social and community service organisation for welfare support.

Method

Design

Data were collected as part of a larger cross-sectional health survey. Data collection occurred between February and October 2010.

Setting and sample

One social and community service organisation in New South Wales, Australia, participated. Data was collected from three Social and community service organisations located in Sydney (two services) and a regional area (one service). Social and community service organisations are non-government, not-for-profit organisations that provide welfare services to highly disadvantaged individuals in the communities in which they are based. They provide a range of services to individuals, including financial and family counselling, temporary accommodation, food and material aid, and child and family support ^{19,20}. Participants were adult clients attending the social and community service organisation for emergency relief, which involved receiving financial or material assistance, including free grocery items, assistance paying bills and assistance with purchasing medications.

Recruitment and procedure

Service attendees were invited by their caseworkers at the end of their emergency relief interviews to complete a touch screen computer-administered health survey [Appendix 5.2]. Clients attending the services during the recruitment period who were aged over 18 years, able to speak or read English to a level that allowed completion of an English survey with or without assistance, and who were not distressed were eligible to participate. The gender and date of birth of non-consenting clients were collected to assess participation bias. Clients who consented to participate were introduced to a research assistant who provided support to

read and/or complete the survey as necessary. Following completion of the touch screen computer health survey, participants were asked to complete a pen-and-paper survey to determine the acceptability of using the touch screen computer [Appendix 5.3]. Participants were then asked to provide a breath sample to measure breath carbon monoxide (BCO) [Appendix 5.4]. Those who agreed provided written consent [Appendix 5.5]. Breath carbon monoxide is a portable, low-cost, immediate and non-invasive method of assessing smoking status ²¹, shown to have acceptable sensitivity and specificity ²². Prior to completing the health survey, participants were unaware that they would be asked to provide these samples.

Measures

Self-report: Survey items included questions about social demographics (e.g. gender, age, income, Aboriginal and Torres Strait islander status, employment and education), fruit and vegetable consumption, sun protection practices, smoking, physical activity, alcohol consumption and cancer screening behaviours [Appendix 1.4]. Only results relevant to the validation of smoking status will be reported here. All participants were asked, “Do you currently smoke tobacco products?” (response options: “Yes, daily”, “Yes, at least once a week”, “Yes, but less often than once per week” and “No, not at all”). Time since last cigarette was determined by asking, “When was the last time you smoked a cigarette, cigar or pipe?” (response options: “Less than 4 hours ago”, “Between 4 and 8 hours ago”, “Between 8 and 12 hours ago” and “Longer than 12 hours ago”). In order to examine discrepancies between self-reported smoking status and BCO, exposure to passive smoke and heaviness of smoking (using the heaviness of smoking index (HSI)) ²³ were examined as explanatory factors. All participants were asked, “In the last 24 hours have you been near other people who were smoking?” (response options: “Yes” and “No”). To enable the calculation of the HSI, smokers were also asked, “On an average day, how many cigarettes do you smoke?” and “How soon after waking

up do you smoke?" (response options: "Within 5 minutes", "6-30 minutes", "31-60 minutes" and "After 60 minutes").

Touch screen computer: All questions were presented on a touch screen computer using Digivey survey software ²⁴. The touch screen computer was a Dell Latitude XT2 (1.4GHz processor).

Breath carbon monoxide: Exhaled BCO measurements were obtained using a Bedfont Micro+™ Smokerlyzer® (Bedfont Scientific, UK, www.bedfont.com). Participants were asked to take a deep breath and hold for 15 seconds before exhaling slowly into the Smokerlyzer. Breath carbon monoxide monitors used in the study were calibrated by the manufacturer before the survey commenced. A cut-point of 6 parts per million (ppm) was used, as recommended by the manufacturer, to distinguish between smokers and non-smokers ²⁵.

Acceptability: Acceptability of touch screen computer use was assessed using six questions answered on a five-point Likert scale ranging from "Strongly agree" to "Strongly disagree". Items included "Completing the survey using the touch screen computer was enjoyable", "Completing the survey using the touch screen computer was easy", "Completing the survey using the touch screen computer was complicated", "Completing the survey using the touch screen computer was stressful", "I would be happy to complete a short survey about my health a few times a year when I come into [community service organisation]" and "I would prefer to answer this survey using a pen-and-paper survey".

Power calculation

Assuming that approximately 50% of clients attending the service would be smokers and a minimum required sensitivity and specificity of 80%, a sample of 300 participants would allow

estimation of sensitivity and specificity of self-report *versus* BCO with 95% confidence intervals within 6.4% of the point estimate.

Statistical analysis

Basic frequencies were calculated, and Chi-square tests and Fisher's exact tests used to explore differences between groups. Self-reported smoking status was compared with the established cut-point (6 ppm) to determine the sensitivity, specificity, and positive and negative predictive values of self-report against BCO, using BCO as the criterion measure. Due to the known short half-life of BCO, only individuals reporting daily or occasional smoking who indicated they had smoked a cigarette in the preceding 12 hours were included in the sensitivity and specificity analysis. The HSI was calculated by assigning a value of 0 for those reporting smoking 0-10 cigarettes per day (CPD), 1 for those reporting 11-20 CPD, 2 for those reporting 21-30 CPD and 3 for those reporting 31 or more CPD. Responses to "How soon after waking up do you smoke?" were assigned values of 0 for those reporting >60 minutes, 1 for those reporting 31-60 minutes, 2 for those reporting 6-30 minutes and 3 for those reporting <5 minutes. These two values were then summed to give a score with a range of 0 (low dependence) to 6 (high dependence).

Ethics approval

This study was approved by the University of Newcastle Human Research Ethics Committee [Appendix 1.3].

Results

Study sample

A participant flow diagram is provided in Figure 6.1. A total of 727 clients attended the three sites during the study period of which 552 were approached to participate. The main reasons for not being approached to participate included having already completed the survey at an earlier visit (71 clients), being assessed by service staff as not suitable to participate (e.g.

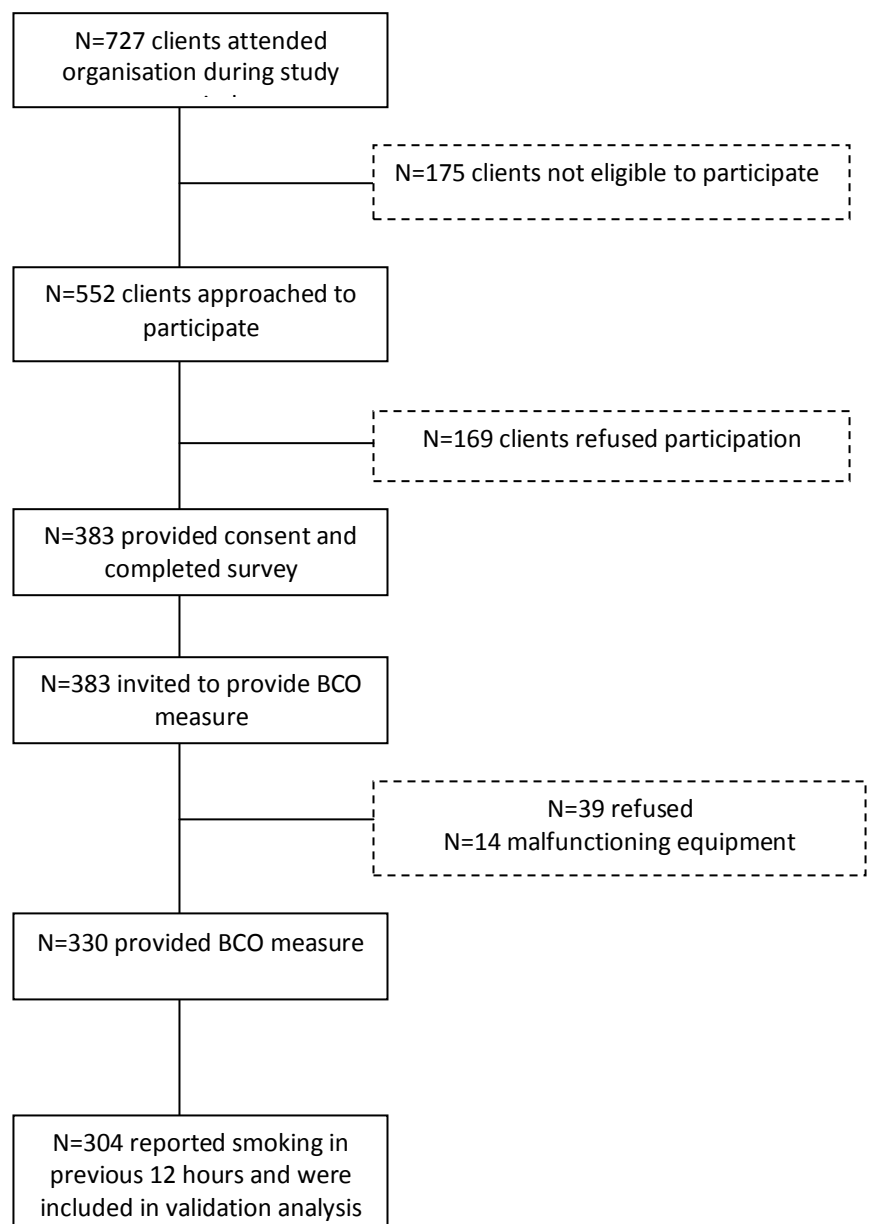


Figure 6.1. Participant flow diagram.

distressed, unwell, intoxicated or uncooperative, 39 clients) and not being able to speak or read English (13 clients). Fifty-four percent of participants reported an income of less than AUD\$300 per week, 49% were unemployed, 3% reported primary school as their highest level of education and 65% reported secondary school as their highest level of education. Male participants were more likely than female participants to agree to participate (76% vs. 67% respectively, $\chi^2=5.5$, $p=0.02$), and participants recruited from the two inner-city services were more likely to agree to participate than participants from the regional service (80% inner-city vs. 60% regional, $\chi^2=34$, $p<0.001$).

In total, 383 clients completed the touch screen survey (69% consent rate). Of these, 330 clients (86%) also provided a breath sample. Demographic details of the sample ($n=330$) are presented in Table 6.2. A total of 39 clients refused to provide a breath sample, and a further 14 clients could not provide a breath sample due to malfunctioning equipment. There were no statistically significant differences in gender, age, Aboriginal or Torres Strait Islander status, marital status, education, income, employment characteristics or smoking status between those consenting and those not consenting to provide a breath sample (see Table 6.2).

Self-reported smoking status

Of the clients included in the validation analysis ($n=304$), 59% ($n=179$) reported daily or occasional smoking (at least once per week or once per month). A total of 41% of clients ($n=125$) reported being current non-smokers (see table 6.3).

Table 6.2: Demographic characteristics and smoking status of whole sample (n=330) and participants not consenting to provide a breath tests (n=39)

		Validation sample (n=330)		Participants not consenting to breath test (n=39)		χ^2
		N	%	N	%	
Gender						
	Male	186	56	17	44	$(\chi^2=1.79,$ $p=0.18)$
	Female	144	44	22	56	
Age						
	≤29 years	45	14	5	13	$(\chi^2=1.64,$ $df=5,$ $p=0.90)$
	30-39 years	85	26	10	26	
	40-49 years	96	29	10	26	
	50-59 years	67	20	11	28	
	60-69 years	21	6	2	5	
	70 + years	16	5	1	3	
Aboriginal or Torres Strait Islander						
	Yes	39	12	3	8	$(\chi^2=0.51,$ $p=0.47)$
	No	291	88	36	92	
Marital status						
	Never married/single	178	54	22	56	$(\chi^2=0.36,$ $df=4,$ $p=0.46)$
	Married	24	7	5	13	
	De facto/living with partner	26	8	1	3	
	Divorced/separated	80	24	10	26	
	Widowed	22	7	1	3	
Highest level of education						
	Primary school	10	3	1	3	$(\chi^2=1.62,$ $df=4,$ $p=0.8)$
	High school years 7-10	157	48	15	38	
	High school years 11-12	58	17	7	18	
	TAFE	56	17	8	21	
	University degree	49	15	8	21	
Income						
	<\$200	53	16	5	13	$(\chi^2=7.4,$ $df=5,$ $p=0.19)$
	\$200-\$300	124	38	10	26	
	\$300-\$400	83	25	12	31	
	\$400-\$500	31	9	2	5	
	< \$500	19	6	6	15	
	Prefer not to answer	20	6	4	10	

	Validation sample (n=330)		Participants not consenting to breath test (n=39)		χ^2
	N	%	N	%	
Employment					
Full-time	4	1	0	0	
Part-time/casual	25	8	0	0	
Unemployed	162	49	19	49	($\chi^2=6.8$, df=7, $p=0.45$)
Student	15	5	3	8	
Unable to work	15	5	7	18	
Home duties	36	11	3	8	
Retired	38	12	3	8	
Other	35	11	4	10	
Smoking status					
Daily	181	55	17	44	($\chi^2=1.9$, df=3, $p=0.6$)
Occasional - weekly	13	4	2	5	
Occasional - monthly	11	3	2	5	
Non-smoker	125	38	18	46	

* Note: not all percentages add to 100% due to rounding.

Table 6.3: Smoking characteristics of participants included in validation analysis (n=304)

	Male	Female	Total	
	n	n	n	%
Self-reported smoking status				
Smoker - daily or occasional	108	71	179	59
Non-smoker	59	66	125	41
Time since last cigarette*				
<4 hours	99	66	165	92
4-8 hours	8	5	13	7
8-12 hours	1	0	1	1
Exposure to passive smoke in last 24 hours				
Exposure	138	99	237	78
No exposure	28	38	66	22
Missing	1	0	1	0.3
Heaviness of smoking index*				
1-2 (Low dependence)	39	26	65	36
3-4	45	35	80	45
5-6 (High dependence)	24	10	34	19

* Smokers only; n=179. Note: not all percentages add to 100% due to rounding.

Accuracy of self-reported smoking status vs. breath carbon monoxide

The smoking characteristics of participants included in validation analysis are reported in Table 5.2. Self-reported daily or occasional smokers (n=179) had a BCO reading greater than or equal to 6 ppm, indicating a sensitivity of 94.4% (CI 91.1%-97.8%). One hundred and sixteen self-reported non-smokers had a BCO reading below 6 ppm, indicating a specificity of 92.8% (CI 88.3%-97.3%). The positive predictive value was 94.9% and the negative predictive value was 92.0%. Nine participants (3% of the total sample) reported being non-smokers but returned a BCO reading at or above the 6 ppm cut-point. Ten self-reported daily or occasional smokers (3.3% of the total sample) returned a BCO below the 6 ppm cut-point. Heavy smoking index and exposure to passive smoke were analysed as explanatory variables for participants whose self-reported smoking status and BCO-measured smoking status were disparate. There were no differences in misclassification according to HSI ($p=0.12$) or exposure to environmental smoke ($p=0.57$).

Touch screen computer acceptability

Acceptability of touch screen computer use is reported in Table 6.4. The majority of participants agreed or strongly agreed that completing the touch screen computer was easy (88%) and enjoyable (79%), and disagreed or strongly disagreed that completing the survey was stressful (92%) or complicated (90%). Most participants (89%) agreed or strongly agreed that they would be happy to complete a survey about their health a few times per year. Only 18% of participants agreed or strongly agreed they would prefer to complete the survey using a pen-and-paper survey.

Table 6.4: *Acceptability (%) of touch screen computer use (N=330)*

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
Completing the survey using the touch screen computer was enjoyable	17	62	17	4	0
Completing the survey using the touch screen computer was easy	25	63	10	2	0
Completing the survey using the touch screen computer was complicated	0	4	5	67	23
Completing the survey using the touch screen computer was stressful	0	3	5	62	30
I would be happy to complete a short survey about my health a few times a year when I come into [community service organisation]	22	67	9	2	0
I would prefer to answer this survey using a pen-and-paper survey	5	13	24	40	17

[^] *Note: not all rows sum to 100% due to rounding*

Discussion

Because misreport often occurs when an individual fears disapproval regarding disclosure of smoking status ¹, emphasis has been placed on confirming self-report of smoking status using biochemical measures in high-risk population groups. Little work has examined the accuracy of self-reported smoking among highly disadvantaged smokers who are often heavily nicotine dependent and live in communities with high smoking rates and pro-smoking social norms. This study aimed to assess the acceptability and accuracy of computer-administered self-report of smoking among a low-SES population attending a social and community service organisation.

Our findings indicate a strong agreement between self-reported smoking status and BCO-measured smoking status, with just over 6% of participants (an equal number of self-reported smokers and non-smokers) misclassified by self-report. This was significantly lower than levels of misreport found among other population groups, including pregnant Indigenous women ²⁶. No correlation was found between reports of being exposed to passive smoke or heaviness of smoking and misclassification, suggesting that these smokers were misreporting their smoking status. These findings suggest that self-report is likely to be valid in determining smoking status in low-SES community populations.

The sensitivity and specificity for self-reported smoking against BCO at 94.4% sensitivity and 92.8% specificity are higher than mean figures derived in a review of validation studies using BCO in general community samples (i.e. 87% sensitivity and 89% specificity) ¹. A sensitivity analysis conducted using Receiver Operating Curve analysis (results not reported) found that by lowering the cut-point to 5 ppm, sensitivity and specificity further improved (96.7% and 91.2% respectively) and resulted in a greater percentage of participants being correctly classified (94.4%), compared with our cut-point of 6 ppm (93.6% correctly classified). Other published research has found that cut-points lower than those recommended are optimal for certain sub-groups ^{27, 28}. Future clinical research using BCO for monitoring or feedback should further explore optimal cut-off points. Further research is also needed to determine the accuracy of self-report among low-SES individuals in high-demand situations, such as during smoking cessation trials.

The high level of acceptability of touch screen computer use in this population supports research demonstrating the utility of touch screen technology as an efficient method of routinely collecting information in healthcare settings ^{16, 17, 29}. Participants rated the touch screen computer as easy to use and enjoyable, and agreed they would be happy to complete a

similar survey a few times each year. Given the high degree of acceptability, the potential for integrating the routine collection of health risk information into social and community service organisations should be further explored. These organisations are well-placed to provide advice and referral regarding healthcare needs to the large number of socially disadvantaged clients seen for welfare and social support. Collection of healthcare information *via* touch screen computer may provide an efficient way of identifying those smokers and providing assistance with social and healthcare needs simultaneously.

The high consent rate for BCO testing (86%) also indicates very good acceptability of BCO among clients attending the social and community service organisation. It was the experience of the authors that the immediate return of results to clients often started conversations about smoking and quitting, suggesting a potential role for BCO as a clinical tool to educate and motivate low-SES smokers who are not motivated to quit. While there is currently no strong evidence that biofeedback increases cessation attempts³⁰, BCO may be an acceptable and non-threatening way to engage hard-to-reach groups with smoking cessation and prompt advice and referral, especially given the high prevalence of smoking identified in this setting.

Limitations

As participants were not told that their smoking status would be verified prior to self-report of smoking status, these results may not be generalisable to situations where individuals are aware that the accuracy of their report will be confirmed. The limitations of BCO as a biochemical confirmer of smoking status should also be recognised. Because BCO is a short-term measure of exposure to tobacco smoke, with a half-life of 2-8 hours⁹, it is possible that self-reported smokers who had consumed their last cigarette earlier than within 2-8 hours of providing a breath sample may have been incorrectly classified by BCO as non-smokers. To control for the short half-life, we included in the sensitivity analysis only the smokers who

reported smoking their last cigarette within the preceding 12 hours. Further, compared with other biochemical measures of confirming smoking status, such as cotinine, BCO may not detect very low levels of smoking. However, these limitations are outweighed by the practical advantages of using BCO, which is an immediate, low-cost and portable measure of confirmation.

Conclusions

Computer-administered self-report is an accurate and acceptable method of assessing smoking status in a low socio-economic status sample of smokers in a community setting, with a low rate of misclassification identified. Routine collection of health information *via* touch screen computer holds potential as a way to improve the health of low socio-economic status individuals attending community welfare organisations.

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PAPER SIX

**Tackling tobacco in severely disadvantaged populations:
Assessing the acceptability and feasibility of smoking cessation
support provided by community service organisations**

Introduction to Paper Six

To gain a better understanding of the acceptability and feasibility of integrating smoking cessation support into the community service setting and to identify opportunities for further enhancing effectiveness, an examination of the feasibility, acceptability and preliminary effectiveness of cessation support delivered by social and community service organisations is needed. Feasibility pilot studies are an important step in determining whether an intervention is appropriate for further testing, as well as identifying any modifications in recruitment, research methods or research protocol that need to be made to increase uptake and effectiveness ¹.

The importance of systems-based organisational change

Given that smoking is deeply entrenched in social and cultural norms, a systems-change approach that extends beyond the clinical treatment of tobacco dependence is likely to be critical to the success of smoking interventions. Systems-change interventions encourage the implementation of comprehensive policies and practices to identify smokers and provide evidence-based cessation treatment as part of routine care ^{2,3}. According to Fiore et al., core elements of systems-change approaches to smoking cessation include ²:

1. Implementing a system to ensure smoking status is identified and recorded
2. Providing education, resources and feedback to promote staff intervention
3. Dedicating staff to provide tobacco-dependence treatment
4. Promoting organisational policies that support and provide tobacco dependence services.

A growing body of evidence has demonstrated the promise of systems-based interventions, and a focus has been recommended for disadvantaged populations given their high rates of smoking ². The following pilot study aims to examine the above elements.

Developing an intervention to increase likelihood of uptake and adherence

There is a clear gap between evidence and practice in many areas of healthcare. However, research suggests that interventions are more likely to be adopted by healthcare providers if ⁴:

- **The intervention** is low-cost, requires minimal time and staff expertise, is easy to learn and understand, is designed to be self-sustaining, considers user needs, is developed in consultation with users and is flexible.
- **The intended setting of the intervention** is stable, there are adequate time, resources and organisational support to implement the intervention, if prevailing work practices complement the intervention and if the intervention takes account of the specific needs and unique aspects of the clients, the staff and the setting.
- **The research design** ensures a representative sample, evaluates cost, reach and adoption, and assesses implementation and sustainability of the intervention.

Aims and purpose

With the above principles and the results of formative work in mind, a smoking cessation intervention to reduce smoking among disadvantaged clients of social and community service organisations was developed. Support workers were trained in brief intervention using the 5 As (Assess, Advise, Agree, Assist, Arrange) technique, as well as brief motivational interviewing. These components were considered to be simple, brief, easily integrated into usual care with minimal disruption, and able to be delivered consistently. Given that cost is a frequently reported barrier to nicotine replacement therapy (NRT) use among smokers of low

socio-economic status, as well as the findings of focus groups which identified the availability of free NRT as a highly desired strategy by both staff and clients, free NRT for the duration of the program was also provided.

The final paper of this thesis aims to describe the acceptability and feasibility of a smoking cessation intervention implemented at a social and community service organisation in Sydney, Australia. Specifically, it aims to examine the perceived usefulness of smoking cessation training, the acceptability from the perspective of staff of providing support, the acceptability from the perspective of clients of receiving support, and the resultant effects on staff self-report of care provided and client self-report of smoking care received.

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[Appendix 6.1]

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**Implementing a smoking cessation program in
social and community service organisations:
A feasibility and acceptability trial**

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Alcohol Review. In press. Doi: 10.1111/j.1465-3362.2011.00391.x. [Appendix 6.1]

Abstract

Background: Novel ways of accessing and engaging smokers who are socially and economically disadvantaged may help reduce socio-economic disparities in smoking rates. This study assessed the feasibility and acceptability of integrating smoking cessation support into usual care at a social and community service organisation.

Methods: One social and community service organisation providing a Personal Helpers and Mentors program participated. Support workers were provided with training in 5 As (Assess, Advise, Agree, Assist, Arrange), brief motivational interviewing and use of nicotine replacement therapy, and then recruited clients into a six-month smoking program. Acceptability and feasibility were assessed prior to receiving training and at three and six month follow-up for support workers, and at enrolment into the program and at four and six month follow-up for clients.

Results: Six support workers (67%) and 20 of their clients (65%) participated. Overall acceptability of the program was high, particularly among clients. The amount of time spent talking about smoking increased from 3.8 minutes per visit at baseline to 15.5 minutes at six month follow-up. There was a significant reduction in the number of cigarettes smoked, from 20.5 cigarettes per day at baseline to 15 cigarettes per day at six month follow-up ($p=0.04$).

Conclusions: Social and community service organisations are both interested in and capable of providing smoking care, and the majority of clients found the smoking cessation intervention acceptable and helpful. Given the demonstrated acceptability and feasibility of this approach, further research to determine its effectiveness is warranted.

Introduction

The socio-economic gradient in smoking prevalence is well-documented, with significantly higher smoking rates found among those of lower socio-economic position ^{1,2}. While individuals experiencing multiple forms of social and economic disadvantage, including low income, low educational attainment, unemployment, homelessness, social isolation and mental illness (hereafter referred to as disadvantaged smokers), attempt to quit at rates similar to those of other smokers, they are less likely to succeed ³⁻⁵. Factors which appear likely to contribute to poor success rates include smoking for a longer period of time ⁴, higher rates of nicotine dependence ^{6,7}, lower self-efficacy to quit ⁷ and being less likely to receive assistance to quit ⁸. Given that these factors may operate synergistically, there are strong grounds for providing cessation programs that specifically target disadvantaged smokers.

One potential access point for supporting disadvantaged smokers may be social and community service organisations ^{9,10}. These organisations are non-government, not-for-profit organisations that provide welfare services, such as financial and material support, personal and social support, and general information and advice, to individuals in need. These organisations are well-placed to deliver smoking care to highly disadvantaged smokers, as they have regular contact with a high proportion of marginalised groups, are able to address smoking alongside other issues faced by their clients, and are in a position to provide tailored support. The sector is also large, with approximately 5,769 not-for-profit social services organisations operating in Australia ¹¹.

Several recent studies have identified support for the provision of smoking care in the social and community service organisation setting ^{9,10,12}. Clients attending a Salvation Army service for emergency assistance in the United States found it acceptable to have their smoking

addressed with a very brief thirty- second intervention ¹⁰, and the provision of training has been found to increase staff knowledge, skills and confidence in addressing tobacco-related issues ¹². While these studies suggest the social and community service setting holds potential for addressing smoking, a number of barriers to providing support have been identified ⁹. These include perceived client disinterest, lack of resources, and competing priorities such as homelessness and poverty ⁹. Currently, there is a lack of sound evidence about whether these barriers can be overcome and smoking care integrated into the routine work of social and community service organisations.

This study aimed to determine the feasibility and acceptability of integrating the delivery of smoking cessation support into usual care at a social and community service organisation serving highly disadvantaged smokers, as well as to assess the impact of the program on client smoking.

Method

Setting

One social and community service organisation providing an Australian government-funded Personal Helpers and Mentors program (PHaMs) participated. These programs operate across Australia, providing support to individuals living in the community who are recovering from mental illness and need help managing daily activities. To be eligible for participation, clients must score ≥ 3 on the PHaMs Eligibility Screening Tool ¹³ (indicating impaired functioning with regard to personal capacity activities, community participation and independent living), must be willing to address any dual-diagnosed co-morbid drug and alcohol issues, and reside in a defined postcode area ¹⁴. The PHaMs program adopts a strengths-based recovery approach. Clients generally engage with the service for 6-12 months.

Smoking care program

The smoking care program was developed on the basis of formative qualitative research⁹ and published evidence of the effectiveness of behavioural interventions with disadvantaged groups¹⁵. PRIME theory was used as the guiding theoretical framework to inform the development of an intervention that emphasised repeated brief intervention and motivational interviewing¹⁶. Aspects of Diffusion of Innovation theory (relative advantage, compatibility and complexity) were also incorporated to ensure the program was compatible with the organisation's systems and to facilitate uptake¹⁷. Support workers were involved in determining the structure and content of the program, which was designed to be flexible and easily integrated into usual care with minimal burden.

Support worker training

A one-day training workshop was delivered by an experienced tobacco educator. Training provided a rationale for incorporating smoking cessation into usual care, as well as instruction on assessing nicotine dependence using the heaviness of smoking index (HSI)¹⁸, training in the use of the 5 As (Assess, Advise, Agree, Assist, Arrange) brief intervention¹⁹, brief motivational interviewing²⁰ and the use of nicotine replacement therapy (NRT). A booster training session was conducted three months after the initial session to answer questions and review skills.

Counselling, information and support

Support workers were encouraged to use the 5 As at each visit with their clients during the intervention period. This included 1) asking about and recording smoking status in case notes, 2) assessing willingness to quit, 3) providing advice to quit, 4) providing support and encouragement to quit and 5) arranging follow-up. Support workers were provided with

resources including a tailored quit plan, referral forms to the telephone Quitline, informational pamphlets and self-help resources.

Free nicotine replacement therapy

Free NRT could be accessed by clients directly from support workers or from local participating pharmacies for the duration of the study. The use of NRT was optional but strongly encouraged. All types and strengths of NRT were available (i.e. gum, inhaler, patch, lozenge and microtab). Support workers determined NRT type and strength based on client preferences and manufacturer recommendations. Clients were encouraged to use multiple forms of NRT if they were heavily nicotine-dependent (defined as HSI \geq 5).

Procedure

Support workers

Support workers at the participating service were invited to attend a one-day training workshop. Support workers completed a pen-and-paper survey prior to the commencement of training and follow-up surveys three and six months later [Appendices 6.2, 6.3, 6.4 and 6.5].

Clients

Eligible clients were invited by their support workers to enrol in a quit smoking program [Appendices 6.6 and 6.7]. Eligible clients were adults currently engaged with the PHaMs program who reported daily smoking and were willing to talk about their smoking with their support workers. Clients completed a baseline survey at enrolment [Appendix 6.8], and follow-up surveys four and six months later [Appendix 6.9].

Measures

Support worker surveys

Demographic and work characteristics, including gender, age, smoking status, highest level of education, time in current position and client caseload, were collected at baseline. At each follow-up point, support workers were asked to indicate how often they provided quit support to clients (e.g. asking and recording smoking status, assessing motivation to quit, advising clients to stop smoking and assisting clients to quit by providing support, encouragement and free NRT) and how much time (in minutes) they spent at each visit discussing tobacco use. Usefulness of training was assessed using five items at three month follow-up. Program acceptability was assessed using seven items at six month follow-up.

Client surveys

Demographic information was collected at baseline. The short version Patient Health Questionnaire (PHQ-2) was used to screen for depression²¹. Smoking status was assessed by asking, "Do you currently use tobacco products?" with response options, "Yes, daily", "Yes, at least once per week", "Yes, at least once per month" and "No, not at all". Smoking cessation was assessed at follow-up by asking, "Have you smoked a cigarette, even a puff, in the past 7 days?" with response items "Yes" and "No". Clients were asked if they had tried to reduce the number of cigarettes they smoked in order to quit, how interested they were in quitting smoking, their intention to quit smoking in the future, the amount spent on tobacco each week, and the number of cigarettes smoked on average each day. At four and six month follow-up, clients were asked about the types of cessation support they had received from their support workers and whether the clients had initiated NRT use (including the type and length of use), their perceptions of the service¹⁰ and the acceptability of the program.

Analysis

Descriptive statistics (frequencies and proportions) were used to describe demographic and smoking characteristics. Due to the small number of participants, response categories using a five-point Likert scale were collapsed into a three-point Likert scale: “Strongly agree or agree”, “Neither agree nor disagree” and “Strongly disagree or disagree”. Paired t-tests were used to examine changes from baseline to follow-up where appropriate. The study was approved by the University of Newcastle Human Research Ethics Committee [Appendix 6.10].

Results

Client demographics and smoking status

Thirty-one smokers were approached to participate by nine support workers. Twenty provided consent and completed a baseline survey (consent rate 64.5%). One client died between baseline and the first follow-up. Seventeen clients completed the follow-up survey at four months (89%), and 13 clients (68%) completed the follow-up survey at six months.

Demographic and smoking characteristics are reported in Table 7.1.

Support worker outcomes

Nine support workers participated in training and completed the initial survey. Six support workers had clients who enrolled in the program and thus were included in the study. All support workers completed the three month follow-up survey. One support worker left the service between the three and six month follow-up points. The remaining five workers completed the six month follow-up survey. At baseline, 50% of participating support workers were male, and participants had an average age of 26.5 years ($SD=3.78$). All but one support worker had a university degree. None was a current smoker. Support workers had an average caseload of 9.5 clients, and all had been in their current positions for less than 12 months.

Table7.1: Demographic characteristics of participating clients at baseline (N=20)

	M	SD
Age	39.84	14.22
Average number of years smoked	23	13.3
	N	%
Gender		
Male	10	50
Female	10	50
Education		
Secondary school years 7-10	9	45
	4	20
Secondary school years 11-12	4	20
TAFE	3	15
University degree		
Income		
\$100-\$200	4	20
	5	25
\$200-\$300	6	30
\$300-\$400	3	15
>\$500	2	10
Prefer not to answer		
Aboriginal or Torres Strait Islander		
Yes	2	10
	18	90
No		
Employment		
Currently unable to work	12	60
	4	20
Unemployed	1	5
	1	5
Part-time or casual employment	1	5
Student	1	5
Retired		
Home duties		
PHQ-2		
Depressed mood - yes	18	90
	12	60
Anhedonia - yes		

Smoking status		
Daily	20	100
Attempted to quit smoking previously		
Yes	17	85
No	3	15
Intention to quit		
Next 30 days	7	35
	9	45
Next 6 months	1	5
Sometime, but not in next 6 months	3	15
Don't know		

Usefulness of training and program acceptability

Support worker ratings of the usefulness of training and program acceptability are reported in Table 7.2. Most components of the training were rated as somewhat or very useful, with all caseworkers rating access to free NRT as somewhat or very useful. Program acceptability was generally high. All support workers agreed that providing quit support did not have a negative effect on their relationships with clients and were happy to attend extra training. Two support workers thought that providing support was difficult, and more than half either agreed or were undecided about whether providing support to clients took too much time. Most agreed it would be better to refer clients to external programs than provide support within the PHaMs program.

Table 7.2: Support worker ratings of the usefulness of cessation training and resources at 3 month follow-up (n=6), and program acceptability at six month follow-up (n=5)

Usefulness of training	Not at all useful	Somewhat useful	Very useful
How to approach the issue of smoking	0	3	3
Appropriate use of nicotine replacement therapy	0	3	3
Use of motivational interviewing	1	3	2
Quit kits, Quit plans and Quitline referral forms	0	4	2
Access to free nicotine replacement therapy*	0	0	5
Program acceptability	Strongly agree or agree	Neither agree nor disagree	Strongly disagree or disagree
Providing quit support is not too difficult	3	0	2
Providing quit support does not take up too much time	2	1	2
Providing quit support has had a negative effect on my relationships with clients	0	0	5
The majority of my clients were receptive to talking about their smoking	4	0	1
It would be better to refer clients to external quit programs than provide support within PHaMs	4	1	0
I would be happy to attend further training to revise or improve my quit smoking skills	5	0	0
I would recommend training to other support workers working with disadvantaged clients	5	0	0

* Note: one participant answered "Not applicable" to this question

Provision of support

Assessing willingness to quit, providing advice to quit smoking and providing access to NRT increased from baseline to three month follow-up, and then decreased at six month follow-up (Table 7.3). The average amount of time spent discussing tobacco use increased from 3.8 minutes per visit at baseline (SD=2.6, range 0-7.5 minutes) to 33.3 minutes at three month

follow-up (SD= 43.3, range 5-120 minutes), and then decreased to 15.5 minutes per visit at six month follow-up (SD=8.7, range 7.5-30 minutes).

Table 7.3: Support worker provision of support at baseline (n=9), three month follow-up (n=6) and six month follow-up (n=5)

		Never or rarely	Some-times	Often or almost always
Ask about smoking status?	<i>Baseline</i>	3	3	3
	<i>3 months</i>	0	1	5
	<i>6 months</i>	1	1	3
Assess willingness to quit?	<i>Baseline</i>	3	5	1
	<i>3 months</i>	0	2	4
	<i>6 months</i>	1	2	2
Advise to stop smoking?	<i>Baseline</i>	6	3	0
	<i>3 months</i>	2	1	3
	<i>6 months</i>	2	1	2
Provide support and encouragement?	<i>Baseline</i>	5	1	3
	<i>3 months</i>	0	0	6
	<i>6 months</i>	0	1	4
Provide access to nicotine replacement therapy?	<i>Baseline</i>	9	0	0
	<i>3 months</i>	1	2	4
	<i>6 months</i>	0	3	2

Client outcomes

Program acceptability

Client ratings of program acceptability are reported in Tables 7.4 and 7.5. The majority of clients agreed that it was probably or definitely acceptable to be asked about their smoking by their support worker, and all but one agreed that they would return to the service in the future.

Support received

Client reports of support received during the program are shown in Table 7.6. The majority of clients (70%) initiated NRT use during the program. However, few reported using NRT consistently.

Table 7.4: *Client acceptability of the smoking care program at four month (n=17) and six month follow-up (n=13)*

		Strongly agree or agree	Neither agree nor disagree	Strongly disagree or disagree
Talking to my support worker about my smoking was helpful	4 months	14	0	2
	6 months	12	1	0
Talking to my support worker about my smoking made me think about quitting	4 months	14	1	0
	6 months	9	4	0
I did not like being asked about my smoking by my support worker	4 months	2	3	10
	6 months	0	4	9

Table 7.5: Client acceptability of the smoking care program at four month (n=17) and six month follow-up (n=13)

		Definitely not	Probably not	Probably yes	Definitely yes
Was it OK to be asked about your smoking by your support worker?	4 months	0	1	5	10
	6 months	0	1	3	9
Would it be OK to be asked about your smoking at your next visit?	4 months	0	3	4	9
	6 months	0	1	3	9
Would you return to [organisation] to use other services?	4 months	1	0	7	8
	6 months	0	0	5	8

Table 7.6: Client reports of support received at four month (n=17*) and six month (n=13) follow-up

		Yes	No
Asked about smoking	4 months	13	2
	6 months	8	5
Asked if interested in quitting	4 months	13	2
	6 months	6	7
Advised to quit	4 months	9	6
	6 months	4	9
Received support and encouragement	4 months	12	3
	6 months	5	8
Received free nicotine replacement therapy	4 months	12	3
	6 months	5	8
Referred to Quitline	4 months	6	9
	6 months	2	11
Referred to general practitioner	4 months	3	12
	6 months	1	12

* Data from two participants missing at four month follow-up.

Smoking characteristics at six month follow-up

At six month follow-up, no participants reported seven-day point prevalence abstinence.

However, all participants (100%) reported that they had reduced the number of cigarettes they smoked in order to quit. There was a significant reduction in the number of cigarettes smoked by participants, from 20.5 cigarettes per day (SD=9.9, range 8-45) at baseline to 15 cigarettes per day (SD=9.3, range 4-40) at six month follow-up ($t=2.26$, $p=0.04$). There was a non-significant reduction in money spent on tobacco per week, from an average of AUD\$70.95 at baseline (SD=35.9, range \$25-\$140) to \$60.69 (SD=42.3, range \$12-\$145) at six month follow-up ($t=1.13$, $p=0.28$).

Discussion

Our findings support evidence that training social and community service organisation staff to provide cessation support is feasible and acceptable^{10,12}. All components of training were rated as somewhat or very useful by the majority of support workers, and all support workers reported that they would recommend training to others. Recently, Cancer Council New South Wales has provided smoking care training to more than forty social and community service organisations across New South Wales, further demonstrating acceptability and interest in this type of program across a range of services. The finding that two-thirds of eligible clients enrolled in the program and 68% were retained at six month follow-up provides further evidence of the feasibility of this approach for a traditionally hard-to-reach group, and supports earlier work showing strong client support for receiving cessation assistance in this setting^{9,10}.

While support worker attitudes towards the program were positive overall, feedback at six month follow-up suggested that many believed that providing support took too much time,

and that referral to external programs would be preferable. Evidence of the relative effectiveness of integrating support into the social and community service setting *versus* using social and community service organisations as a referral point to existing services is needed to enable organisations to consider the relative costs and benefits of providing in-house cessation support. Despite these concerns, the amount of time spent addressing smoking during routine visits increased following training. Provision of the 5 As at three month follow-up was similar to levels reported in a similar larger trial ¹².

While NRT increases the success of quit attempts, the cost is often prohibitive to smokers on a low income ²². Although development of the intervention drew heavily on formative research which identified strong support for the provision of free NRT ^{9, 22}, overall uptake and use were inconsistent. Poor adherence to NRT has been found for a number of highly disadvantaged groups, including in community-based trials with adolescents ²³ and homeless smokers ²⁴. Heavily subsidised NRT patches became available *via* prescription in Australia in February 2011 for individuals receiving government welfare benefits. Rates of uptake are yet to be determined.

No participants reported seven-day point prevalence abstinence. However, there was a significant reduction in the number of cigarettes smoked, and at six month follow-up all participants reported reducing the number of cigarettes smoked in order to quit. This is a positive finding, although complete abstinence remains the ultimate goal ²⁵.

Limitations

Difficulties obtaining data from clients meant that the first follow-up occurred four months post-baseline, rather than three months post-baseline as planned. The small sample size limits

the generalisability of conclusions and resulted in wide standard deviations. An adequately powered, randomised controlled trial which will provide rigorous evidence of the effectiveness of providing cessation support in this novel setting is currently underway²⁶. Client diagnosis was not assessed. This means it is likely that the study population comprised a heterogeneous mix of mental illness of varying types and severity.

Conclusions

Innovative methods for accessing and engaging disadvantaged smokers may help reduce the burden of smoking-related morbidity and mortality that falls disproportionately on individuals of lower socio-economic position. This study adds to the emerging literature demonstrating the potential of a novel setting in providing cessation support to highly disadvantaged smokers. Given the size and potential reach of the sector, further well-controlled trials to evaluate the effectiveness of this approach in reducing smoking rates among this disadvantaged group are needed.

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DISCUSSION AND CONCLUSIONS

Introduction

Social and community service organisations provide a setting offering contact with a large proportion of disadvantaged smokers. However, despite the potential for offering smoking cessation advice and support in this setting, prior to the research presented in this thesis there was: 1) limited evidence of these organisations' interest in addressing smoking or of the acceptability of this notion, 2) no Australian evidence of the interest of clients in receiving this type of support, and 3) little knowledge of the effectiveness of smoking cessation training for non-traditional healthcare providers such as social workers.

In order to test feasibility, acceptability and limited efficacy of social and community service organisations as a way of reaching the socially disadvantaged for smoking cessation, the Medical Research Council guidelines for the development and evaluation of complex interventions¹ and a framework for designing feasibility studies² were consulted. Key areas of focus identified included assessing the acceptability, demand, implementation, practicality, adaptation, integration, expansion and efficacy of the approach². Each paper in this dissertation aimed to address one or several of these key feasibility concepts by exploring social and community service organisations as novel settings for the delivery of smoking cessation support to disadvantaged smokers. The final section of this thesis will provide a summary of findings and discuss implications of this work for future research and practice.

Main findings and implications

Value of social and community service organisations as a setting for reaching a large number of disadvantaged smokers

Paper one found that 61.4% of clients accessing social and community service organisations reported daily or occasional smoking, a rate which is more than three times higher than the

current population smoking rate of 15.1%³. Encouragingly, 56.6% of smokers also reported being “quite” or “very” interested in quitting, and 52.8% of smokers reported an interest in receiving support from staff of social and community service organisations to quit. These findings strongly support social and community service organisations as a setting for reaching vulnerable groups for smoking cessation. This is particularly important, given that clients of social and community service organisations contain an over-representation of nationally recognised target groups such as single parents, Aboriginal and Torres Strait Islanders, and those receiving social welfare payments⁴. The Australian Council of Social Services reports that member social and community service organisations provided services to disadvantaged clients on more than 4.3 million occasions in 2009⁴. Assuming a smoking rate of 62% and that 53% of clients would accept support, social and community service organisations could provide support to smokers on nearly 1.5 million occasions each year. If a conservative 3% of smokers provided with support were to quit as a result of support in the social and community service setting, there would be 45,000 fewer smokers each year, at no cost to the federal or state government health budgets. Given that these quitters would be from socially disadvantaged groups, consistent and effective social and community service organisation based intervention has the potential to make a significant contribution to reducing the social gradient in smoking prevalence in Australia.

Acceptability and feasibility of providing cessation support in the social and community service setting

Both qualitative and quantitative work has provided evidence to support the acceptability and feasibility of integrating support into the social and community service setting. The benefits of social and community service delivered support from the perspective of staff and clients (Paper Two) are summarised in Table 8.1. In qualitative work, managers and staff acknowledged that smoking was detrimental to their clients’ wellbeing, and considered the

provision of support as an appropriate component of their role as carers. They expressed a willingness to provide support to clients, with a preference for low-intensity strategies such as asking about and recording client smoking status, and providing information, brief advice, general support and referral. For clients, the opportunity to receive support, encouragement and praise to quit smoking from staff at social and community service organisations was viewed positively. The elements of personal relationships and trust were considered by both staff and clients to be major advantages of receiving support in the community service setting. These findings have since been replicated by other qualitative work conducted with disadvantaged families accessing non-government community service organisations ⁵.

Further evidence of the acceptability of the social and community service setting is provided by the uptake of strategies implemented by the state-based Cancer Council's Tackling Tobacco Program. Implemented concurrently with this research, since 2006 the Tackling Tobacco Program has delivered more than 40 workshops, seminars and conference sessions on smoking in the community service sector, and has delivered training to more than 1,500 community sector staff from over 370 services. This emphasises the increasing interest of the social and community service sector in tobacco control, and highlights the potential to build capacity within the sector. Importantly, non-government social and community service organisations are increasingly being recognised as having potential to play a central role in representing marginalised groups and advocating for delivering health and health-related services to these groups ^{6, 7}.

The feasibility of both engaging clients with smoking cessation support and integrating it into usual care was also demonstrated (Paper Six). The study was able to recruit 65% of eligible participants into a smoking trial and to follow up 68% of participants after six months. The

provision of brief support at three month follow-up was similar to levels of support reported in a similar larger trial ⁸.

Barriers needing to be addressed to facilitate widespread adoption

While our findings provide evidence of the potential of social and community service organisations as a setting for engaging a traditionally hard-to-reach group for smoking cessation, it also identified barriers which could limit implementation unless they are able to be addressed (Paper Two). These barriers are outlined in Table 8.1. For example, while managers and staff acknowledged the potential benefit to clients of providing cessation care, provision of such support was seen as a lower priority, compared with the provision of other types of welfare support. Lack of resources, time and training to provide quit smoking services were also identified as barriers, and there was some concern that raising the issue of smoking might appear judgemental or harm rapport with the clients ⁹. Providing training and education for staff about the importance of addressing smoking as a long-term health and financial issue and how to approach clients to provide support in a non-judgemental way appeared to address these concerns. It may also be possible to develop models whereby smoking cessation is better integrated into care delivery in a holistic manner. In the pilot study, the majority of support workers rated training highly, and the amount of time spent talking about smoking increasing from 3.8 minutes per visit at baseline to 15.5 minutes at six month follow-up ¹⁰, suggesting that the provision of training can help overcome these barriers.

A second potential barrier identified as part of support worker feedback during the pilot trial (Paper Six) was that many believed that providing support took too much time, and that referral to external programs would be preferable. Evidence of the relative effectiveness and costs of integrating support into the social and community service setting *versus* using organisations as a referral point to other existing services are needed. This information would

allow organisations to consider the relative costs and benefits of providing in-house cessation support. The only widely available cessation service in Australia is the telephone Quitline, which has been shown to have a low degree of acceptability among disadvantaged smokers ⁹. If a referral model is to be trialled, further research into how Quitlines may better meet the needs of disadvantaged groups is important.

Accuracy and acceptability of computer-administered self-report of smoking status

While the accuracy of self-reported smoking status has been established in the general population, it had not been previously investigated among highly disadvantaged clients attending social and community service organisations. Validation of self-reported smoking status using exhaled breath carbon monoxide (BCO) with a cut-point of 6 ppm resulted in 94.4% sensitivity and 92.8% specificity. These findings indicate a strong agreement between self-reported smoking status and BCO-validated smoking status, and suggest that self-report is an accurate method of determining smoking status in a low socio-economic status, community-based population (Paper Five).

While the sensitivity and specificity for self-reported smoking against BCO were found to be higher than those derived in a review of validation studies in general community samples (i.e. 87% sensitivity and 89% specificity ¹¹), there is new debate about the cut-point used to determine sensitivity and specificity, with suggestions that different patterns of smoking, as well as socio-economic and cultural differences, may alter the optimal BCO cut-point ¹². A cut-point of 8– 10 ppm has traditionally been used to discriminate between smokers and non-smokers. However, several recent studies have suggested that BCO cut-points as low as 2-6 ppm are optimal ^{12, 13}. For example, in a recent study conducted with female prisoners, Cropsey et al reported that a significantly lower cut-point of 3 ppm resulted in the highest

sensitivity and specificity in circumstances where participants had few situational demands to provide false information about their smoking status¹³. Using a cut-point of 8-10 ppm with our sample of smokers would have decreased sensitivity by 7.8% to 15%, resulting in a high number of smokers being incorrectly classified as non-smokers. Given the methodology of the study, we were unable to examine the optimal cut-point for use in this population. Future research should attempt to derive the optimal cut-point for this population, where smokers are likely to vary or limit their intake depending on fluctuating finances. Further research is also needed to establish the validity of self-report in this population in high-demand circumstances, such as when clients are involved in a smoking cessation program.

Limited ability to generalise these findings

The ability to generalise these findings of acceptability and feasibility to other community social services should also be considered. It is likely that the ability to provide smoking cessation support will vary from service to service and be largely dependent on the nature, frequency and length of contact with individual clients, the types of support provided, the expertise of staff and the specific needs of clients who are receiving care. Comprehensive staff training, tailoring strategies and their format of delivery, and offering a menu of evidence-based cessation strategies are likely to be necessary for widespread uptake in this setting. Examination of the acceptability, feasibility and effectiveness of this approach in other types of social and community service organisations that have more, less, or irregular contact with clients (for example, drug and alcohol treatment centres, residential care, supported accommodation services, and services providing one-off financial assistance) is needed before these findings can be generalised to the broader community services sector. As social disadvantage covers a wide range of population groups, the limited ability to generalise these findings to other groups such as the homeless and prisoners should also be acknowledged.

Table 8.1: *Summary of qualitative findings: benefits and barriers to providing support, from the perspective of staff; and benefits of receiving support from social and community service organisations, and barriers to quitting, from the perspective of clients*

	Benefits of social and community service organisation delivered support	Barriers to providing support
Staff	<ul style="list-style-type: none"> • Acknowledgment that smoking is detrimental to client wellbeing and finances • Provision of support considered an appropriate component of their role as carers and a good fit with the goals of the organisation • Trusting relationships with clients • Safe and comfortable setting for clients to receive support 	<ul style="list-style-type: none"> • May negatively impact on ability of organisation to provide other types of welfare support • Support more appropriately provided through specialist external organisations • Low priority compared with other types of support • Inadequate time and skills • Reluctance to raise issue with clients
	Benefits of social and community service organisation delivered support	Barriers to quitting
Clients	<ul style="list-style-type: none"> • Desire for encouragement to quit • Client familiarity with staff and organisation • Ability to receive face-to-face support • Ability to receive support from the same person over time 	<ul style="list-style-type: none"> • Poor self-efficacy for quitting • Poor knowledge of available support • Misconceptions about the use and effectiveness of nicotine replacement therapy • Fear of gaining weight • Limited use of available support such as Quitline • High cost of nicotine replacement therapy • Strong pro-smoking community norms

Dearth of literature on how best to help socially disadvantaged smokers to quit

Despite the obvious importance of reducing smoking prevalence among socially disadvantaged smokers, our review (Paper Four) identified a dearth of evidence about effective interventions for socially disadvantaged groups. Few well-controlled trials were identified, especially among the homeless, Indigenous people and prisoners. There is a clear need for further research to establish the most effective interventions for vulnerable high-risk groups. Special attention should be given to increasing sample size and power, and to sound evaluation methodology to overcome methodological limitations of conducting research with these high-risk groups.

Directions for future research

Feasibility studies are recommended in circumstances where 1) partnerships with the community need to be established, increased, or sustained, 2) the approach or intervention is novel and not yet supported by the literature and 3) previous interventions have had positive outcomes, but not in the setting or population of interest ². Our work has provided an initial examination of the acceptability and feasibility of integrating the provision of support into the community service setting. However, there have been no rigorous examinations of the effectiveness of this approach. Methodologically rigorous and powered trials that will provide level two evidence of effectiveness (i.e. a randomised controlled trial ¹⁴) in the social and community service organisation setting are now warranted.

A methodologically rigorous effectiveness trial of volunteer-delivered support

Based on formative work described in this thesis, a randomised controlled trial which aims to evaluate the efficacy of a client-centred, volunteer-delivered cessation support intervention

will begin recruitment in 2012 ¹⁵. Using a block randomised design, consenting clients aged over 18 years who are self-reported smokers and attending a social and community service organisation will be randomly allocated to an intervention condition or a minimal ethical care control condition. Clients randomised to the intervention condition will receive a systems-based intervention with policies and practices designed to integrate the identification of smokers and subsequent offering and receipt of evidence-based cessation treatments into routine care ¹⁶. Clients will receive 1) routine assessment of smoking status, 2) two face-to-face and two telephone contacts with a volunteer providing evidence-based cessation assistance, including access to free NRT, and 3) the implementation of smoke-free policies at the organisation. The primary outcome measures will be 24-hour BCO-validated self-reported abstinence and 7-day self-reported point prevalence abstinence at one, six and twelve month follow-ups. This rigorous examination will provide evidence about the effectiveness of integrating support into the social and community service setting using volunteer support workers, estimations of the relative reach of this approach and detailed analysis of the cost-effectiveness of the approach.

Strategies for increasing use of nicotine replacement therapy

Nicotine replacement therapy has been consistently found to increase odds of smoking cessation, regardless of the setting or type of NRT used ¹⁷. While access to free or subsidised NRT was consistently reported by clients of social and community service organisations as the most desired form of quit support (77% in Paper One and 87.5% in Paper Three), few participants reported regularly using NRT in the pilot study, even though it was provided at no cost.

Non-use, under-utilisation and premature discontinuation of NRT are consistently found in population samples ^{18, 19}, disadvantaged racial groups ^{20 21}, and among pregnant women ²².

Reasons for non-use or under-utilisation of NRT were not explored in this study. However, previous qualitative and quantitative studies have identified reasons other than cost and difficulty in accessing NRT as barriers to its use; these include perceived ineffectiveness and physical and psychological side-effects²³. Given that adherence to pharmacotherapy strongly predicts quit success^{22,24}, strategies are needed to increase compliance with NRT use to improve cessation outcomes. Our qualitative findings suggested that misconceptions about the use of NRT and its effectiveness may explain some of these findings. Further research is needed to explore the reasons why socially disadvantaged smokers do not use NRT, and whether it is possible to achieve moderate or high levels of compliance with the use of pharmacotherapies in such groups.

Use of financial incentives for smoking cessation

Another suggested strategy for reducing smoking is the use of financial incentives²⁵. Incentives have been found to increase enrolment in smoking cessation programs delivered in workplace settings^{26,27}, but there is mixed evidence regarding whether they are effective in increasing smoking cessation rates. Several studies have found significant long-term cessation rates²⁷, while others have found no impact²⁶. It is possible, however, that the use of financial incentives may be effective among disadvantaged smokers who are under financial stress. For example, modest financial incentives have been shown to increase biochemically verified cessation rates among low-income pregnant smokers²⁸, and short-term quit rates among predominantly low socio-economic status patients treated within primary care clinics²⁹.

The acceptability of financial incentives for smoking cessation among socially disadvantaged groups has been explored as part of this thesis²⁵. These results suggest that clients receiving support from social and community service organisations report high levels of acceptability for financial and non-financial incentives, although staff attitudes were mixed. Careful further

testing is required to evaluate whether such incentive schemes may have unintended effects when used in community service environments. However, these findings suggest preliminary acceptability, and further investigation of this approach is warranted.

Strengths and limitations

This body of work has provided a thorough assessment of the barriers, opportunities, acceptability, feasibility and likely reach of the social and community service sector in addressing smoking among disadvantaged groups. The mixed-methods approach used is appropriate for formative work, and involvement of key stakeholders throughout the process is likely to increase the possibility that an acceptable, effective and sustainable approach is developed that takes into account the practicalities of the population and setting. In particular, the pilot study has provided in-depth information on participant and organisational contextual factors that are likely to facilitate and hinder implementation of the approach. This has been invaluable in informing the development and implementation of a randomised controlled trial, and has aided the identification of elements that may have led to poor implementation or uptake of the intervention, for example, the failure to use NRT.

It is also important to note the limitations of this work. Firstly, the early quantitative work exploring smoking prevalence and interest in quitting only surveyed clients attending one type of social and community service organisation providing financial and material assistance to clients (Paper One). This type of service was chosen because of its high throughput of clients. While this limits the ability to generalise the findings to clients accessing other types of non-government community organisation services (for example, residential drug and alcohol services, and family and relationship counselling services) it is likely that smoking rates will be similar.

Secondly, given the qualitative nature of the study exploring barriers to quitting and the acceptability of providing and receiving support (Paper Two), the results cannot be considered representative or highly generalisable. The study sample was drawn only from a small number of non-government social and community service organisations operating in New South Wales, Australia, and therefore the results should be interpreted only in this context. Further research is required to test these findings on other types of community organisations operating in other geographical areas. Additionally, the purposive sampling frame used to recruit both organisations and clients means it is possible that only social and community service organisations interested in addressing smoking cessation took part, and that participating clients may have been those only relatively sympathetic to the idea of smoking cessation. However, this is unlikely, given that findings of client acceptability have since been replicated in services providing support to disadvantaged families ⁵.

Finally, the pre-post design of the pilot trial and the small sample size for both staff and clients limits the generalisability of conclusions (Paper Six). The fact that none of the clients reported quitting smoking, despite reducing, suggests that further research is needed to test strategies to improve the effectiveness of support provided. Additional strategies, including more intensive support, a more systems-oriented approach, the addition of peer or group support, increased adherence to NRT, and the use of financial incentives, are worthy of further exploration.

A social determinants approach

While this thesis has focused on reducing smoking as a means of reducing health inequalities, smoking cessation interventions are likely to only ever address the proximal determinants of health inequalities. Even if smoking was eliminated and could no longer mediate the effect of a

low socio-economic position on morbidity and mortality, socio-economic differences in health would remain if underlying inequalities in access to material and immaterial resources remain unchanged. Instead, other risk factors that are also caused by the same underlying conditions, such as overweight and obesity, would replace smoking as the mediator of inequalities^{30, 31}.

This highlights the importance of addressing not only the risk factors that directly contribute to socio-economic inequalities such as smoking, but also the wider social, living and working conditions within which health is embedded: water and sanitation, agriculture and food, access to health and social care services, unemployment and welfare, working conditions, housing and living environments, education and transport. Future research should also investigate the effect of these distal determinants of smoking on smoking cessation among socially disadvantaged groups.

Conclusions

Health inequalities are largely avoidable and contradict principles of fairness and justice³², and eliminating such inequalities should be a major focus of public health programs. Smoking currently accounts for up to a quarter of all health inequalities³³, and the substantial contribution of this single behaviour highlights the importance of systematic efforts to eliminate disparities in smoking rates. This will require targeted efforts that are disproportionally effective at reducing smoking rates among the vulnerable, marginalised and disadvantaged groups with the highest smoking rates³⁴.

The findings from this body of work provide useful insight into the potential of social and community service organisations to integrate smoking cessation support into usual care. This approach has the potential to reach a large number of disadvantaged smokers. An examination of effectiveness of this approach using a methodologically rigorous powered trial is now warranted.

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APPENDICES

Appendix 1.1: Published manuscript

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RESEARCH ARTICLE

Open Access

A survey of smoking prevalence and interest in quitting among social and community service organisation clients in Australia: a unique opportunity for reaching the disadvantaged

Jamie Bryant^{1*}, Billie Bonevski¹ and Christine Paul²

Abstract

Background: Social and community service organisations (SCSOs) are non-government, not-for-profit organisations that provide welfare services to disadvantaged individuals. SCSOs hold considerable potential for providing smoking cessation support to disadvantaged smokers. This study aimed to establish the prevalence of smoking, interest in quitting and interest in receiving cessation support amongst clients accessing SCSOs.

Methods: Clients seeking financial or material assistance from three SCSOs in NSW, Australia, between February and October 2010 were invited to complete a 60-item general health touch screen computer survey. This included questions about smoking status, past quit attempts and interest in receiving support to quit smoking from SCSO staff.

Results: A total of 552 clients were approached to participate during the study period, of which 383 provided consent and completed the survey (69% consent rate). Daily smoking was reported by 53.5% of participants. Occasional smoking (non-daily smoking) was reported by a further 7.9% of participants. Most participants had tried to quit smoking in the past (77%) and had made an average of two quit attempts (SD = 3.2) lasting longer than 24 hours in the previous 12 months. More than half of all participants (52.8%) reported that they would like help from SCSO staff to quit smoking. For those interested in receiving help, the preferred types of help were access to free NRT (77%), cash rewards (52%) and non-cash rewards (47%) for quitting, and to receive support and encouragement from SCSO staff to quit (45%).

Conclusions: Smoking rates among clients accessing SCSO are substantially higher than the general population rate of 15.1%. A substantial proportion of clients are interested in quitting and want support from the SCSO to do so.

Background

In 2009, the National Preventative Taskforce recommended that daily smoking prevalence in Australia be reduced to less than 10% by 2020 [1]. In recognition of high smoking rates among disadvantaged groups [2,3], the taskforce acknowledged that “*a special focus on working with and supporting disadvantaged groups and communities*” would be needed to achieve this target [1]. There has also been increasing international recognition

of the need for policies and strategies to increase access, affordability and use of smoking cessation services and treatments by disadvantaged smokers [2,4,5]. While the importance of a comprehensive population level approach to tobacco control cannot be overstated, in 2008 the US guidelines for tobacco dependence treatment called for research to explore the effectiveness of novel treatment delivery settings, including community-based settings, for reaching low socioeconomic status smokers and those with limited formal education [6]. One novel setting with considerable potential in Australia is social and community service organisations (SCSOs).

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SCSOs are non-government, not-for-profit organisations that provide welfare services including financial and family counselling, temporary accommodation, food and material aid, and child and family support. They have existing contact with a large number of disadvantaged groups including the homeless, individuals with a mental illness, the unemployed and Aboriginal and Torres Strait Islanders [7], and are uniquely placed to provide smoking cessation support to disadvantaged smokers; they are able to address smoking in a holistic way alongside other issues faced by their clients, can provide personalised ongoing support, and have demonstrated growing interest in this opportunity via participation in programs such as the Cancer Council NSW's Tackling Tobacco initiative (see <http://www.cancercouncil.com.au/editorial.asp?pageid=2210>). Qualitative and quantitative work has established the acceptability of providing and receiving smoking cessation support in the SCSO setting [8,9]. A small pilot study has also shown that providing training to staff of SCSOs develops confidence, skills and knowledge in addressing tobacco issues [10], overcoming some of the barriers identified in providing support in this setting [8]. While SCSOs appear to be a promising setting for targeting disadvantaged smokers, no data exists to describe the prevalence of smoking and interest in quitting among clients attending SCSOs in order to make judgements about the potential reach of this approach.

Objective

To describe the smoking prevalence, interest in quitting and interest in receiving smoking cessation support among clients accessing SCSOs for welfare support.

Method

Design & Sample

A cross-sectional health survey was conducted between February and October 2010 in two SCSOs located in Sydney, and one SCSO located in a regional area of NSW, Australia. Participants were clients seeking financial or material assistance such as food vouchers, free grocery items, or assistance paying bills or purchasing medications from the SCSO. Clients who were aged over 18 years, able to speak and/or read English, and who were not judged to be distressed or ill by the caseworker recruiting participants were eligible to participate.

Recruitment & Procedure

A top down approach to recruitment of services was used. The Chief Executive Officer (CEO) of a large SCSO operating in NSW, Australia, was initially approached for consent for the organisation to be involved in the research. The CEO nominated services

to participate, who were then contacted for permission to be involved. Eligible service attendees were invited by their caseworker at the end of their appointment seeking financial or material assistance to complete a confidential and anonymous touch screen computer health survey. Gender and date of birth of non-consenting clients was collected to assess participation bias. Support to read and/or complete the touch screen computer survey of health status was provided by a research assistant when necessary. Ethics approval was provided by the University of Newcastle Human Research Ethics Committee.

Measures

Participants completed a 60-item general health survey which included items on smoking, fruit and vegetable consumption, sun protection, physical activity, alcohol consumption and cancer screening. Only items related to smoking will be reported here. All questions were presented on a touch screen computer using Digivey survey software [11]. Questions related to:

1. *Socio-demographics*: gender, age, income, Aboriginal or Torres Strait islander status, employment and highest level of education.
2. *Smoking behaviours*: Smoking status was assessed by asking "Do you currently smoke tobacco products?" with response options i) 'Yes, daily', ii) 'Yes, at least once a week', iii) 'Yes, but less often than once per week' and iv) 'No, not at all'. Those reporting daily or occasional smoking were asked about the type of tobacco used and the average amount spent on tobacco each week (\$AUD). Those reporting daily smoking were asked the age they first started smoking daily and, to enable the calculation of the heaviness of smoking index (HSI), were asked to report the number of cigarettes smoked each day, and time to first cigarette after waking [12]. Those who reported not smoking were asked if they had ever been a daily smoker (yes/no), and if so, how long ago they had quit.
3. *Smoking induced financial deprivation*: was assessed by asking participants "In the last six months, have you spent money on cigarettes that you knew would be better spent on household essentials like food?" (yes/no) [13].
4. *Quitting behaviours*: Current smokers were asked whether they had ever tried to quit smoking (yes/no), the number of quit attempts lasting at least 24 hours in the past 12 months, who had advised to them to quit smoking, what strategies they had used to try and quit in the past and their interest and intention to quit.

5. Interest in receiving quit support from SCSOs: Current smokers were asked whether they would be interested in receiving support to quit smoking from organisation staff (yes/no) and the type of support wanted (12 possible response options).

Statistical Analysis

Frequencies were calculated and Chi-square tests used to examine differences between smokers and non-smokers using categorical data. HSI was calculated to give a score with a range of 0 (low dependence) to 6 (high dependence). Statistical analysis was conducted using STATA version 11.0 [14].

Results

Characteristics of the sample

A total of 552 clients were approached to participate during the study period, of which 383 completed the survey (69% consent rate). There were no differences in age between those who did ($M = 43$, $SD = 12.6$) and did not ($M = 42.9$, $SD = 12.3$) consent to participate, however male participants were more likely than female participants to agree to participate (76% vs. 67% respectively, $\chi^2 = 5.5$, $p = 0.02$). Demographic details are reported in table 1. The majority of participants reported an income of less than AUD\$300 per week, were unemployed and reported primary or secondary school as their highest level of education.

Smoking behaviours

Smoking characteristics of the sample are reported in table 2. More than half of all participants (53.5%) reported daily smoking. A further 7.9% were occasional smokers. Of those who reported being an ex-smoker, the majority (57.4%) had quit smoking longer than 5 years ago. Males were more likely to smoke than females (67% v. 54%). Younger participants, those who were never married or single, and those with a high school year 7-10 education were also significantly more likely to smoke than their counterparts. Ex-smokers were more likely to be female ($\chi^2 = 4.7$, $p = 0.03$). 78% of participants reported that they had been near others who were smoking in the past 24 hours and 61% of smokers reported that they had spent money on cigarettes they knew would be better spent on household essentials like food in the past six months.

Quitting

Quitting behaviours are reported in table 3. Overall, 77% of participants had tried to quit smoking in the past. Participants had made an average of 2.1 quit attempts lasting longer than 24 hours in the previous 12 months ($SD = 3.2$; range 0-20). The majority had attempted to

quit cold turkey (74%). A minority had used NRT (32.9%), or called Quitline (7.7%). More than half of participants were 'very' or 'quite' interested in quitting smoking (56.6%), however relatively few intended to quit in the next 30 days (16.2%).

Interest in receiving quit support from SCSOs

Just over half of all participants (52.8%) reported that they would like help from community service staff to quit smoking. Types of help wanted are shown in table 4. For those wanting support, the most desired types were access to free NRT (77.4%), cash rewards (52.4%) and non-cash rewards (46.8%) for quitting, and to receive support and encouragement from SCSO staff to quit (45.2%). The least desired types of support were to be put in touch with the telephone Quitline (11.3%) and to receive quit help via SMS messages (12.9%).

Discussion

The rate of current daily smoking at 53.5% was more than three times higher than the Australian population rate of 15.1% [15], and comparable to that documented in other severely disadvantaged groups such as those attending a psychiatric rehabilitation support service [16]. Daily consumption of cigarettes at 16.7 per day was slightly higher than the general population consumption of 13.9 cigarettes per day [17]. A considerably smaller proportion of participants were never smokers compared to the general population [17]. These data confirm that SCSO clients have rates of smoking and nicotine dependence similar to that of the most disadvantaged groups in Australia.

A high proportion of smokers had attempted to quit in the past year, adding further support to evidence that disadvantaged smokers have a desire to quit smoking that is comparable to the general population [18]. However, a relatively small proportion of participants reported using strategies known to increase quit success, including using nicotine replacement therapy and behavioural support. Few participants had contacted the telephone Quitline, and few showed interest in receiving this type of support. Alarming, over a third of respondents wanted help from the SCSO to access acupuncture and hypnosis, despite there being no evidence of the effectiveness of these types of support [19]. While the cost of nicotine replacement therapy is sometimes reported as a barrier to use amongst disadvantaged smokers and could explain this finding [20], further exploration of the reasons why disadvantaged smokers do not use other available services such as the telephone Quitline is needed. Such work would help inform the development of strategies to increase engagement of disadvantaged smokers with evidence-based cessation interventions that will increase the likelihood of quit success.

Table 1 Demographic characteristics of respondents (N = 383)

	Smokers (n = 235) % (95%)	Non-Smokers (n = 148) % (95%)	Total Sample (N = 383) % (95%)	χ^2
Gender				
Male	60.4 (54.1-66.7)	46.6 (38.5-54.7)	55.1 (50.1-60.1)	$\chi^2 = 7, p < 0.01$
Female	39.6 (33.3-45.9)	53.4 (45.3-61.5)	44.9 (39.9-49.9)	
Age				
< 29	13.2 (8.8-17.5)	12.8 (7.3-18.3)	13.0 (9.7-16.4)	$\chi^2 = 18.5, p < 0.01$
30-39	28.9 (23.1-34.8)	21.6 (14.9-28.3)	26.1 (21.7-30.5)	
40-49	31.5 (25.5-37.5)	23.6 (16.8-30.5)	28.5 (23.9-33.0)	
50-59	20.4 (15.2-25.6)	23.6 (16.8-30.5)	21.7 (17.5-25.8)	
60-69	4.3 (1.7-6.8)	9.5 (4.7-14.2)	6.3 (3.8-8.7)	
70+	1.7 (0.04-3.4)	8.8 (4.2-13.4)	4.4 (2.4-6.5)	
Aboriginal or Torres Strait Islander				
Yes	12.3 (8.1-16.6)	8.8 (4.2-13.4)	11 (7.8-14.1)	$\chi^2 = 1.2, p = 0.28$
No	87.7 (83.4-91.9)	91.2 (86.6-95.8)	89 (85.9-92.1)	
Marital Status				
Married	5.5 (2.6-8.5)	11.5 (6.3-16.7)	7.8 (5.1-10.5)	$\chi^2 = 16.4, p < 0.01$
Defacto	8.5 (4.9-12.1)	5.4 (1.7-9.1)	7.3 (4.7-9.9)	
Separated/divorced	23 (17.6-28.4)	27.7 (20.4-34.9)	24.8 (20.5-29.1)	
Never married	59.6 (53.3-65.9)	45.3 (37.2-53.3)	54 (49-59)	
Widowed	3.4 (1.1-5.7)	10.1 (5.2-15.0)	6 (3.6-8.4)	
Education				
Primary school	3 (0.7-5.2)	2.7 (0.07-5.3)	2.9 (1.2-4.6)	$\chi^2 = 13.4, p < 0.01$
High school 7-10	53.2 (46.8-59.6)	35.1 (27.4-42.9)	46.2 (41.2-51.2)	
High school 11-12	16.2 (11.4-20.9)	19.7 (13.2-26.1)	17.5 (13.7-21.3)	
TAFE	15.3 (10.7-19.9)	21.6 (14.9-28.3)	17.7 (13.9-21.6)	
University Degree	12.3 (8.1-16.6)	20.9 (14.3-27.5)	15.7 (12.0-19.3)	
Income				
< \$200	18.3 (13.3-23.3)	12.8 (7.4-18.3)	16.2 (12.5-19.9)	$\chi^2 = 3.9, p = 0.42$
\$200-\$300	36.2 (30.0-42.3)	38.5 (30.6-46.4)	37.1 (32.2-41.9)	
\$300-\$400	25.5 (19.9-31.1)	24.3 (17.4-31.3)	25.1 (20.7-29.4)	
\$400-\$500	9.4 (5.6-13.1)	8.1 (3.7-12.5)	8.9 (6.0-11.7)	
> \$500	5.1 (2.3-7.9)	8.9 (4.2-13.4)	6.5 (4.0-9.0)	
Missing	5.5 (2.6-8.5)	7.4 (3.2-11.7)	6.2 (3.8-8.7)	
Employment				
Full time	1.3 (0.3-3.7)	0.7 (0.2-3.7)	1 (0.02-2.1)	$\chi^2 = 8.2, p = 0.32$
Part time or casual	6.4 (3.2-9.5)	7.4 (3.2-11.7)	6.8 (4.3-9.3)	
Unemployed	48.5 (42.1-54.9)	49.3 (41.2-57.4)	48.8 (43.8-53.9)	
Student	4.2 (1.7-6.8)	6 (2.2-10)	5 (2.8-7.1)	
Retired	2.9 (0.8-5.2)	7.4 (3.2-11.7)	4.8 (2.6-6.8)	
Unable to work	12.8 (8.5-17.1)	12.2 (6.9-17.5)	12.5 (9.2-15.9)	
Home duties	11.1 (7.0-15.1)	10.1 (5.2-15.0)	10.7 (7.6-13.8)	
Other	12.8 (8.5-17.1)	6.9 (2.7-10.8)	10.4 (7.4-13.5)	

More than half of smokers wanted support from the SCSO to quit, which highlights the potential of SCSOs to reach disadvantaged smokers. The Australian Council of Social Services reports that member SCSOs provided services to disadvantaged clients on more than 4.3 million occasions in 2009 [7]. Assuming a smoking rate of 62% and that 53% of clients would accept support,

SCSOs could provide support to smokers on nearly 1.5 million occasions each year. SCSO client populations contain an over-representation of single parents, Aboriginal and Torres Strait Islanders, and individuals receiving social welfare payments [7], providing a unique way to access the most disadvantaged smokers in the community. It is unclear however whether utilization of

Table 2 Smoking characteristics of the study sample (n = 235)

	% (95% CI)
Smoking status	
Daily	53.5 (48.5-58.5)
Weekly	4.2 (2.2-6.2)
Less than weekly	3.7 (1.8-5.5)
Never-smoker	22.4 (18.3-26.7)
Ex-smoker	16.2 (12.5-19.9)
HSI	
Low	36.5 (29.8-43.1)
Moderate	44.3 (37.4-51.2)
High	19.2 (13.7-24.7)
Smoking induced financial deprivation	
Yes	61.3 (55-67.6)
No	38.7 (32.4-45)
	Mean (SD)
Age started smoking	
Males	15.7 (4.4)
Females	17.7 (7)
Number of cigarettes smoked daily	16.8 (10.6)
Amount spent on cigarettes weekly (\$AUD)	42.9 (31.1)

support provided by SCSOs would be more or less than the 53% suggested by our data. Large randomised controlled trials are needed to examine the uptake of support by clients in this setting, and the effectiveness of this approach in increasing smoking cessation. A trial examining the efficacy of a client-centred, caseworker-delivered cessation support intervention is currently underway [21].

Conclusions

Smoking rates among clients accessing SCSOs are markedly higher than the general population. Given that a high proportion of smokers are interested in receiving quit support from SCSOs, the effectiveness of integrating the delivery of evidence-based support into care provided by SCSOs should be further explored.

Acknowledgements and Funding

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Table 3 Quitting behaviours and intentions among sample of daily and occasional smokers (n = 235 unless otherwise noted)

	% (95% CI)
Interest in quitting	
Very interested	36.2 (30.0-42.4)
Quite interested	20.4 (15.2-25.6)
A little bit interested	19.6 (14.5-24.7)
Not at all interested	23.8 (18.3-29.3)
Intention to quit	
Next 30 days	16.2 (11.4-20.9)
Next 6 months	25.9 (20.3-31.6)
Quit, but not in next 6 months	17.9 (12.9-22.8)
Never quit	6.8 (3.7-10.0)
Don't know	33.2 (27.1-39.3)
Who has advised to quit *	
Doctor	38.7 (32.4-45.0)
Family member	38.7 (32.4-45.0)
No one	37.0 (30.8-43.2)
Friend	26.4 (20.7-32.1)
Other	11.1 (7.0-15.1)
Nurse	6.0 (2.9-9.0)
Caseworker	6.0 (2.9-9.0)
Teacher	2.1 (0.2-4.0)
Boss	3.4 (1.2-5.7)
Quit strategies used in the past*^	
Cold turkey	74 (67.6-80.5)
Used NRT	39.2 (32.0-46.4)
Other	19.3 (13.5-25.1)
Received support from family/friends	8.3 (4.2-12.3)
Called Quitline	7.7 (3.8-11.7)
Acupuncture or hypnosis	5 (1.7-8.2)
Individual counselling	2.8 (0.3-5.2)
Group quit program	0.5 (0.04-1.6)

*Participants could select more than one response. Percentages do not add to 100%.

^Answered only by participants who reported making a quit attempt, n = 181.

Table 4 Types of quit support most desired by clients who wanted support from SCSO staff to quit (n = 124)

	% (95% CI)
Be given free nicotine patches or gum	77.4 (70.0-84.9)
Be given cash rewards for quitting	52.4 (43.5-61.3)
Be given non-cash rewards for quitting	46.8 (37.9-55.7)
Get support and encouragement from staff to quit	45.2 (36.3-54.1)
Alternative therapy like acupuncture or hypnosis	38.7 (30.0-47.4)
Receive advice or counselling	31.5 (23.2-39.7)
Be asked by staff if I would like help to quit	31.5 (23.2-39.7)
Be given pamphlets about quitting	23.4 (15.8-30.9)
Computer or internet based quit program	15.3 (8.9-21.8)
Video or DVD about quitting	14.5 (8.2-20.8)
Quit help via SMS messages	12.9 (6.9-18.9)
Be put in touch with Quitline	11.3 (5.6-16.9)

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Authors' contributions

JB, BB, and CP conceived of the study and were involved in its design and co-ordination. JB and BB supervised data collection. Statistical analysis was carried out by JB and CL. JB led manuscript preparation. All authors were involved in data interpretation and revised the manuscript critically for intellectual content. All authors approve of the final version of the manuscript.

Competing interests

The authors declare that they have no competing interests.

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Appendix 1.2: Information Statement



V#2

14/12/2009



INFORMATION STATEMENT

Tackling Tobacco Health Survey

Researchers from the University of Newcastle are doing a survey to find out about the health of people who come to [community service organisation]. This research is funded by the Cancer Council NSW and the Cancer Institute NSW. [Community service organisation] has given us permission to ask you if you would like to take part in this research.

Who can be involved?

- Adults aged over 18 years can take part.

What will happen?

- If you agree to take part, you will be asked to answer questions on a touch screen computer.
- The questions ask about things like smoking, alcohol, diet and exercise.

What choice do you have?

- You do not have to take part in this research. Only those people who give consent will be asked to do the survey.
- If you do not want to participate, this will not affect the help and support you receive from [community service organisation].

What will happen with the survey answers?

- The information will be used to design programs that organisations like [community service organisation] can use to help their clients.
- The information may be used by Cancer Council NSW to plan activities, published in scientific journals, used in presentations and included in a thesis submitted for Ms Bryant's University studies.

How will your privacy be protected?

We will ensure your privacy is protected in a number of ways:

- All information will be kept private. The staff at [community service organisation] will not be told your answers.
- All records will be kept in locked cabinets that only the researchers can access.
- When we finish the research all documents will be kept in a locked storeroom for five years.
- No names will be used when we report the results of the research.

What are the risks and benefits of participating?

- We do not think there are any risks from participating in this research.

What do you need to do to take part?

- Please tell the research assistant who gave you this information if you want to take part in the research.

For more information

- Ask the research assistant conducting the research
- You can call us for free on 1800 033 246
- You can send an email to Jamie.Bryant@newcastle.edu.au or Billie.Bonevski@newcastle.edu.au, or call us on the numbers listed below.

Yours sincerely,

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This project has been approved by the University's Human Research Ethics Committee, Approval No.H-2009-0364. Should you have concerns about your rights as a participant in this research, or you have a complaint about the manner in which the research is conducted, it may be given to the researcher, or, if an independent person is preferred, to the Human Research Ethics Officer, Research Office, The Chancellery, The University of Newcastle, University Drive, Callaghan NSW 2308, telephone (02 49216333, email Human-Ethics@newcastle.edu.au

Appendix 1.3: Ethics approval

HUMAN RESEARCH ETHICS COMMITTEE

Notification of Expedited Approval

To Chief Investigator or Project Supervisor:	Doctor Biljana Bonevski
Cc Co-investigators / Research Students:	Ms Jamie Bryant Doctor Christine Paul
Re Protocol:	Assessment of health risk behaviours and validation of self-reported smoking among adults accessing community service organisations
Date:	22-Jan-2010
Reference No:	H-2009-0364
Date of Initial Approval:	21-Jan-2010

Thank you for your **Response to Conditional Approval** submission to the Human Research Ethics Committee (HREC) seeking approval in relation to the above protocol.

Your submission was considered under **Expedited** review by the Chair/Deputy Chair.

I am pleased to advise that the decision on your submission is **Approved** effective **21-Jan-2010**.

In approving this protocol, the Human Research Ethics Committee (HREC) is of the opinion that the project complies with the provisions contained in the National Statement on Ethical Conduct in Human Research, 2007, and the requirements within this University relating to human research.

Approval will remain valid subject to the submission, and satisfactory assessment, of annual progress reports. *If the approval of an External HREC has been "noted" the approval period is as determined by that HREC.*

The full Committee will be asked to ratify this decision at its next scheduled meeting. A formal *Certificate of Approval* will be available upon request. Your approval number is **H-2009-0364**.

If the research requires the use of an Information Statement, ensure this number is inserted at the relevant point in the Complaints paragraph prior to distribution to potential participants You may then proceed with the research.

Conditions of Approval

This approval has been granted subject to you complying with the requirements for *Monitoring of Progress, Reporting of Adverse Events, and Variations to the Approved Protocol* as detailed below.

PLEASE NOTE:

In the case where the HREC has "noted" the approval of an External HREC, progress reports and reports of adverse events are to be submitted to the External HREC only. In the case of Variations to the approved protocol, or a Renewal of approval, you will apply to the External HREC for approval in the first instance and then Register that approval with the University's HREC.

- ***Monitoring of Progress***

Other than above, the University is obliged to monitor the progress of research projects involving human participants to ensure that they are conducted according to the protocol as approved by the HREC. A progress report is required on an annual basis. Continuation of your HREC approval for this project is conditional upon receipt, and satisfactory assessment, of annual progress reports. You will be advised when a report is due.

- ***Reporting of Adverse Events***

1. It is the responsibility of the person **first named on this Approval Advice** to report adverse events.
2. Adverse events, however minor, must be recorded by the investigator as observed by the investigator or as volunteered by a participant in the research. Full details are to be documented, whether or not the investigator, or his/her deputies, consider the event to be related to the research substance or procedure.
3. Serious or unforeseen adverse events that occur during the research or within six (6) months of completion of the research, must be reported by the person first named on the Approval Advice to the (HREC) by way of the Adverse Event Report form within 72 hours of the occurrence of the event or the investigator receiving advice of the event.
4. Serious adverse events are defined as:
 - Causing death, life threatening or serious disability.
 - Causing or prolonging hospitalisation.
 - Overdoses, cancers, congenital abnormalities, tissue damage, whether or not they are judged to be caused by the investigational agent or procedure.
 - Causing psycho-social and/or financial harm. This covers everything from perceived invasion of privacy, breach of confidentiality, or the diminution of social reputation, to the creation of psychological fears and trauma.
 - Any other event which might affect the continued ethical acceptability of the project.
5. Reports of adverse events must include:
 - Participant's study identification number;
 - date of birth;
 - date of entry into the study;
 - treatment arm (if applicable);
 - date of event;
 - details of event;
 - the investigator's opinion as to whether the event is related to the research procedures; and
 - action taken in response to the event.
6. Adverse events which do not fall within the definition of serious or unexpected, including those reported from other sites involved in the research, are to be reported in detail at the time of the annual progress report to the HREC.

- ***Variations to approved protocol***

If you wish to change, or deviate from, the approved protocol, you will need to submit an

Application for Variation to Approved Human Research. Variations may include, but are not limited to, changes or additions to investigators, study design, study population, number of participants, methods of recruitment, or participant information/consent documentation.

Variations must be approved by the (HREC) before they are implemented except when Registering an approval of a variation from an external HREC which has been designated the lead HREC, in which case you may proceed as soon as you receive an acknowledgement of your Registration.

Linkage of ethics approval to a new Grant

HREC approvals cannot be assigned to a new grant or award (ie those that were not identified on the application for ethics approval) without confirmation of the approval from the Human Research Ethics Officer on behalf of the HREC.

Best wishes for a successful project.

Associate Professor Alison Ferguson

Chair, Human Research Ethics Committee

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Linked University of Newcastle administered funding:

Funding body	Funding project title	First named investigator	Grant Ref
Research Grant	Action research for tackling tobacco in community based social services	Bonevski Biljana,	G0189214
Research Scholars Award	Tackling Tobacco: An exploration of methods to reduce smoking in socially disadvantaged populations	Bonevski Biljana,	G0189540

Appendix 1.4: Touch screen computer health survey

First, we would like to know a little bit about you.

1) Are you

Male	1
Female	2

2) In what year were you born?

1	9		
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3) Are you of Aboriginal or Torres Strait Islander origin?

Yes	1
No	2

4) What is your marital status?

Married	1
De facto or living with a partner	2
Separated or divorced	3
Never married, or single	4
Widowed	5

5) What is the highest level of education that you have completed?

Primary school	1
High school years 7– 10	2
High school years 11– 12	3
TAFE	4
University degree	5

6) What is your household income each week?

Less than \$100 per week	1
Between \$100 and \$200 per week	2
Between \$200 and \$300 per week	3

Between \$300 and \$400 per week	4
Between \$400 and 500 per week	5
More than \$500 per week	6
Prefer not to answer	7

7) How would you best describe your employment situation at the moment?

Employed full time	1
Employed part-time or casual	2
Unemployed	3
Student	4
Retired	5
Permanently unable to work	6
Home duties	7
Other	8

8) What is the postcode of the suburb where you live? If you don't know the postcode, please type "0000". Press CLR if you make a mistake

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9) How many serves of vegetables do you usually eat each day? A "serve" is $\frac{1}{2}$ cup of cooked vegetables like carrot or peas, or 1 cup of salad

1 serve per day	1	GO TO Q12
2 serves per day	2	GO TO Q12
3 serves per day	3	GO TO Q12
4 serves per day	4	GO TO Q12
5 or more serves per day	5	GO TO Q12
I don't eat vegetables every day	6	GO TO Q10

10) How many serves would you usually eat PER WEEK? If you do not eat *vegetables at least weekly*, please type "0".

--	--

serves per week

- 11) What is the main reason you do not eat vegetables every day? Choose as many options as apply

I don't like vegetables	1
Vegetables are too expensive to buy	2
There are few places to buy vegetables where I live	3
I don't have time to cook vegetables	4
I don't know how to cook vegetables	5
I forget to eat vegetables	6
I don't have the cooking equipment to prepare vegetables	7
Other reason	8

- 12) How many serves of fruit do you usually eat EACH DAY? A "serve" is 1 medium piece of fruit like an apple, 2 small pieces like apricots or 1 cup of chopped or canned fruit

1 serve per day	1	GO TO Q15
2 serves per day	2	GO TO Q15
3 serves per day	3	GO TO Q15
4 serves per day	4	GO TO Q15
5 or more serves per day	5	GO TO Q15
I don't eat fruit every day	6	GO TO Q13

- 13) If you don't eat fruit every day, how many serves do you eat PER WEEK? If you do not eat fruit at least weekly, please type "0".

--	--

serves per week

- 14) What is the main reason you do not eat fruit every day?

I don't like fruit	1
Fruit is too expensive to buy	2
There are few places to buy fruit where I live	3
I forget to eat fruit	4
Other	5

15) In the last week, HOW MANY times have you walked continuously, for at least 10 minutes, for recreation, exercise or to get to or from places?

times

16) What do you estimate was the TOTAL TIME you spent walking in this way in the last week? Please answer in MINUTES

minutes

17) In the last week, HOW MANY times did you do any more moderate physical activities like gentle swimming, social tennis or golf?

times

18) What do you estimate was the TOTAL TIME you spent doing these moderate activities in the last week? Please answer in MINUTES

minutes

19) In the last week, HOW MANY times did you do any vigorous physical activity which made you breathe harder or puff and pant, like jogging, cycling, aerobics or competitive tennis?

times

20) What do you estimate was the TOTAL TIME you spent doing this vigorous physical activity in the last week? Please answer in MINUTES

minutes

21) When you are outside for more than 15 minutes on a summer day, how often do you wear a hat to protect yourself from the sun?

Never	Rarely	Sometimes	Usually	Always
1	2	3	4	5

22) When you are outside for more than 15 minutes on a summer day, how often do you wear sunglasses to protect yourself from the sun?

Never	Rarely	Sometimes	Usually	Always
1	2	3	4	5

23) When you are outside for more than 15 minutes on a summer day, how often do you apply sunscreen to protect yourself from the sun?

Never	Rarely	Sometimes	Usually	Always
1	2	3	4	5

24) When you are outside for more than 15 minutes on a summer day, how often do you wear clothing like long sleeves or long pants to protect yourself from the sun?

Never	Rarely	Sometimes	Usually	Always
1	2	3	4	5

25) When you are outside for more than 15 minutes on a summer day, how often do you stay in the shade when outdoors to protect yourself from the sun?

Never	Rarely	Sometimes	Usually	Always
1	2	3	4	5

26) Do you currently smoke tobacco products?

Yes, daily	1	GO TO Q27
Yes, at least once a week	2	GO TO Q27
Yes, but less often than once a week	3	GO TO Q27
No, not at all	4	GO TO Q28

27) When was the last time you smoked a cigarette, cigar or pipe?

Less than 4 hours ago	1	GO TO Q30
Between 4 and 8 hours ago	2	GO TO Q30
Between 8 and 12 hours ago	3	GO TO Q30
Longer than 12 hours ago	4	GO TO Q30

28) Have you ever been a daily smoker?

Yes	1	GO TO Q49
No	2	GO TO Q45

29) How long has it been since you quit smoking?

Less than 6 months	1
Between 6 and 12 months	2
Between 1 and 2 years	3
Between 2 and 5 years	4
More than 5 years	5

30) What type of tobacco do you normally use? Choose as many answers as apply

Cigarettes (pre-rolled)	1
Cigarettes (roll your own)	2
Cigars or pipe	3
Chewing tobacco	4
Chop chop	5
Snuff	6

31) On an average day, how many cigarettes do you smoke? Press CLR if you make a mistake

32) How much do you spend on average on tobacco each week? Enter your answer in dollars (\$). Press CLR if you make a mistake

33) In the last six months have you spent money on cigarettes that you knew would be better spent on household essentials like food?

Yes	1
No	2

34) At what age did you first start smoking daily?

years

35) How soon after waking up do you smoke?

Within 5 minutes	1
6– 30 minutes	2
31– 60 minutes	3
After 60 minutes	4

36) Have you ever tried to quit smoking before?

Yes	1	GO TO Q37
No	2	GO TO Q39

37) How many times have you made a quit attempt that lasted at least one day in the past 12 months? Press CLR if you make a mistake

38) What methods have you used when trying to quit smoking in the past? Choose as many answers as apply

I had no help (quit “cold turkey”)	1
I contacted Quitline	2
I used nicotine replacement therapy (patches, gum, inhaler)	3
I received support from family or friends	4
I had individual quit smoking counselling	5
I joined a quit smoking group program	6
I used acupuncture or hypnosis	7
Other	8

39) What persons have advised you to quit in the last 12 months? Choose as many answers as apply

No one has advised me to quit in the last 12 months	1
Doctor	2
Nurse	3

Family member	4
Friend	5
Caseworker	6
Teacher	7
Boss at work	8
Other person	9

40) Which statement best describes how interested you are in quitting smoking?

I am not interested in quitting smoking	1
I am a little bit interested in quitting smoking	2
I am quite interested in quitting smoking	3
I am very interested in quitting smoking	4

41) What are your intentions regarding quitting? Do you plan to

Quit in the next 30 days	1
Quit in the next 6 months	2
Quit, but not in the next 6 months	3
Never quit	4
Don't know	5

42) In the last 24 hours have you been near other people who were smoking?

Yes	1
No	2

43) Would you be interested in getting help from staff at this service to help you quit smoking?

Yes	1	GO TO Q44
No	2	GO TO Q45

44) What types of help would you like to receive from staff at this service to quit smoking?

Select as many answers as apply

To be asked by staff at this service if I would like help to quit smoking	1
To get support and encouragement from staff to help me quit	2
To be put in touch with telephone help like Quitline	3
To be given pamphlets about quitting smoking	4
To be given free or cheap nicotine patches or gum	5
To be given one-on-one advice or counselling	6
To be given cash rewards for quitting and staying quit	7
To be given non-cash rewards like footy tickets or shop vouchers for quitting	8
To be given computer- or internet-based quit programs	9
To be given a video or DVD about quitting smoking	10
To be given an alternative therapy like hypnosis or acupuncture	11
To be given quit help <i>via</i> SMS messages	12

45) Some people suggest the health system should pay people to improve their health. Do you think that paying people to quit smoking is....

An excellent idea	A good idea	A bad idea	A very bad idea	Don't know
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46) Do you think that paying people to quit smoking would do more good than harm?

Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
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47) Do you think that paying people to quit smoking would motivate smokers to quit?

Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
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48) How much money should the government pay a smoker to quit for 12 months?

\$0	1
\$50	2
\$100	4
\$250	5
\$1000	6
\$1500	7
More than \$1500	8

49) Have you had an alcoholic drink of any kind in the last 12 months?

Yes	1	GO TO Q50
No	2	GO TO Q53

50) How often did you have a drink containing alcohol in the past year?

Never	1
Monthly or less	2
2 to 4 times a month	3
2 to 3 times a week	4
4 to 5 times a week	5
6 or more times a week	6

51) How many standard drinks containing alcohol did you have on a typical day when you were drinking in the past year?

Never	1
1 to 2 drinks	2
3 to 4 drinks	3
5 to 6 drinks	4
7 to 9 drinks	5
10 or more drinks	6

52) How OFTEN did you have four or more standard drinks on one occasion in the past year?

Never	1
Less than monthly	3
Monthly	4
Weekly	5
Daily or almost daily	6

53) Have you ever had a Pap test?

[Note: question asked only if answer to question 1= Female]

Yes	1	GO TO Q54
No	2	GO TO Q55
Don't know	3	GO TO Q55

54) How long ago was your last Pap test?

Less than 12 months ago	1
Between 12 months and 2 years ago	2
Between 2 and 3 years ago	3
Between 3 and 5 years ago	4
More than 5 years ago	5

55) Have you ever had a screening mammogram?

[Note: question asked only if answer to question 1 = Female]

Yes	1	GO TO Q56
No	2	GO TO Q57
Don't know	3	GO TO Q57

56) How long ago was your last mammogram?

Less than 12 months ago	1
Between 12 months and 2 years ago	2
Between 2 and 3 years ago	3
Between 3 and 5 years ago	4

More than 5 years ago	5
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57) Have you ever had a faecal occult blood test?

Yes	1	GO TO Q58
No	2	GO TO Q59
Don't know	3	GO TO Q59

58) How long ago was your last faecal occult blood test?

Less than 12 months ago	1
Between 12 months and 2 years ago	2
Between 2 and 3 years ago	3
Between 3 and 5 years ago	4
More than 5 years ago	5

59) Have you ever had a PSA test?

[Note: question asked only if answer to question 1= Male]

Yes	1	GO TO Q60
No	2	FINISH
Don't know	3	FINISH

60) How long ago was your last PSA test?

Less than 12 months ago	1
Between 12 months and 2 years ago	2
Between 2 and 3 years ago	3
Between 3 and 5 years ago	4
More than 5 years ago	5

Thank you

Appendix 1.5 Statements of contribution from co-authors

Statement of contribution

I, Dr. Billie Bonevski, attest that Research Higher Degree candidate Jamie Bryant contributed substantially- in terms of study concept and design, data collection and analysis, and preparation of the manuscript- to the publication:

Jamie Bryant, Billie Bonevski, Christine Paul. A survey of smoking prevalence and interest in quitting among social and community service organisation clients in Australia: a unique opportunity for reaching the disadvantaged. BMC Public Health, 2011, 11:827, doi: 10.1186/1471-2458-11-827.

Dr. Billie Bonevski (Co-author)

Date

Jamie Bryant (Candidate)

Date

Prof John Rostas (Assistant Dean Research Training)

Date

Statement of contribution

I, A/Prof Christine Paul, attest that Research Higher Degree candidate Jamie Bryant contributed substantially- in terms of study concept and design, data collection and analysis, and preparation of the manuscript- to the publication:

Jamie Bryant, Billie Bonevski, Christine Paul. A survey of smoking prevalence and interest in quitting among social and community service organisation clients in Australia: a unique opportunity for reaching the disadvantaged. BMC Public Health, 2011, 11:827, doi: 10.1186/1471-2458-11-827.

A/Prof Christine Paul (Co-author)

Date

Jamie Bryant (Candidate)

Date

Prof John Rostas (Assistant Dean Research Training)

Date

Appendix 2.1: Published manuscript

Citation: Bryant J, Bonevski B, Paul C, O'Brien J, Oakes W. Developing cessation interventions for the social and community service setting: A qualitative study of barriers to quitting among disadvantaged Australian smokers. BMC Public Health 2011;11:493. Doi: 10.1186/1471-2458-11-493.

RESEARCH ARTICLE

Open Access

Developing cessation interventions for the social and community service setting: A qualitative study of barriers to quitting among disadvantaged Australian smokers

Jamie Bryant^{1*}, Billie Bonevski¹, Christine Paul², Jon O'Brien³ and Wendy Oakes³

Abstract

Background: Smoking rates remain unacceptably high among individuals who are socially disadvantaged. Social and community service organisations (SCSO) are increasingly interested in providing smoking cessation support to clients, however little is known about the best way to assist disadvantaged smokers to quit in this setting. This study aimed to explore barriers and facilitators to quitting within the conceptual framework of the PRECEDE model to identify possible interventions appropriate to the social and community service setting.

Methods: Semi-structured focus groups were conducted with clients attending five community welfare organisations located in New South Wales, Australia. Thirty-two clients participated in six focus groups. A discussion guide was used to explore the barriers and facilitators to smoking and smoking cessation including: current smoking behaviour, motivation to quit, past quit attempts, barriers to quitting and preferences for cessation support. Focus groups were audio-taped, transcribed and analysed using thematic analysis techniques.

Results: Participants were current smokers and most expressed a desire to quit. Factors predisposing continued smoking included perceived benefits of smoking for stress relief, doubting of ability to quit, fear of gaining weight, and poor knowledge and scepticism about available quit support. The high cost of nicotine replacement therapy was a barrier to its use. Continual exposure to smoking in personal relationships and in the community reinforced smoking. Participants expressed a strong preference for personalised quit support.

Conclusions: Disadvantaged smokers in Australia express a desire to quit smoking, but find quitting difficult for a number of reasons. SCSOs may have a role in providing information about the availability of quit support, engaging disadvantaged smokers with available quit support, and providing personalised, ongoing support.

Keywords: Smoking, Vulnerable Populations, Inequalities, PRECEDE-PROCEED model

Background

According to the World Health Organisation, tobacco is the single greatest preventable cause of death and disease worldwide [1]. It is a leading risk factor in the development of chronic diseases including cancer, lung diseases, and cardiovascular disease and is responsible for more than 5 million deaths each year [1]. If current

trends continue, the number of deaths caused as a result of tobacco is expected to rise to between 8 and 10 million deaths annually by 2030 [2-4]. Within Australia, tobacco is estimated to be responsible for 7.8% of the total burden of disease [5], and costs the economy more than \$31.5 billion dollars each year [6].

Public health campaigns, tobacco control programs and tobacco control policies have resulted in significant declines in the prevalence of tobacco use in many developed countries in recent decades [7-9]. Currently, prevalence of daily smoking in Australia is 16.6%, declining more than 30% since 1991[10]. However despite this

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overall decline, smoking rates remain unacceptably high among those who are both socially excluded and socio-economically disadvantaged. For example, smoking rates are markedly higher among low income single women (46% [11]), individuals with a mental illness (41-62% [12,13]), and the homeless (66-77% [14-17]).

Although disadvantaged smokers attempt to quit at rates similar to other smokers [18], they are less likely to succeed [18-21]. Social and community service organisations (SCSOs) are emerging as a novel and viable setting for targeting socially disadvantaged and marginalised groups for smoking cessation [22-24]. SCSO provide welfare services to socially disadvantaged individuals across a broad range of areas including support in accessing accommodation, emergency relief (groceries, assistance with paying bills), financial and relationship counselling, family support and support for individuals with a mental illness. SCSO are increasingly aware of the contribution of tobacco use to social exclusion, poverty and health disparities, and are interested in developing interventions addressing smoking cessation among their clients [25].

Developing effective interventions for novel settings requires thorough formative research to determine the normative beliefs and perceived barriers to change among the population to be targeted, and ensure a culturally relevant and acceptable intervention is developed [26,27]. A considerable amount of research has explored barriers to quitting smoking, including among specific disadvantaged sub-groups (those living in socioeconomically deprived areas, institutionalised public mental health patients [28], and pregnant Aboriginal and Torres Strait Islander women [29]). Barriers including poor self efficacy, lack of knowledge, lack of willpower, pro-smoking community norms and barriers to accessing support are frequently identified [30-33]. However health behaviours are embedded within a social and cultural context [34], which is especially important to consider when attempting to address health disparities in vulnerable or marginalised groups [35]. A limited amount of research has explored barriers to cessation among disadvantaged Australian smokers, identifying stress as a barrier to quitting, and resilience as an important factor for quitting and maintaining abstinence [28,36-38]. However, no research has explored barriers to quitting among severely disadvantaged individuals accessing community service organisations, nor examined these factors within a conceptual framework to identify appropriate individual-level intervention strategies appropriate to the community service setting [39].

The PRECEDE model [40] is a particularly valuable and widely applied framework for guiding the development of interventions [41]. Within the PRECEDE framework, factors contributing to health behaviours are

classified as those that predispose, enable and reinforce behaviour. Predisposing factors are antecedents to behaviour including attitudes, knowledge, beliefs and self-efficacy for change. Enabling factors are those that help facilitate behaviour change such as availability of resources. Reinforcing factors include rewards, social support and attitudes of significant others that facilitate and reward change [42]. The PRECEDE model has been used extensively to guide planning of health behaviour interventions [41] including developing smoking cessation interventions to increase the provision of quit smoking counselling by primary care physicians [43], and has been applied to changing other health behaviours in disadvantaged groups including routine cancer screening and prevention of ischemic heart disease through changes to smoking, diet, and physical activity [44,45]. The utility of the PRECEDE model is its capacity to consider in a systematic way the factors that influence health behaviours. This in turn allows identification and implementation of appropriate and effective strategies for behaviour change [39].

This study sought to describe the smoking behaviours and attitudes of disadvantaged Australian smokers attending SCSOs, including past experiences of quitting, preferences for quit support, and perceived barriers to quitting. These perceptions and experiences were considered within the conceptual framework of the PRECEDE model to provide recommendations for the development of appropriate individual-level interventions in the social and community welfare setting.

Method

Design

As part of a study examining the acceptability of the SCSO setting for providing smoking cessation support, semi-structured focus groups were conducted with clients attending five non-government community organisations for welfare support. Focus groups are integral to developing and tailoring complex interventions to address individual needs in different settings [46], and are well suited to in-depth exploration and understanding of underlying issues embedded within a social context [35].

Sampling

Chief Executive Officers (CEO) of community service organisations in New South Wales, Australia, were approached for permission for their organisation to participate in a study examining smoking and quitting among disadvantaged clients. Community social service organisations are non-government organisations that provide welfare services to individuals in need in the communities in which they are based. Purposeful sampling was used to ensure inclusion of a diverse range of

service and client types [47]. Following verbal or written consent, CEOs nominated services within their organisation to participate. Co-ordinators of services were briefed about the study and asked to distribute study information and consent statements to eligible clients. Clients who were in contact with the community service organisation and self reported smoking tobacco were eligible to participate in a one hour focus group. Sampling continued until both facilitators agreed that saturation had been reached and that no new insights or themes were identified by participants [48,49].

Procedure

Focus groups were conducted between December 2008 and March 2009 by two facilitators, one with training in behavioural science (JB), and one with experience working in the community service sector (JO). Each focus group was conducted at the participating community organisation in a private room. Prior to commencement of the research, participants were given an information statement and consent form and also had information about the study explained verbally. Participants were informed that the discussion would be audio-taped, but that only de-identified quotes would be used in reports arising from the research. Participants provided written informed consent prior to the commencement of discussions and were provided with a \$50 gift voucher for reimbursement of their time and travel costs. The study gained ethics approval from the University of Newcastle Human Research Ethics Committee. Each participating community service organisation also provided approval for involvement of their organisation.

Discussion Guide

A semi-structured focus group protocol was used to guide discussions. Focus group questions were developed by the research team based on a review of the literature and consideration of the key research questions. Questions were designed to explore the barriers and facilitators to smoking and smoking cessation. Participants were asked about their current smoking behaviour (type of tobacco used, number of cigarettes used each day, times when they smoke more or less) and current motivation to quit. The focus groups allowed participants the opportunity to detail past quit attempts, including the type of help or support used, and what facilitated or undermined each quit attempt. Participants were asked about their preferences for cessation support, including whether they would like help to quit, perceptions of the role of the community organisation in providing support, and details about specific types of support they would or would not like to receive.

Analysis

Discussions were audio-taped and transcribed verbatim. All transcripts were checked by the first author (JB) for typographical errors. Transcripts were analysed using thematic analysis techniques by reviewing each transcript and noting emergent themes. To establish reliability and validity of emergent themes, two transcripts were independently analysed by both facilitators (JB and JO) and identified themes compared and reconciled with input from the second author (BB) where necessary [50]. Analysis of the remaining transcripts was conducted by JB using Nvivo version 8. The following results are presented thematically, with barriers to quitting considered within the context of the PRECEDE model. De-identified quotes presented in subsequent analysis are followed by parentheses which describe the service the client attended (A-F: see Table 1) and the gender (Male or Female) of the speaker.

Results

Participant and Group Characteristics

Six services from within five community organisations participated. Details of service and participant involvement are presented in table one. Participating services included two early intervention services for teenage mothers, one residential youth drug and alcohol rehabilitation service, one adult residential drug and alcohol rehabilitation service, one outreach service for homeless youth, and one community care drop in service that provided counselling and crisis relief services. Thirty-two clients, 22 female and 10 male, participated in six separate focus groups. Other demographic characteristics were not collected as individual-level and subgroup comparisons were not the aim of this study. All participants were aged over 16 years. Focus groups lasted between thirty-four minutes and one hour ($M = 50.33$ minutes), and comprised between 3 and 8 participants. All participants were current daily or occasional smokers and were either attending the community service organisation or had attended in the past.

Table 1 Focus group participant number and gender by service type

Service	Total N	Female N
Service A: Child, youth and family early intervention	5	5
Service B: Community care centre	6	2
Service C: Residential drug and alcohol program	8	8
Service D: Residential adolescent life management service	3	0
Service E: Infants and child services	6	5
Service F: Outreach service for homeless youth	4	2
TOTAL PARTICIPANTS	32	22

Smoking behaviour

Most participants reported initiating smoking in their early teen years. One client reported starting smoking at the age of five or six years. The main reasons for initiating smoking included to fit in with friends and having brothers, sisters, and parents who smoked. About one third of participants reported smoking between 10 and 15 cigarettes per day, and a similar proportion reported smoking between 15 and 20 cigarettes per day or smoking one pack or more per day. Participants reported that the amount they smoked increased remarkably when they were socialising with friends and family who were also smokers and when drinking alcohol. The majority of participants seemed heavily addicted to smoking, reflected by most participants reporting that they smoked their first cigarette soon after waking or even that they woke up during the night to smoke. Participants perceived themselves as highly addicted, describing smoking as having “a hold on me” (E, Female) and being “part of my life now” (E, Female).

Most participants reported multiple past attempts to quit smoking. Many reported trying to quit cold turkey without support or use of cessation aids such as NRT. NRT had been used by some participants, but were generally considered ineffective. One participant said: “I have used all sorts of things, patches, the nicotine gum.... They don't work” (F, Male). Three clients reported that they had tried Varenicline with some success “Last year I was taking Champix [Varenicline].... Yeah, they were really good. Um, I gave up for 10 weeks and I wasn't cranky or anything” (C, Female). Several participants reported contacting the Quitline, but few perceived the support offered useful “I rang them ages ago, but it didn't really do anything” (D, Male).

Barriers and facilitators to quitting smoking

Barriers to quitting smoking identified by participants were analysed thematically then categorised as those predisposing, enabling and reinforcing continued smoking.

Predisposing Factors

Strong motivation to quit The majority of participants reported a strong desire to quit smoking. Short and long term health benefits like feeling fitter, being healthier and a fear of smoking related diseases like emphysema and lung cancer were the main reasons given for wanting to quit. “I've quit many times. I'm at the point now nearly that I'm going to quit for good. I feel as though I'm sick of all me mates dying around me because of lung cancer” (F, Male). The high cost of smoking was another strong motivating factor with participants reporting that finding money to smoke was a continual source of stress given their low incomes. “It gets pretty hard after a while thinking 'how am I going to get my

next pack of durries(cigarettes)”? Or when you run out it's like, what do I do, how am I going to get my next lot of money to get them?” (F, Male).

Beliefs in the benefits of smoking for stress relief

Although the financial and health consequences of smoking were well understood by participants, many participants held a strong belief that smoking had many benefits. Smoking was described as relaxing, calming, a good way to relieve boredom and a “best friend” and a “superglue” that could hold a person together during stressful times. One participant said “I need it to help me stress-less and yeah, take my mind off a lot of things” (D, Male). Many participants used stress as a strong justification for continuing to smoke. “I need to stop.... But at the moment I'm very stressed out so I don't think I should stop at the moment. It does help me with stress relief heaps” (B, Female). The use of smoking as a form of stress relief was also a commonly cited reason for relapse “I gave it away and then 7th of July last year, went off for four months and then me nerves played up on me so I went back on” (B, Male)

Doubting ability to quit Despite a strong reported desire to quit smoking, many participants expressed doubt in their ability to successfully quit “I would like to quit but I honestly, I know this sounds bad, I honestly don't think I have the will power to do it. I honestly don't think I do” (E, Female). Participants described quitting as “impossible” and the idea of making a quit attempt was often intimidating “I know I want to quit - it's just hard to do. I'm scared to do it” (A, Female). Feeling ‘ready’ and having willpower to quit were identified as the key to success “I think you've got to be ready aswell-you've got to want to feel ready within yourself. I know that's hard to say, 'well when are you going to be ready to actually want to do it?' You've got to think hard about it” (A, Female).

Poor knowledge of available quit support Participants overall knowledge about the availability of quit support was poor. Many participants who had used NRT reported that it did not effectively reduce cravings, but often reported not wearing patches as prescribed, not using recommended doses of gum, and were unaware of recommendations to use stronger doses of NRT or multiple forms if they were heavy smokers. Several participants reported being told by others that NRT is ineffective, and this perception had discouraged some from using NRT during a quit attempt. One participant said: “I've been told that those stupid Nicorette patches don't work and the gum's gross and it doesn't work so, there's no point in even wasting your money on buying them if they're not going to help you” (A, Female). The majority of participants had no knowledge about what Varenicline was, how to access it or the cost. Knowledge of other support services such as the telephone quit

service Quitline was also poor. While many participants had heard of Quitline, which is heavily advertised on television, many were unsure about the type of support Quitline provided, including the provision of the call-back service or that the service is free.

Fear of gaining weight Among many female participants, fear of gaining weight was also a barrier to making a quit attempt. Participants recounted stories about friends and family members who had given up smoking and then gained weight, or reported that they had experienced weight gain themselves during previous quit attempts *"I gave up for 5 months last year and gained about 40 kilos. Um yeah, and just took it back up again"* (C, Female). One participant who had recently started smoking after a long period of abstinence reported losing ten kilos when she began smoking again, which she described as *"a nice side effect"* (B, Female).

Enabling Factors

Limited provision of cessation support Some participants had received advice from their General Practitioner (GP) about the use of Bupropion or Varenicline, but most were unaware that prescription only cessation medications were available through their GP. Some clients reported *'being told'* or lectured by their GP to quit smoking without the offer of support to quit *"Most doctors just tell me 'it's bad for your health, you've got to stop. I advise you to quit'"* (A, Female). Young mothers who had recently had repeated contact with physicians during prenatal and antenatal care reported being given educational pamphlets and advice to stop smoking, but felt they were not offered genuine support or assistance to quit *"Yep, that's the most they give you. A pamphlet"* (A, Female). As a result most reported that they continued to smoke throughout their pregnancies.

Limited use of available quit support Despite awareness of the existence of the telephone Quitline, only three clients reported having contacted Quitline in the past. There was strong scepticism among participants that support provided over the telephone would be useful in aiding a quit attempt. Young participants were particularly doubtful about the motivations and ability of a person who did not know them personally helping them to quit smoking. The following two quotes illustrate this point - *"It's a bit weird talking to some random person, you're like, oh yeah I want to quit and you know what I mean? They might not really care - they're just doing it for a job."* (D, Male). *"Nup. Wouldn't want to waste my time. Because they're getting paid to give you useful advice and they're not really supportive"* (D, Male).

High cost of NRT NRT was perceived as an expensive and ineffective substitute for smoking that would require a large initial outlay of money *"I've looked at the patches occasionally and thought I'm not paying \$32 or*

\$35 for a box. It's just too expensive" (B, Female). Because of doubts about the effectiveness of NRT many participants did not recognise that if they were successful at quitting smoking, NRT would not be an ongoing cost *"If they don't work then it's a waste of \$50"*. When asked, the majority of participants agreed that if NRT was free or available at a heavily subsidised rate that they would consider using NRT *"I'd take it for sure.... If you said patches they are for free or \$2.50, I'm telling you there would be way more people having a crack at giving up"* (E, Female). *"Subsidise the quit smoking products.... maybe someone could subsidise these products so that they're affordable"* (C, Female).

Reinforcing Factors

Smoking and Social Norms Repeated social and environmental exposure to smoking was also a barrier to quitting smoking for many participants. Smoking was reported as a normal part of social interaction, with participants stating that the majority of their partners, family and friends also smoked *"you've got your family and your friends come over and they're like oh yeah, and they light up...."* (A, Female); *"You always know someone that smokes"* (A, Female). Participants spoke about smoking being depicted on television, seeing people smoking when walking down the street and commented that *"you seem them everywhere you go"* (A, Female). Not only did this strong presence of smoking in the community make it less likely for participants to make a quit attempt, it also served as a powerful trigger for relapse *"Yeah, given up about 20 times in that time but yeah, for some reason just don't work because everyone else around me smokes and it's hard to quit"* (F, Male). One participant reported being strongly motivated to quit and had tried setting quit dates in the past, but found quitting impossible because of the continued exposure to second-hand smoke at home *"Well I have been trying to give it up. I sort of set today as a give up target, but I'm going to find it so hard because people are smoking outside my room at home"* (B, Male). Several participants mentioned changing social norms around smoking, such as restrictions on smoking at shopping centres and at pubs often, made them feel *'uncomfortable'* and *'ashamed'* of their smoking, however no participants identified this as a factor motivating them to quit.

Preferences for Quit Support

When asked about the type of support they would like to receive to quit smoking, participants emphasised the need for personalised, ongoing support. *"Support... I don't know, just a social worker to come around and you know, just have a bit of a chat...meet them at the park or something"* (A, Female). Several participants emphasised the importance of having someone who genuinely

cared about them providing support to quit *"I'd like to go to someone for some serious advice, you know, someone who actually cares and will support you (D, Male) "Yeah, someone you can talk to and you're not going to talk to once and then they're not going to be there again. (D, Male).* Family and friends who often were also smokers were considered a poor source of support.

Discussion

This qualitative study extends knowledge of barriers to quitting smoking by examining barriers and facilitators among disadvantaged smokers attending SCSOs in Australia. Identifying factors that predispose, enable and reinforce a particular behaviour within the framework of the PRECEDE model provides a basis for the development of appropriate interventions to specifically target barriers to behaviour change.

While most participants reported a strong desire to quit smoking and had made multiple past quit attempts, predisposing factors acting as barriers to quitting included using smoking as a way of coping with stress, poor self efficacy, and fear of gaining weight. These findings confirm individual level barriers to quitting smoking identified among disadvantaged smokers both in Australia [36-38] and the UK [31,32,51], and particularly highlight the perceived role of stress and coping in continuing to smoke [31,32,38,52], and the perception of willpower as the key to successfully quitting [32].

Poor knowledge about and low utilisation of available quit support were reported across the focus groups. Few participants reported ever receiving help to quit smoking from their GP and few had called the Quitline, which seemed to stem from a lack of understanding about the type of support offered. Despite Varenecline being available in Australia as a prescription-only smoking cessation treatment since January 2008 at a minimal cost for low income smokers [53,54], few participants knew that this support was available or had accessed it. While participants had good knowledge of the availability of NRT, there were misconceptions about its use and effectiveness, and the cost was perceived as prohibitive. The availability of free or subsidised NRT was strongly supported. Participants strongly articulated a preference for ongoing, personalised support.

The predisposing, enabling and reinforcing factors identified suggest that strategies to increase knowledge of and engagement with evidence-based smoking cessation strategies may be crucial to overcoming barriers to quitting for disadvantaged smokers. Access to services is recognised as an important barrier for smokers attempting to quit in lower socioeconomic groups [30,55]. Integration of referral and direct provision of smoking cessation support into the SCSO setting may also hold significant potential in addressing key barriers identified

by SCSO clients. SCSOs are increasingly interested in addressing aspects of physical health that impact on wellbeing, and are well placed to provide cessation support given that they are heavily utilised by disadvantaged smokers (there are more than 5,700 SCSO in Australia [22,23]). Recent research has noted the acceptability of providing support in this setting [22-24]. Interventions provided in this setting should focus on enhancing client access to existing services including Quitline and subsidized pharmacotherapy, and address individual barriers to quitting through integration of brief advice as part of usual care. A large randomized controlled trial to examine the effectiveness of providing brief advice, access to NRT and referral in the SCSO setting is planned [56].

Study strengths and weaknesses

A number of limitations regarding recruitment and sampling should be considered when interpreting the results of this study. While care was taken to recruit a range of organisations offering a variety of services to a cross-section of disadvantaged individuals, as a result of our sampling approach our findings are indicative only of the opinions of disadvantaged smokers who access community social services. Secondly, potential bias in the inclusion of organisations and clients should be considered. While the majority of services contacted agreed to take part, it may have been that only those services interested in smoking cessation agreed to their clients being contacted as part of the study. We did not collect detailed demographic information from participants. Furthermore, clients were recruited by staff of community service organisations with no involvement from researchers, which may have resulted in the selection only of clients known to be interested in smoking cessation. Finally, although the PRECEDE theory was chosen a priori to explore data, the researchers were cautious not to impose bias on data analysis. All themes emerged from the data and were not pre-determined by the theory. As a result of using this framework, which is behavioural in nature, structural barriers to quitting may not have been identified.

Conclusions

This is the first study to explore smoking behaviours, past quit attempts and barriers to quitting among disadvantaged smokers attending community service organisations for welfare support in Australia. Our findings identify multiple complex barriers to quitting, but suggest that SCSOs may have a role in increasing knowledge and use of available cessation support, and providing direct, personalised, and ongoing support to disadvantaged Australian smokers. Further research is needed to explore the effectiveness of these approaches.

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Authors' contributions

All authors conceived of the study and participated in study design and co-ordination. JB co-facilitated the focus groups, analysed the data and drafted the manuscript. JO co-facilitated focus groups and assisted with data analysis and drafting of the manuscript. BB, CP and WO assisted in drafting of the manuscript. All authors have read and approved the final manuscript.

Competing interests

The authors declare that they have no competing interests.

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Appendix 2.2: Organisation invitation letter



Date

Name

Organisation

Address

Dear,

I am writing to formally invite your organisation to participate in the first step of an important research project investigating the best ways to reduce the harm caused by smoking among disadvantaged populations.

The Tackling Tobacco Program is an initiative of Cancer Council NSW which aims to work with community service organisations to reduce smoking-related harm among the most disadvantaged population groups in NSW. As smoking rates drop among the most advantaged sectors of the community, these harms, which include both increased material hardship as well as ill-health and premature death, now fall most heavily on already vulnerable people. The Cancer Council has a commitment to addressing this inequity and has committed significant funding and resources for an initial 5-year program, with a view to establishing effective and sustainable smoking care support for disadvantaged populations.

As you may know, on 25 July 2008, a meeting was held at Cancer Council NSW to discuss a Tackling Tobacco Program action research project. The project aims to explore acceptable and effective ways that community service organisations could address the issue of tobacco and provide support and assistance for those clients who wish to quit or change their smoking behaviours. In attendance at this meeting were Tackling Tobacco Program staff from Cancer Council NSW, researchers from the Centre for Health Research and Psycho-oncology (CHERP) who will be conducting this research, and key representatives from community service organisations including [insert name] from [community service organisation].

This research will be developed and undertaken in close collaboration with interested community service organisations. While there will be no cash cost for interested organisations to participate, we appreciate that it will require a commitment of staff time. However, we

believe the benefits of this research will be significant for both staff and clients of your organisation, as well as other disadvantaged groups.

The research will be undertaken in four steps, and we hope you will participate throughout. However, this invitation relates to the first step only, and organisations are free to withdraw at any time.

The first step of the research project is a series of focus groups to help us better understand the needs and environments of community service organisations. Specifically, we would like to seek your consent to invite interested managers, staff and clients of your organisation to participate in one of a small number of focus groups. These focus groups will explore the barriers and facilitators to addressing smoking within community service organisations, and help inform the next steps of our research, i.e. to design a successful smoking care program that can be effectively used by community service organisations.

Please find attached an information document which provides further details about the research, including an overview of the project and the commitment being sought from your organisation.

If you would like further information, or have questions, please contact the Program Co-ordinator of the Tackling Tobacco Program, Jon O'Brien (02) 9334 1848, or Senior Research Academic from CheRP, Dr Billie Bonevski (02) 49 246343 Billie.Bonevski@newcastle.edu.au. A member of the research team will be in contact within the next two weeks to answer any questions you may have and determine your interest in participating. Alternatively, please feel free to pass these details to a nominated staff member to liaise with Jon or Billie on this project.

Thank you for considering this invitation.

Yours sincerely,

Dr Andrew Penman
Chief Executive Officer, Cancer Council NSW



Information about the Tackling Tobacco Action Research Project

Step 1: Focus Groups

Smoking among the disadvantaged

Disadvantaged and vulnerable groups, such as low-income single parents, Indigenous persons, the homeless, the mentally ill and marginalised young people, have smoking rates that are 2– 4 times higher than the general Australian community. As a result of higher smoking rates, disadvantaged populations also face a higher burden of death and disease from tobacco. Smoking-related illness kills 15,000 Australians every year, and the quality of life for many thousands more is compromised by chronic illnesses, including chronic bronchitis, emphysema, heart disease and asthma, which occur as a result of smoking.

Tobacco use also adds significantly to financial disadvantage. For example, an average 1 pack per day smoker spends about \$70 a week or \$3640 per year on tobacco. This means there is much less to spend on essentials such as food, clothing and accommodation, exacerbating the cycle of disadvantage and hardship. Money spent on tobacco also limits the funds available for recreational activities which could provide positive health and social benefits. The Cancer Council believes it is imperative that serious and targeted efforts are made to reduce smoking and its health, social and financial consequences for disadvantaged and vulnerable groups.

What is the Tackling Tobacco Program?

You may already be familiar with the Tackling Tobacco Program. This initiative of Cancer Council NSW aims to work with community service organisations to reduce smoking-related harm among the most disadvantaged population groups in NSW. The Cancer Council has made an initial 5-year commitment with an allocation of a significant level of funding to this Program. Our aim within this first 5-year period is to develop and establish effective, best practice support for smoking care among disadvantaged populations, and to ensure that infrastructure is developed to provide on-going support for smoking care activities.

What is this research about?

This action research project is part of the broader Tackling Tobacco Program described above. The Tackling Tobacco action research project is a 3– 5 year multi-stage project that aims to investigate which smoking care strategies offer the most benefit for clients, staff and organisations. In addition to the effectiveness of the program in supporting cessation attempts, issues such as appropriateness of the program, acceptability to staff and clients, compatibility with the organisation's core business, and real cost (including staff time and resources) will be investigated.

Diagram 1 outlines the project stages and expected outcomes. The first step of this action research program is to explore the barriers and facilitators to addressing tobacco and provision of smoking care programs in community service organisations. To do this we will be conducting a number of focus groups with appropriate stakeholders, such as managers, staff and clients of community services. This current invitation is for participation in that first step only. On completion of the analysis of the focus groups we will report the findings back to participant organisations and discuss the options for participation in further stages of the research.

Who is conducting this research?

The current research is funded by Cancer Council NSW, and we anticipate that it will attract additional grant funding as it progresses. The research will be conducted by Dr Billie Bonevski and Dr Chris Paul (Senior Research Academics) and Ms Jamie Bryant (PhD candidate) from the Centre for Health Research and Psycho-oncology (CHeRP). CHeRP is the behavioural research unit of Cancer Council NSW and is also part of the University of Newcastle. Jon O'Brien (Tackling Tobacco Program Co-ordinator) and Wendy Oakes (Cancer Council NSW Tobacco Control Manager) are members of the Steering Group providing advice and direction for the project.

What will the research involve?

We would like to invite you, as an important community service organisation, to participate in the first step of the Tackling Tobacco action research project (see step one below). Specifically, we are seeking your consent to invite interested managers, staff and clients from your organisation to take part in these focus group discussions. If you consent, managers, staff and clients of your organisation will be contacted and invited to participate in separate focus groups. These groups will take no more than 1.5 hours each. We would, of course, be guided by you as to the best way to organise these groups and arrange locations and times that are

most suitable for participants and your organisation. For practical reasons, and to encourage participation, we anticipate that it may be best to hold discussions with clients at one of your agency programs with which they are familiar. Reimbursement of \$50 will be provided by the research team to cover the travel costs and time of clients attending the groups and can be provided for staff participation, if required.

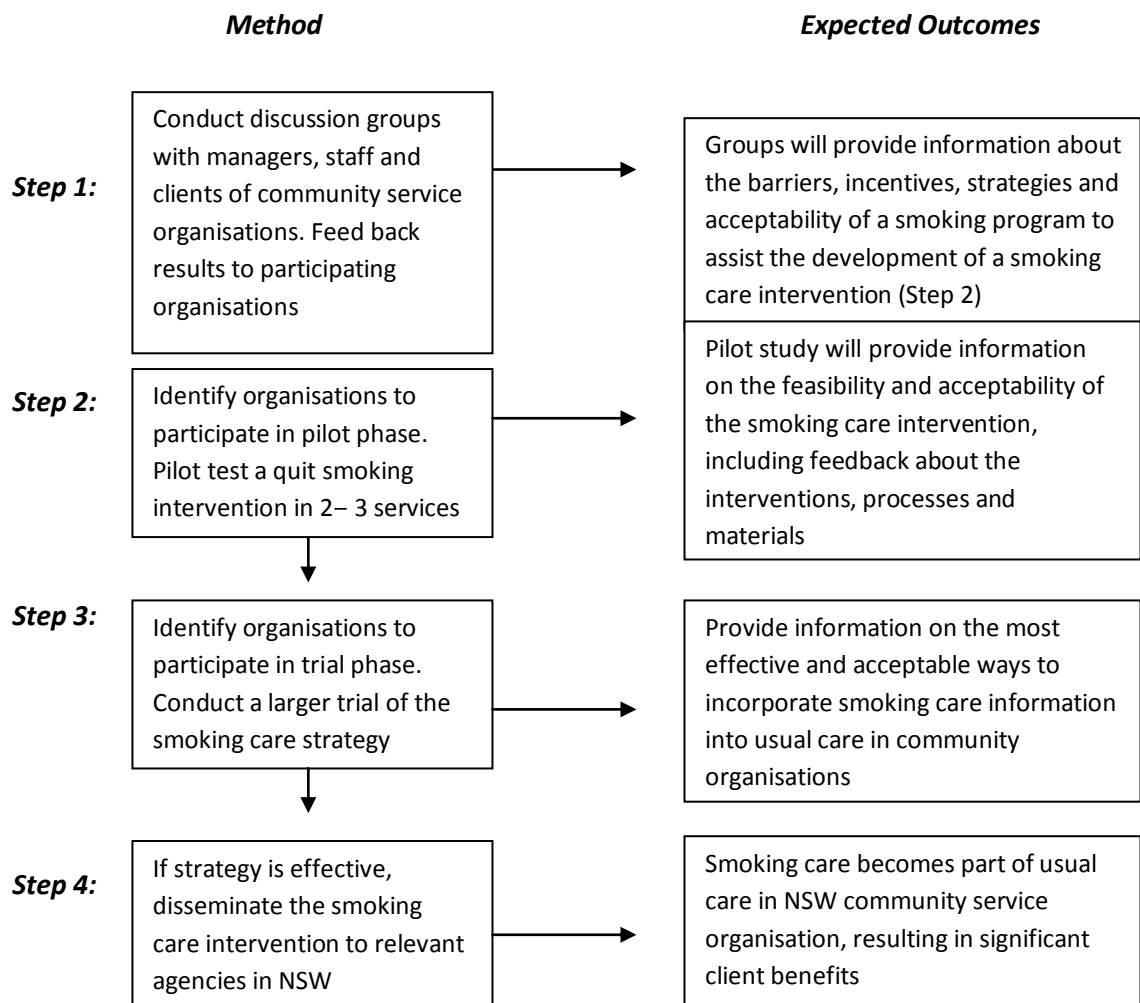


Diagram 1: *Project stages and expected outcomes*

Why should my community service organisation participate in this research?

- The high smoking rates among your clients significantly decrease their health, social and financial wellbeing.
- Community-based social services are ideally placed to access vulnerable and disadvantaged groups of the population and thus to reduce the financial, social and health consequences of smoking, helping to break the cycle of disadvantage.
- Disadvantaged clients make the same number of quit attempts as other smokers, but they are far less successful. They need support to quit.
- Clients of community services have indicated that they would like help to quit smoking, alongside the support they receive from community organisations on other important issues.

Privacy and ethical considerations

Please note that all procedures and materials will gain approval from the University of Newcastle Human Research Ethics Committee prior to the commencement of the research. If you consent for your organisation to participate in this research, you may withdraw your consent at any time, without providing a reason. No organisations or individual participants will be identifiable in the reporting of the results of this research. A summary of the results of the focus groups will be made available to your organisation. We would also be happy to provide a briefing regarding the results, on request.

Please note that participation in the initial discussion groups does not commit your organisation to participate in any further research activities associated with this project. We are requesting permission only to invite interested managers, staff and clients to participate in these initial focus group discussions. The cost of running the groups is being met by Cancer Council NSW. Your organisation does not need to contribute cash funding to the project, although we do appreciate that participation in the focus groups has an impact on staff resourcing.

Further information

If you would like further information or clarification about the project, please contact Ms Jamie Bryant on (02) 49246332 or Jamie.Bryant@newcastle.edu.au, or Dr Billie Bonevski on (02) 49 246343 or Billie.Bonevski@newcastle.edu.au (Monday, Wednesday and Friday).

If you would like to participate

We believe this project could contribute to the capacity of community service organisations to reduce the harms imposed by tobacco and improve the wellbeing of the clients with whom they work. A member of the research team from CHeRP will be in contact within the next two weeks to discuss your organisation's participation in this important research project.

Alternatively, you may wish to pass these details to a nominated staff member to liaise with Jamie Bryant or Billie Bonevski on this project.

Appendix 2.3: Client Information Statement



V#2

22/10/08



INFORMATION STATEMENT

Clients

Tackling Tobacco Research Project

You are invited to participate in a research project to talk about your thoughts and feelings about quitting smoking.

Who is conducting this research?

This research is being conducted by Dr Billie Bonevski, Dr Chris Paul and Ms Jamie Bryant from the Centre for Health Research and Psycho-oncology (CHERP) of the Cancer Council NSW and the University of Newcastle. The research is part of Ms Bryant's studies at the University of Newcastle, and is supervised by Dr Bonevski and Dr Paul. This research is part of the Cancer Council NSW's Tackling Tobacco Program.

Who can participate in the research?

Adults aged over 16 years who smoke tobacco are invited to participate.

What will the research involve?

If you agree to participate, you will be invited to take part in a group discussion. This discussion will involve 4 to 8 people who are also clients of community service organisations talking about smoking and quitting smoking. This discussion will take 1.5 hours, including time for refreshments and explanations at the start. The discussion will be conducted by Ms Jamie Bryant and will be recorded on audio-tape. At the end of the discussion, you will be asked to complete a short survey and will be provided with a \$50 Coles/Myer voucher as reimbursement to cover your travel and time to come to the discussion. You will also be invited to indicate your interest in reviewing the study report when it is available, to comment on whether it represents the nature of the discussions.

What choice do you have?

Participation in this research is entirely your choice. Only those people who give their informed consent will be included in the project. Whether or not you decide to participate, your decision will not disadvantage you in any way. If you do decide to participate you may withdraw from the project at any time without giving a reason, and can withdraw, prior to 28 February 2009, any data you have provided. At the end of the discussion you can listen to the audio-tape of the discussion and erase your comments, if you wish.

How will your privacy be protected?

We will ensure your privacy is protected in a number of ways. All information we collect is confidential and will be kept in locked cabinets that can only be accessed by authorised researchers. On completion of the study, all paper documents will be stored in a locked storage facility, and electronic copies of transcripts will be moved to CD-ROM and stored in a locked storeroom with the audiocassette for 5 years. We will not use your contact details for anything other than to contact you about this study and will not give your name to anyone, apart from the researchers involved in this study.

What will the information collected be used for?

Information collected from the discussion groups will be used to design programs to help people who want to quit smoking. The information may also be used by Cancer Council NSW to support people who want to quit smoking, published in scientific journals, used in presentations and included in a thesis submitted for Ms Bryant's University studies. While quotes from some discussions may be used to give examples of people's points of view, individual participants will not be identified in any reports arising from the research.

Can I be informed of the outcomes of the study?

Once the discussion groups have been analysed, we can provide you with a summary of the results. If you would like a copy of these results, please provide your mailing details on the attached consent form. Alternatively, summaries of the results will also be available from the community service organisation.

What are the risks and benefits of participating?

You may benefit from taking part in this discussion by gaining a better understanding of some of the factors that may encourage you to smoke or make your quit attempts unsuccessful. We do not anticipate any risks from your participation in this research.

What do you need to do to participate?

Please read this Information Statement and be sure you understand its contents before you consent to participate. If you would like to participate, please attend the discussion group. A staff member from [community service organisation] will tell you the date and time of the group.

For more information

If you have any questions about participating in the study, please contact myself, Jamie Bryant, on this toll free number 1800 033 246 or on (02) 49246332 or Jamie.Bryant@newcastle.edu.au. You can also contact Dr Billie Bonevski on (02) 49 246343 or Billie.Bonevski@newcastle.edu.au (Monday, Wednesday and Friday).

Thank you for considering this invitation.

Yours sincerely,

Dr Billie Bonevski
Senior Research Academic
CHERP
Billie.Bonevski@newcastle.edu.au
(02) 49138619

Dr Chris Paul
Senior Research Academic
CHERP
Chris.Paul@newcastle.edu.au
(02) 49138472

Ms Jamie Bryant
PhD Candidate
CHERP
Jamie.Bryant@newcastle.edu.au
(02) 49138618

This project has been approved by the University's Human Research Ethics Committee, Approval No.H-2008-0334. Should you have concerns about your rights as a participant in this research, or you have a complaint about the manner in which the research is conducted, it may be given to the researcher, or, if an independent person is preferred, to the Human Research Ethics Officer, Research Office, The Chancellery, The University of Newcastle, University Drive, Callaghan NSW 2308, telephone (02) 49216333, email Human-Ethics@newcastle.edu.au.

Appendix 2.4: Client consent form



V#2

22/10/08



CONSENT FORM

Tackling Tobacco Research Project

I agree to participate in the Tackling Tobacco research project and give my consent freely.

I understand that the project will be conducted as described in the Information Statement, a copy of which I have retained.

I agree that:

- The group discussion will be audio-taped
- I can edit or erase anything I say from the tape
- Anything said in the discussion is confidential
- Comments or quotes recorded on the tape may be used in written reports (subject to consent below). However, no names or identifying information will be used
- I can withdraw from the discussion at any time, without giving a reason
- I have had the opportunity to have questions answered to my satisfaction.

Consent to participate:

I give my consent to participate in a focus group discussion.

Print name: _____ Signature: _____ Date: _____

Consent to use comments or direct quotes from the audio-tapes in written reports and publications:

I give permission for researchers from Cancer Council NSW to use comments or direct quotes from the audio-tapes in written reports and publications. I understand no names or identifying information will be used.

Print name: _____ Signature: _____ Date: _____

If you would like to receive feedback on the results of these groups, please provide your mailing details in the Request for Results box provided over the page.

Request for Results

On completion of this research, a summary of results will be made available to those who would like a copy. If you would like to pick up a copy of the results from your community service organisation, please provide your name below. Alternatively, if you would like a copy of the summary to be posted to you, please provide your name and address or email address below.

Name _____

Mailing address or email _____

Yours sincerely,

Dr Billie Bonevski
Senior Research Academic
CHeRP
Billie.Bonevski@newcastle.edu.au
(02) 49138619

D. Chris Paul
Senior Research Academic
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This project has been approved by the University's Human Research Ethics Committee, Approval No.H-2008-0334. Should you have concerns about your rights as a participant in this research, or you have a complaint about the manner in which the research is conducted, it may be given to the researcher, or, if an independent person is preferred, to the Human Research Ethics Officer, Research Office, The Chancellery, The University of Newcastle, University Drive, Callaghan NSW 2308, telephone (02) 49216333, email Human-Ethics@newcastle.edu.au.

Appendix 2.5: Ethics approval

HUMAN RESEARCH ETHICS COMMITTEE

Notification of Expedited Approval

To Chief Investigator or Project Supervisor:	Dr Biljana Bonevski
Cc Co-investigators / Research Students:	Dr Christine Paul Ms Jamie Bryant
Re Protocol:	Two stage proposal for an action research project for tackling tobacco in community based social services. Focus groups.
Date:	18-Nov-2008
Reference No:	H-2008-0334

Thank you for your **Response to Conditional Approval** submission to the Human Research Ethics Committee (HREC) seeking approval in relation to the above protocol.

Your submission was considered under **Expedited** review by the Chair/Deputy Chair.

I am pleased to advise that the decision on your submission is **Approved** effective **18-Nov-2008**.

The full Committee will be asked to ratify this decision at its next scheduled meeting whereupon a formal Certificate of Approval will be issued. In the interim your approval number is **H-2008-0334**

If the research requires the use of an Information Statement, ensure this number is inserted at the relevant point in the Complaints paragraph prior to distribution to potential participants.

You may then proceed with the research. Best wishes for a successful project

Professor Val Robertson
Chair, Human Research Ethics Committee

For communications and enquiries:

Human Research Ethics Administration

Research Services

Research Office

The University of Newcastle, Callaghan NSW 2308 , T +61 2 492 18999, Human-

Ethics@newcastle.edu.au

Funding Details

Funding body	Funding project title	First-named investigator	Administering institution	Uni of Newc Grant Reference
Cancer Council NSW	Two stage proposal...	Dr Billie Bonevski	University of Newcastle	G0189214

Appendix 2.6: Client discussion guide

Discussion Guide -Clients

Hi, all. My name is Jamie. I am from the Centre for Health Research and Psycho-oncology and I will be running today's discussion.

Today we are here to talk about smoking, including how you feel about quitting smoking and what types of ways community service organisations like [community service organisation] may be able to help you if you want to quit smoking. The discussion will take about 60 minutes, and we welcome everyone's opinion. I will be asking some specific questions to guide us through the discussion today, but you can talk about any aspect of smoking you want.

To start off, I just need to remind you about some aspects of the information that you were all provided with before the start of the group today. Firstly, anything you say during this discussion will remain confidential. This discussion today will be audio-taped. However, if you wish to delete your comments from the audio-tape, please see me at the end of this session. You do not have to answer any questions you do not want to, and if you no longer wish to participate at any stage, just let me know.

OK. Before we start it is important to set some basic ground rules which help to ensure everyone has an equal opportunity to participate in the group discussion. As I have said, I will be asking some specific questions today to guide us through our discussion. Sometimes it is easy to get caught up on a particular issue, but if this happens it won't allow sufficient time for all relevant issues to be covered. If this occurs, I will suggest we move on to the next issue. Are there any questions?

Current Smoking Behaviour and Attitudes

1. Can you tell us about your smoking, such as how much you smoke and when you smoke?

- When was the last time you had a smoke?
- What do you smoke? (e.g. tailor-made, roll your own, bulk tobacco, chop chop)
- How much would you normally smoke in a day?
- How often do you buy cigarettes or get given them or borrow them from others?
- When do you smoke? Through the day, certain times of the day, when you go out in the evening, at weekends?

2. Why do you smoke?

3. Tell me about what smoking means to you – is it just a habit, something you really enjoy, something you enjoy sometimes and not other times, something you wish you didn't do, an addiction?
4. Do you want to quit smoking? Now, or some time in the future?
5. Why do you want to quit smoking?

Past Quitting Experiences

5. Can you tell us about your past experiences of trying to quit smoking or reducing the amount you smoke?
 - What was that experience like for you?
 - When was it easy to quit/cut down/stop for a while?
 - When was it difficult?
6. Did you quit “cold turkey” or did you use some product or service to help you?
 - If you had some sort of help, what was it?
 - Did it help?
 - Was it easy or hard to get?
 - Was it expensive or inexpensive?
 - What made it work for you?
 - What made it not work for you?
7. What do you think was the main reason you started smoking again?

Future Quitting and the Role of Community Services

8. Where do you think is an appropriate place to be offered help to stop smoking if you want to quit?
 - a. Doctors? (why)
 - b. Pharmacy? (why)
 - c. School/work? (why)
 - d. Some people also think that community organisations such as [community service organisation] are well-placed to help people quit smoking. What do you think about that?
9. Does anyone currently get any help from [community service organisation] with their smoking, or has ever been offered help in the past? What did you think?
10. How would you feel if a staff person from [community service organisation] asked if you were interested in quitting and wanted any help with that?

11. If you decided now that you wanted to give up smoking and [community service organisation] was willing to help you do this, what kinds of help would you want from them?

- How would you feel if they offered you brief advice to quit smoking, such as talking to you about quitting smoking and offering some materials to help you? Do you think this would help you? Why or why not?
- How would you feel if they referred you to external quit smoking services like Quitline?
- How would you feel about being offered help with nicotine replacement therapy such as patches and gum?
- How would you feel about being offered group or individual counselling sessions?
- Who should deliver the sorts of support you are interested in? What people would be most helpful?

10. Is there anything you would not like [community service organisation] to do with regard to your smoking?

Conclusion

(When there are approximately 5 minutes remaining)

So, to summarise the main points of our discussion today....

I would like to thank you all for agreeing to participate in the discussion today.

If anyone would like to listen to the audio-tape of today's group discussion or erase anything they have said, please see me at the end, and we can do this.

I will now hand out the envelopes that contain the \$50 Coles/Myer vouchers.

Appendix 2.7 Statements of contribution from co-authors

Statement of contribution

I, Dr. Billie Bonevski, attest that Research Higher Degree candidate Jamie Bryant contributed substantially- in terms of study concept and design, data collection and analysis, and preparation of the manuscript- to the publication:

Jamie Bryant, Billie Bonevski, Christine Paul, Jon O'Brien, Wendy Oakes. Developing cessation interventions for the social and community service setting: A qualitative study of barriers to quitting among disadvantaged Australian smokers. BMC Public Health, 2011, 11:493, doi:10.1186/1471-2458-11-493.

Dr. Billie Bonevski (Co-author)

Date

Jamie Bryant (Candidate)

Date

Prof John Rostas (Assistant Dean Research Training)

Date

Statement of contribution

I, A/Prof Christine Paul, attest that Research Higher Degree candidate Jamie Bryant contributed substantially- in terms of study concept and design, data collection and analysis, and preparation of the manuscript- to the publication:

Jamie Bryant, Billie Bonevski, Christine Paul, Jon O'Brien, Wendy Oakes. Developing cessation interventions for the social and community service setting: A qualitative study of barriers to quitting among disadvantaged Australian smokers. BMC Public Health, 2011, 11:493, doi:10.1186/1471-2458-11-493.

A/Prof. Christine Paul (Co-author)

Date

Jamie Bryant (Candidate)

Date

Prof John Rostas (Assistant Dean Research Training)

Date

Statement of contribution

I, Jon O'Brien, attest that Research Higher Degree candidate Jamie Bryant contributed substantially- in terms of study concept and design, data collection and analysis, and preparation of the manuscript- to the publication:

Jamie Bryant, Billie Bonevski, Christine Paul, Jon O'Brien, Wendy Oakes. Developing cessation interventions for the social and community service setting: A qualitative study of barriers to quitting among disadvantaged Australian smokers. BMC Public Health, 2011, 11:493, doi:10.1186/1471-2458-11-493.

Jon O'Brien (Co-author)

Date

Jamie Bryant (Candidate)

Date

Prof John Rostas (Assistant Dean Research Training)

Date

Statement of contribution

I, Wendy Oakes, attest that Research Higher Degree candidate Jamie Bryant contributed substantially- in terms of study concept and design, data collection and analysis, and preparation of the manuscript -to the publication:

Jamie Bryant, Billie Bonevski, Christine Paul, Jon O'Brien, Wendy Oakes. Developing cessation interventions for the social and community service setting: A qualitative study of barriers to quitting among disadvantaged Australian smokers. BMC Public Health, 2011, 11:493, doi:10.1186/1471-2458-11-493.

Wendy Oakes (Co-author)

Date

Jamie Bryant (Candidate)

Date

Prof John Rostas (Assistant Dean Research Training)

Date

Appendix 3.1: Published manuscript

Citation: Bryant, J., Bonevski, B., Paul, C., O'Brien, J., Oakes, W. (2010). Delivering smoking cessation support to disadvantaged groups: A qualitative study of the potential of community welfare organisations. *Health Education Research*, 25(6), 979-990.

Delivering smoking cessation support to disadvantaged groups: a qualitative study of the potential of community welfare organizations

Jamie Bryant^{1*}, Billie Bonevski¹, Christine Paul¹, Jon O'Brien² and Wendy Oakes²

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Received on September 19, 2009; accepted on August 13, 2010

Abstract

Reaching disadvantaged groups for smoking cessation represents a significant challenge. Not-for-profit community service organizations (CSOs) represent a promising setting for the delivery of quit smoking support to disadvantaged smokers. However, their potential has not yet been explored. This qualitative study examined the acceptability of community service-delivered smoking cessation care. In-depth interviews and focus groups were conducted with 8 managers, 35 staff and 32 clients of CSOs between December 2008 and March 2009 in New South Wales, Australia. Discussions were audiotaped, transcribed and analysed using thematic analysis techniques. Quantitative surveys were also conducted to explore preferences for cessation support. Results showed that the acceptability of providing and receiving cessation support in the community service setting was high. Staff perceived the provision of quit support to be compatible with their role but reported barriers to providing care including competing priorities, insufficient resources and inadequate staff training. Brief intervention approaches were preferred by managers and staff, while financial incentives and access to free or subsidized nicotine replacement therapy (NRT) were desired by clients. The community service setting represents

a promising access point for engaging disadvantaged smokers for cessation and further research exploring the effectiveness of support delivered in this setting is clearly warranted.

Introduction

Tobacco smoking is the single greatest preventable cause of death and disease worldwide and is currently responsible for more than 5 million deaths each year [1]. Despite significant reductions in smoking prevalence in western developed countries over the past several decades [2–4], smoking remains highly prevalent among some subgroups of the population. Severely disadvantaged and marginalized groups such as the homeless, prisoners, the indigenous, individuals with a low income and individuals with a mental illness are consistently found to have significantly higher rates of tobacco use. For example, compared with current smoking prevalence of 16–20% in western developed countries, cross sectional and national health surveys have found rates between 26 and 30% among individuals with low income [5, 6] (individuals with the lowest socioeconomic status or living at or below the poverty level), between 32 and 50% for indigenous groups [6, 7], between 69 and 70% for individuals who are homeless [8, 9], between 35 and 90% for individuals with a mental illness [10–12] and between 72 and 79% among prisoner

populations [13–15]. As a result of these significantly higher smoking rates, disadvantaged groups suffer disproportionately from tobacco-related death and disease.

Accessing and engaging disadvantaged groups for smoking cessation represents a significant challenge [16]. Despite the fact that disadvantaged groups have some of the highest rates of smoking, they are less likely to access preventative health care services such as smoking cessation programmes, are less likely to receive advice and support to quit smoking from primary care providers [17] and are less likely to access telephone Quitlines even during mass media campaigns [18]. Innovative approaches to engage these smokers with cessation services are needed and one emerging approach is the integration of quit smoking support into existing networks of disadvantaged smokers [19, 20]. England's National Health Service Stop Smoking Services, which are dedicated cessation clinics set up in response to English health policy targets to reduce tobacco-related health inequalities [21], have recently reported success in targeting low income, pregnant and young smokers in intensive cessation services by delivering care in easily accessible local community settings such as community centres and libraries [22]. As a result of this targeted approach, 32.3% of all smokers accessing cessation services lived in the most disadvantaged areas compared with 9.6% of smokers who lived in the most advantaged areas [23]. This approach is novel and represents a significant change from support traditionally delivered by physicians and other health care workers in primary care settings. Within Australia, community service organizations (CSOs) represent a similarly innovative community-based setting for the delivery of smoking cessation care to hard-to-reach smokers.

CSOs are non-government, not-for-profit organizations that provide welfare services in the communities in which they are based. They provide a range of services including financial and family counselling, temporary accommodation, food and material aid and child and family support to individuals in need. Within Australia, the CSO sector is large, with recent reports estimating a throughput of

more than 3 million people each year [24]. CSOs have a number of characteristics which suggest they are well placed to provide smoking cessation support to disadvantaged smokers; they have existing established contact with a large number of disadvantaged smokers, are uniquely placed to address smoking in a holistic way alongside other issues faced by their clients and are in the position to provide personalized and ongoing support. The potential for integrating cessation care into existing community welfare services also means that CSOs represent a potentially sustainable and cost-effective access point. Despite the difficulty of accessing and engaging with disadvantaged smokers and the potential of CSO's to effectively target disadvantaged smokers for cessation, little research has examined the use of the CSO setting as an access point for delivering cessation support. One study has provided some evidence of potential effectiveness, with a recent pilot study reporting a verified 6-month quit rate of 7.5% among clients following a group quit programme delivered by a CSO. While a quit rate of this size might seem low, and the study had a number of limitations including a small sample size, this rate is comparable to cessation rates found with other hard-to-treat disadvantaged smokers [25, 26], providing evidence of the potential population impact of smoking cessation care delivered in this setting.

Despite this potential, little is known about the current provision of smoking cessation care by CSOs or their openness to routinely delivering such support in a community-based welfare setting. This qualitative study aimed to explore the perceptions of community welfare service managers, staff and clients about (i) the acceptability of providing and receiving cessation support, (ii) organizational barriers to providing support and (iii) the types of support considered appropriate and feasible.

Methods

Design

This study used a qualitative research design. A purposive maximum variation sampling approach

was used to ensure representation from the widest possible range of service types, staff and clients. Separate focus groups were conducted with clients and with staff of CSOs. In-depth interviews were conducted with managers. All participants also completed a brief pen and paper exit survey at the conclusion of the focus group or interview.

Setting

Eleven social services offered by six non-government community welfare organizations operating in New South Wales, Australia, participated. The types of services included child, youth and family early intervention services, community care centres, residential drug and alcohol services and outreach services for homeless young people. Some services were 'drop-in' services and some provided ongoing casework and counselling support. There was also considerable range in the size and types of support the services provided; some of the more intensive early intervention services had capacity for 15 clients, while some community care centres which provided material aid and referral assisted over 1000 clients per year.

Recruitment

According to the Australian Council of Social Service Australian community sector survey [27], there are over 5800 not-for-profit social services in Australia. Seven of the largest CSO's in terms of the range, number and types of services they provide that operate in New South Wales, Australia, were invited to an information meeting to discuss involvement in the research. Representatives from five organizations attended this meeting and all expressed interest in being involved in the research. A top-down approach to recruitment was then used; the chief executive officer (CEO) of each organization was contacted by telephone and invited to participate in the research. All provided consent. CEO's were then asked to provide the details of area managers who could nominate services within the organization for participation. The manager's of the nominated services were then contacted and given the opportunity for their service to be in-

involved in client focus groups, staff focus groups and/or telephone interviews with service managers dependent on availability of staff and clients and the number of hours they were able to commit to the research. One additional organization was recruited after hearing about the research from another organization and expressing an interest in being involved. Table I shows the range of focus groups and interviews selected by services. Purposeful sampling was used to ensure inclusion of a diverse range of service and client types [28].

Procedure

Client focus groups

Clients who smoked tobacco and were aged over 16 years were eligible to participate. Clients were identified by service staff and invited by letter to participate in a 1-hour group discussion. Client focus groups were conducted in a private room by two facilitators. Clients were provided with reimbursement for participation.

Staff focus groups

Staff who had contact at least weekly with clients at the service were eligible to participate. All eligible staff employed at each participating service were invited to participate in a 1-hour focus group via a letter from the research team that was distributed by the service manager. Staff focus groups were conducted in a private room by two facilitators.

Manager interviews

Managers who were involved in the day-to-day running of their service were eligible to participate. All eligible managers employed at the services contacted were invited to participate in a telephone interview. Manager telephone interviews were conducted by one interviewer.

For all focus groups and interviews, sampling continued until saturation of the data was reached [where facilitators agreed that no new themes were emerging from the discussions (29)]. All participants were informed that discussions would be audiotaped and that de-identified comments may be used for reporting purposes. This study had

Table 1. Focus group and interview participant number and gender by service type

	Manager interview		Staff focus group		Client focus group	
	Total N	Male or female	Total N	Female N	Total N	Female N
Service A: child, youth and family early intervention	1	F	4	4	5	5
Service B: community care centre	1	M			6	2
Service C: community care centre	1	M				
Service D: infant and child service			2	2		
Service E: residential drug and alcohol programme					8	8
Service F: residential adolescent life management service	2 ^a	M and F	7	4	3	0
Service G: infants and child services					6	5
Service H: family support service	1	F	5	4		
Service I: family support service ^b	1	F	6	6		
Service J: family support service ^b	1	F	7	6		
Service K: outreach service for homeless youth			4	4	4	2
Total participants	8		35	30	32	22

^aAs this service had recently undergone a policy change where they had banned smoking, manager interviews were conducted with both the current coordinator of the service, as well as the coordinator who was in charge at the time the ban was introduced.

^bStaff from these services were combined to form one staff group.

ethics approval from the University of Newcastle Human Research Ethics Committee and each organization provided approval for participation.

Discussion guide

Semi-structured interview protocols were used to guide discussions. For clients, this involved discussion of current smoking behaviour, past quit attempts, motivation to quit and attitudes and preferences for different types of cessation strategies. For managers and staff, this involved discussion of attitudes and service policies around smoking, the types of cessation care currently offered and attitudes and preferences for developing and implementing cessation strategies into routine care.

Quantitative exit survey

At the conclusion of each focus group or interview, participants were asked to complete a brief exit survey assessing their attitudes towards a range of smoking cessation interventions. Managers and staff were asked to rate the desirability ('desirable', 'not desirable' or 'unsure') and the feasibility ('feasible', 'not feasible' or 'unsure') of 17 possible smoking cessation strategies that could be offered

to clients. Clients were asked to rate the acceptability ('would like', 'wouldn't like' or 'don't care') of 16 similar smoking cessation strategies that could be offered by CSOs. Cessation strategies included in the survey were derived from strategies identified by the Cochrane Collaboration Tobacco Addiction Group that the authors identified as having the potential to be implemented in a community service environment [30].

Analysis

Qualitative data analysis

Discussions were audiotaped, transcribed verbatim and the transcripts checked for errors. Data collection and analysis were conducted between December 2008 and March 2009. Data were analysed qualitatively using thematic analysis by one facilitator (J.B.) using NVivo version 8.0 [31]. To establish inter-rater reliability, a proportion of transcripts were independently analysed by the second facilitator (J.O.) and emergent themes were compared and reconciled where necessary.

Quantitative exit survey analysis

For manager and staff surveys, proportions were calculated for each variable. Client survey ratings

of would like and don't care were combined to represent an openness to receiving the type of quit smoking support from the CSO and proportions calculated.

Results

Qualitative results

Sample

Eight telephone interviews lasting an average of 30 min were conducted with managers from seven services. Thirty-five staff members participated in six staff focus groups which lasted an average of 54 min. Thirty-two clients participated in six client focus groups which lasted an average of 50 min. Twenty-two clients and 35 staff and managers were females. Four staff members and one manager identified themselves as smokers. Two staff members identified themselves as ex-smokers.

Manager and staff results

Manager and staff attitudes towards smoking.

Smoking was reported to be highly prevalent among clients, with estimates of smoking prevalence varying between 25 and 99%. Managers and staff were highly aware of the health consequences and financial impacts of smoking, especially for clients who were on limited incomes; yet, smoking was accepted, considered 'pretty normal' and staff often reported turning a blind eye to smoking.

Manager and staff attitudes towards smoking (quotes):

Well I think we just turn a blind eye It's a shame they do, but we accommodate it I suppose. We're conscious if we're having a group they need a break. (*Female staff member, child and family early intervention service*).

None of us kind of thinks smoking's a good idea, it's just that we kind of need to accommodate our

clients. (*Female staff member, child and family early intervention service*).

I think a lot of staff accept it due to the young people coming off harder drugs A lot of staff, including myself, don't really frown upon it. (*Male staff member, residential adolescent life management service*).

Current provision of cessation support. Most services did not provide quit smoking support to clients. For most, smoking had 'just not been on our radar'. Two services reported routinely asking about and documenting new client smoking status. One residential youth drug and alcohol service offered subsidized courses of nicotine replacement therapy (NRT) to clients who expressed an interest in quitting smoking but reported low uptake. Informal discussions about the benefits of quitting smoking and referral to telephone support such as Quitline or a General Practitioner was sometimes provided opportunistically in response to a client's request for help or support, but otherwise the provision of smoking care was largely not seen as part of the staff members' role. In some instances, managers and staff reported discouraging clients from giving up smoking as it was perceived as the only effective coping mechanism available to clients who were stressed and in crisis.

Current provision of cessation support (quotes):

If they asked for and wanted help with smoking then yes we would do that ... but we don't go in there and say oh gee, you should stop smoking. (*Female manager, family support service*).

I've encouraged people but it's probably not really in my job description. If they talk about it, I will highlight the benefits of it and praise them and encourage them and stuff but yeah, it's not something that I would say 'let's talk about your smoking. (*Female staff member, family support service*).

There would be time when we would actually discourage families from giving up smoking at

that particular point in time, because of the high stress they're under. And it's actually one of the only coping strategies that they have got. (*Female manager, family support service*).

Manager and staff attitudes towards the acceptability of providing quit support. Despite currently providing little quit smoking support to clients, there was strong agreement from staff and managers that CSOs were an appropriate setting for the delivery of quit smoking care. Providing cessation support was considered highly relevant and a good fit with the organizations' focus on improving the health and well-being of clients. Trusting relationships between staff and clients and client familiarity in receiving support from the organization were identified as the primary reasons the community service setting was well suited to providing quit smoking care. A minority of staff members were concerned that providing quit smoking support would negatively impact on the ability of the organization to provide welfare support. While these staff members saw the CSO as a good place to identify clients who wanted to quit smoking, they believed support was more appropriately provided through external specialized services.

Manager and staff acceptability of providing quit support (quotes):

I think it would be interesting to ask our clients about whether they smoke and if they wanted to talk about it and look at ways to manage it Because I don't think we know enough about it. (*Female staff member, family support service*).

If [*the client*] is willing to make that [*quitting smoking*] part of their goals, then we would help them work towards that. (*Female manager, child and family early intervention service*).

Yeah, because smoking is not our core business. We are a welfare agency and we support families through crisis but smoking is never

a crisis. (*Female staff member, family support service*).

Why the CSO is well placed to provide cessation support (quotes):

We see them for a long time and we get to know them quite intimately, so the barriers are let down after establishing a rapport. (*Female staff member, residential adolescent life management service*).

I think we are well placed because we have access to families and we've created our relationship with families and so there's that trust there. (*Male staff member, family service*).

I think it would be a good thing because it provides an access point for them and a place where they feel comfortable and safe to go, rather than having to go somewhere strange with different people. (*Female staff member, family support service*).

Perceived barriers of providing smoking cessation support to clients. Despite the high perceived benefit of providing cessation support to client, several barriers to providing support were identified. The most frequently reported barrier was low perceived priority. Clients were often in crisis when first in contact with the community service and had immediate needs such as homelessness or domestic violence that needed to be addressed. Another barrier to the provision of quit smoking support was inadequate staff time. Services were often already working at capacity and reported to be 'overloaded' and 'burdened' with their current caseloads. Staff reported that they had inadequate training, skills and knowledge about how to address the issue of tobacco with their clients. There was also a reluctance to pro-actively raise the issue of smoking with clients. Smoking was viewed as a personal choice, and there was concern among managers and staff that clients may perceive advice to quit smoking as judgemental, intrusive or 'nagging' and that the provision of this type of support might make clients hesitant to continue contact with the service.

Perceived barriers of providing smoking cessation support to clients (quotes):

I guess we move in largely when there is a crisis in the household and quite possibly The crisis is not about smoking at that time. It's about another issue. (*Female manager, family support service*).

Not with the current resources we have, no The staff has way too much to do already. (*Female manager, family support service*).

I don't know how well skilled I am, confident I would feel, giving advice about stopping smoking. (*Female staff member, family support service*).

If they feel like we're trying to make them give up smoking, we're potentially going to lose them. If they feel like we're judging them, we're going to lose them. (*Male manager, community care centre*).

Types of cessation support considered appropriate to offer clients in the CSO setting. There was variability between services in the types of support considered appropriate to offer clients; offering group quit smoking programmes or integrating smoking care into existing programmes was considered feasible by some services but was considered resource heavy and unrealistic by others. Offering vouchers for free or heavily subsidized NRT that could be redeemed at a nearby pharmacy was perceived to be of enormous benefit to clients who could not afford to access such support. Flexibility with the provision of services and being able to offer repeated opportunities for quitting following relapse were considered important. Staff and managers reported strong preferences for support that was tailored to the particular client groups they were working with and wanted clear guidance about the types of support they could provide that would be relevant to the unique needs of their clients.

Types of cessation support considered appropriate to offer clients in the CSO setting (quotes):

I think we need more than just general education ... we're working with high-risk, a targeted

group. It's not the mainstream, you know who respond well to public education, public health stuff. They're a hard to reach target group—so how can we get a custom-made sort of program or strategies and guidelines for how we can implement them. Yeah. So something more than just you know, a general public health program. (*Female staff member, child and family early intervention service*).

Client results

Client acceptability of receiving cessation support from the CSO. Most clients reported a desire to quit smoking and had made multiple failed attempts to quit in the past. Clients reported a strong desire for support and encouragement to quit smoking but reported being unable to receive this from partners, family or friends who were often also smokers. The opportunity to receive support, encouragement and praise to quit smoking from staff at the CSO alongside the support already provided was viewed positively.

Client acceptability of receiving cessation support from the CSO (quotes):

If I ever felt like quitting yeah Because then I'd know it would be good encouragement. I like speaking to the workers when I'm stressing, so I think it would be good. (*Male client, residential adolescent life management service*).

I reckon it would be alright as long as we weren't feeling like we were getting pestered. (*Female client, young mothers service*).

Yeah it would be alright, they could ask. (*Male client, community service*).

Types of cessation support wanted by client:

Again, there was variability in client preferences for support. Some wanted to attend quit smoking groups where they could meet and receive support from others who were also trying to quit smoking, while some preferred informal or one-on-one support. Clients acknowledged that quitting was likely to take multiple attempts and

reported a strong preference for personalized quit support that could be offered by a familiar person over an extended period of time. Telephone support like Quitline was viewed with scepticism and was perceived to be ineffective, despite the fact that the majority of clients acknowledged never having accessed this service.

Types of cessation support wanted by clients (quotes):

Support ... I don't know, just a social worker to come around and you know, just have a bit of a chat ... meet them at the park or something. (*Female client, child and family early intervention service*).

I'd like to go to someone for some serious advice, you know, someone who actually cares and will support you ... I would prefer to get useful advice from a person—not over the phone. (*Male client, residential adolescent life management service*).

If you were keen to give up, smoking groups would be great because then you would meet people doing the same thing. (*Female client, child and family early intervention service*).

Maybe subsidise the quit smoking products. Maybe someone could subsidise these products so they're affordable. (*Female client, residential drug and alcohol program*).

Quantitative exit survey results

Sample

Exit surveys were completed and returned by all participants ($N = 75$).

Manager and staff exit survey results

Manager and staff ratings of the desirability and feasibility of cessation strategies are reported in Table II. Strategies rated most desirable and feasible were brief intervention and referral approaches. Strategies that were considered undesirable included offering clients individual quit smoking counselling (35.7%), providing non-financial

incentives like shop vouchers (33.3%) or government sponsored financial incentives (26.2%) and providing alternative therapies like acupuncture (28.6%) and hypnosis (23.8%).

Client exit survey results

Client ratings of the type of cessation support they would be open to receive are presented in Table III. The strategies clients were most open to included being asked if they smoke cigarettes by staff at the CSO (100%), being asked if they are interested in quitting (94%), being given cash rewards (94%) or non-cash rewards for quitting (94%) and having access to free or subsidized NRT (88%).

Discussion

Main findings

This qualitative study provides insight into the attitudes of managers, staff and clients of CSOs in providing and receiving cessation support.

Overall, managers and staff reported strong support for providing cessation care to clients: they acknowledged that smoking was detrimental to their clients' well-being and considered smoking care an appropriate component of their role as carers. They expressed a willingness to provide certain types of support to clients which primarily consisted of low-intensity strategies such as asking about and recording client smoking status and providing information, brief advice, general support and referral. Perceived barriers to providing support were similar across all services and included smoking cessation being seen as a lower priority than the provision of other types of welfare support and lack of resources, time and training to provide quit smoking services. Staff and managers were also concerned that raising the issue of smoking may appear judgemental or harm rapport with their clients. Providing training and education for staff about the importance of addressing smoking as a long-term health and financial issue and how to approach clients and provide support in a non-judgemental way is likely to aid significantly in addressing these concerns.

Table II. Manager and staff ratings of 10 most desirable and 10 most feasible cessation strategies (N = 43)

Cessation strategy	Desirable (%)	Not desirable (%)	Unsure (%)
Providing quit smoking pamphlets and information to clients	92.9	0	7.1
Referring clients to quit smoking services that provide telephone support (e.g. Quitline)	88.4	2.3	9.3
Developing policies about smoking at the organization	88.1	0	11.9
Providing support and encouragement for clients who make quit smoking attempts	86.0	0	14.0
Providing brief verbal advice to clients about the negative effects of smoking and the benefits of quitting	78.6	4.8	16.6
Asking clients about their smoking status	74.4	14.0	11.6
Giving clients a video or DVD about quitting smoking	72.1	9.3	18.6
Recording smoking status in client records	62.8	20.9	16.3
Running a group quit smoking counselling programme	60.5	20.9	18.6
Offering individual quit smoking counselling	54.8	35.7	9.5
	Feasible (%)	Not feasible (%)	Unsure (%)
Providing quit smoking pamphlets and information to clients	85.4	2.4	12.2
Referring clients to quit smoking services that provide telephone support (e.g. Quitline)	83.3	4.8	11.9
Providing support and encouragement for clients who make quit smoking attempts	81.0	2.4	16.6
Developing policies about smoking at the organization	76.7	4.7	18.6
Asking clients about their smoking status	73.8	9.5	16.7
Providing brief verbal advice to clients about the negative effects of smoking and the benefits of quitting	67.4	7.0	25.6
Giving clients a video or DVD about quitting smoking	66.7	7.1	26.2
Recording smoking status in client records	61.9	11.9	26.2
Organizing a quit smoking counsellor to make home visits to clients	39.5	16.3	44.2
Running a group quit smoking counselling programme	38.1	23.8	38.1

Clients were also enthusiastic about receiving support from staff at the CSO. Clients spoke positively about the help and support they already received from CSOs, including the provision of accommodation, life skills training and counselling and reported that receiving support and encouragement would be of great benefit during quit attempts. Manager and staff perceptions that clients would find questions and advice about smoking intrusive and judgemental appeared largely unfounded.

Opportunities for intervention

Agreements in the types of cessation strategies managers and staff were willing to provide and the types of cessation support clients were open to represent encouraging opportunities for intervention. Strategies considered acceptable to at least half of all managers, staff and clients included asking

about smoking status, providing pamphlets and information about quitting, providing videos or DVDs about quitting, providing individual quit smoking counselling and providing group quit smoking counselling. The provision of brief advice (asking about smoking status and providing pamphlets and information), group counselling and individual quit counselling all align with evidence-based practice for adult smoking cessation, so are likely to be good starting points for incorporating into routine care in the CSO environment. Also strongly endorsed by a number of clients, staff and managers was the provision of free or subsidized NRT. NRT has been repeatedly shown to be cost effective and to increase the success of quit attempts [32, 33]; however, the cost is frequently prohibitive to smokers on a low income. The willingness of CSOs to facilitate access to free or subsidized NRT

Table III. *Client ratings of cessation strategies (N = 32)*

How would you feel if staff at [organization] ...	Would like or don't care (%)	Wouldn't like (%)
Asked you if you smoke cigarettes	100	0.00
Asked you if you were interested in quitting	93.8	6.2
Offered you cash rewards if you quit	93.7	6.3
Provided non-cash rewards like footy tickets or shop vouchers if you quit	93.7	6.3
Offered you free or cheap nicotine patches or gum	87.5	12.5
Offered you an alternative therapy like hypnosis	87.5	12.5
Told you about ways to stop smoking	87.5	12.5
Ran a counselling group for smokers to help you quit	84.4	15.6
Offered you an alternative therapy like acupuncture	81.3	18.7
Gave you a video or DVD about quitting smoking	81.3	18.7
Offered you quit smoking pamphlets	78.1	21.9
Gave you a computer or internet-based programme to help you quit	78.1	21.9
Offered you individual counselling to help you quit	68.8	31.2
Had a quit smoking counsellor who could visit you at home	62.5	37.5
Put you in touch with telephone quit help like Quitline	53.1	46.9
Did not allow any smoking at the service	37.5	62.5

deserves further exploration and may be a particularly important factor in effectively engaging disadvantaged smokers in smoking cessation programmes [34] and increasing the success of quit attempts.

Further research

Russell's landmark 1979 study [35] suggested that smoking cessation was possible and efficacious in the general practice setting. However, research which followed showed that many organizational, provider and patient, barriers to the provision of cessation assistance in this setting existed including time constraints [36–39], lack of resources [36], lack of training [36–39] and perceived lack of client motivation [36, 38]. Among health professionals serving disadvantaged communities, additional cited barriers include the fact that patients often

present in crisis and are often unable to pay for cessation treatment [36]. Similar barriers were identified by CSO staff in this study. Research has helped identify strategies to overcome these barriers and improve rates of practitioner delivery of smoking cessation advice [40]. Similar research into ways to overcome the barriers identified by staff and clients and improve the effectiveness of CSO-delivered support for highly addicted disadvantaged smokers is needed. It was noteworthy that managers and staff indicated an openness and willingness to work through identified barriers. Given the demonstrated acceptability of implementing cessation support in this setting, further research should develop and examine the effectiveness of interventions likely to be cost effective and successful within the community service setting. In particular, examination of strategies with high ratings of acceptability among managers, staff and clients are clearly warranted.

Implications for service providers and policy makers

This research shows that CSOs show significant promise in encouraging and supporting quit attempts among disadvantaged smokers. Importantly, they provide an access point to a large number of disadvantaged smokers desiring help to quit and are open to providing support if provided with the time, training and guidance to do so. Clients also appear motivated to quit smoking and are open to receiving personalized support from CSOs. The fact that managers and staff often expressed different opinions about the type of delivery or intensity of support that they would like to provide is indicative of the large variability in the types of support services provide, the expertise of staff and the specific needs of clients who are receiving care. Tailoring cessation strategies for each organization or offering a menu of evidence-based cessation strategies may be necessary for widespread uptake in this setting.

Study limitations and strengths

This study used qualitative methods to illustrate the views of disadvantaged welfare clients and their

carers about assistance to quit smoking. Health services research tends to be dominated by quantitative approaches and qualitative methods are often criticized for not being reliable, valid and objective [41]. However, within the context of understanding underlying issues, the appropriateness of an intervention and gaining a sense of the match between an intervention, a system and the user, qualitative methods are critical [41–43]. Given the qualitative nature of the study and the purposive sampling used, the results cannot be considered representative or highly generalizable. The study sample was drawn only from non-government CSOs operating in New South Wales, Australia, and therefore, the results should be interpreted only in this context. Further research is required to generalize these findings to other types of community organizations operating in other areas. Further, we did not collect detailed demographic information from clients who participated in focus groups and this lack of specific participant information limits the extent the findings can be generalized to disadvantaged subgroups. In terms of analysis, thematic analysis has the potential to result in the de-contextualization of the speakers' words; however, great care was taken to analyse the participants' words in their broader context. Finally, we have used some numerical counting from exit surveys to help describe the prevalence of particular preferences and views within the samples interviewed. These should not be taken to imply statistical representation of the population under consideration but are used to represent the diversity of views.

Conclusion

CSOs are providers of a range of welfare services to a diverse range of disadvantaged individuals in the Australian community. They are uniquely placed to tackle the high prevalence of smoking among their client population, are considered appropriate for the delivery of cessation care by service providers and service users and represent an innovative and promising point for accessing disadvantaged smokers. Further research which examines the effectiveness

of support delivered in this setting is clearly warranted.

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Conflict of interest statement

None declared.

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Appendix 3.2: Staff Information Statement



V#2

22/10/08



INFORMATION STATEMENT

Staff

Tackling Tobacco Research Project

You are invited to participate in a research project to talk about your thoughts and opinions about providing quit smoking programs in your organisation.

Who is conducting this research?

This research is being conducted by Dr Billie Bonevski, Dr Chris Paul and Ms Jamie Bryant from the Centre for Health Research and Psycho-oncology of Cancer Council NSW and the University of Newcastle. The research is part of Ms Bryant's studies at the University of Newcastle, and will be supervised by Dr Bonevski and Dr Paul. This research is part of Cancer Council NSW's Tackling Tobacco Program.

Who can participate in the research?

Staff of [community service organisation] who have face-to-face contact with clients at least weekly are invited to participate. The Chief Executive Officer of [community service organisation] has agreed for the organisation to be involved in this research, and has allowed us to invite staff and clients to participate.

What will the research involve?

If you agree to participate, you will be invited to take part in a group discussion. This discussion will involve 4 to 8 people who are also staff members of community service organisations, talking about their thoughts and opinions about providing smoking cessation services to clients. This discussion will be held at [insert venue name, location and date/time] and will take 1.5 hours, including time for refreshments and explanations at the start. The discussion will be conducted by Ms Jamie Bryant and will be recorded on audio-tape. At the end of the

discussion, you will be asked to complete a short survey and will be provided with a \$50 Coles/Myer voucher as reimbursement to cover your travel and time to come to the discussion. You will also be invited to indicate your interest in reviewing the study report when it is available, to comment on whether it represents the nature of the discussions.

What choice do you have?

Participation in this research is entirely your choice. Only those people who give their informed consent will be included in the project. Whether or not you decide to participate, your decision will not disadvantage you or your employment in any way. If you do decide to participate you may withdraw from the project at any time without giving a reason, and can withdraw, prior to 31 December 2008, any data you have provided. At the end of the discussion you can listen to the tape and erase your comments if you wish.

How will your privacy be protected?

We will ensure your privacy is protected in a number of ways. All information we collect is confidential, and will be kept in locked cabinets that can only be accessed by authorised researchers. On completion of the study, all paper documents will be stored in a locked storage facility, and electronic copies of transcripts will be moved to CD-ROM and stored in a locked storeroom with the audiocassette for five years. We will not use your contact details for anything other than to contact you about this study and will not give your name to anyone, apart from the researchers involved in this study.

What will the information collected be used for?

Information collected from the discussion groups will be used to design programs that community service organisations can use to help clients who want to quit smoking. The information may also be used by Cancer Council NSW to support people who want to quit smoking, published in scientific journals, used in presentations and included in a thesis submitted for Ms Bryant's University studies. While quotes from some discussions may be used to give examples of people's points of view, individual participants will not be identified in any reports arising from the research.

Can I be informed of the outcomes of the study?

Once the discussion groups have been analysed, we can provide you with a summary of the results. If you would like a copy of these results, please provide your mail or email details on the attached consent form and bring this with you to the group discussion.

What are the risks and benefits of participating?

You may benefit from taking part in this discussion by gaining a better understanding of some of the factors that may encourage your clients to smoke or make their quit attempts unsuccessful. We do not anticipate any risks from your participation in this research.

What do you need to do to participate?

Please read this Information Statement and be sure you understand its contents before you consent to participate. If you wish to participate, please contact [organisation representative on ...] or contact [the researchers on ...].

For more information

If you have any questions about participating in the study, please contact myself, Jamie Bryant, on this toll free number 1800 033 246 or on (02) 49246332 or Jamie.Bryant@newcastle.edu.au. You can also contact Dr Billie Bonevski on (02) 49 246343 or Billie.Bonevski@newcastle.edu.au (Monday, Wednesday and Friday).

Thank you for considering this invitation.

Yours sincerely,

Dr Billie Bonevski
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This project has been approved by the University's Human Research Ethics Committee, Approval No.H-2008-0334. Should you have concerns about your rights as a participant in this research, or you have a complaint about the manner in which the research is conducted, it may be given to the researcher, or, if an independent person is preferred, to the Human Research Ethics Officer, Research Office, The Chancellery, The University of Newcastle, University Drive, Callaghan NSW 2308, telephone (02 49216333, email Human-Ethics@newcastle.edu.au.

Appendix 3.3: Staff consent form



V#2

22/10/08

CONSENT FORM

Staff

Tackling Tobacco Research Project

I agree to participate in the Tackling Tobacco research project and give my consent freely.

I understand that the project will be conducted as described in the Information Statement, a copy of which I have retained.

I agree that:

- The discussion will be audio-taped
- I can edit or erase anything I say from the tape
- Anything said during the discussion is confidential
- Comments or quotes recorded on the tape may be used in written reports (subject to consent below), but no names or identifying information will be used
- I can withdraw from the discussion at any time, without giving a reason
- I have had the opportunity to have questions answered to my satisfaction.

Consent to participate:

I give my consent to participate in a focus group discussion.

Print name: _____ Signature: _____ Date: _____

Consent to use comments or direct quotes from the audio-tapes in reports and publications:

I give permission for researchers from Cancer Council NSW to use comments or direct quotes from the audio-tapes in written reports and publications. I understand no names or identifying information will be used.

Print name: _____ Signature: _____ Date: _____

If you would like to receive feedback on the results of these groups, please provide your mailing details in the Request for Results box provided over the page.

Request for Results

On completion of this research, a summary of results will be made available to those who would like a copy. If you would like to pick up a copy of the results from your community service organisation, please provide your name below. Alternatively, if you would like a copy of the summary to be posted to you, please provide your name and address or email address below.

Name _____

Mailing address or email _____

Yours sincerely,

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Appendix 3.4: Manager Information Statement



V#3

17/12/08

INFORMATION STATEMENT

Managers

Tackling Tobacco Research Project

You are invited to participate in a research project to talk about your thoughts and opinions about providing quit smoking programs in your organisation.

Who is conducting this research?

This research is being conducted by Dr Billie Bonevski, Dr Chris Paul and Ms Jamie Bryant from the Centre for Health Research and Psycho-oncology of Cancer Council NSW and the University of Newcastle. The research is part of Ms Bryant's studies at the University of Newcastle and is supervised by Dr Bonevski and Dr Paul. This research is part of the Cancer Council NSW's Tackling Tobacco Program.

Who can participate in the research?

We would like to invite managers involved in the day-to-day management of their service to participate in a telephone interview. The Chief Executive Officer of [community service organisation] has agreed for the organisation to be involved in this research, and has allowed us to invite managers to participate.

What will the research involve?

If you agree to participate, you will be invited to take part in a telephone interview. This will involve talking about your thoughts and opinions about providing quit smoking programs in your organisation. This interview will take about 30 minutes, will be conducted by Ms Jamie Bryant and will be recorded on audio-tape. At the end of the interview, you will be asked to complete a short survey. You will also be invited to indicate your interest in reviewing the

study report when it is available to comment on whether it represents the nature of your discussion.

What choice do you have?

Participation in this research is entirely your choice. Only those people who give their informed consent will be included in the project. Whether or not you decide to participate, your decision will not disadvantage you in any way. If you do decide to participate you may withdraw from the project at any time without giving a reason, and can withdraw, prior to 28 February 2009, any data you have provided. At the end of the discussion you can listen to the audio-tape and erase your comments if you wish.

How will your privacy be protected?

We will ensure your privacy is protected in a number of ways. All information we collect is confidential and will be kept in locked cabinets that can only be accessed by authorised researchers. On completion of the study, all paper documents will be stored in a locked storage facility, and electronic copies of transcripts will be moved to CD-ROM and stored in a locked storeroom with the audiocassette for 5 years. We will not use your contact details for anything other than to contact you about this study and will not give your name to anyone, apart from the researchers involved in this study.

What will the information collected be used for?

Information collected from the interview will be used to design programs that community service organisations can use to help clients who want to quit smoking. The information may also be published in scientific journals, used in presentations and included in a thesis submitted for Ms Bryant's University studies. While quotes from some discussions may be used to give examples of people's points of view, individual participants will not be identified in any reports arising from the research.

Can I be informed of the outcomes of the study?

Once the interviews have been analysed, we can provide you with a summary of the results. If you would like a copy of these results, please provide your mail or email details on the attached consent form.

What are the risks and benefits of participating?

You may benefit from taking part in this interview by gaining a better understanding of some of the ways your organisation may help clients who wish to stop smoking. We do not anticipate any risks from your participation in this research.

What do you need to do to participate?

Please read this Information Statement and be sure you understand its contents before you consent to participate. If you wish to participate, please contact Jamie Bryant, whose contact details are below.

For more information

If you have any questions about participating in the study, please contact myself, Jamie Bryant, on this toll free number 1800 033 246 or on (02) 49 138 618 or Jamie.Bryant@newcastle.edu.au. You can also contact Dr. Billie Bonevski on (02) 49 138 619 or Billie.Bonevski@newcastle.edu.au (Monday, Wednesday and Friday).

Thank you for considering this invitation.

Yours sincerely

Dr Billie Bonevski
Senior Research Academic
CHERP

Billie.Bonevski@newcastle.edu.au

(02) 49138619

Dr Chris Paul
Senior Research Academic
CHERP

Chris.Paul@newcastle.edu.au

(02) 49138472

Ms Jamie Bryant
PhD Candidate
CHERP

Jamie.Bryant@newcastle.edu.au

(02) 49138618

This project has been approved by the University's Human Research Ethics Committee, Approval No.H-2008-0334. Should you have concerns about your rights as a participant in this research, or you have a complaint about the manner in which the research is conducted, it may be given to the researcher, or, if an independent person is preferred, to the Human Research Ethics Officer, Research Office, The Chancellery, The University of Newcastle, University Drive, Callaghan NSW 2308, telephone (02) 49216333, email Human-Ethics@newcastle.edu.au.

Appendix 3.5: Manager consent form



V#3

17/12/08



CONSENT FORM

Managers

Tackling Tobacco Research Project

I agree to participate in the Tackling Tobacco research project and give my consent freely.

I understand that the project will be conducted as described in the Information Statement, a copy of which I have retained.

I agree that:

- The interview will be audio-taped
- I can edit or erase anything I say from the tape
- Anything said during the interview is confidential
- Comments or quotes recorded on the audio-tape may be used in written reports (subject to consent below), but no names or identifying information will be used
- I can withdraw from the interview at any time, without giving a reason
- I have had the opportunity to have questions answered to my satisfaction.

Consent to participate:

I give my consent to participate in the interview.

Print name: _____ Signature: _____ Date: _____

Consent to use comments or direct quotes from the audio-tapes in reports and publications:

I give permission for researchers from Cancer Council NSW to use comments or direct quotes from the audio-tapes in written reports and publications. I understand no names or identifying information will be used.

Print name: _____ Signature: _____ Date: _____

If you would like to receive feedback on the results of the interviews, please provide your mailing details in the Request for Results box provided over the page.

Request for Results

On completion of this research, a summary of results will be made available to those who would like a copy. If you would like to pick up a copy of the results from your community service organisation, please provide your name below. Alternatively, if you would like a copy of the summary to be posted to you, please provide your name and address or email address below.

Name _____

Mailing Address or Email _____

Yours sincerely,

Dr Billie Bonevski
Senior Research Academic
CHeRP
Billie.Bonevski@newcastle.edu.au
(02) 49138619

Dr Chris Paul
Senior Research Academic
CHeRP
Chris.Paul@newcastle.edu.au
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Ms Jamie Bryant
PhD Candidate
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Jamie.Bryant@newcastle.edu.au
(02) 49138618

This project has been approved by the University's Human Research Ethics Committee, Approval No.H-2008-0334. Should you have concerns about your rights as a participant in this research, or you have a complaint about the manner in which the research is conducted, it may be given to the researcher, or, if an independent person is preferred, to the Human Research Ethics Officer, Research Office, The Chancellery, The University of Newcastle, University Drive, Callaghan NSW 2308, telephone (02) 49216333, email Human-Ethics@newcastle.edu.au.

Appendix 3.6: Manager interview guide

Interview Guide -Managers

Services which have implemented programs in the past

Hi, everyone. My name is Jamie. I am from the Centre for Health Research and Psycho-oncology. This is Jon, from the Cancer Council. We will be running today's discussion.

Today we are here to talk about smoking and quitting smoking, including how you feel about offering support to help clients within your organisation quit smoking. The discussion will take about 60 minutes, and we welcome everyone's opinion. I will be asking some specific questions to guide us through the discussion today, but you can talk about any aspect of smoking you want to during the discussion.

To start off, I just need to reiterate some aspects of the Information Statement that you were all provided with before the commencement of the group today. Firstly, anything you say during this discussion will remain confidential. This discussion today will be audio-taped. However, If you wish to delete your comments from the audio-tape please see me at the end of this session. If you no longer wish to participate at any stage just let me know.

OK. Before we start it is important to set some basic ground rules which help to ensure everyone has an equal opportunity to participate in the group discussion. As I have said, I will be asking some specific questions today to guide us through our discussion. Sometimes it is easy to get caught up on a particular issue, but if this happens it won't allow sufficient time for all relevant issues to be covered. If this occurs, I will suggest we move on to the next issue. Are there any questions?

To start off, can we go around the room and have each person introduce themselves and describe their role in [community service organisation] and what type of service they work in?

Smoking in the Organisation

1. How pro- or anti-smoking would you say your organisation is? Why?

- What proportion of staff/clients would you say smoke?
- Does smoking occur in this setting between clients and staff?
- Why do you think this is?

2. As managers, how do you see your role in encouraging quitting or a smoke-free environment for staff and clients?

- How high a priority is it for you, compared with your other roles and responsibilities in the organisation?
- Would you say that's generally the case among managers in your organisation, or are you a little more/less interested in the issue than other managers?

Past Experience of Implementing a Smoking Policy or Program

3. Can you tell us about any smoking policies or programs or support for quitting smoking that your organisation has provided in the past?

- What did this policy/program/support involve?
- Was the change generally supported or not supported by staff and clients?
- What degree of support, such as resources, did it have in the organisation?
- How much planning was there before the policy/program/support was implemented?
- Did clients and/or staff comply with the policy or attend the program?
- How effective was the policy or program?
- What were some of the barriers or challenges to implementing the policy or program?
- What would have made this more successful? What would you do differently next time?
- How did this change compare with other changes in policies and programs over time? Is it generally easy or difficult to effect change?

Introducing a Smoking Policy or Program

- 4. In your view, do you think providing quit smoking support is an appropriate activity for your organisation? Why or why not?**
- 5. What sort of quit smoking support do you think could work within your organisation?**
- 6. What sort of help would you value/use from external organisations like the Cancer Council to implement a quit smoking program?**

7. Is there anything else that would be helpful or required for effective change?

- Organisation commitment
- Resources to implement change
- External sources of referral/support
- Staff training
- Staff motivation

8. What do you think is the most important?

9. Is there anything you think would not be appropriate for your organisation to do?

Conclusion

(When there are approximately 5 minutes remaining)

So, to summarise the main points of our discussion today....

Is there anything anyone would like to add before we finish?

I would like to thank you all for agreeing to participate in the discussion today. If anyone would like to listen to the audio-tape of today's group discussion or erase anything they have said, please see me at the end, and we can organise to do this.

Interview Guide -Managers

Services which have not implemented programs in the past

Hi, everyone. My name is Jamie. I am from the Centre for Health Research and Psycho-oncology and I will be running today's discussion.

Today we are here to talk about smoking and smoking cessation, including how you feel about offering support to help clients quit smoking. The discussion will take about 60 minutes, and we welcome everyone's opinion. I will be asking some specific questions to guide us through the discussion today, but you can talk about any aspect of smoking you want to during the discussion.

To start off, I just need to reiterate some aspects of the Information Statement that you were all provided with before the commencement of the group today. Firstly, anything you say during this discussion will remain confidential. This discussion today will be audio-taped. However, If you wish to delete your comments from the audio-tape please see me at the end of this session. If you no longer wish to participate at any stage just let me know.

OK. Before we start, it is important to set some basic ground rules which help to ensure everyone has an equal opportunity to participate in the group discussion. As I have said, I will be asking some specific questions today to guide us through our discussion. Sometimes it is easy to get caught up on a particular issue, but if this happens it won't allow sufficient time for all relevant issues to be covered. If this occurs I will suggest we move on to the next issue. Are there any questions?

To start off, can we go around the room and have each person introduce themselves and describe their role in [community service organisation] and what type of service they work in?

Smoking in the Organisation

1. How pro- or anti-smoking would you say your organisation is? Why?

- What proportion of staff/clients would you say smoke?
- Does smoking occur in this setting between clients and staff?
- Why do you think this is?

2. As managers, how do you see your role in encouraging quitting or a smoke-free environment for staff and clients?

- How high a priority is it for you, compared with your other roles and responsibilities in the organisation?
- Would you say that's generally the case among managers in your organisation, or are you a little more/less interested in the issue than other managers?

Introducing a Smoking Policy

3. Why do you think your organisation does not offer quit smoking support?

- What are some of the main barriers and challenges in providing quit smoking advice to clients?

4. If your organisation was to start offering clients support to quit smoking, what sort of quit smoking supports do you think would work best within your organisation?

- What are your thoughts about providing brief advice to clients, such as discussing quitting smoking with them and providing them with printed quit smoking materials? (What sort of service would this fit into? Do you think it would be effective in helping clients to quit? What would facilitate/hinder its success?)
- What are your thoughts about having staff refer clients to external quit smoking services like Quitline to help them quit? (In what types of services within your organisation would this best fit? Do you think it would be effective in helping clients to quit? What would be required to implement it? What would facilitate/hinder its success?)
- What do you think about your organisation providing clients with subsidised or free nicotine replacement therapy to help them quit smoking? (In what types of services within your organisation would this type of help best fit? Do you think it would be effective in helping clients to quit? What would be required to implement it? What would facilitate/hinder its success?)
- What are your thoughts about providing individual or group programs to clients to help them quit smoking? (In what types of services within your organisation would this best fit? Do you think it would be effective in helping clients to quit? What would be required to implement it? What would facilitate/hinder its success?)

- Do you have any other suggestions about what might be appropriate and effective?

5. What sort of help would you value/use from external organisations like the Cancer Council?

6. Is there anything else you think is needed to make quit smoking support more common in your organisation?

- Organisation commitment
- Resources to implement change
- External sources of referral/support
- Staff training
- Staff motivation

7. What do you think is the most important?

8. Is there anything you think would not be appropriate for your organisation to do regarding smoking?

Conclusion

(When there are approximately 5 minutes remaining)

So, to summarise the main points of our discussion today....

Is there anything anyone would like to add?

I would like to thank you all for agreeing to participate in the discussion today. If anyone would like to listen to the audio-tape of today's group discussion or erase anything they have said, please see me at the end, and we can organise to do this.

Appendix 3.7: Staff discussion guide

Discussion Guide -Staff

Services which have not implemented programs in the past

Hi, everyone. My name is Jamie. I am from the Centre for Health Research and Psycho-oncology and I will be running today's discussion.

Today we are here to talk about smoking and smoking cessation, including how you feel about offering support to help clients quit smoking. The discussion will take about 60 minutes, and we welcome everyone's opinion. I will be asking some specific questions to guide us through the discussion today, but you can talk about any aspect of smoking you want to during the discussion.

To start off, I just need to reiterate some aspects of the Information Statement that you were all provided with before the commencement of the group today. Firstly, anything you say during this discussion will remain confidential. The discussion today will be audio-taped. However, If you wish to delete your comments from the audio-tape please see me at the end of this session. If you no longer wish to participate at any stage just let me know.

OK. Before we start, it is important to set some basic ground rules which help to ensure everyone has an equal opportunity to participate in the group discussion. As I have said, I will be asking some specific questions today to guide us through our discussion. Sometimes it is easy to get caught up on a particular issue, but if this happens it won't allow sufficient time for all relevant issues to be covered. If this occurs I will suggest we move on to the next issue. Are there any questions?

To start off, can we go around the room and have each person introduce themselves and describe their role in [community service organisation] and what type of service they work in?

Current Smoking Policies/Programs

1. How pro- or anti-smoking would you say [community service organisation] is? Why?

- Is smoking allowed at [community service service]? (by clients and staff)
- What proportion of staff/clients smoke?
- When do they smoke when they are at the service?
- Where do they smoke when they are at the service?
- How much smoking happens between clients and staff?

- Thinking more broadly about [community service organisation] services as a whole, how much variation would you say there is in the role smoking plays?
 - So, for example, do you think that there is less smoking in this service compared with crisis services, or more than in youth services, etc.

Current Provision of Quit Smoking Services and Advice

OK. So I now want to move on to talking about the types of quit smoking support that is offered to clients at [community service organisation].

- 2. Does [community service organisation] offer any type of quit smoking support or advice or services?** (Alternative question: If someone observed interactions between staff and clients in your service for a week, what sorts of advice and support about smoking would they notice?)

If YES:

- What is offered?
- Who offers it? (For example, does the case manager offer it, or is there a specific person who clients can go and speak to if they want information?)
- When is it offered? (For example, is it every time the person comes into [community service organisation], or once a month?)
- How effectively do you think it works?

If NO

OK. So what do you think are the main barriers to providing quit smoking support to clients?

What are the reasons [community service organisation] doesn't offer quit smoking help?

Providing Smoking Cessation to Clients

How important does everyone think offering quit smoking help to clients is in your organisation? Is it extremely important? Not important?

What sort of quit smoking programs or services do you think would work best within your organisation?

- What are your thoughts about providing brief advice to clients, such as discussing quitting smoking with them and providing them with printed quit smoking

materials? (What sort of service would this fit into? Do you think it would be effective in helping clients to quit? What would facilitate/hinder its success?)

- What are your thoughts about referring clients to external quit smoking services like Quitline to help them quit? (Do you think this would work in your service? Would it be effective in helping clients to quit? What would facilitate/hinder its success?)
- What are your thoughts about providing clients with subsidised or free nicotine replacement therapy to help them quit smoking? (Do you think this would work in your service? Would it be effective in helping clients to quit? What would facilitate/hinder its success?)
- What are your thoughts about providing individual or group programs to clients to help them quit smoking? (Do you think this would work in your service? Would it be effective in helping clients to quit? Do you think clients would attend the groups? What would facilitate/hinder its success?)

OK. So, imagine that your managers have come to you and said, “We are going to start providing quit smoking help for clients.” What specific types of help do you think staff would need to do this?

- For example, would staff need training? Organisational commitment? Extra resources?

Are there any types of quit smoking support that you think would not be suitable or appropriate to do within your organisation?

Is there anything anyone would like to add before we finish?

Conclusion

(When there are approximately 5 minutes remaining)

So to summarise the main points of our discussion today....

Surveys

I would like to thank you all for agreeing to participate in the discussion today. If anyone would like to listen to the audio-tape of today's group discussion or erase anything they have said, please see me at the end, and we can organise to do this.

Discussion Guide -Staff

Services which have implemented programs in the past

Hi, everyone. My name is Jamie. I am from the Centre for Health Research and Psycho-oncology and I will be running today's discussion.

Today we are here to talk about smoking and smoking cessation, including how you feel about offering support to help clients quit smoking. The discussion will take about 60 minutes, and we welcome everyone's opinion. We will be asking some specific questions to guide us through the discussion today, but you can talk about any aspect of smoking you want to during the discussion.

To start off, I just need to reiterate some aspects of the Information Statement that you were all provided with before the commencement of the group today. Firstly, anything you say during this discussion will remain confidential. This discussion today will be audio-taped. However, if you wish to delete your comments from the audio-tape please see me at the end of this session. If you no longer wish to participate at any stage just let me know.

OK. Before we start it is important to set some basic ground rules which help to ensure everyone has an equal opportunity to participate in the group discussion. As I have said, I will be asking some specific questions today to guide us through our discussion. Sometimes it is easy to get caught up on a particular issue, but if this happens it won't allow sufficient time for all relevant issues to be covered. If this occurs, I will suggest we move on to the next issue. Are there any questions?

To start off, can we go around the room and have each person introduce themselves and describe their role in [community service organisation] and what type of service they work in?

Description of Service and Clients

- What type of clients do you work with?
- How often do you have face-to-face contact with clients?
- Where are clients referred from?
- For how long would clients be in contact with the organisation?
- What is the main age of clients? (e.g. young people, young parents, a cross-section?)
- As part of the intake process, do you currently ask clients if they smoke?

Current Smoking Policies/Programs

1. What would you say is the general attitude towards smoking at the organisation?

- Is smoking (by clients and staff) allowed at the organisation?
- What of proportion of staff/clients would you say smoke?
- Where and when do they smoke?
- How much is staff-client smoking a feature of staff-client interactions?
- How much variation is there across your organisation in the role smoking plays? (e.g. youth vs. crisis vs. other services)
- Are there any policies related to smoking?

Past Experience of Implementing a Smoking Policy or Program

2. Has your organisation ever implemented a smoking policy or program or offered support for quit smoking in the past that you are aware of?

- What did this policy or program involve?
- Were the changes generally supported or not supported by both staff and clients?
- What do you think were the main concerns of staff and clients about such change?
- How long did it take for the policy or program to come into force?
- Did clients and/or staff comply with the policy or attend the program?
- How effective was the policy or program?
- What were some of the barriers or challenges to implementing the policy or program?
- What would have made this more successful? What would you do differently next time?
- At the moment, what type of quit smoking advice or support is provided to clients in your organisation?
- How do you think previous experiences have influenced staff and client views about quit programs?

Providing Smoking Cessation

3. Do you think providing quit smoking services is an appropriate activity for your organisation? Why?

4. What do you think are some of the things that make giving up smoking difficult for clients?

5. What sort of quit smoking programs or services do you think would work best within your organisation?

- What are your thoughts about providing brief advice to clients, such as discussing quitting smoking with them and providing them with printed quit smoking materials? (What sort of service would this fit into? Do you think it would be effective in helping clients to quit? What would facilitate/hinder its success?)
- What are your thoughts about referring clients to external quit smoking services like Quitline to help them quit? (What sort of service would this fit into? Do you think it would be effective in helping clients to quit? What would facilitate/hinder its success?)
- What are your thoughts about providing clients with subsidised or free nicotine replacement therapy to help them quit smoking? (What sort of service would this fit into? Do you think it would be effective in helping clients to quit? What would facilitate/hinder its success?)
- What are your thoughts about providing individual or group programs to clients to help them quit smoking? (What sort of service would this fit into? Do you think it would be effective in helping clients to quit? Do you think clients would attend the groups? What would facilitate/hinder its success?)
- What are your thoughts about providing financial incentives to clients to help them quit smoking? (What sort of service would this fit into? Do you think it would be effective in helping clients to quit? Do you think clients would attend the groups? What would facilitate/hinder its success?)
- Is there anything else that would be helpful or required for effective change?
 - Organisational commitment
 - Resources to implement change
 - External sources of referral/support
 - Staff training
 - Staff motivation
- Is there anything you think would not be appropriate or effective in helping clients to quit?

- What would it take to move the concern you have about smoking to the next level in terms of being more active on smoking as an issue?
- How do you see providing quit smoking services evolving at the organisation? Will it occur without the involvement of organisations like the Cancer Council, or only with the involvement and help of organisations like the Cancer Council?

Conclusion

(When there are approximately 5 minutes remaining)

So, to summarise the main points of our discussion today...

Is there anything anyone would like to add before we finish the session?

I would like to thank you all for agreeing to participate in the discussion today. If anyone would like to listen to the audio-tape of today's group discussion or erase anything they have said, please see me at the end, and we can organise to do this.

Appendix 3.8: Manager survey



Manager Survey

How **desirable** and how **feasible** do you think it would be to implement the following quit smoking strategies in your organisation:

Question	Desirability			Feasibility		
	Desirable	Unsure	Not desirable	Feasible	Unsure	Not feasible
1. Developing policies about smoking at the organisation	1	2	3	1	2	3
2. Asking clients about their smoking status	1	2	3	1	2	3
3. Recording smoking status in client records	1	2	3	1	2	3
4. Providing support and encouragement for clients who make quit smoking attempts	1	2	3	1	2	3
5. Providing brief verbal advice to clients about the negative effects of smoking and the benefits of quitting	1	2	3	1	2	3
6. Providing quit smoking pamphlets and information to clients	1	2	3	1	2	3
7. Providing free or subsidised nicotine replacement therapy	1	2	3	1	2	3
8. Running a group quit smoking counselling program	1	2	3	1	2	3
9. Offering individual quit smoking counselling	1	2	3	1	2	3
10. Offering clients an alternative therapy such as hypnosis	1	2	3	1	2	3
11. Offering clients an alternative therapy such as acupuncture	1	2	3	1	2	3

Question	Desirability			Feasibility		
	Desirable	Unsure	Not desirable	Feasible	Unsure	Not feasible
12. Referring clients who smoke to external quit smoking services that provide telephone support (e.g. Quitline)	1	2	3	1	2	3
13. Offering government-sponsored financial incentives to clients to achieve quit goals	1	2	3	1	2	3
14. Offering non-financial incentives (such as footy tickets, shop vouchers) to clients to quit	1	2	3	1	2	3
15. Giving clients a computer- or internet-based program about quitting smoking	1	2	3	1	2	3
16. Giving clients a video or DVD about quitting	1	2	3	1	2	3
17. Organising a quit smoking counsellor to make home visits to clients	1	2	3	1	2	3

Please write any other comments below:

This project has been approved by the University's Human Research Ethics Committee, Approval No. H-2008-0334. Should you have concerns about your rights as a participant in this research, or you have a complaint about the manner in which the research is conducted, it may be given to the researcher, or, if an independent person is preferred, to the Human Research Ethics Officer, Research Office, The Chancellery, The University of Newcastle, University Drive, Callaghan NSW 2308, telephone (02) 492 16333, email Human-Ethics@newcastle.edu.au

Appendix 3.9: Staff survey



Staff Survey

How **desirable** and how **feasible** do you think it would be for staff to offer the following quit smoking strategies to clients:

Question	Desirability			Feasibility		
	Desirable	Unsure	Not desirable	Feasible	Unsure	Not feasible
1. Developing policies about smoking at the organisation	1	2	3	1	2	3
2. Asking clients about their smoking status	1	2	3	1	2	3
3. Recording smoking status in client records	1	2	3	1	2	3
4. Providing support and encouragement for clients who make quit smoking attempts	1	2	3	1	2	3
5. Providing brief verbal advice to clients about the negative effects of smoking and the benefits of quitting	1	2	3	1	2	3
6. Providing quit smoking pamphlets and information to clients	1	2	3	1	2	3
7. Providing free or subsidised nicotine replacement therapy	1	2	3	1	2	3
8. Running a group quit smoking counselling program	1	2	3	1	2	3
9. Offering individual quit smoking counselling	1	2	3	1	2	3
10. Offering clients an alternative therapy like hypnosis	1	2	3	1	2	3

Question	Desirability			Feasibility		
	Desirable	Unsure	Not desirable	Feasible	Unsure	Not feasible
11. Offering clients an alternative therapy like acupuncture	1	2	3	1	2	3
12. Referring clients who smoke to external quit smoking services that provide telephone support (e.g. Quitline)	1	2	3	1	2	3
13. Offering government-sponsored financial incentives to clients to achieve quit goals	1	2	3	1	2	3
14. Offering non-financial incentives (such as footy tickets, shop vouchers) to clients to quit	1	2	3	1	2	3
15. Giving clients a computer- or internet-based program about quitting smoking	1	2	3	1	2	3
16. Giving clients a video or DVD about quitting smoking	1	2	3	1	2	3
17. Organising a quit smoking counsellor to make home visits to clients	1	2	3	1	2	3

Please write any other comments below:



This project has been approved by the University's Human Research Ethics Committee, Approval No.H-2008-0334. Should you have concerns about your rights as a participant in this research, or you have a complaint about the manner in which the research is conducted, it may be given to the researcher, or, if an independent person is preferred, to the Human Research Ethics Officer, Research Office, The Chancellery, The University of Newcastle, University Drive, Callaghan NSW 2308, telephone (02 49216333, email Human-Ethics@newcastle.edu.au.

Appendix 3.10: Client survey



Client Survey

How would you feel if the staff at [community service organisation]:

Question	Would like 	Don't care 	Wouldn't like 
1. Asked you if you smoke cigarettes	1	2	3
2. Asked you if you were interested in quitting	1	2	3
3. Put you in touch with telephone quit help like Quitline	1	2	3
4. Told you about ways to stop smoking	1	2	3
5. Offered you quit smoking pamphlets	1	2	3
6. Offered you free or cheap nicotine patches or gum	1	2	3
7. Ran a counselling group for smokers to help you quit	1	2	3
8. Offered you individual counselling to help you quit	1	2	3
9. Offered cash rewards if you quit smoking and stayed off the smokes	1	2	3
10. Provided non-cash rewards (like footy tickets or shop vouchers) if you quit and stayed off the smokes	1	2	3
11. Gave you a computer- or internet-based program to help you quit	1	2	3
12. Gave you a video or DVD about quitting smoking	1	2	3
13. Offered you an alternative therapy such as hypnosis	1	2	3
14. Offered you an alternative therapy such as acupuncture	1	2	3
15. Had a quit smoking counsellor who could visit you at home	1	2	3
16. Did not allow any smoking at the service	1	2	3

Client Survey

If you have anything else to tell us, please write this below:

This project has been approved by the University's Human Research Ethics Committee, Approval No. H-2008-0334. Should you have concerns about your rights as a participant in this research, or you have a complaint about the manner in which the research is conducted, it may be given to the researcher, or, if an independent person is preferred, to the Human Research Ethics Officer, Research Office, The Chancellery, The University of Newcastle, University Drive, Callaghan NSW 2308, telephone (02) 49216333, email Human-Ethics@newcastle.edu.au.

Appendix 3.11 Statements of contribution from co-authors

Statement of contribution

I, Dr. Billie Bonevski, attest that Research Higher Degree candidate Jamie Bryant contributed substantially- in terms of study concept and design, data collection and analysis, and preparation of the manuscript- to the publication:

Jamie Bryant, Billie Bonevski, Christine Paul, Jon O'Brien, Wendy Oakes. Delivering smoking cessation support to disadvantaged groups: a qualitative study of the potential of community welfare organizations. Health Education Research, 2010, 25(6):979-90.

Dr. Billie Bonevski (Co-author)

Date

Jamie Bryant (Candidate)

Date

Prof John Rostas (Assistant Dean Research Training)

Date

Statement of contribution

I, A/Prof. Christine Paul, attest that Research Higher Degree candidate Jamie Bryant contributed substantially- in terms of study concept and design, data collection and analysis, and preparation of the manuscript- to the publication:

Jamie Bryant, Billie Bonevski, Christine Paul, Jon O'Brien, Wendy Oakes. Delivering smoking cessation support to disadvantaged groups: a qualitative study of the potential of community welfare organizations. Health Education Research, 2010, 25(6):979-90.

A/Prof. Christine Paul (Co-author)

Date

Jamie Bryant (Candidate)

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Prof John Rostas (Assistant Dean Research Training)

Date

Statement of contribution

I, Jon O'Brien, attest that Research Higher Degree candidate Jamie Bryant contributed substantially- in terms of study concept and design, data collection and analysis, and preparation of the manuscript- to the publication:

Jamie Bryant, Billie Bonevski, Christine Paul, Jon O'Brien, Wendy Oakes. Delivering smoking cessation support to disadvantaged groups: a qualitative study of the potential of community welfare organisations. Health Education Research, 2010, 25(6): 979-990.

Jon O'Brien (Co-author)

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Jamie Bryant (Candidate)

Date

Prof John Rostas (Assistant Dean Research Training)

Date

Statement of contribution

I, Wendy Oakes, attest that Research Higher Degree candidate Jamie Bryant contributed substantially- in terms of study concept and design, data collection and analysis, and preparation of the manuscript - to the publication:

Jamie Bryant, Billie Bonevski, Christine Paul, Jon O'Brien, Wendy Oakes: Delivering smoking cessation support to disadvantaged groups: a qualitative study of the potential of community welfare organizations. Health Education Research, 2010, 25(6):979-90.

Wendy Oakes (Co-author)

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Appendix 4.1: Published manuscript

Citation: Bryant J, Bonevski B, Paul C, Mcelduff P, Attia J. A systematic review and meta-analysis of the effectiveness of behavioural smoking cessation interventions in selected disadvantaged groups. *Addiction*, 2011, 106(9), 1568-1585. Doi: 10.1111/j.1360-0443.2011.03467.x.

A systematic review and meta-analysis of the effectiveness of behavioural smoking cessation interventions in selected disadvantaged groups

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ABSTRACT

Aims A systematic review and meta-analysis was conducted to assess the methodological quality and effectiveness of behavioural smoking cessation interventions targeted at six disadvantaged groups; the homeless, prisoners, indigenous populations, at-risk youth, individuals with low socio-economic status and individuals with a mental illness. **Methods** Medline, EMBASE, the Cochrane Library and PsycInfo databases were searched using MeSH and keywords for studies conducted in developed countries prior to October 2010. Included studies were assessed for methodological quality. A DerSimonian and Laird random effects meta-analysis was conducted where possible to explore the effectiveness of interventions for the different subgroups. A narrative review was conducted for studies unable to be included in the meta-analysis. Outcomes examined were abstinence rates at short-term (up to 3 months) and long-term (6 months or the longest) follow-up. **Results** Thirty-two relevant studies were identified. The majority ($n = 20$) were rated low in methodological quality. Results of the meta-analysis showed a significant increase in cessation for behavioural support interventions targeted at low-income female smokers at short-term follow-up [relative risk (RR) 1.68, confidence interval (CI) 1.21–2.33], and behavioural support interventions targeted at individuals with a mental illness at long-term follow-up (RR 1.35, CI 1.01–1.81). Results of the narrative review showed several promising interventions that increased cessation rates at 6-month or longer follow-up. **Conclusions** Few well-controlled trials have examined the most effective smoking cessation strategies for highly disadvantaged groups, especially among the homeless, indigenous smokers and prisoners. The use of behavioural smoking cessation interventions for some socially disadvantaged groups appears promising; however, overall findings are inconsistent. Further research is needed to establish the most effective interventions for vulnerable high-risk groups. Special attention should be given to increasing sample size and power, and to sound evaluation methodology to overcome methodological limitations of conducting research with these high-risk groups.

Keywords Homeless persons, indigenous population, low income population, mentally ill, prisoners, review, smoking cessation.

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INTRODUCTION

Compared with recent estimates of population smoking prevalence of around 20% in most developed countries [1,2], markedly higher smoking rates have been reported

for disadvantaged groups. For example, rates of 26–30% have been found among individuals with low income [2,3], rates of 32–50% have been found for indigenous groups [3,4], rates of 69–70% have been found for homeless individuals [5,6], rates of 35–90% have been found

for individuals with a mental illness [7–9] and rates of 72–79% have been found among prisoner populations [10–12].

Some studies have found that although smokers from disadvantaged groups are interested in quitting and attempt to quit at rates similar to those of other smokers, they are less likely to succeed [13–15]. Smokers from disadvantaged groups face unique barriers to quitting, including high levels of dependence [16], high levels of stress and pro-smoking community norms which both increase social pressure to smoke and increase exposure to triggers for smoking [17]. As a result, the need for targeted efforts to increase cessation among highly disadvantaged groups has been identified in many countries as a public health priority [18–20].

While the effectiveness of behavioural strategies for smoking cessation have been evaluated repeatedly and rigorously for the general population [21], limited attention has been given to determining the effectiveness of behavioural counselling interventions at achieving cessation with disadvantaged groups [22]. Six reviews have synthesized the evidence relating to smoking cessation in special populations, including some disadvantaged populations [23–28]. Two reviews of population-based approaches found mixed results [27,28]. Other reviews have highlighted difficulties disadvantaged groups have in accessing existing cessation support [23], and have made recommendations about future research needs [24–26]. No reviews have examined the effectiveness of behavioural counselling interventions among disadvantaged groups and, as a result, few evidence-based recommendations exist for achieving cessation among disadvantaged groups. Additionally, few studies have examined the methodological quality of the evidence base in this area. Given that poor methodological quality has been associated with bias in estimates of treatment effect [29] and that research with disadvantaged populations can be methodologically challenging [30], it is critical that an assessment of quality is conducted.

This paper aimed to review the literature reporting the effectiveness of behavioural smoking cessation interventions among six disadvantaged groups known to have high smoking rates; (i) individuals who are homeless, (ii) prisoners, (iii) indigenous populations, (iv) at-risk youth (defined as young people and adolescents at higher risk of harm), (v) individuals with a low income and (vi) individuals with a mental illness. Specifically, this review aimed to:

- 1 assess the methodological quality of studies targeted at smoking cessation for disadvantaged groups using a methodological rating tool with demonstrated validity [31]; and
- 2 conduct a meta-analysis or, if not possible, a narrative review, to examine the effectiveness of behavioural

cessation interventions in the selected disadvantaged groups.

METHOD

Literature search

Medline, The Cochrane Library, Embase and PsycInfo databases were searched for relevant studies published prior to October 2010. The MeSH terms [smoking OR smoking cessation] were combined with the following groups of words using the AND command; [vulnerable populations OR minority groups OR poverty OR socioeconomic factors OR homeless persons OR Oceanic Ancestry Group OR Central American Indians OR North American Indians OR Inuits OR First Nations OR mentally ill persons OR mental health OR schizophrenia OR anxiety OR depression OR prison OR prisoner OR adolescent behaviour OR juvenile delinquency]. Table of contents of relevant journals *Tobacco Control*, *Nicotine and Tobacco Research* and the *Journal of Public Health* were searched manually between 2005 and 2010. Previous reviews of relevant literature, the grey literature databases 'GreyNet' and 'OpenSIGLE' and the reference lists of retrieved articles were also searched. Several researchers known to be working in the areas of interest were also contacted to identify eligible studies.

Inclusion and exclusion criteria

Randomized controlled trials (RCTs) and clinical controlled trials (CCTs) that described the evaluation of a behavioural smoking cessation intervention published prior to October 2010 were included. To limit the scope of the review and minimize heterogeneity, only studies conducted in developed countries (United States, Canada, Australia, New Zealand, United Kingdom and western Europe) reporting smoking cessation as an outcome measure were included. All types of behavioural interventions were considered for inclusion and the control or comparison condition could include another behavioural intervention or usual care. Studies that included pharmacotherapy as a component of a behavioural intervention were included only when pharmacotherapy was not being tested for effectiveness. Studies that were not published in English, that were case reports or cross-sectional studies, or studies that reported on population-level public health campaigns or pharmacotherapies alone were excluded. Multiple risk factor interventions where smoking cessation was one of a number of health-related outcomes were excluded because of the inability to distinguish the impact of the smoking intervention alone.

Data extraction

The titles and abstracts of all identified papers were assessed for relevance by one reviewer (J.B.) and were

rejected on initial screening if the reviewer could determine from the title and abstract that the study did not meet inclusion criteria. Remaining studies were assessed against the inclusion and exclusion criteria by two reviewers (J.B. and B.B.). Studies that met all criteria were retained for full review. The characteristics of each study including setting, country, participants, gender, age, intervention, follow-up period and study outcome measures were examined.

Assessment of methodological quality

Studies included in the review were assessed for methodological quality using the Effective Public Health Practice Project Quality Assessment Tool for quantitative studies [31–33]. Study quality was assessed by one author (J.B.) and an independent second reviewer, and disagreement resolved through discussion. Studies were assessed on six domains: selection bias (the likelihood that participants were representative of the target population as well as the consent rate achieved in the study), study design, control of confounders, blinding (whether assessors were blind to participant condition and whether participants were blind to the research question), data collection methods (whether the data collection tools were both valid and reliable) and withdrawals and dropouts (whether the reasons for attrition and final follow-up numbers were reported). Each study was given a rating of ‘strong’, ‘moderate’ or ‘weak’ in methodological quality for each domain according to pre-defined criteria (see <http://www.ephpp.ca/Tools.html>; archived by Webcite at <http://www.webcitation.org/5yabOoyNW>), and then given an overall global rating; those with no weak ratings were given a rating of strong, those with one weak rating were given a rating of

moderate and those with two or more weak ratings across the six domains were given a weak rating.

Classification of interventions

Cochrane reviews of smoking cessation interventions provided a framework for the classification of studies by the type of interventions used (see Table 1).

Meta-analysis

Given the potential statistical heterogeneity among studies an estimate of the pooled effect size for each disadvantaged group using a defined intervention was calculated using a DerSimonian and Laird random effects model. Risk ratios (RR), 95% confidence intervals (CI) and a statistical measure of heterogeneity (I^2) was calculated for each analysis using Revman [34]. Three studies were not eligible to be included in the meta-analysis because they did not report sufficient data or outcomes in a format suitable for inclusion in the meta-analysis [35–37]. The results of these studies are reported narratively instead.

Outcome measures

The primary outcome measure was smoking abstinence 6 months after the start of the intervention or longer when data from longer follow-up points was available. Short-term abstinence at 3 months or less was also assessed. Biochemically validated quit rates were preferred over self-reported quit rates, and cotinine-confirmed measures were preferred over carbon monoxide (CO) measures. Self-reported quit rates were included where this was the only information available.

Table 1 Criteria for classification of interventions included in the meta-analysis.

<i>Intervention type</i>	<i>Description</i>	<i>Number of studies References</i>
Brief advice	Verbal advice with a ‘stop smoking’ message	<i>n</i> = 2 [56,63]
Incentives for quitting	Incentive schemes (such as contingent reinforcement) for quitting	<i>n</i> = 1 [64]
Self-help intervention	As any manual or programme to be used by individuals to assist a quit attempt not aided by health professionals, counsellors or group support	<i>n</i> = 1 [57,59]
Behavioural support	Includes: (1) interventions based on identified MI principles [88] making explicit reference to exploring ambivalence, decision balance, assessment of motivation and confidence to quit or motivational enhancement therapy; (2) behavioural counselling. Can include the provision of information, advice, support, encouragement, skills training, cognitive behavioural therapy or other counselling provided for smoking cessation	<i>n</i> = 28 [35,36,38–55,58, 60–62,65–68,89]

MI: motivational interviewing.

For consistency, 7-day point prevalence abstinence (PPA) rates were the preferred outcome measure, although continuous abstinence rates were used where this was the only outcome measure reported. An intention-to-treat approach (ITT) was adopted where possible. Where studies had more than two experimental groups and these were similar [38,39], the average effect of the two treatment groups was calculated and compared with the control group. For one four-arm trial, the most intensive condition was compared to the control group [40]. Three studies were cluster randomized trials [37,41–43]. One study was not included in the meta-analysis [37]; however, we have adjusted for the study design of the two cluster randomized trials included in the meta-analysis [41–43] by dividing the number of participants in each arm of the trial by the design effect of 3.98 and 1.26, respectively, which we estimated based on the intracluster correlation coefficient reported in Okuyemi *et al.* [43].

RESULTS

Search results

The initial search yielded 12 448 citations, of which 237 relevant articles were retained for further review. A flow chart describing article retrieval is provided in Fig. 1. In total, 32 studies reported in 34 papers are included in the review. One study targeted homeless smokers [44], one

study targeted prisoners [45], two studies targeted indigenous smokers [46,47], six studies targeted at-risk adolescent smokers [36,37,48–51], 12 studies targeted low-income smokers [38,40–43,52–60] and 10 studies targeted smokers with a mental illness [35,39,61–68].

Description of included studies

A detailed description of included studies is provided in Table 2. Included studies were published between 1997 and 2010. Thirteen RCTs [36,40,43,45,46,52,53,55, 57,59,62,65,67,68], 16 CCTs [35,38,39,47–51,54,56, 58,60,61,63,64,66] (RCTs where the method of randomization was not described) and three cluster RCTs were identified [37,41–43]. Studies were conducted primarily in primary and community health-care clinics. Thirteen studies incorporated nicotine replacement therapy (NRT) [43–45,49,53,56,57,59–61,64–66,68]. The majority of studies (91%) were conducted in the United States, with one study each conducted in Australia [61], New Zealand [46] and the United Kingdom [57,59].

Methodological quality assessment

Individual ratings for each study against the six methodological criteria and the assigned global rating are reported in Table 3. Overall, two studies received a methodological rating of strong [51,55], 10 studies received a

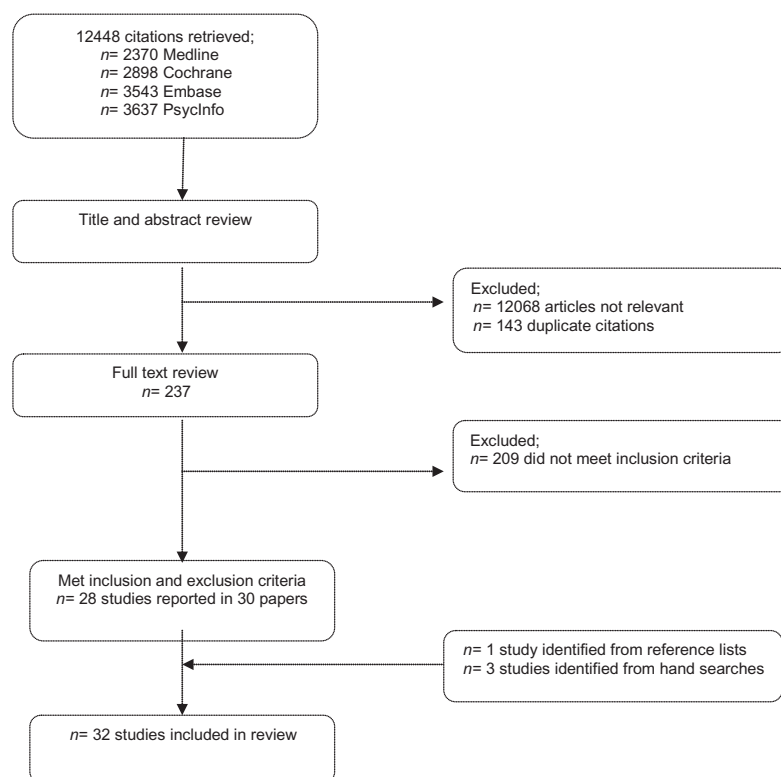


Figure 1 Flow chart of search strategy and study selection

Table 2 Study characteristics by population group.

Study, country	Design setting of intervention	Participant group, n gender, age	Intervention	Primary outcome measure, follow-up	Results
Homeless Okuyemi et al. 2006 [44] USA	RCT Homeless service facilities	Homeless smokers, <i>n</i> = 46 56.3% male smoking only group, 65.2% male smoking plus group; mean = 43.8 years (SD = 9.4) smoking only group, mean = 43.7 years (SD = 9.8) smoking plus	<i>Smoking only</i> : <i>n</i> = 23, 5 individual MI sessions focusing exclusively on smoking behaviours, 6 group educational support sessions, group outings, 8-week course NRT <i>Smoking plus</i> : <i>n</i> = 23, as above; however, individual MI sessions focused on smoking behaviours and other barriers to quitting (e.g. other addictions)	7-day PPA; 8 and 26 weeks	ITT 7-day PPA: 17.4% smoking plus versus 13% smoking only at 8-week follow-up (NS); 17.4% smoking plus and 8.7% smoking only at 26-week follow-up (NS)
Indigenous Bramley et al. 2005 [46] New Zealand	RCT Text message intervention	Maori and non-Maori smokers, <i>n</i> = 1705 (355 Maori, 1350 non-Maori) 41.5% male; median 22 years (interquartile range 19–30)	<i>Intervention</i> : <i>n</i> = 176 Maori, <i>n</i> = 676 non-Maori, supportive text messages (tailored for Maori Ps); 5 messages per day in first 6 weeks, 3 per week until 26-week follow-up. <i>Control</i> : <i>n</i> = 179 Maori, <i>n</i> = 674 non-Maori, one fortnightly message not related to smoking (tailored for Maori participants) <i>Intervention</i> : <i>n</i> = 17, 15–25 minutes of face-to-face counselling, four 10–15 minute telephone calls at 1, 2, 4 and 6 weeks, private viewing of a video highlighting cessation stories, culturally sensitive cessation guide <i>Control</i> : <i>n</i> = 18 Brief 5-minute face-to-face counselling using 5As approach at the first visit and four pregnancy and culturally specific information brochures	7-day PPA; 6, 12 and 26 weeks	For Maori Ps, ITT-verified quit rates: 26.1% (I) versus 11.2% (C) at 6 weeks follow-up (<i>P</i> < 0.01); 26.7% (I) versus 19.6% (C) at 12-week follow-up (<i>P</i> = 0.11); 21.6% (I) versus 18.4% (C) at 26-week follow-up (<i>P</i> = 0.46) ITT 7-day PPA verified quit rates: 6% (I) versus 0% (C) (NS)
Patten et al. 2010 [47] US	CCT Prenatal and WIC clinic	Pregnant native Alaskan women, <i>n</i> = 35; 100% female, mean = 25.4 (SD = 4.2) intervention; mean = 24.8 (SD = 5) control		7-day PPA; baseline and >60 days post-randomization (average 82 days post-randomization controls and 108 days intervention participants)	
Prisoners Cropsey et al. 2008 [45] US	RCT Prison	Female prisoners, <i>n</i> = 539 100% female; mean = 33.8 years (SD = 9)	<i>Intervention</i> : <i>n</i> = 250, 10-session group intervention based on mood management, combined with NRT <i>Control</i> : <i>n</i> = 289, no advice waiting-list control group	7-day PPA; each weekly session and 3, 6 and 12 months	ITT 7-day PPA: 18.4% (I) at end of treatment; 16.8% (I) at 3 months follow-up; 1.4% (I) versus 2.8% (C) at 6 months (<i>P</i> < 0.001). At 12-month follow-up, there was no control group but 11.6% (I) remained abstinent
At-risk youth Albrecht et al. 1998 [48] US	CCT Not reported	Pregnant teenage smokers, <i>n</i> = 84 100% female; not reported	TFS-B: <i>n</i> = 26, 8-week Teen FreshStart CBT group programme with 'buddy' support person TFS: <i>n</i> = 29, 8-week Teen FreshStart CBT group programme <i>Usual care</i> : <i>n</i> = 29, 30 minute individual education session with a nurse and received written materials TFS-B: <i>n</i> = 45, 8 week Teen FreshStart CBT group programme with 'buddy' support person TFS: <i>n</i> = 47, 8-week Teen FreshStart CBT group programme <i>Usual care</i> : <i>n</i> = 50, received educational materials	Self-reported smoking; 4–6 weeks post-baseline	ITT-verified quit rates: TFS and UC groups were combined for analysis. Abstinence rates were 18.7% TFSB versus 16.6% TFS and UC groups (NS)
Albrecht et al. 2006 [36] US	RCT Not reported	Pregnant teenage smokers, <i>n</i> = 142 100% female; mean = 17 years (SD = 1.3)		Self-reported smoking; 8 weeks and 1 year	Self-reported abstinence: at 8 weeks follow-up, greater abstinence in the TFS-B group than the UC group (<i>P</i> = 0.01). No differences between any of the three groups at 1-year follow-up

Table 2 Cont.

Study, country	Design setting of intervention	Participant group, n, gender, age	Intervention	Primary outcome measure; follow-up	Results
Brown <i>et al.</i> 2003 [49] US	CCT University psychiatric hospital	Adolescent smokers with psychiatric disorders, <i>n</i> = 191 37.7% male; mean = 15.4 years	<i>Intervention:</i> <i>n</i> = 116, two 45-minute individual MI sessions, relapse prevention manual, '1 Quit' self-help pamphlet, 8 weeks free nicotine patches, 6 telephone calls over 6 months to P's. Parents were also able to utilize 4 telephone calls over the same period <i>Control:</i> <i>n</i> = 75, 5–10-minute brief advice from study therapist and the '1 Quit' self-help manual <i>Intervention:</i> <i>n</i> = 45, one session of motivational enhancement therapy <i>Control:</i> <i>n</i> = 36, one session of tobacco education based on American Cancer Society self-help pamphlet <i>Intervention:</i> <i>n</i> = 26, 6 weekly 1-hour counselling sessions incorporating motivational enhancement, stimulus control, barriers to change, social support for quitting and planning for quitting and relapse <i>Control:</i> <i>n</i> = 28, waiting-list control group <i>Intervention:</i> interactive computer program composed of five weekly sessions in one semester and 2 booster sessions in following semester. Sessions 30 minutes in duration <i>Control:</i> receipt of National Cancer Institute's 'Clearing the Air' self-help booklet	7-day PPA; baseline, 1, 3, 6, 9 and 12 months	Non-ITT-verified 7-day PPA: 11% (I) versus 11% (C) at 1-month follow-up (NS); 13.3% (I) versus 8.5% (C) at 6-month follow-up (NS); 14% (I) versus 9.9% (C) at 12-month follow-up (NS)
Helstrom <i>et al.</i> 2007 [50] US	CCT Not reported	High-risk adolescent smokers, <i>n</i> = 81 58% male; mean = 15.98 years (SD = 1.30) Intervention; mean = 15.97 years (SD = 1.36) control	Intervention: <i>n</i> = 36, one session of tobacco education based on American Cancer Society self-help pamphlet <i>Control:</i> <i>n</i> = 26, 6 weekly 1-hour counselling sessions incorporating motivational enhancement, stimulus control, barriers to change, social support for quitting and planning for quitting and relapse <i>Control:</i> <i>n</i> = 28, waiting-list control group <i>Intervention:</i> interactive computer program composed of five weekly sessions in one semester and 2 booster sessions in following semester. Sessions 30 minutes in duration <i>Control:</i> receipt of National Cancer Institute's 'Clearing the Air' self-help booklet	Salivary-confirmed abstinence; 1 and 6 months	Non-ITT-verified quit rates: 10.5% (I) versus 6.8% (C) at 1-month follow-up (NS); 9.5% (I) versus 7.4% (C) at 6-month follow-up (NS)
Myers & Brown 2005 [51] US	CCT Out-patient substance abuse centres	Adolescents in substance abuse treatment, <i>n</i> = 54 78% male; mean = 16.1 years	Intervention: <i>n</i> = 26, 6 weekly 1-hour counselling sessions incorporating motivational enhancement, stimulus control, barriers to change, social support for quitting and planning for quitting and relapse <i>Control:</i> <i>n</i> = 28, waiting-list control group <i>Intervention:</i> interactive computer program composed of five weekly sessions in one semester and 2 booster sessions in following semester. Sessions 30 minutes in duration <i>Control:</i> receipt of National Cancer Institute's 'Clearing the Air' self-help booklet	7-day PPA; end of treatment and 3 and 6 months	ITT-verified 7-day PPA: 19.2% (I) versus 3.6% (C) at end of treatment (<i>P</i> = 0.012); 30.8% (I) versus 3.6% (C) at 3 months (<i>P</i> = 0.004); 15.4% (I) versus 3.6% (C) at 6 months (NS)
Prokhorow <i>et al.</i> 2008 [37] US	CCT	10th grade high school students from schools located in ethnically diverse, socio-economically disadvantaged communities, <i>n</i> = 1574. A small subsample of students (<i>n</i> = 62) were smokers. 58.5% female; mean = 15.7 years (SD = 0.90)	Intervention: interactive computer program composed of five weekly sessions in one semester and 2 booster sessions in following semester. Sessions 30 minutes in duration <i>Control:</i> receipt of National Cancer Institute's 'Clearing the Air' self-help booklet	7-day self-reported PPA; 18 months	Non-ITT: 60.7% (I) versus 61.8% (C) (NS)
Low income Bullock <i>et al.</i> 2009 [40] US	RCT 21 rural Women, Infant and Children Nutritional Supplement (WIC) clinics in a US midwest state	Low-income rural pregnant women, <i>n</i> = 530 100% female; mean = 22 (SD = 4.6)	<i>Social support plus booklet:</i> <i>n</i> = 129 Scheduled weekly telephone call with nurse plus 'Stop smoking! A Special Program for Pregnant women' booklet, plus 24/7 access to nurse via telephone <i>Social support without booklet:</i> <i>n</i> = 132 Scheduled weekly telephone call with nurse plus 24/7 access to nurse via telephone <i>Booklet only:</i> <i>n</i> = 141, 8 serialised 'Quit smoking for good' booklets from American Heart Association <i>Usual care control group:</i> <i>n</i> = 128, usual care plus a quit booklet	Point prevalence abstinence; baseline (T1), 8th month of pregnancy (T2) and 6 weeks post-partum (T3)	ITT-verified abstinence: at T2, 17% in social support plus booklet group versus 22% in the social support alone group versus 19.2% booklet alone versus 17.2% control group were abstinent (all differences NS). At T3, 12.4% in social support plus booklet group versus 11.4% social support alone group versus 13.5% in the booklet alone group versus 13.3% in the control group were abstinent (all differences NS)
Curry <i>et al.</i> 2003 [52] US	RCT Four paediatric clinics serving low-income and ethnically diverse families	Low-income women, <i>n</i> = 303 100% female; mean = 34.2 years (I) (SD = 8.8), mean = 33.6 years (C) (SD = 9.5)	<i>Intervention:</i> <i>n</i> = 156, brief motivational message from the child's clinician, self-help guide to quitting, 10-minute motivational interview with nurse or research assistant and up to 3 outreach telephone calls. <i>Control:</i> <i>n</i> = 147, usual care	7-day self-reported PPA, sustained abstinence; 3 and 12 months	ITT 7-day PPA: 8% (I) versus 3% (C) at 3 months (adjusted OR = 2.4, NS); 14% (I) versus 7% (C) at 12 months (adjusted OR = 2.77, sig.)

Table 2 *Cont.*

Study, country	Design setting of intervention	Participant group, n, gender, age	Intervention	Primary outcome measure, follow-up	Results
Froelicher <i>et al.</i> 2010 [53] US	RCT Public health centre located in a low-income area	African American smokers residing in a low-income area, n = 60 80.8% female (I), 64.7% female (C); mean = 46.5 (I), mean = 46.7 (C)	<i>Intervention:</i> n = 26. Industry and media intervention programme, 1-hour pre-class orientation, 5-weekly standard smoking cessation intervention, NRT offered to those who requested it and to highly addicted smokers (defined as those reporting withdrawal and smoking ≥ 25 cigarettes per day) <i>Control:</i> n = 34. 1-hour pre-class orientation session, 5-week group smoking cessation intervention which included education and CBT strategies, plus NRT (as defined above) and edited smoking cessation guide <i>Intervention:</i> n = 193. Educational materials, 15-minute individual counselling and clinic reinforcement (written agreement to quit, two letters of encouragement, brief advice from clinic nurse) <i>Control:</i> n = 198. Usual brief advice	7-day PPA; baseline, 6 months and 12 months	ITT-verified analyses: 13.6% (I) versus 11.5% (C) at 6-month follow-up (NS), 15.8% (I) versus 5.3% (C) at 12-month follow-up (NS)
Gielen <i>et al.</i> 1997 [54] US	CCT Public prenatal clinic servicing predominantly low-income African American smokers	Pregnant smokers Predominantly African American with less than high school education, n = 391, 100% female; mean = 23.3 years (I); mean = 24.1 years (C)	<i>Intervention:</i> n = 193. Educational materials, 15-minute individual counselling and clinic reinforcement (written agreement to quit, two letters of encouragement, brief advice from clinic nurse) <i>Control:</i> n = 198. Usual brief advice	7-day PPA; 28 weeks gestation, 6 months post-partum	Non-ITT-verified 7-day PPA: 6.2% (I) versus 5.6% (C) (sig. not reported) at 28 weeks gestation. At 6 months post-partum, 15% (I) versus 4% (C) (sig. not reported), although only a small number of participants (27%) were followed-up at this point
Glasgow <i>et al.</i> 2000 [55] US	RCT Four planned parenthood clinics	Low-income female smokers, n = 1154 100% female; mean = 24 years (SD = 5)	<i>Intervention:</i> n = 578. Generic stop smoking pamphlet, brief advice, educational video, 1-minute consultation with nurse, 2 follow-up telephone calls <i>Control:</i> n = 576. Generic stop smoking brochure and brief advice	7-day PPA; 6 weeks and 6 months	ITT-verified 7-day PPA: 10.2% (I) versus 6.9% (C) at 6 weeks ($P < 0.05$); 18.3% (I) versus 14.9% (C) at 6 months (NS)
Gordon <i>et al.</i> 2010 [56] US	CCT 14 federally funded public health dental clinics serving diverse racial/ethnic groups	Low-income individuals (at or below 200% of the federal poverty threshold) attending public dental health clinics, n = 2637 57.2% female; mean = 40.5 (SD = 12.6)	<i>Intervention:</i> n = 1434. Practitioners provided 5As, printed self-help materials and NRT to clients <i>Control:</i> n = 1203. Usual care	7-day PPA abstinence at the 7.5-month follow-up; 6 weeks and 7.5 months post-enrolment	Non-ITT: 7-day PPA 11.3% (I) versus 6.8% (C) ($P < 0.05$)
Lipkus <i>et al.</i> 1999 [38] US	CCT Community Health Centre	Low-income African American smokers, n = 266 (160 completed final follow-up) 54% male; 56% aged < 49 years	<i>Provider intervention:</i> n = 53, computer-prompted provider advice <i>Provider intervention \pm tailored print:</i> n = 55, as above, plus a tailored birthday card and newsletter <i>Provider intervention \pm tailored print \pm telephone counselling:</i> n = 52, as above, plus one (males) or two (females) telephone counselling calls	7 day PPA; 16 months	ITT self-reported 7-day PPA: those receiving the provider intervention and tailored print communication sig. more likely to be abstinent (32.7%) compared to those receiving provider intervention alone (13.2%) or all three levels of the intervention (19.2%; $P < 0.05$)
Manfredi <i>et al.</i> 1999, 2004 [41, 42] US	CCT 33 prenatal, family planning and paediatric services within 12 public health clinics	Low-income female smokers, n = 1068 100% female	<i>Intervention:</i> n = 527. Video segment and posters in clinic waiting-rooms, provider advice, motivational self-help booklet, patient-provider agreement form, provider reminder letter, one-off 15-minute motivational telephone call <i>Control:</i> n = 541. No intervention	7-day PPA; 2, 6, 12 and 18 months	Non-ITT self-reported 7-day PPA: 14.5% (I) versus 7.68% (C) at 2 months ($P < 0.001$); 20.15% (I) versus 11.49% (C) at 6 months ($P < 0.001$); 21.5% (I) versus 17.73% (C) at 12 months (NS); 26.11% (I) versus 24.21% (C) at 18 months (NS)
Okuyemi <i>et al.</i> 2007 [43] US	RCT 20 low-income public housing developments	Low-income smokers, n = 173 30% male; mean = 43 (SD = 14.3; I), mean = 48 (SD = 13.1; C)	<i>Intervention:</i> n = 66. Educational materials, 8-week course of nicotine gum, 5 MI sessions on quitting smoking <i>Comparison:</i> n = 107. Educational materials and 5 MI sessions addressing fruit and vegetable consumption	7-day PPA; 8 weeks and 26 weeks	ITT-verified 7-day PPA quit rates: 6.1% (I) versus 5.6% (C) at 8 weeks (NS); 7.6% (I) versus 9.3% (C) at 26 weeks (NS)

Table 2 *Cont.*

Study, country	Design setting of intervention	Participant group, n gender; age	Intervention	Primary outcome measure; follow-up	Results
Ruger <i>et al.</i> 2008 [58] US	CCT Obstetric clinics	Low-income pregnant women, <i>n</i> = 302 100% female; mean = 25.6 years (I), mean = 25.7 years (C)	<i>Intervention:</i> <i>n</i> = 156, 3 home visits providing individual MI sessions, feedback about household nicotine levels and self-help materials. Visits lasted an average of 1 hour and were tailored to stage of change <i>Control:</i> <i>n</i> = 146, 5-minute brief intervention at clinic and self-help materials	30-day PPA; 1 month post-intervention and 6 months post-partum	Non-ITT self-reported 30-day point prevalence quit rates: 6.3% (I) versus 8% (C) at 6-month follow-up (NS)
Sykes <i>et al.</i> 2001 [59]; Marks <i>et al.</i> 2002 [57] UK	RCT Smoking cessation clinic	Smokers from deprived area of London, <i>n</i> = 260 36.2% male; not reported	<i>Intervention:</i> <i>n</i> = 131, 3-month self-help CBT cessation and relapse prevention programme ('Quit for Life') with optional NRT <i>Control:</i> <i>n</i> = 129, educational materials ('Stop Smoking Made easier' programme) <i>Intervention:</i> <i>n</i> = 110, brief physician advice, 8 weeks transdermal NRT, 6 telephone counselling sessions <i>Control:</i> <i>n</i> = 123, brief physician advice, 8 weeks transdermal NRT	7-day PPA; 6 and 12 months	Non-ITT-verified PPA: 17.2% (I) versus 5.6% (C) at 6 months (<i>P</i> < 0.0001); 19.8% (I) versus 5.7% (C) at 12 months (sig. not reported)
Wadland <i>et al.</i> 2001 [60] US	CCT Community health centres	Low-income smokers, <i>n</i> = 238 30% male; mean = 44 years (I); mean = 38.7 years (C)	<i>Intervention:</i> <i>n</i> = 147, 8 × 1-hour sessions (6 weekly sessions plus a booster at weeks 8 and 10) of MI and CBT, plus NRT and usual care (self-help pamphlets) <i>Control:</i> <i>n</i> = 151, self-help pamphlets	7-day PPA; 3 months	ITT-verified 7-day PPA: 8.1% (C) versus 21% (I); <i>P</i> < 0.01 at 3-month follow-up
Mentally ill Baker <i>et al.</i> 2006 [26,61], 2010 [90] Australia	CCT Research centre, community clinic or participant's home	Smokers with non-acute psychotic disorder, <i>n</i> = 298 52.3% male; mean = 37.24 years (SD = 11.09)	<i>Intervention:</i> <i>n</i> = 86, 8 sessions of CBT for depression combined with homework assignments <i>Control:</i> <i>n</i> = 93, 8 sessions of standard CBT combined with homework assignments. <i>Intervention:</i> <i>n</i> = 156, 5 As for smoking cessation implemented at every patient visit for 12 months <i>Control:</i> <i>n</i> = 148 Delayed control; physicians delivered 5As for 6 months after a 6-month delay control period <i>Contingent reinforcement:</i> <i>n</i> = 60, financial incentive for abstinence <i>Contingent reinforcement plus nicotine patch:</i> <i>n</i> = 60, financial incentive for abstinence, plus 16 weeks of NRT <i>Control:</i> <i>n</i> = 60, Ps encouraged to use available community resources <i>MI alone:</i> <i>n</i> = 67, single MI session 40–50 minutes in duration. <i>MI/BI:</i> <i>n</i> = 67, MI as above plus instruction in deep breathing <i>MI/IS:</i> <i>n</i> = 74, MI as above plus instruction in the use of an incentive spirometer for practice in breath/diaphragmatic control	7-day PPA; end of treatment, 1, 6 and 12 months 7-day PPA, Recent abstinence from smoking confirmed with CO; 6 months and 12 months 'Abstinence'; 20 and 36 weeks	ITT-verified 7-day PPA: 1.5% (I) versus 6% (C) at 3 months (NS); 9.5% (I) versus 4% (C) at 6 months (NS); 10.9% (I) versus 6.6% (C) at 12-months follow-up (NS) Among a subsample completing follow-up at 4 years (<i>n</i> = 164), there were no differences in 7-day PPA 21% (C) versus 15.7% (I) ITT-verified 7-day PPA: 37.6% (I) versus 33.3% (C) at end of treatment (NS), 39.5% (I) versus 30.1% (C) at 1 month, 24.4% (I) versus 24.7% (C) at 6 months (NS), 32.5% (I) versus 24.7% (C) at 12 months (NS) Non-ITT 7-day PPA: at 6 months, 3.9% (I) versus 1.6% (C) (NS)
Brown <i>et al.</i> 2001 [62] US	RCT Research centre	Smokers with a history of major depressive disorder, <i>n</i> = 179 40.2% male; mean = 45.1 years (SD = 9.27)	<i>Intervention:</i> <i>n</i> = 86, 8 sessions of CBT for depression combined with homework assignments <i>Control:</i> <i>n</i> = 93, 8 sessions of standard CBT combined with homework assignments.	7-day PPA; end of treatment, 1, 6 and 12 months	ITT-verified 7-day PPA: 37.6% (I) versus 33.3% (C) at end of treatment (NS), 39.5% (I) versus 30.1% (C) at 1 month, 24.4% (I) versus 24.7% (C) at 6 months (NS), 32.5% (I) versus 24.7% (C) at 12 months (NS) Non-ITT 7-day PPA: at 6 months, 3.9% (I) versus 1.6% (C) (NS)
Dixon <i>et al.</i> 2009 [63] US	CCT Out-patient mental health clinics	Smokers with a diagnosis of schizophrenia or affective and other psychoses, <i>n</i> = 304 47.7% female; mean = 44.28 (SD = 9)	<i>Intervention:</i> <i>n</i> = 156, 5 As for smoking cessation implemented at every patient visit for 12 months <i>Control:</i> <i>n</i> = 148 Delayed control; physicians delivered 5As for 6 months after a 6-month delay control period <i>Contingent reinforcement:</i> <i>n</i> = 60, financial incentive for abstinence <i>Contingent reinforcement plus nicotine patch:</i> <i>n</i> = 60, financial incentive for abstinence, plus 16 weeks of NRT <i>Control:</i> <i>n</i> = 60, Ps encouraged to use available community resources <i>MI alone:</i> <i>n</i> = 67, single MI session 40–50 minutes in duration. <i>MI/BI:</i> <i>n</i> = 67, MI as above plus instruction in deep breathing <i>MI/IS:</i> <i>n</i> = 74, MI as above plus instruction in the use of an incentive spirometer for practice in breath/diaphragmatic control	7-day PPA, Recent abstinence from smoking confirmed with CO; 6 months and 12 months 'Abstinence'; 20 and 36 weeks	ITT self-reported abstinence: MI alone: 0%, 1 month, 0% 2 months, 4.5% 3 months, 4.5% 4 months, 3% 5 months, 6% 6 months. MI/BI: 5.4% 1 month, 4% 2 months, 6.8% 3 months, 6.8% 4 months, 6.8% 5 months, 6.8% 6 months. MI/IS: 3% 1 month, 3% 2 months, 4.5% 3 months, 4.5% 4 months, 6% 5 months, 4.5% 6 months
Gallagher <i>et al.</i> 2007 [64] US	CCT Community health care organization	Smokers with schizophrenia, <i>n</i> = 180 52% male; mean = 42.55 (SD = 0.43; contingent reinforcement), mean = 43.55 (SD = 9.82, contingent reinforcement plus nicotine patch), mean = 42.45 (SD = 10.35, control)	<i>Intervention:</i> <i>n</i> = 86, 8 sessions of CBT for depression combined with homework assignments <i>Control:</i> <i>n</i> = 93, 8 sessions of standard CBT combined with homework assignments.	7-day PPA, Recent abstinence from smoking confirmed with CO; 6 months and 12 months 'Abstinence'; 20 and 36 weeks	ITT self-reported abstinence: MI alone: 0%, 1 month, 0% 2 months, 4.5% 3 months, 4.5% 4 months, 3% 5 months, 6% 6 months. MI/BI: 5.4% 1 month, 4% 2 months, 6.8% 3 months, 6.8% 4 months, 6.8% 5 months, 6.8% 6 months. MI/IS: 3% 1 month, 3% 2 months, 4.5% 3 months, 4.5% 4 months, 6% 5 months, 4.5% 6 months
Gulliver <i>et al.</i> 2008 [39] US	CCT Not reported	Military veterans with variety of psychiatric diagnoses, <i>n</i> = 208 97% male; mean = 49.06 MI alone; mean = 49.64 MI/BI; mean = 47.5 MI/IS	<i>Intervention:</i> <i>n</i> = 86, 8 sessions of CBT for depression combined with homework assignments <i>Control:</i> <i>n</i> = 93, 8 sessions of standard CBT combined with homework assignments.	7-day PPA, Recent abstinence from smoking confirmed with CO; 6 months and 12 months 'Abstinence'; 20 and 36 weeks	ITT self-reported abstinence: MI alone: 0%, 1 month, 0% 2 months, 4.5% 3 months, 4.5% 4 months, 3% 5 months, 6% 6 months. MI/BI: 5.4% 1 month, 4% 2 months, 6.8% 3 months, 6.8% 4 months, 6.8% 5 months, 6.8% 6 months. MI/IS: 3% 1 month, 3% 2 months, 4.5% 3 months, 4.5% 4 months, 6% 5 months, 4.5% 6 months

Table 2 Cont.

Study, country	Design setting of intervention	Participant group, n gender, age	Intervention	Primary outcome measure, follow-up	Results
Hall <i>et al.</i> 2006 [65] US	RCT University-based clinic	Smokers with current diagnosis of unipolar depression, $n = 322$ 30.4% male; mean = 41.5 years (I), mean = 42.2 years (C)	<i>Intervention:</i> $n = 163$, staged care intervention; individualized feedback on quitting smoking based on stages of change, 6 counselling sessions for Ps who had reached contemplation, 10-week course NRT. <i>Control:</i> $n = 159$, brief contact control; list of smoking cessation programmes with no other contact <i>Intervention:</i> $n = 35$, Eight 1-hour weekly group sessions. Intervention content included 30 minutes of standard treatment and 30 minutes of behavioural activation treatment for smoking. NRT began on scheduled quit date (21 mg for 4 weeks, 4 weeks 14 mg and 2 weeks 7 mg). <i>Control:</i> $n = 33$, Eight 1-hour weekly group sessions including only standard treatment	7-day PPA, number of 24-hour quit attempts: baseline, 3.6, 12 and 18 months	ITT 7-day-verified quit rates: 13.5% (I) versus 9.34% (C) at 3 months (NS), 14.11% (I) versus 15.73% (C) at 6 months (NS), 14.11% (I) versus 9.43% (C) at 12 months (NS) and 18.4% (I) versus 13.21% (C) at 18 months (NS)
MacPherson <i>et al.</i> 2010 [66] US	CCT Not reported	Smokers with mildly elevated depressive symptoms (score ≥ 10 on Beck Depression Inventory-II), $n = 68$ 48.6% female (I); 48.5% female (C); mean = 45 (SD = 12.2) (I); mean = 42.6 (SD = 11.5) (C)	<i>Intervention:</i> $n = 33$, PTSD care from normal providers, referred to external clinic for usual behavioural therapy <i>Intervention:</i> $n = 30$, 10 weekly individually tailored exercise counselling sessions designed to motivation increased regular physical activity and short bouts of exercise in response to urges to smoke <i>Control:</i> $n = 30$, Ps received information on health topics including sleep hygiene, nutrition and health screening tests for women. Also received brief intervention approx. 10 minutes at each visit	7-day PPA; 1 week, 4 weeks, 16 weeks and 26 weeks post-quit date	ITT: 1 week 9.1% (C) versus 28.6% (I); 4 weeks 9.1% (C) versus 17.1% (I); 16 weeks 3% (C) versus 11.4% (I); 26 weeks 0% (C) versus 14.3% (I). The interaction between treatment condition and time was non-significant (OR 16.4, $P = 0.24$)
McFall <i>et al.</i> 2005 [35] US	CCT Out-patient PTSD clinic	Smokers with a diagnosis of PTSD, $n = 66$ 92% male; mean = 52.9 years (I), mean = 52.3 years (C)	<i>Intervention:</i> $n = 33$, 5 individual behavioural counselling related to smoking, delivered by mental health providers along with PTSD care <i>Comparison:</i> $n = 33$, PTSD care from normal providers, referred to external clinic for usual behavioural therapy	7-day PPA, Repeated 7-day PPA: 2.4, 6 and 9 months follow-up	ITT-verified 7-day repeated abstinence: 12% (I) versus 3% (C; $P = 0.20$). 7-day point prevalence abstinence 18% (I) versus 7% (C) (sig. not reported). At each assessment interval, odds of not smoking were 5.23 times greater for Ps in the intervention group compared to control ($P < 0.002$)
Vickers <i>et al.</i> 2009 [67] US	RCT	Depressed female smokers (score ≥ 16 on CES-D), $n = 60$ 100% female; mean = 41.8 (SD = 12.1; I), mean = 40.9 (SD = 11.8; C)	<i>Intervention:</i> $n = 30$, 10 weekly individually tailored exercise counselling sessions designed to motivation increased regular physical activity and short bouts of exercise in response to urges to smoke <i>Control:</i> $n = 30$, Ps received information on health topics including sleep hygiene, nutrition and health screening tests for women. Also received brief intervention approx. 10 minutes at each visit	7-day PPA, 10 weeks and 24 weeks	Non-ITT-verified 7-day PPA: 1.7% (I) versus 23% (C) at 10-week follow-up ($P = 0.75$), 6.3% (I) versus 6.70% (C) at 24-weeks follow-up ($P = 1.0$)
Williams <i>et al.</i> 2010 [68] US	RCT Out-patient mental health facilities	Individuals who met DSM-IV criteria for schizophrenia or schizoaffective disorder, $n = 87$; 35.6% female (I), 38.1% female (C), mean = 43.5 (SD = 12.1) (I); mean = 47.1 (SD = 10.5) (C)	<i>Intervention:</i> $n = 45$, High-intensity 'Treatment of Addiction to Nicotine in Schizophrenia' intervention, 24, 45 minute sessions over 26 weeks incorporating MI, social skills training, use of NRT, relapse prevention techniques and nicotine patch use for 16 weeks beginning on the quit date <i>Comparison:</i> $n = 42$, Moderate intensity 'Medication Management' intervention, 9, 20-minute sessions over 26 weeks. Sessions focused on medication compliance, education about NRT, nicotine patch use for 16 weeks beginning on the quit date	Continuous abstinence (self-reported abstinence after the target quit date), 7 day PPA; 3, 6 and 12 months	ITT 7-day PPA: quit rates for both groups not reported; however, difference reported as not significant at 12 weeks. ITT continuous abstinence: 15.6% (I) versus 26, 2% (C) at 12 weeks (NS). No differences at 6 or 12 months

RCT: randomized controlled trial; MI: motivational interviewing; ITT: intention-to-treat; NS: not significant; SD: standard deviation; NRT: nicotine replacement therapy; CES-D: Center for Epidemiologic Studies Depression Scale; PPA: point prevalence abstinence; PTSD: post-traumatic stress disorder; MI/BI: motivational interviewing plus breathing instruction; MI/IS: motivational interviewing plus incentive spirometry; CCT: clinical controlled trials; CO: carbon monoxide; CBT: cognitive-behavioural therapy; TFS: Teen Fresh Start program; UC: Usual Care; OR: odds ratio.

Table 3 Ratings of methodological quality: strong (S), moderate (M) and weak (W).

	Selection bias	Study design	Confounders	Blinding	Data collection	Withdrawals	Global rating
1 Okuyemi <i>et al.</i> 2006 [44]	W	S	W	W	S	M	W
2 Bramley <i>et al.</i> 2005 [46]	W	S	W	M	S	M	W
3 Patten <i>et al.</i> 2010 [47]	W	S	S	M	S	S	M
4 Cropsey, 2008 [45]	W	S	S	M	S	W	W
5 Albrecht <i>et al.</i> 1998 [48]	W	S	W	M	S	W	W
6 Albrecht <i>et al.</i> 2006 [36]	M	S	W	M	S	W	W
7 Brown <i>et al.</i> 2003 [49]	W	S	S	M	S	S	M
8 Helstrom <i>et al.</i> 2007 [50]	W	S	W	M	S	S	W
9 Myers <i>et al.</i> 2005 [51]	M	S	S	M	S	M	S
10 Prokhorov <i>et al.</i> 2008 [37]	W	S	W	M	W	M	W
11 Bullock <i>et al.</i> 2009 [40]	M	S	W	M	S	S	M
12 Curry <i>et al.</i> 2003 [52]	W	S	S	M	S	S	M
13 Froelicher <i>et al.</i> 2010 [53]	W	S	W	M	S	M	W
14 Gielen <i>et al.</i> 1997 [54]	M	S	W	M	S	W	W
15 Glasgow <i>et al.</i> 2000 [55]	M	S	S	M	S	S	S
16 Gordon <i>et al.</i> 2010 [56]	M	S	S	M	W	M	M
17 Lipkus <i>et al.</i> 1999 [38]	M	S	W	M	W	M	W
18 Manfredi <i>et al.</i> 1999; 2004 [41,42]	M	S	W	M	W	W	W
19 Okuyemi <i>et al.</i> 2007 [43]	W	S	W	M	S	M	W
20 Ruger <i>et al.</i> 2008 [58]	M	S	W	M	S	M	M
21 Skyes <i>et al.</i> 2001; Marks 2002 [57,59]	W	S	W	M	S	S	W
22 Wadland <i>et al.</i> 2001 [60].	W	S	W	M	S	M	W
23 Baker <i>et al.</i> 2006 [61]	M	S	W	M	S	S	M
24 Brown <i>et al.</i> 2001 [62]	W	S	W	M	S	S	W
25 Dixon <i>et al.</i> 2009 [63]	M	S	W	M	S	M	M
26 Gallagher <i>et al.</i> 2007 [64]	W	S	S	M	S	W	W
27 Gulliver <i>et al.</i> 2008 [39]	W	S	S	M	S	W	W
28 Hall <i>et al.</i> 2006 [65]	W	S	W	M	S	M	W
29 MacPherson <i>et al.</i> 2010 [66]	W	S	S	S	S	W	W
30 McFall <i>et al.</i> 2005 [35]	W	S	S	M	S	S	M
31 Vickers <i>et al.</i> 2009 [67]	W	S	S	M	S	W	W
32 Williams <i>et al.</i> 2010 [68]	M	S	S	W	S	M	M

rating of moderate [35,40,47,49,52,56,58,61,63,68] and 20 studies received a rating of weak [36–39,41–46,48,50,53,54,57,59,60,62,64–67]. Unrepresentative samples, non-reporting of consent rates, non-reporting of blinding of participants and outcome assessors and high attrition rates were common issues across all studies. Four studies relied solely on self-reported smoking status [37,38,41,42,56]. Twelve studies used CO to confirm smoking status [35,39,45,48,52,57,59–61,63,65,67,68], nine used cotinine in saliva or urine [36,40,46,47,50,53–55,58] and seven studies used a combination of CO and cotinine [43,44,49,51,62,64,66]. Where reported, attrition rates varied from 8–77% at the longest follow-up point.

Narrative review and meta-analysis

Homeless smokers

Only one trial examined the effectiveness of a behavioural smoking cessation intervention targeted at homeless

smokers [44]. Okuyemi *et al.* [44] examined the effectiveness of five individual motivational interviewing (MI) sessions focusing on smoking behaviours and barriers to quitting combined with group educational support sessions, supportive group outings and an 8-week course of NRT, with a similar intervention where MI sessions focused only on smoking behaviours (and not barriers to quitting). No significant differences were found between the two interventions at 8-week (17.4% smoking plus versus 13% smoking only) or 26-week follow-up (17.4% smoking plus and 8.7% smoking only).

Indigenous smokers

Two trials examined cessation interventions targeted at indigenous populations [46,47]. Bramley *et al.* [46] examined the effectiveness of supportive quit smoking text messages compared with text messages not related to smoking among 355 Maori smokers over a 6-month period (this study also examined the effectiveness for

non-Maori smokers; however, these results will not be reported here). Patten *et al.* [47] examined the effectiveness of a multi-component intervention consisting of face-to-face counselling, four telephone calls, a video highlighting personal stories of cessation and a cessation guide on abstinence among pregnant Alaskan native women. Both studies were combined at short-term follow-up. A non-significant effect was found (RR 1.34, CI 0.91–1.96, $I^2 = 0\%$) (see Fig. 2a). Bramley [46] also assessed outcomes at 6-month follow-up and found no significant differences between those receiving smoking related text messages and those receiving non-smoking related messages.

Prisoners

One trial examined the effectiveness of a group behavioural mood management intervention among 250 female prisoners. Cropsey *et al.* [45] randomly assigned participants to a 10-week group mood management intervention incorporating transdermal nicotine or to a waiting-list control group. At 6-month follow-up, 14% of prisoners receiving the mood management intervention were abstinent compared with 2.8% of control participants ($P < 0.001$). At 12-month follow-up there was no longer a comparison condition (as the waiting-list control group had crossed over to the active intervention condition); however, 11.6% of intervention participants maintained abstinence.

Youth

Six studies examined the effectiveness of cessation interventions for at-risk youth [36,37,48–51]. Four studies used a behavioural support intervention and were combined for meta-analysis [48–51]. At short-term follow-up a non-significant effect was found (RR 1.55, CI 0.74–3.26, $I^2 = 21\%$) (Fig. 2b). Three studies were pooled at long-term follow-up [49–51] and also showed a non-significant effect (RR 1.69, CI 0.83–3.41, $I^2 = 0\%$) (Fig. 2c). Two studies also used a behavioural support intervention but could not be included in the meta-analysis due to the method of reporting of results. Albrecht *et al.* [36] examined the effectiveness of an 8-week group cognitive behavioural therapy (CBT) group programme for pregnant adolescents incorporating NRT and buddy support compared with a CBT programme alone and usual care. It appeared that the addition of a support person was of modest benefit, with a significant difference found at 8-week follow-up ($P = 0.01$). No differences were found at 1-year follow-up. Prokhorov [37] examined the effectiveness of a computer-based smoking prevention and cessation programme among disadvantaged

high school students. No significant effects were found among a small subsample of adolescent smokers at 18-months follow-up [37].

Low-income smokers

Studies targeting low-income smokers were categorized as those targeting low-income women attending paediatric or planned parenthood clinics (three studies [41,42,52,55]), those targeting low-income pregnant women (three studies [40,54,58]) and those targeting individuals from low-income areas (six studies [38,43,53,56,57,59,60]).

Three studies compared a multi-component MI intervention to either usual care or brief advice among low-income female smokers accessing paediatric or planned parenthood clinics and were combined for meta-analysis [41,42,52,55]. Combining the three studies at their shortest follow-up point (6–12 weeks) resulted in a significant effect (RR 1.68, CI 1.21–2.33, $I^2 = 0\%$) (Fig. 2d). At the longest follow-up point, a non-significant effect was found (RR 1.28, CI 0.96, 1.72, $I^2 = 17\%$) (Fig. 2e), although it should be noted that one study [55] was given the majority of the weight (68.3%) in the meta-analysis.

Three interventions targeted pregnant women [40,54,58]. Gielen *et al.* [54] examined the provision of educational materials, 15 minutes of individual counselling, verbal support from clinic staff and letters of encouragement compared with brief advice; Bullock *et al.* [40] tested intensive social support plus a cessation guide compared with a cessation booklet alone, social support alone or usual care (only the comparison between social support and booklet compared with control will be reported here); and Ruger *et al.* [58] tested the effectiveness of three home visits providing MI, feedback about household nicotine levels and self-help materials compared with the provision of a 5-minute brief intervention and self-help materials provided at the prenatal clinic. Two studies were combined at the third trimester follow-up point [40,54]. No effect was found (RR 1.04, CI 0.66–1.63, $I^2 = 0\%$) (Fig. 2f). Two studies [54,58] reporting 6-month post-partum follow-up could not be combined due to heterogeneity ($I^2 = 61\%$). Both found no significant differences at their 6-month post-partum follow-up. Bullock *et al.* [40] also found no significant differences at 6 weeks post-partum.

Six studies targeted low-income individuals living in deprived neighbourhoods or attending public health clinics [38,43,53,56,57,59,60]. Four provided a behavioural support intervention and were combined for meta-analysis [38,43,53,60]. Combining two studies reporting short-term outcomes [43,60] and three studies reporting long-term outcomes [38,43,53] showed no significant effects (RR 1.87, CI 0.91–3.83, $I^2 = 13\%$ and RR 1.58,

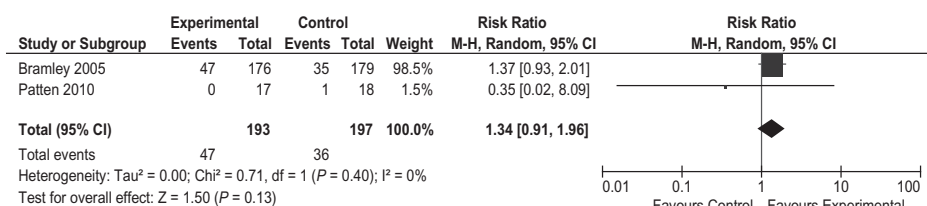
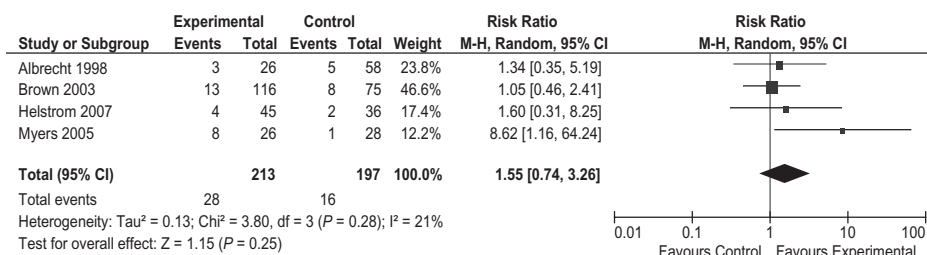
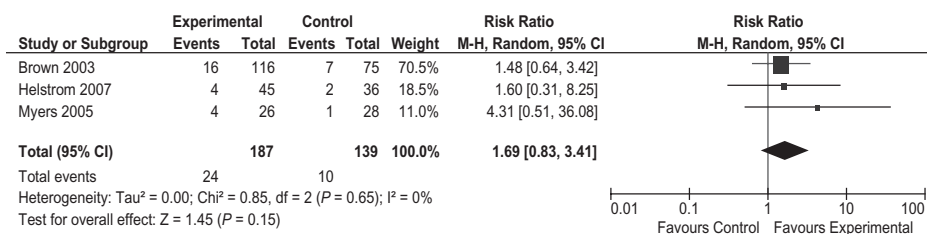
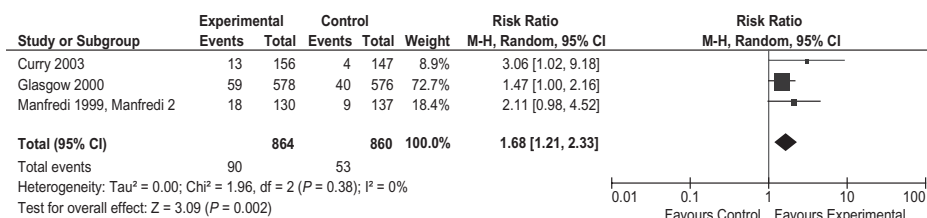
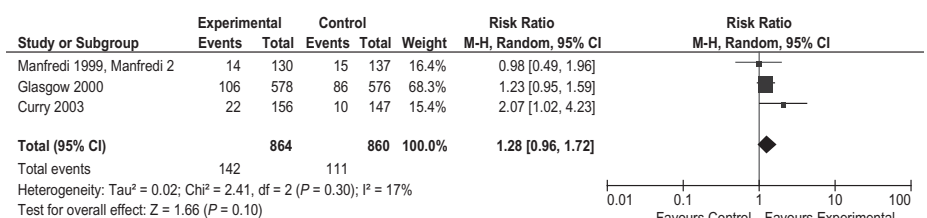
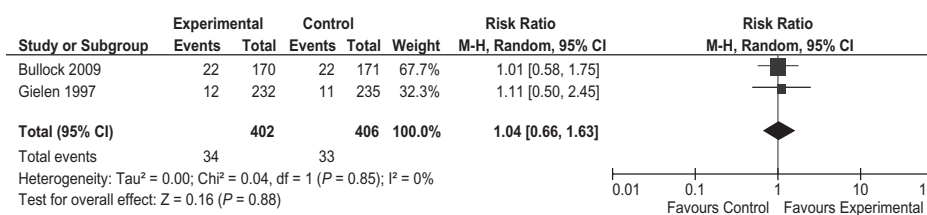
a) *Indigenous- Short term*b) *At risk youth- Short term*c) *At risk youth- Long term*d) *Low income female- Short term*e) *Low income female- Long term*f) *Pregnant women- Third trimester*

Figure 2 (a-j) Forrest plots: Intervention effectiveness at short- and long-term follow-up

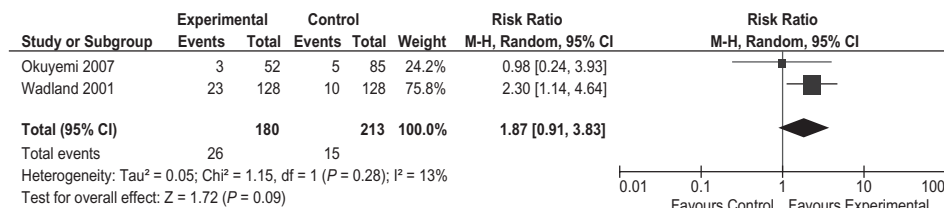
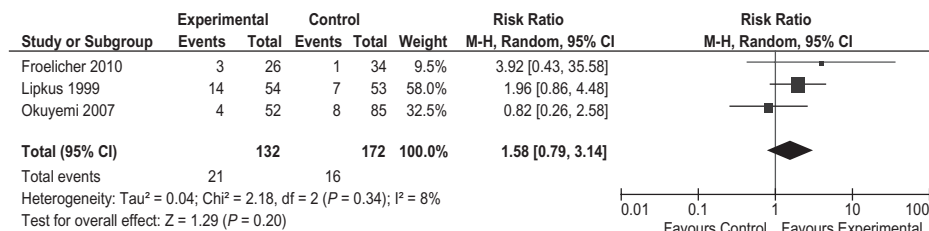
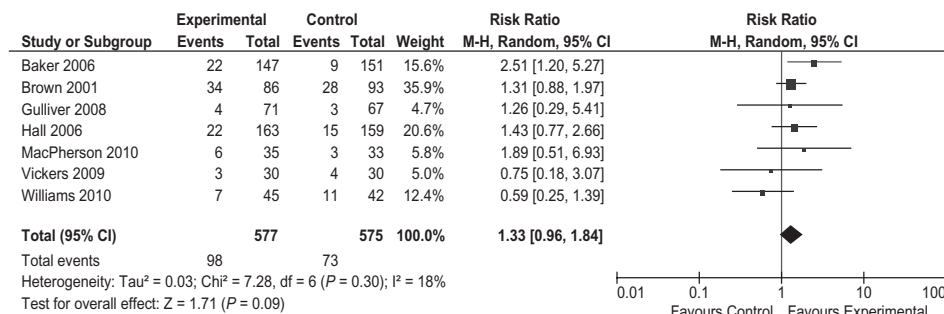
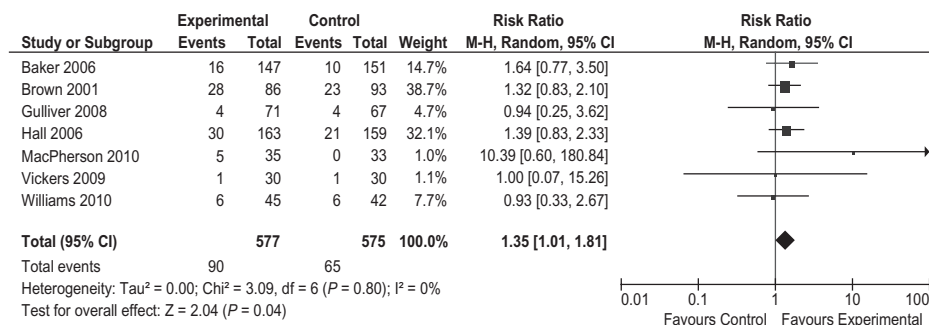
g) *Low income individual living in deprived area- Short term*h) *Low income individual living in deprived area- Long term*i) *Mentally ill- Short term*j) *Mentally ill- Long term*

Figure 2 Cont.

CI 0.79–3.14, $I^2 = 8\%$; Fig. 2g,h, respectively). Two additional studies targeting low-income individuals found significant effects; Sykes *et al.* [57,59] found a self-help CBT cessation programme was significantly more effective among smokers living in a deprived area of London compared to educational materials at both 6-month follow-up (17.2% self-help programme versus 5.6% control; $P < 0.0001$) and 12-month follow-up (19.8% self-help programme versus 5.7% control; $P < 0.0001$); however, an intention-to-treat approach to analysis was not adopted in this study. Gordon *et al.* [56] conducted a

large trial to examine the effectiveness of dental practitioner brief advice using the 5As approach and NRT compared to usual care among 2637 low-income smokers attending a public dental clinic. Significant differences were found at the 7.5-month follow-up (11.3% intervention compared to 6.8% control, $P < 0.05$).

Individuals with a mental illness

Of the 10 studies identified, three targeted smokers with schizophrenia or schizoaffective disorders [63,64,69],

four targeted smokers with depression [62,65–67], two studies included smokers with a variety of psychotic disorders [39,61] and one study targeted smokers with post-traumatic stress disorder (PTSD) [35].

Seven studies [39,61,62,65–68] examined the effectiveness of behavioural support interventions and were combined for meta-analysis. At short-term follow-up a non-significant effect was found (RR 1.33, CI 0.96–1.84, $I^2 = 18\%$) (Fig. 2i); however, a significant effect was found at long-term follow-up (RR 1.35, CI 1.01–1.81, $I^2 = 0\%$) (Fig. 2j). It should be noted, however, that two studies [66,67] had extremely wide confidence intervals in the long-term analysis and only contributed 1% and 1.5% weight, respectively, to the meta-analysis. Two studies [62,66] also had moderately intensive control conditions, which could have reduced the effect size found.

One study targeting smokers with a mental illness could not be included in the meta-analysis due to the method of reporting of results. McFall *et al.* [35] found that integrating smoking care with PTSD treatment for smokers with a diagnosis of PTSD was more than five times more effective than referring smokers to external clinics to receive smoking care ($P < 0.002$). Dixon [63] found that repeated brief advice (5As) in an out-patient mental health clinic setting had no impact on abstinence rates compared with usual care. Gallagher *et al.* [64] examined the use of contingent reinforcement for cessation, both with and without NRT, compared with a control group for male smokers with schizophrenia. Smokers allocated to either of the contingent reinforcement conditions earned progressively larger cash rewards for abstinence, ranging from \$20 to \$80 per visit. There were no significant differences between conditions at 20-week or 36-week follow-up.

DISCUSSION

The results of this review suggest that behavioural interventions may be effective among some disadvantaged groups. Meta-analysis showed promising point estimates for the effects of behavioural support interventions on abstinence among at-risk youth, but did not reach statistical significance due to small sample sizes and the small number of well-controlled RCTs pooled for analysis. A significant effect was found for behavioural support interventions targeted at low-income female smokers at short-term follow-up (RR 1.68, CI 1.21–2.33). While this comparison pooled only a small number of studies and gave the majority of weight in the meta-analysis to one large study, all three studies provided a similar multi-component clinic-based intervention to low socio-economic status women attending prenatal and paediatric clinics. Despite a reduced effect size and non-significant result at long-term follow-up, the significant

short-term finding supports the implementation of evidence-based smoking cessation support in routine prenatal care. Behavioural support interventions targeted at individuals with a mental illness at long-term follow-up also showed a significant effect (RR 1.35, CI 1.01–1.81). The studies included in this meta-analysis incorporated a wide range behavioural interventions, a varying number of intervention components and the duration of intervention delivery varied from one single session to high-intensity treatment of 24 sessions over 26 weeks. These findings must therefore be interpreted with caution. While further research that addresses barriers to quitting among individuals with a mental illness is needed, these significant long-term findings further support research which shows that cessation interventions can assist individuals with a mental illness to quit smoking [70]. These two significant findings are, however, notable, given that Cochrane reviews of counselling interventions in mainstream population groups show similar effect sizes for both individual and group behavioural counselling interventions of RR 1.39 and RR 1.98, respectively [71,72].

Of studies not included in the meta-analysis, some showed promising results. Studies targeting low-income individuals from deprived areas showed the most success, with two different approaches (a self-help CBT programme and brief advice integrated in dental care) demonstrating significant increases in smoking abstinence rates. Of particular note, of the six studies included in the review that specifically targeted pregnant smokers [36,40,47,48,54,58], only one study showed a significant impact on post-partum abstinence rates. Studies targeting low-income pregnant women tended to focus on providing increased advice and support, both during the woman's visits with health-care providers and additional support in the home. None included NRT. A recent Cochrane review has shown that cessation interventions can reduce smoking during pregnancy by approximately 6% [73]. Given the high rates of smoking among disadvantaged pregnant women and the high risk of harm, it is crucial that increased efforts are given to reducing smoking among this high-risk group. The addition of NRT to behavioural support for pregnant smokers who smoke more than five cigarettes per day may increase cessation rates [74].

A small number of studies targeted homeless smokers, indigenous smokers or prisoners. Point estimates suggest that effective interventions exist for indigenous smokers, but both of the included trials showed wide confidence intervals due to low power. Promising results were found for a group mood management intervention delivered to female prisoners [45]. Given the small number of studies, it appears efforts to promote cessation in these highly vulnerable groups has so far been relatively limited.

Methodological quality

The majority of studies included in the review performed poorly on ratings of methodological quality. Recurring methodological limitations included small sample sizes, high rates of attrition and failure to report blinding of participants, clinical staff and outcome assessors. Intervening with hard-to-reach smokers and undertaking rigorously designed cessation interventions is challenging [75]. Trialling strategies to both recruit and retain a representative sample of smokers is of critical importance to both improve the quality of studies and engage disadvantaged smokers with cessation trials. Robust methodologies which are culturally and politically sensitive to the needs of these populations are required. Extensive formative research would aid the development of stronger trials that can account for methodological issues [76].

Implications for research and practice

Some have argued that individuals from disadvantaged groups are more likely to be 'hard-core' smokers [77], and therefore that special considerations for intervening with these groups are needed. While Cochrane reviews have shown that cessation interventions, including individual and group behavioural counselling [71,72], telephone counselling [78] and physician advice [79], increase smoking cessation among mainstream population groups, there is less evidence about the effectiveness of behavioural interventions among disadvantaged groups. This meta-analysis found effect sizes broadly similar to those found with other populations, but in most cases the effects were not significant. There were notable exceptions, however, with targeted behavioural interventions provided to low-income female smokers and individuals with a mental illness showing significant effects in the meta-analysis.

Further large-scale RCTs should continue to examine the differential benefit of behavioural cessation interventions for disadvantaged groups. Such research is difficult to undertake, and needs to be resourced adequately to ensure that sample sizes can yield adequate power to detect clinically meaningful effect sizes. There is also a clear need for further research using interventions that have so far received little attention. For example, there have been recent calls for the use of financial incentives with disadvantaged groups [80,81]; however, we identified few studies that examined the effectiveness of this strategy. Where financial incentives were used wide confidence intervals were found, indicating the need for larger trials [64].

Attention should also be given to identifying novel settings for delivering cessation interventions to

disadvantaged groups. Of the 32 studies included in this review, the majority were conducted in health-care settings. Given evidence that disadvantaged groups are less likely to access health care and receive preventive advice [82], further research should explore the effectiveness of providing cessation support in settings familiar and trusted to disadvantaged individuals, such as community social services [83,84].

Limitations

This review is limited by the small number of studies eligible for inclusion in the review and the small number of studies included in the meta-analysis. It was not possible to compare interventions on the basis of intensity, duration or format of intervention delivery, and it is important that future reviews examine these constructs where possible. We were also unable to determine whether combining behavioural intervention with NRT increased smoking cessation above behavioural intervention alone. While a significant attempt was made to identify all published studies by using comprehensive *a priori* search strategies, it is possible that relevant studies were not located. While a significant attempt was made to compare consistent outcome measures, given the nature of the studies a mix of validated and self-reported quit rates, and 7-day point prevalence and continuous abstinence rates are included. Given that only studies conducted in developed countries were included, results are not generalizable to non-developed countries. Finally, methodological quality was not used as an exclusion criterion for meta-analysis. Although there are conflicting views on how to deal with assessments of study quality [85,86], including these studies means that there is a risk that bias has been introduced.

CONCLUSIONS

Increasing rates of cessation among disadvantaged groups will make a significant contribution to reducing tobacco-related health inequalities [87]. The results of this review indicate that behavioural interventions do show some benefit among disadvantaged and vulnerable subgroups, and this is an important finding as it suggests that achieving cessation with disadvantaged groups is within reach. Further research that is adequately resourced and powered is needed to establish the most effective cessation interventions for vulnerable high-risk groups.

Declarations of interest

None.

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Appendix 4.2: Quality Assessment Tool for Quantitative Studies

QUALITY ASSESSMENT TOOL FOR

QUANTITATIVE STUDIES



COMPONENT RATINGS

A) SELECTION BIAS

(Q1) Are the individuals selected to participate in the study likely to be representative of the target population?

- 1 Very likely
- 2 Somewhat likely
- 3 Not likely
- 4 Can't tell

(Q2) What percentage of selected individuals agreed to participate?

80– 100%
1 agreement

60– 79%
2 agreement

Less than 60%
3 agreement

4 Not applicable
5 Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

B) STUDY DESIGN

Indicate the study design

- 1 Randomised controlled trial
- 2 Controlled clinical trial
- 3 Cohort analytic (two group pre + post)
- 4 Case-control
- 5 Cohort (one group pre + post (before and after))
- 6 Interrupted time series
- 7 Other specify _____
- 8 Can't tell

Was the study described as randomised? If NO, go to Component C.

No Yes

If Yes, was the method of randomisation described? (See dictionary)

No Yes

If Yes, was the method appropriate? (See dictionary)

No Yes

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

C) CONFOUNDERS

(Q1) Were there important differences between groups prior to the intervention?

- 1 Yes
- 2 No
- 3 Can't tell

The following are examples of confounders:

- 1 Race
- 2 Sex
- 3 Marital status/family
- 4 Age
- SES (income or
- 5 class)
- 6 Education
- 7 Health status
- 8 Pre-intervention score on outcome measure

(Q2) If yes, indicate the percentage of relevant confounders that were controlled (either in the design (e.g. stratification, matching) or analysis)?

- 1 80–100% (most)
- 2 60–79% (some)
- 3 Less than 60% (few or none)
- 4 Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

D) BLINDING

(Q1) Was (Were) the outcome assessor(s) aware of the intervention or exposure status of participants?

- 1 Yes
- 2 No
- 3 Can't tell

(Q2) Were the study participants aware of the research question?

- 1 Yes
- 2 No
- 3 Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

E) DATA COLLECTION METHODS

(Q1) Were data collection tools shown to be valid?

- 1 Yes
- 2 No
- 3 Can't tell

(Q2) Were data collection tools shown to be reliable?

- 1 Yes
- 2 No
- 3 Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

F) WITHDRAWALS AND DROP-OUTS

(Q1) Were withdrawals and drop-outs reported in terms of numbers and/or reasons per group?

- 1 Yes
- 2 No
- 3 Can't tell
- 4 Not applicable (i.e. one-time surveys or interviews)

(Q2) Indicate the percentage of participants completing the study. (If the percentage differs by groups, record the lowest.)

- 80- 100
- 1 %
- 2 60- 79%
- 3 Less than 60%
- 4 Can't tell
- 5 Not applicable (i.e. retrospective case-control)

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

G) INTERVENTION INTEGRITY

(Q1) What percentage of participants received the intervention or exposure of interest?

- 1 80- 100%
- 2 60- 79%
- 3 Less than 60%
- 4 Can't tell

(Q2) Was the consistency of the intervention measured?

- 1 Yes
- 2 No
- 3 Can't tell

(Q3) Is it likely that subjects received an unintended intervention (contamination or co-intervention) that may influence the results?

- 4 Yes
- 5 No
- 6 Can't tell

H) ANALYSES

(Q1) Indicate the unit of allocation (circle one)

community organization/institution practice/office individual

(Q2) Indicate the unit of analysis (circle one)

community organization/institution practice/office individual

(Q3) Are the statistical methods appropriate for the study design?

- 1 Yes
- 2 No
- 3 Can't tell

(Q4) Is the analysis performed by intervention allocation status (i.e. intention to treat) rather than the actual intervention received?

- 1 Yes
- 2 No
- 3 Can't tell

Component Ratings of Study:

For each of the six components A – F, use the following descriptions as a roadmap.

SELECTION BIAS

Strong: The selected individuals are very likely to be representative of the target population (Q1 is 1) **and** there is greater than 80% participation (Q2 is 1).

Moderate: The selected individuals are at least somewhat likely to be representative of the target population (Q1 is 1 or 2); **and** there is 60 - 79% participation (Q2 is 2). 'Moderate' may also be assigned if Q1 is 1 or 2 and Q2 is 5 (can't tell).

Weak: The selected individuals are not likely to be representative of the target population (Q1 is 3); **or** there is less than 60% participation (Q2 is 3) **or** selection is not described (Q1 is 4); and the level of participation is not described (Q2 is 5).

B) DESIGN

Strong: will be assigned to those articles that described RCTs and CCTs.

Moderate: will be assigned to those that described a cohort analytic study, a case control study, a cohort design, or an interrupted time series.

Weak: will be assigned to those that used any other method or did not state the method used.

C) CONFOUNDERS

Strong: will be assigned to those articles that controlled for at least 80% of relevant confounders (Q1 is 2); **or** (Q2 is 1).

Moderate: will be given to those studies that controlled for 60 – 79% of relevant confounders (Q1 is 1) **and** (Q2 is 2).

Weak: will be assigned when less than 60% of relevant confounders were controlled (Q1 is 1) **and** (Q2 is 3) **or** control of confounders was not described (Q1 is 3) **and** (Q2 is 4).

D) BLINDING

Strong: The outcome assessor is not aware of the intervention status of participants (Q1 is 2); **and** the study participants are not aware of the research question (Q2 is 2).

Moderate: The outcome assessor is not aware of the intervention status of participants (Q1 is 2); **or** the study participants are not aware of the research question (Q2 is 2); **or** blinding is not described (Q1 is 3 and Q2 is 3).

Weak: The outcome assessor is aware of the intervention status of participants (Q1 is 1); **and** the study participants are aware of the research question (Q2 is 1).

E) DATA COLLECTION METHODS

Strong: The data collection tools have been shown to be valid (Q1 is 1); **and** the data collection tools have been shown to be reliable (Q2 is 1).

Moderate: The data collection tools have been shown to be valid (Q1 is 1); **and** the data collection tools have not been shown to be reliable (Q2 is 2) **or** reliability is not described (Q2 is 3).

Weak: The data collection tools have not been shown to be valid (Q1 is 2) **or** both reliability and validity are not described (Q1 is 3 and Q2 is 3).

F) WITHDRAWALS AND DROP-OUTS - a rating of:

Strong: will be assigned when the follow-up rate is 80% or greater (Q2 is 1).

Moderate: will be assigned when the follow-up rate is 60 – 79% (Q2 is 2) **OR** Q2 is 5 (N/A).

Weak: will be assigned when a follow-up rate is less than 60% (Q2 is 3) or if the withdrawals and drop-outs were not described (Q2 is 4).

GLOBAL RATING

COMPONENT RATINGS

Please transcribe the information from the gray boxes on pages 1– 4 onto this page. See dictionary on how to rate this section.

A	SELECTION BIAS	STRONG	MODERATE	WEAK
		1	2	3
B	STUDY DESIGN	STRONG	MODERATE	WEAK
		1	2	3
C	CONFOUNDERS	STRONG	MODERATE	WEAK
		1	2	3
D	BLINDING	STRONG	MODERATE	WEAK
		1	2	3
E	DATA COLLECTION METHOD	STRONG	MODERATE	WEAK
		1	2	3
F	WITHDRAWALS AND DROPOUTS	STRONG	MODERATE	WEAK
		1	2	3

GLOBAL RATING FOR THIS PAPER (circle one):

- | | | |
|---|----------|----------------------------|
| 1 | STRONG | (no WEAK ratings) |
| 2 | MODERATE | (one WEAK rating) |
| 3 | WEAK | (two or more WEAK ratings) |

With both reviewers discussing the ratings:

Is there a discrepancy between the two reviewers with respect to the component (A – F) ratings?

No Yes

If yes, indicate the reason for the discrepancy

- | | |
|---|---|
| 1 | Oversight |
| 2 | Differences in interpretation of criteria |
| 3 | Differences in interpretation of study |

Final decision of both reviewers (circle one):

- | | |
|---|----------|
| 1 | STRONG |
| 2 | MODERATE |
| 3 | WEAK |

Appendix 4.3: Quality Assessment Tool for Quantitative Studies

Dictionary

Quality Assessment Tool

for Quantitative Studies

Dictionary



The purpose of this dictionary is to describe items in the tool thereby assisting raters to score study quality. Due to under-reporting or lack of clarity in the primary study, raters will need to make judgements about the extent that bias may be present. When making judgements about each component, raters should form their opinion based upon information contained in the study rather than making inferences about what the authors intended.

1. SELECTION BIAS

(Q1) Participants are more likely to be representative of the target population if they are randomly selected from a comprehensive list of individuals in the target population (score very likely). They may not be representative if they are referred from a source (e.g. clinic) in a systematic manner (score somewhat likely) or self-referred (score not likely).

(Q2) Refers to the % of subjects in the control and intervention groups who agreed to participate in the study before they were assigned to intervention or control groups.

2. STUDY DESIGN

In this section, raters assess the likelihood of bias due to the allocation process in an experimental study. For observational studies, raters assess the extent that assessments of exposure and outcome are likely to be independent. Generally, the type of design is a good indicator of the extent of bias. In stronger designs, an equivalent control group is present and the allocation process is such that the investigators are unable to predict the sequence.

Randomized Controlled Trial (RCT)

An experimental design where investigators randomly allocate eligible people to an intervention or control group. A rater should describe a study as an RCT if the randomization sequence allows each study participant to have the same chance of receiving each intervention and the investigators could not predict which intervention was next. If the investigators do not describe the allocation process and only use the words, “random” or “randomly”, the study is described as a controlled clinical trial.

See below for more details.

Was the study described as randomised?

Score YES, if the authors used words such as random allocation, randomly assigned, and random assignment. Score NO, if no mention of randomisation is made.

Was the method of randomisation described?

Score YES, if the authors describe any method used to generate a random allocation sequence. Score NO, if the authors do not describe the allocation method or describe methods of allocation such as alternation, case record numbers, dates of birth, day of the week, and any allocation procedure that is entirely transparent before assignment, such as an open list of random numbers of assignments. If NO is scored, then the study is a controlled clinical trial.

Was the method appropriate?

Score YES, if the randomisation sequence allowed each study participant to have the same chance of receiving each intervention and the investigators could not predict which intervention was next. Examples of appropriate approaches include assignment of subjects by a central office unaware of subject characteristics, or sequentially numbered, sealed, opaque envelopes.

Score NO, if the randomisation sequence is open to the individuals responsible for recruiting and allocating participants or providing the intervention, since those individuals can influence the allocation process, either knowingly or unknowingly.

If NO is scored, then the study is a controlled clinical trial.

Controlled Clinical Trial (CCT)

An experimental study design where the method of allocating study subjects to intervention or control groups is open to individuals responsible for recruiting subjects or providing the intervention. The method of allocation is transparent before assignment, e.g. an open list of random numbers or allocation by date of birth, etc.

Cohort analytic (two group, pre and post)

An observational study design where groups are assembled according to whether or not exposure to the intervention has occurred. Exposure to the intervention is not under the control of the investigators. Study groups might be non-equivalent or not comparable on some feature that affects outcome.

Case control study

A retrospective study design where the investigators gather “cases” of people who already have the outcome of interest and “controls” who do not. Both groups are then questioned or their records examined about whether they received the intervention exposure of interest.

Cohort (one group pre + post (before and after))

The same group is pretested, given an intervention, and tested immediately after the intervention. The intervention group, by means of the pretest, acts as its own control group.

Interrupted time series

A time series consists of multiple observations over time. Observations can be on the same units (e.g. individuals over time) or on different but similar units (e.g. student achievement scores for particular grade and school). Interrupted time series analysis requires knowing the specific point in the series when an intervention occurred.

C) CONFOUNDERS

By definition, a confounder is a variable that is associated with the intervention or exposure and causally related to the outcome of interest. Even in a robust study design, groups may not be balanced with respect to important variables prior to the intervention. The authors should indicate if confounders were controlled in the design (by stratification or matching) or in the analysis. If the allocation to intervention and control groups is randomised, the authors must report (either in the text or a table) that the groups were balanced at baseline with respect to confounders.

D) BLINDING

(Q1) Assessors should be described as blinded to which participants were in the control and intervention groups. The purpose of blinding the outcome assessors (who might also be the care providers) is to protect against detection bias.

(Q2) Study participants should not be aware of (i.e. blinded to) the research question. The purpose of blinding the participants is to protect against reporting bias.

E) DATA COLLECTION METHODS

Tools for primary outcome measures must be described as reliable and valid. If “face” validity or “content” validity has been demonstrated, this is acceptable. Some sources from which data may be collected are described below:

Self-reported data include data that are collected from participants in the study (e.g. completing a questionnaire, survey, answering questions during an interview, etc.).

Assessment/Screening includes objective data that are retrieved by the researchers (e.g. observations by investigators).

Medical Records/Vital Statistics refers to the types of formal records used for the extraction of the data.

Reliability and validity can be reported in the study or in a separate study. For example, some standard assessment tools have known reliability and validity.

F) WITHDRAWALS AND DROP-OUTS

Score **YES** if the authors describe BOTH the numbers and reasons for withdrawals and drop-outs. Score **NO** if either the numbers or reasons for withdrawals and drop-outs are not reported. The percentage of participants completing the study refers to the % of subjects remaining in the study at the final data collection period in all groups (i.e. control and intervention groups).

G) INTERVENTION INTEGRITY

The number of participants receiving the intended intervention should be noted (consider both frequency and intensity). For example, the authors may have reported that at least 80 percent of the participants received the complete intervention. The authors should describe a method of measuring if the intervention was provided to all participants in the same way. As well, the authors should indicate if subjects received an unintended intervention that may have influenced the outcomes. For example, co-intervention occurs when the study group receives an additional intervention (other than that intended). In this case, it is possible that the effect of the intervention may be over-estimated. Contamination refers to situations where the control group accidentally receives the study intervention. This could result in an under-estimation of the impact of the intervention.

H) ANALYSIS APPROPRIATE TO QUESTION

Was the quantitative analysis appropriate to the research question being asked?

An intention-to-treat analysis is one in which all the participants in a trial are analysed according to the intervention to which they were allocated, whether they received it or not. Intention-to-treat analyses are favoured in assessments of effectiveness as they mirror the noncompliance and treatment changes that are likely to occur when the intervention is used in practice, and because of the risk of attrition bias when participants are excluded from the analysis.

Component Ratings of Study:

For each of the six components A–F, use the following descriptions as a roadmap.

A) SELECTION BIAS

Strong: The selected individuals are very likely to be representative of the target population (Q1 is 1) **and** there is greater than 80% participation (Q2 is 1).

Moderate: The selected individuals are at least somewhat likely to be representative of the target population (Q1 is 1 or 2); **and** there is 60–79% participation (Q2 is 2). “Moderate” may also be assigned if Q1 is 1 or 2 and Q2 is 5 (can’t tell).

Weak: The selected individuals are not likely to be representative of the target population (Q1 is 3); **or** there is less than 60% participation (Q2 is 3) **or** selection is not described (Q1 is 4); and the level of participation is not described (Q2 is 5).

B) DESIGN

Strong: will be assigned to those articles that described RCTs and CCTs.

Moderate: will be assigned to those that described a cohort analytic study, a case control study, a cohort design, or an interrupted time series.

Weak: will be assigned to those that used any other method or did not state the method used.

C) CONFOUNDERS

Strong: will be assigned to those articles that controlled for at least 80% of relevant confounders (Q1 is 2); **or** (Q2 is 1).

Moderate: will be given to those studies that controlled for 60–79% of relevant confounders (Q1 is 1) **and** (Q2 is 2).

Weak: will be assigned when less than 60% of relevant confounders were controlled (Q1 is 1) **and** (Q2 is 3) **or** control of confounders was not described (Q1 is 3) **and** (Q2 is 4).

D) BLINDING

Strong: The outcome assessor is not aware of the intervention status of participants (Q1 is 2) **and** the study participants are not aware of the research question (Q2 is 2).

Moderate: The outcome assessor is not aware of the intervention status of participants (Q1 is 2); **or** the study participants are not aware of the research question (Q2 is 2); **or** blinding is not described (Q1 is 3 and Q2 is 3).

Weak: The outcome assessor is aware of the intervention status of participants (Q1 is 1) **and** the study participants are aware of the research question (Q2 is 1).

E) DATA COLLECTION METHODS

Strong: The data collection tools have been shown to be valid (Q1 is 1) **and** the data collection tools have been shown to be reliable (Q2 is 1).

Moderate: The data collection tools have been shown to be valid (Q1 is 1); **and** the data collection tools have not been shown to be reliable (Q2 is 2) **or** reliability is not described (Q2 is 3).

Weak: The data collection tools have not been shown to be valid (Q1 is 2) **or** both reliability and validity are not described (Q1 is 3 and Q2 is 3).

F) WITHDRAWALS AND DROP-OUTS

Strong: Will be assigned when the follow-up rate is 80% or greater (Q2 is 1).

Moderate: Will be assigned when the follow-up rate is 60–79% (Q2 is 2) **OR** Q2 is 5 (N/A).

Weak: Will be assigned when a follow-up rate is less than 60% (Q2 is 3) or if the withdrawals and drop-outs were not described (Q2 is 4).

Appendix 4.4 Statements of contribution from co-authors

Statement of contribution

I, Dr. Billie Bonevski, attest that Research Higher Degree candidate Jamie Bryant contributed substantially- in terms of study concept and design, literature searching and analysis, and preparation of the manuscript- to the publication:

Jamie Bryant, Billie Bonevski, Chris Paul, Patrick McElduff, John Attia. A systematic review and meta-analysis of the effectiveness of behavioural smoking cessation interventions in selected disadvantaged groups. *Addiction*, 2011, 106(9), 1568-1585. doi: 10.1111/j.1360-0443.2011.03467.x

Dr. Billie Bonevski (Co-author)

Date

Jamie Bryant (Candidate)

Date

Prof John Rostas (Assistant Dean Research Training)

Date

Statement of contribution

I, A/Prof. Christine Paul, attest that Research Higher Degree candidate Jamie Bryant contributed substantially- in terms of study concept and design, literature searching and analysis, and preparation of the manuscript -to the publication:

Jamie Bryant, Billie Bonevski, Chris Paul, Patrick McElduff, John Attia. A systematic review and meta-analysis of the effectiveness of behavioural smoking cessation interventions in selected disadvantaged groups. *Addiction*, 2011, 106(9), 1568–1585. doi: 10.1111/j.1360-0443.2011.03467.x

A/Prof. Christine Paul (Co-author)

Date

Jamie Bryant (Candidate)

Date

Prof John Rostas (Assistant Dean Research Training)

Date

Statement of contribution

I, Dr. Patrick McElduff, attest that Research Higher Degree candidate Jamie Bryant contributed substantially- in terms of study concept and design, literature searching and analysis, and preparation of the manuscript- to the publication:

Jamie Bryant, Billie Bonevski, Chris Paul, Patrick McElduff, John Attia. A systematic review and meta-analysis of the effectiveness of behavioural smoking cessation interventions in selected disadvantaged groups. *Addiction*, 2011, 106(9), 1568–1585. doi: 10.1111/j.1360-0443.2011.03467.x

Dr. Patrick McElduff (Co-author)

Date

Jamie Bryant (Candidate)

Date

Prof John Rostas (Assistant Dean Research Training)

Date

Statement of contribution

I, Prof John Attia, attest that Research Higher Degree candidate Jamie Bryant contributed substantially- in terms of study concept and design, literature searching and analysis, and preparation of the manuscript- to the publication:

Jamie Bryant, Billie Bonevski, Chris Paul, Patrick McElduff, John Attia. A systematic review and meta-analysis of the effectiveness of behavioural smoking cessation interventions in selected disadvantaged groups. *Addiction*, 2011, 106(9), 1568–1585. doi: 10.1111/j.1360-0443.2011.03467.x

Prof. John Attia (Co-author)

Date

Jamie Bryant (Candidate)

Date

Prof John Rostas (Assistant Dean Research Training)

Date

Appendix 5.1: Published manuscript

Citation: Bryant J, Bonevski B, Paul C, Lecathelinais C. Assessing smoking status in disadvantaged populations: Is computer-administered self-report an accurate and acceptable measure? BMC Medical Research Methodology, 2011, 11:153, doi:10.1186/1471-2288-11-153.

RESEARCH ARTICLE

Open Access

Assessing smoking status in disadvantaged populations: is computer administered self report an accurate and acceptable measure?

Jamie Bryant^{1*†}, Billie Bonevski^{1†}, Christine Paul^{2*†} and Christophe Lecathelinais^{1*†}

Abstract

Background: Self report of smoking status is potentially unreliable in certain situations and in high-risk populations. This study aimed to determine the accuracy and acceptability of computer administered self-report of smoking status among a low socioeconomic (SES) population.

Methods: Clients attending a community service organisation for welfare support were invited to complete a cross-sectional touch screen computer health survey. Following survey completion, participants were invited to provide a breath sample to measure exposure to tobacco smoke in expired air. Sensitivity, specificity, positive predictive value and negative predictive value were calculated.

Results: Three hundred and eighty three participants completed the health survey, and 330 (86%) provided a breath sample. Of participants included in the validation analysis, 59% reported being a daily or occasional smoker. Sensitivity was 94.4% and specificity 92.8%. The positive and negative predictive values were 94.9% and 92.0% respectively. The majority of participants reported that the touch screen survey was both enjoyable (79%) and easy (88%) to complete.

Conclusions: Computer administered self report is both acceptable and accurate as a method of assessing smoking status among low SES smokers in a community setting. Routine collection of health information using touch-screen computer has the potential to identify smokers and increase provision of support and referral in the community setting.

Keywords: Smoking, biochemical validation, carbon monoxide, touch screen computer, acceptability, accuracy

Background

Accurate assessment of smoking status is crucial not only for monitoring smoking prevalence, but also for assessing the effectiveness of smoking cessation interventions. Meta-analysis has shown that the accuracy of self-reported smoking status is high when assessed in the general population, particularly in community settings [1]. However self report tends to be compromised during smoking cessation

trials where social desirability bias may influence self report, and among particular population groups where smoking is seen as undesirable, including among pregnant women [2-5], and among individuals with smoking related medical conditions including respiratory diseases [6,7] and cancer [8]. It has therefore been recommended that smoking status be validated using a biochemical marker in certain circumstances including when assessing smoking status in special populations and in situations where contextual demand characteristics may influence accurate reporting [9].

As a result of a comprehensive population based approach to tobacco control, smoking rates in Australia have declined from 28.4% in 1989-1990 [10] to less than 17% in 2007 [11]. While Australia now has one of the lowest smoking rates in the developed world, rates remain significantly high among some disadvantaged

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sub-groups of the community [12]. For example compared to the whole population smoking prevalence rate of 16.9%, smoking rates reported in the 2007 National Drug Strategy Household survey were 9%-21% higher among disadvantaged sub-groups, including individuals in the lowest socioeconomic quintile (the most disadvantaged; 25.9%), the unemployed (38.2%), and Aboriginal and Torres Strait Islanders (34.1%) [11]. These estimates are however based on self report, the accuracy of which has not been established in highly disadvantaged or very low socio-economic status (SES) populations.

It is important to establish the accuracy of self-report as a measure of smoking status among very low SES populations for a number of reasons, including examining whether social desirability bias may be more or less evident among low SES groups than it is for the general population. Individuals receiving government welfare or community social support may perceive a level of disapproval from others if such support is spent on tobacco products, thereby increasing the likelihood of falsely reporting to be a non-smoker. Alternatively, the greater prevalence of smoking in low SES groups, as well as social norms conducive to smoking, may reduce such social desirability bias. In the absence of relevant data, it is difficult to know whether self-report data for disadvantaged populations provide overestimates or underestimates of the true prevalence of smoking in this population.

One method of assessing smoking status is using touch-screen computer technology. Touch-screen computers are an efficient and cost-effective way of collecting health information, often preferred over pen-and-paper methods [13]. Touch screen computers have been found to be acceptable in a wide range of settings and population groups, including among patients in cancer treatment and rheumatology clinics [14,15], clients of community drug and alcohol treatment centres [16], and in general practice [17]. While the use of touch screen computers has been found to be acceptable among low income populations in primary care [18], no studies have explored the accuracy or acceptability of computer technology for assessing smoking status in a non-health community setting.

This study aimed to determine the accuracy (i.e. sensitivity, specificity, positive predictive value and negative predictive value) and acceptability of computer administered self report of smoking among socially disadvantaged individuals accessing a social and community service organisation (SCSO) for welfare support.

Materials and methods

Design

Data were collected as part of a larger cross-sectional health survey. Data collection occurred between February and October 2010.

Setting & Sample

One SCSO in New South Wales, Australia, participated. Data was collected from three SCSO service sites located in Sydney (two services) and a regional area (one service). SCSOs are non-government, not-for-profit organisations that provide welfare services to highly disadvantaged individuals in the communities in which they are based. They provide a range of services to individuals including financial and family counselling, temporary accommodation, food and material aid, and child and family support [19,20]. Participants were adult clients attending the SCSO for emergency relief, which involved receiving financial or material assistance, including free grocery items, assistance paying bills, and assistance with purchasing medications.

Recruitment & Procedure

Service attendees were invited by their caseworker at the end of their emergency relief interview to complete a touch screen computer administered health survey. Clients attending the services during the recruitment period who were aged over 18 years, able to speak or read English to a level that allowed completion of an English survey with or without assistance, and who were not distressed were eligible to participate. The gender and date of birth of non-consenting clients were collected to assess participation bias. Clients who consented to participate were introduced to a research assistant who provided support to read and/or complete the survey as necessary. Following completion of the touch screen computer health survey, participants were asked to complete a pen-and-paper survey to determine the acceptability of using the touch screen computer. Participants were then asked to provide a breath sample to measure breath carbon monoxide (BCO). BCO is a portable, low cost, immediate and non-invasive method of assessing smoking status [21], shown to have acceptable sensitivity and specificity [22]. Participants were unaware that they would be asked to provide this sample prior to completing the health survey.

Measures

Self-report

Survey items included questions about social demographics (e.g. gender, age, income, Aboriginal and Torres Strait islander status, employment and education), fruit and vegetable consumption, sun protection practices, smoking, physical activity, alcohol consumption and cancer screening behaviours (see Additional File 1). Only results relevant to the validation of smoking status will be reported here. All participants were asked "Do you currently smoke tobacco products?" (response options: 'Yes, daily', 'Yes, at least once a week', 'Yes, but less often than once per week' and 'No, not at all'). Time since last cigarette was determined by asking "When was the last

time you smoked a cigarette, cigar or pipe?" (response options: 'Less than 4 hours ago', 'Between 4 and 8 hours ago', 'Between 8 and 12 hours ago' and 'Longer than 12 hours ago'). In order to examine discrepancies between self reported smoking status and BCO, exposure to passive smoke and heaviness of smoking (using the Heaviness of Smoking Index (HSI)) [23] were examined as explanatory factors. All participants were asked "In the last 24 hours have you been near other people who were smoking?" (response options: 'Yes' and 'No'). To enable the calculation of the HSI, smokers were also asked "On an average day, how many cigarettes do you smoke?" and "How soon after waking up do you smoke?" (response options: 'Within 5 minutes', '6-30 minutes', '31-60 minutes' and 'After 60 minutes').

Touch screen computer

All questions were presented on a touch screen computer using Digivey survey software [24]. The touch screen computer was a Dell Latitude XT2 (1.4 GHz processor).

BCO

Exhaled BCO measurements were obtained using a Bedfont Micro+™ Smokerlyzer® (Bedfont Scientific, UK, <http://www.bedfont.com>). Participants were asked to take a deep breath and hold for 15 seconds before exhaling slowly into the smokerlyzer. BCO monitors used in the study were calibrated by the manufacturer before the study commenced. A cut point of 6 parts per million (ppm) was used as recommended by the manufacturer to distinguish between smokers and non-smokers [25].

Acceptability

Acceptability of touch screen computer use was assessed using six questions answered on a five point Likert scale from 'Strongly agree' to 'Strongly disagree'. Items included "Completing the survey using the touch screen computer was enjoyable", "Completing the survey using the touch screen computer was easy", "Completing the survey using the touch screen computer was complicated", "Completing the survey using the touch screen computer was stressful", "I would be happy to complete a short survey about my health a few times a year when I came into [community service organisation]" and "I would prefer to answer this survey using a pen-and-paper survey".

Power calculation

Based on known smoking rates among groups that utilise social and community service organisations [19], it was assumed that approximately 50% of clients attending the service would be smokers. Based on this assumption, and a minimum required sensitivity and specificity of 80%, a sample of 300 participants would allow estimation of sensitivity and specificity of self-report versus BCO with 95% confidence intervals within 6.4% of the point estimate.

Statistical Analysis

Basic frequencies were calculated and Chi-square tests and Fisher's exact tests used as appropriate to explore differences between groups. Self-reported smoking status was compared to the established cut point (6 ppm) to determine the sensitivity, specificity, and positive and negative predictive values of self-report against BCO, using BCO as the criterion measure. Due to the known short half life of BCO, only individuals reporting daily or occasional smoking who indicated they had smoked a cigarette in the preceding 12 hours were included in the sensitivity and specificity analysis. The HSI was calculated by assigning a value of 0 for those reporting smoking between 0-10 cigarettes per day (CPD), 1 for those reporting 11-20 CPD, 2 for those reporting 21-30 CPD and 3 for those reporting 31 or more CPD. Responses to "How soon after waking up do you smoke?" were assigned values of 0 for those reporting > 60 minutes, 1 for those reporting 31-60 minutes, 2 for those reporting 6-30 minutes and 3 for those reporting < 5 minutes. These two values were then summed to give a score with a range of 0 (low dependence) to 6 (high dependence).

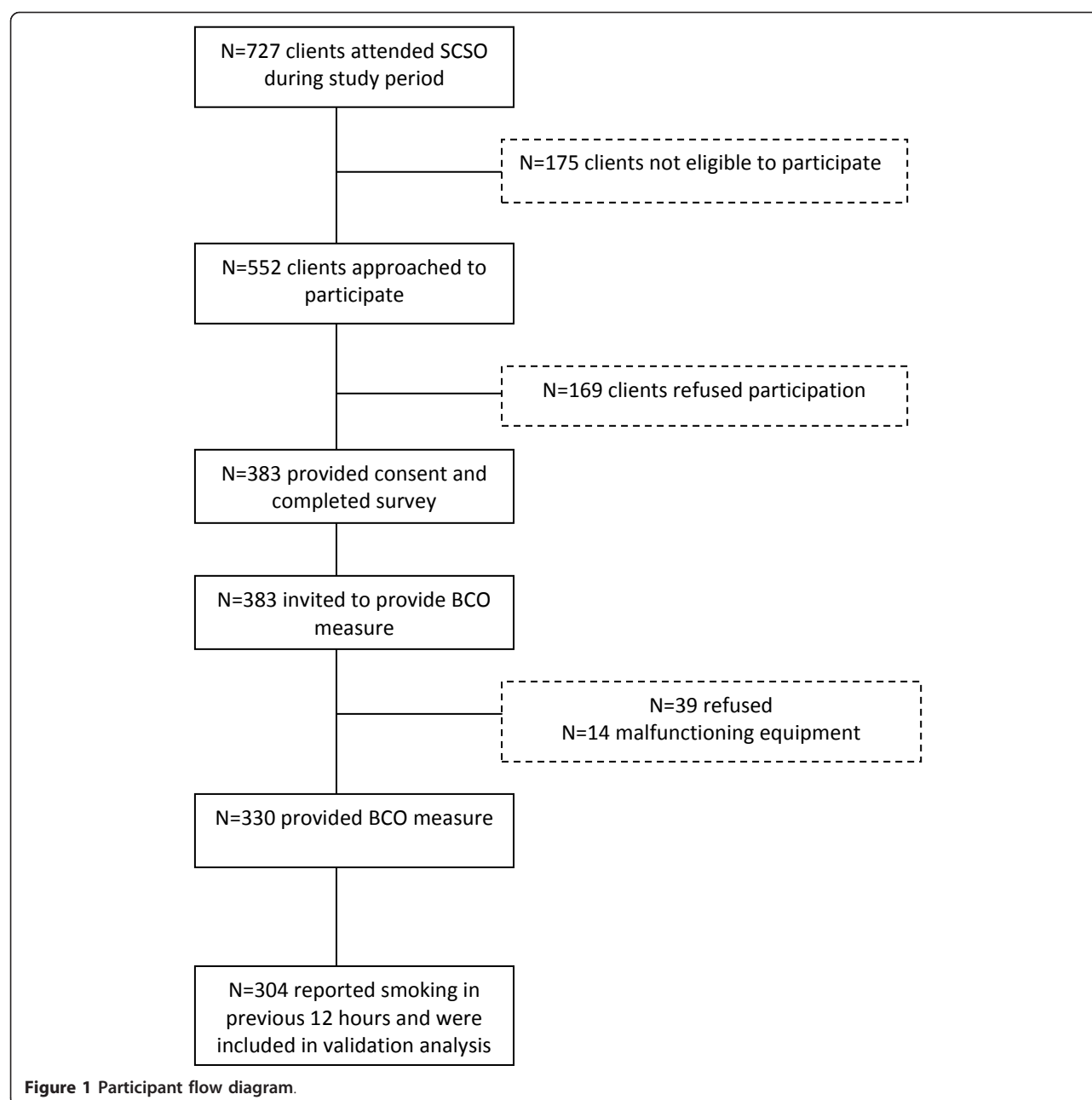
Ethics Approval

This study was approved by the University of Newcastle Human Research Ethics Committee.

Results

Study Sample

A participant flow diagram is provided in Figure 1. A total of 727 clients attended the three sites during the study period of which 552 were approached to participate. The main reasons for not being approached to participate included having already completed the survey at an earlier visit (71 clients), being assessed by service staff as not suitable to participate (e.g. distressed, unwell, intoxicated or uncooperative, 39 clients), and not being able to speak or read English (13 clients). In total, 383 clients completed the touch screen survey (69% consent rate), of which 330 clients (86%) also provided a breath sample. Demographic details of the sample (n = 330) are presented in table one. Fifty-four percent of participants reported an income of less than AUD\$300 per week, 49% were unemployed, 3% reported primary school as their highest level of education and 65% reported secondary school as their highest level of education. Male participants were more likely than female participants to agree to participate (76% vs. 67% respectively, $\chi^2 = 5.5$, $p = 0.02$), and participants recruited from the two inner-city services were more likely to agree to participate than participants from the regional service (80% inner-city vs. 60% regional, $\chi^2 = 34$, $p < 0.001$). A total of 39 clients refused to provide a breath sample and a further 14 clients could not provide a breath sample due



to malfunctioning equipment. There were no statistically significant differences in gender, age, Aboriginal or Torres Strait Islander status, marital status, education, income, employment characteristics or smoking status between those consenting and those not consenting to provide a breath sample (see table 1).

Self-reported smoking status

Of the clients included in the validation analysis ($n = 304$), 59% ($n = 179$) reported daily or occasional smoking (at least once per week or once per month). A total of 41% of clients ($n = 125$) reported being current non-smokers.

Accuracy of self reported smoking status vs. BCO

The smoking characteristics of participants included in validation analysis are reported in table 2. Self reported daily or occasional smokers ($n = 179$) had a BCO reading greater than or equal to 6 ppm indicating a sensitivity of 94.4% (CI 91.1%-97.8%). One hundred and sixteen self reported non-smokers had a BCO reading below 6 ppm indicating a specificity of 92.8% (CI 88.3%-97.3%). The positive predictive value was 94.9% and the negative predictive value was 92.0%. Nine participants (3% of the total sample) self reported being non-smokers but returned a BCO reading at or above the 6 ppm cut point.

Table 1 Demographic characteristics and smoking status of whole sample (n = 330) and participants not consenting to provide a breath tests (n = 39)

	Validation sample (n = 330)		Participants not consenting to breath test (n = 39)		χ^2
	N	%	N	%	
Gender					
Male	186	56	17	44	$(\chi^2 = 1.79, p = 0.18)$
Female	144	44	22	56	
Age					
≤ 29 years	45	14	5	13	$(\chi^2 = 1.64, df = 5, p = 0.90)$
30-39 years	85	26	10	26	
40-49 years	96	29	10	26	
50-59 years	67	20	11	28	
60-69 years	21	6	2	5	
70 + years	16	5	1	3	
Aboriginal or Torres Strait Islander					
Yes	39	12	3	8	$(\chi^2 = 0.51, p = 0.47)$
No	291	88	36	92	
Marital status					
Never married/single	178	54	22	56	$(\chi^2 = 0.36, df = 4, p = 0.46)$
Married	24	7	5	13	
De facto/living with partner	26	8	1	3	
Divorced/separated	80	24	10	26	
Widowed	22	7	1	3	
Highest level of education					
Primary school	10	3	1	3	$(\chi^2 = 1.62, df = 4, p = 0.8)$
High school years 7-10	157	48	15	38	
High school years 11-12	58	17	7	18	
TAFE	56	17	8	21	
University Degree	49	15	8	21	
Income					
< \$200	53	16	5	13	$(\chi^2 = 7.4, df = 5, p = 0.19)$
\$200-\$300	124	38	10	26	
\$300-\$400	83	25	12	31	
\$400-\$500	31	9	2	5	
< \$500	19	6	6	15	
Prefer not to answer	20	6	4	10	
Employment					$(\chi^2 = 6.8, df = 7, p = 0.45)$
Full time	4	1	0	0	
Part time/casual	25	8	0	0	
Unemployed	162	49	19	49	
Student	15	5	3	8	
Unable to work	15	5	7	18	
Home duties	36	11	3	8	
Retired	38	12	3	8	
Other	35	11	4	10	
Smoking Status					
Daily	181	55	17	44	$(\chi^2 = 1.9, df = 3, p = 0.6)$
Occasional- weekly	13	4	2	5	
Occasional- monthly	11	3	2	5	
Non-smoker	125	38	18	46	

* Note: not all percentages add to 100% due to rounding.

Table 2 Smoking characteristics of participants included in validation analysis (n = 304)

	Male	Female	Total	
	n	n	n	%
Self reported smoking status				
Smoker- daily or occasional	108	71	179	59
Non-smoker	59	66	125	41
Time since last cigarette*				
< 4 hours	99	66	165	92
4-8 hours	8	5	13	7
8-12 hours	1	0	1	1
Exposure to passive smoke in last 24 hours				
Exposure	138	99	237	78
No exposure	28	38	66	22
Missing	1	0	1	0.3
Heaviness of smoking index*				
1-2 (Low dependence)	39	26	65	36
3-4	45	35	80	45
5-6 (High dependence)	24	10	34	19

* Smokers only. n = 179. Note: not all percentages add to 100% due to rounding.

Ten self reported daily or occasional smokers (3.3% of the total sample) returned a BCO below the 6 ppm cut point. Heaviness of Smoking Index and exposure to passive smoke were analysed as explanatory variables for participants whose self reported smoking status and BCO measured smoking status were disparate. Analysis using Fisher's exact revealed no differences in misclassification according to HSI ($p = 0.12$) or exposure to environmental smoke ($p = 0.57$).

Touch screen computer acceptability

Acceptability of touch screen computer use is reported in table 3. The majority of participants agreed or strongly agreed that completing the touch screen computer was easy (88%) and enjoyable (79%), and disagreed or strongly disagreed that completing the survey was stressful (92%) or complicated (90%). Most participants (89%) agreed or strongly agreed that they would be happy to complete a survey about their health a few times per year. Only 19%

of participants agreed or strongly agreed they would prefer to complete the survey using a pen-and-paper survey.

Discussion

Because misreport often occurs when an individual fears disapproval regarding disclosure of smoking status [1], emphasis has been placed on confirming self report of smoking status using biochemical measures in high-risk population groups. Little work has examined the accuracy of self reported smoking among highly disadvantaged smokers who are often heavily nicotine dependent and live in communities with high smoking rates and pro-smoking social norms. This study aimed to assess the acceptability and accuracy of computer administered self-report of smoking among a low SES population attending a social and community welfare organisation.

Our findings indicate a strong agreement between self reported smoking status and BCO measured smoking status, with just over 6% of participants (an equal number of self reported smokers and non-smokers) misclassified by self report. This was significantly lower than levels of misreport found among other population groups, including pregnant Indigenous women [26]. No correlation was found between reports of being exposed to passive smoke or heaviness of smoking and misclassification, suggesting these smokers were misreporting their smoking status. These findings suggest that self-report is likely to be valid in determining smoking status in low SES community based populations.

The sensitivity and specificity for self-reported smoking against BCO at 94.4% sensitivity and 92.8% specificity are higher than mean figures derived in a review of validation studies using BCO in general community samples (87% sensitivity, 89% specificity [1]. A sensitivity analysis conducted using Receiver Operating Curve analysis (results not reported) found that by lowering the cut-point to 5 ppm, sensitivity and specificity further improved (96.7% and 91.2% respectively), and resulted in a greater percentage of participants being correctly classified (94.4%) compared to our cut point of 6 ppm (93.6% correctly classified). Other published research has found that cut-points lower than those recommended are optimal for

Table 3 Acceptability (%) of touch screen computer use (N = 330)

	Strongly agree	Agree	Neither agree or disagree	Disagree	Strongly disagree
Completing the survey using the touch screen computer was enjoyable	17	62	17	4	0
Completing the survey using the touch screen computer was easy	25	63	10	2	0
Completing the survey using the touch screen computer was complicated	0	4	5	67	23
Completing the survey using the touch screen computer was stressful	0	3	5	62	30
I would be happy to complete a short survey about my health a few times a year when I came into [service]	22	67	9	2	0
I would prefer to answer this survey using a pen-and-paper survey	5	13	24	40	17

^ Note: not all rows sum to 100% due to rounding

certain sub-groups [27-29]. Future clinical research using BCO for monitoring or feedback should further explore optimal cut points, as well as determine the accuracy of self report among low SES individuals in high-demand situations, such as during smoking cessation trials.

The high level of acceptability of touch screen computer use in this population supports research demonstrating the utility of touch screen technology as an efficient method of routinely collecting information in health care settings [16,17,30]. Participants rated the touch screen computer as easy to use and enjoyable, and agreed they would be happy to complete a similar survey a few times each year. Given the high degree of acceptability, the potential for integrating the routine collection of health risk information into SCSOs should be further explored. These organisations are well placed to provide advice and referral regarding health care needs to the large number of socially disadvantaged clients seen for welfare and social support. Collection of health care information via touch screen computer may provide an efficient way of identifying those smokers and providing assistance with social and health care needs simultaneously.

The high consent rate for BCO testing (86%) also indicates very good acceptability of BCO among clients attending the SCSO. It was the experience of the authors that the immediate return of results to clients often started conversations about smoking and quitting, suggesting a potential role for BCO as a clinical tool to educate and motivate low SES smokers who are not motivated to quit. While there is currently no strong evidence that biofeedback increases cessation attempts [31], BCO may be an acceptable and non-threatening way to engage hard-to-reach groups with smoking cessation and prompt advice and referral, especially given the high prevalence of smoking identified in this setting.

Limitations and Generalisability

As participants were not told that their smoking status would be verified prior to self report of smoking status, these results may not be generalisable to situations where individuals are aware that the accuracy of their report will be confirmed. The limitations of BCO as a biochemical confirmer of smoking status should also be recognised. Because BCO is a short-term measure of exposure to tobacco smoke, with a half life of 2-8 hours [9], it is possible that self-reported smokers who had consumed their last cigarette longer than within 2-8 hours of providing a breath sample may have been incorrectly classified by BCO as non-smokers. To control for the short half life, we included in the sensitivity analysis only the smokers who reported smoking their last cigarette within the preceding 12 hours. Further, compared with other biochemical measures of confirming smoking status such as cotinine, BCO may not detect very low levels of

smoking and can be influenced by environmental sources of CO [9]. However these limitations are outweighed by the practical advantages of using BCO which is an immediate, low-cost and portable measure of confirmation.

Conclusions

Computer administered self report is an accurate and acceptable method of assessing smoking status in a low SES sample of smokers in a community setting, with a low rate of misclassification identified. Routine collection of health information via touch screen computer holds potential as a way to improve the health of low SES individuals attending community welfare organisations.

Additional material

Additional file 1: Survey Items. Survey items completed by participants.

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Authors' contributions

JB, BB, and CP conceived of the study and were involved in its design and co-ordination. JB and BB supervised data collection. Statistical analysis was carried out by JB and CL. JB led manuscript preparation. All authors were involved in data interpretation and revised the manuscript critically for intellectual content. All authors approve of the final version of the manuscript.

Competing interests

The authors declare that they have no competing interests.

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Appendix 5.2: Information Statement -Survey



V#2

14/12/2009



INFORMATION STATEMENT

Tackling Tobacco Health Survey

Researchers from the University of Newcastle are doing a survey to find out about the health of people who come to [community service organisation]. This research is funded by Cancer Council NSW and the Cancer Institute NSW. [Community service organisation] has given us permission to ask you if you would like to take part in this research.

Who can be involved?

- Adults aged over 18 years can take part.

What will happen?

- If you agree to take part, you will be asked to answer questions on a touch screen computer.
- The questions ask about things like smoking, alcohol, diet and exercise.

What choice do you have?

- You do not have to take part in this research. Only those people who give consent will be asked to do the survey.
- If you do not want to participate, this will not affect the help and support you receive from [community service organisation].

What will happen with the survey answers?

- The information will be used to design programs that organisations like [community service organisation] can use to help their clients.
- The information may be used by Cancer Council NSW to plan activities, and may be published in scientific journals, used in presentations and included in a thesis submitted for Ms Bryant's University studies.

How will your privacy be protected?

We will ensure your privacy is protected in a number of ways:

- All information will be kept private. The staff at [community service organisation] will not be told your answers.
- All records will be kept in locked cabinets that only the researchers can access.
- When we finish the research all documents will be kept in a locked storeroom for five years.
- No names will be used when we report the results of the research.

What are the risks and benefits of participating?

- We do not think there are any risks from participating in this research.

What do you need to do to take part?

- Please tell the research assistant who gave you this information if you want to take part in the research.

For more information

- Ask the research assistant conducting the research
- You can call us for free on 1800 033 246
- You can send an email to Jamie.Bryant@newcastle.edu.au or Billie.Bonevski@newcastle.edu.au, or call us on the numbers listed below.

Yours sincerely,

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(02) 49138618

This project has been approved by the University's Human Research Ethics Committee, Approval No.H-2009-0364. Should you have concerns about your rights as a participant in this research, or you have a complaint about the manner in which the research is conducted, it may be given to the researcher, or, if an independent person is preferred, to the Human Research Ethics Officer, Research Office, The Chancellery, The University of Newcastle, University Drive, Callaghan NSW 2308, telephone (02) 49216333, email Human-Ethics@newcastle.edu.au

Appendix 5.3: Touch screen survey acceptability checklist



Touch Screen Survey Acceptability Checklist

Participant Number: _____

Date: _____

Time: _____

Level of help with completion: ☐ No assistance
☐ Some assistance (help with reading or answering 3 or more questions)
☐ Completed fully by RA (questions read and answered by RA)

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
Completing the survey using the touch screen computer was <u>enjoyable</u>					
Completing the survey using the touch screen computer was <u>easy</u>					
Completing the survey using the touch screen computer was <u>complicated</u>					
Completing the survey using the touch screen computer was <u>stressful</u>					
I would be happy to complete a short survey about my health a few times a year when I come into [community service organisation]					
I would prefer to answer this survey using a pen-and-paper survey					

Comments:

Appendix 5.4: Information Statement -Breath sample



INFORMATION STATEMENT

Tackling Tobacco

Measuring Exposure to Tobacco Smoke

Another part of the research we are conducting involves measuring your exposure to tobacco smoke. We would like to invite you to participate in this research.

What will the research involve?

- If you agree to participate, you will be asked to give a sample of your breath.
- This involves blowing for about 10 seconds into a breath monitor that will measure the amount of tobacco smoke in your lungs.
- This should take no more than a few minutes of your time.

What choice do you have?

- You do not have to take part in this research. Only those people who give consent will be asked to give a breath sample.
- If you do not want to participate, this will not affect the help and support you receive from [community service organisation].

What will happen with the survey answers?

- The answers all participants give may be used by Cancer Council NSW to plan activities and may be published in scientific journals, used in presentations and included in a thesis submitted for Ms Bryant's University studies.
- No names will be used when we report the results of the research, and you will not be identifiable in any way.

How will your privacy be protected?

We will ensure your privacy is protected in a number of ways:

- All information will be kept private. The staff at [community service organisation] will not be told your answers.
- All records will be kept in locked cabinets that only the researchers can access.
- When we finish the research all documents will kept be in a locked storeroom for five years.

What are the risks and benefits of participating?

- We do not think there are any risks from participating in this research.
- You may benefit from taking part in this research by gaining a better understanding of your level of exposure to tobacco smoke.

What do you need to do to take part?

- Please tell the research assistant who gave you this information if you want to take part in the research.

For more information

- Ask the research assistant conducting the research
- You can call us for free on 1800 033 246
- You can send an email to Jamie.Bryant@newcastle.edu.au or Billie.Bonevski@newcastle.edu.au, or call us on the numbers listed below.

Thank you for considering this invitation.

Yours sincerely,

Dr Billie Bonevski
Senior Research Academic
CHERP
Billie.Bonevski@newcastle.edu.au
(02) 49138619

Dr Chris Paul
Senior Research Academic
CHERP
Chris.Paul@newcastle.edu.au
(02) 49138472

Ms Jamie Bryant
PhD Candidate
CHERP
Jamie.Bryant@newcastle.edu.au
(02) 49138618

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Appendix 5.5. Consent form -Breath sample



V#1

5/11/2009

CONSENT FORM

Measuring Exposure to Tobacco Smoke

Please read the information letter before completing this consent form. If there is anything that you do not understand or if you have any questions, please ask the research assistant.

- I agree to take part in this research which involves providing a breath sample to measure my exposure to tobacco smoke.
- I agree that I have had the chance to ask questions about the research.

I understand that:

- The research will be conducted as described in the Information Statement I was given.
- I can stop taking part in the research at any time and do not have to give a reason if I want to stop.
- My personal information will remain private and accessible only to the researchers.
- Staff at [community service organisation] will not be told about my result.

Print name: _____

Signature: _____

Date: _____

Yours sincerely,

Dr Billie Bonevski
Senior Research Academic
CHERP
Billie.Bonevski@newcastle.edu.au
(02) 49138619

Dr Chris Paul
Senior Research Academic
CHERP
Chris.Paul@newcastle.edu.au
(02) 49138472

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PhD Candidate
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Appendix 5.6 Statements of contribution from co-authors

Statement of contribution

I, Dr. Billie Bonevski, attest that Research Higher Degree candidate Jamie Bryant contributed substantially- in terms of study concept and design, data collection and analysis, and preparation of the manuscript- to the publication:

Jamie Bryant, Billie Bonevski, Christine Paul, Christophe Lecathelinais. Assessing smoking status in disadvantaged populations: is computer administered self report an accurate and acceptable measure? BMC Medical Research Methodology, 2011. In Press

Dr. Billie Bonevski (Co-author)

Date

Jamie Bryant (Candidate)

Date

Prof John Rostas (Assistant Dean Research Training)

Date

Statement of contribution

I, A/Prof Christine Paul, attest that Research Higher Degree candidate Jamie Bryant contributed substantially- in terms of study concept and design, data collection and analysis, and preparation of the manuscript- to the publication:

Jamie Bryant, Billie Bonevski, Christine Paul, Christophe Lecathelinais. Assessing smoking status in disadvantaged populations: is computer administered self report an accurate and acceptable measure? BMC Medical Research Methodology, 2011. In Press

A/Prof Christine Paul (Co-author)

Date

Jamie Bryant (Candidate)

Date

Prof John Rostas (Assistant Dean Research Training)

Date

Statement of contribution

I, Christophe Lecathelinais, attest that Research Higher Degree candidate Jamie Bryant contributed substantially- in terms of study concept and design, data collection and analysis, and preparation of the manuscript- to the publication:

Jamie Bryant, Billie Bonevski, Christine Paul, Christophe Lecathelinais. Assessing smoking status in disadvantaged populations: is computer administered self report an accurate and acceptable measure? BMC Medical Research Methodology, 2011. In Press

Christophe Lecathelinais (Co-author)

Date

Jamie Bryant (Candidate)

Date

Prof John Rostas (Assistant Dean Research Training)

Date

Appendix 6.1: Published manuscript

Citation: Bryant J, Bonevski B, Paul C, O'Brien J. Tackling tobacco in socially disadvantaged groups: Time for action. Drug and Alcohol Review. In press. Doi: 10.1111/j.1465-3362.2011.00391.x.

Implementing a smoking cessation program in social and community service organisations: A feasibility and acceptability trial

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Abstract

Introduction and Aims. Novel ways of accessing and engaging smokers who are socially and economically disadvantaged may help reduce socioeconomic disparities in smoking rates. This study assessed the feasibility and acceptability of integrating smoking cessation support into usual care at a social and community service organisation (SCSO). **Design and Methods.** One SCSO providing a Personal Helpers and Mentors program participated. Support workers were provided with training in 5A's, brief motivational interviewing and use of nicotine replacement therapy, and then recruited clients into a 6 month smoking program. Acceptability and feasibility was assessed prior to receiving training and at 3 and 6 month follow up for support workers, and at enrolment into the program and at 4 and 6 month follow up for clients. **Results.** Six support workers (67%) and 20 of their clients (65%) took part. Overall acceptability of the program was high, particularly among clients. The amount of time spent talking about smoking increased from 3.8 min per visit at baseline to 15.5 min at 6 month follow up. There was a significant reduction in the number of cigarettes smoked from 20.5 cigarettes per day at baseline to 15 cigarettes per day at 6 month follow up ($P = 0.04$). **Discussion and Conclusions.** SCSOs are both interested in and capable of providing smoking care and the majority of clients found the smoking cessation intervention acceptable and helpful. Given the demonstrated acceptability and feasibility of this approach, further research to determine the effectiveness of this approach is warranted. [Bryant J, Bonevski B, Paul C, Hull P, O'Brien J. Implementing a smoking cessation program in social and community service organisations: A feasibility and acceptability trial. *Drug Alcohol Rev* 2011]

Key words: smoking cessation, social disadvantage, community organisation.

Introduction

The socioeconomic gradient in smoking prevalence is well documented, with significantly higher smoking rates found among those of lower socioeconomic position [1,2]. While individuals experiencing multiple forms of social and economic disadvantage, including low income, low educational attainment, unemployment, homelessness, social isolation and mental illness (hereafter referred to as disadvantaged smokers), attempt to quit at rates similar to those of other smokers, they are less likely to succeed [3–5]. Factors which appear likely to contribute to poor success rates include smoking for a longer period of time [4], higher rates of

nicotine dependence [6,7], lower self-efficacy to quit [7], and being less likely to receive assistance to quit [8]. Given that these factors may operate synergistically, there are strong grounds for providing cessation programs that specifically target disadvantaged smokers.

One potential access point for supporting disadvantaged smokers may be social and community service organisations (SCSOs) [9,10]. SCSOs are non-government, not-for-profit organisations that provide welfare services, such as financial and material support, personal and social support and general information and advice to individuals in need. SCSOs are well placed to deliver smoking care to highly disadvantaged smokers; they have regular contact with a high proportion of

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marginalised groups, are able to address smoking alongside other issues faced by their clients, and are in a position to provide tailored support. The sector is also large, with approximately 5769 not-for-profit social services organisations operating in Australia [11].

Several recent studies have identified support for the provision of smoking care in the SCSO setting [9,10,12]. Clients attending a Salvation Army service for emergency assistance in the USA found it acceptable to have their smoking addressed with a very brief 30 s intervention [10], and the provision of training has been found to increase staff knowledge, skills and confidence in addressing tobacco related issues [12]. While these studies suggest the SCSO setting holds potential for addressing smoking, a number of barriers to providing support have been identified [9]. These include perceived client disinterest, lack of resources, and competing priorities, such as homelessness and poverty [9]. Currently, there is a lack of sound evidence about whether these barriers can be overcome and smoking care integrated into the routine work of SCSOs.

This study aimed to determine the feasibility and acceptability of integrating the delivery of smoking cessation support into usual care at a community service organisation serving highly disadvantaged smokers, as well as assess the impact of the program on client smoking.

Methods

Setting

One SCSO providing an Australian government-funded Personal Helpers and Mentors program (PHaMs) participated. PHaMs programs operate across Australia and provide support to individuals living in the community who are recovering from mental illness and need help managing daily activities. To be eligible for participation, clients must score ≥ 3 on the PHaMs Eligibility Screening Tool [13] (indicating impaired functioning with personal capacity activities, community participation and independent living), must be willing to address any dual diagnosed comorbid drug and alcohol issues, and reside in a defined postcode area [14]. The PHaMs program adopts a strengths-based recovery approach. Clients generally engage with the service for 6–12 months.

Smoking care program

The smoking care program was developed based on formative qualitative research [9] and published evidence of the effectiveness of behavioural interventions with disadvantaged groups [15]. PRIME theory was used as the guiding theoretical framework to inform the development of an intervention that emphasised

repeated brief intervention and motivational interviewing [16]. Aspects of Diffusion of Innovation theory (relative advantage, compatibility and complexity) were also incorporated to ensure the program was compatible with the organisations systems and to facilitate uptake [17]. Support workers were involved in determining the structure and content of the program, which was designed to be flexible and easily integrated into usual care with minimal burden.

Support worker training. A 1 day training workshop was delivered by an experienced tobacco educator. Training provided a rationale for incorporating smoking cessation into usual care, as well as instruction on assessing nicotine dependence using the heaviness of smoking index [18], training in the use of the 5A's brief intervention [19], brief motivational interviewing [20] and the use of nicotine replacement therapy (NRT). A booster training session was conducted 3 months after the initial session to answer questions and review skills.

Counselling, information and support. Support workers were encouraged to use the 5A's at each visit with their clients during the intervention period. This included: (i) asking about and recording smoking status in case notes; (ii) assessing willingness to quit; (iii) providing advice to quit; (iv) providing support and encouragement to quit; and (v) arranging follow up. Support workers were provided with resources, including a tailored quit plan, referral forms to the telephone Quitline, informational pamphlets and self-help resources.

Free NRT. Free NRT could be accessed by clients directly from support workers or from local participating pharmacies for the duration of the study. The use of NRT was optional but strongly encouraged. All types and strengths of NRT were available (i.e. gum, inhaler, patch, lozenge and microtab). Support workers determined NRT type and strength based on client preferences and manufacturer recommendations. Clients were encouraged to use multiple forms of NRT if they were heavily nicotine-dependent (defined as Heaviness of Smoking Index ≥ 5).

Procedure

Support workers. Support workers at the participating service were invited to attend a 1 day training workshop. Support workers completed a pen-and-paper survey prior to the commencement of training and follow-up surveys 3 and 6 months later.

Clients. Eligible clients were invited by their support worker to enrol in a quit smoking program. Eligible

clients were adults currently engaged with the PHaMs program, who reported daily smoking and were willing to talk about their smoking with their support worker. Clients completed a baseline survey at enrolment, and follow-up surveys 4 and 6 months later.

Measures

Support worker surveys. Demographic and work characteristics, including gender, age, smoking status, highest level of education, time in current position and client caseload, were collected at baseline. At each follow-up point, support workers were asked to indicate how often they provided quit support to clients (asking and recording smoking status, assessing motivation to quit, advising clients to stop smoking and assisting clients to quit by providing support, encouragement and free NRT), and how much time they spent at each visit discussing tobacco use (min). Usefulness of training was assessed using five items at 3 month follow up. Program acceptability was assessed using seven items at 6 month follow up.

Client surveys. Demographic information was collected at baseline. The short version Patient Health Questionnaire-2 was used to screen for depression [21]. Smoking status was assessed by asking 'do you currently use tobacco products?' with response options (i) yes, daily, (ii) yes, at least once per week, (iii) yes, at least once per month and (iv) no, not at all. Smoking cessation was assessed at follow up by asking 'have you smoked a cigarette, even a puff, in the past 7 days?' (yes/no). Clients were asked if they had tried to reduce the number of cigarettes they smoke in order to quit, how interested they were in quitting smoking, their intention to quit smoking in the future, the amount spent on tobacco each week, and the number of cigarettes smoked on average each day. At 4 and 6 month follow up, clients were asked about the types of cessation support they had received from their support worker, and whether they had initiated NRT use (including the type and length of use), their perceptions of the service [10] and the acceptability of the program.

Analysis

Descriptive statistics (frequencies and proportions) are used to describe demographic and smoking characteristics. Due to the small number of participants, response categories using a 5-point Likert scale were collapsed into a 3-point Likert scale: (i) strongly agree or agree, (ii) neither agree or disagree and (iii) strongly disagree or disagree. Paired *t*-tests were used to examine changes from baseline to follow up where appropriate. The study was approved by the University of Newcastle Human Research Ethics Committee.

Results

Client demographics and smoking status

Thirty-one smokers were approached to participate by nine support workers. Twenty provided consent and completed a baseline survey (consent rate of 64.5%). One client died between baseline and the first follow up. Seventeen clients completed the follow-up survey at 4 months (89%) and 13 clients (68%) completed the follow-up survey at 6 months. Demographic and smoking characteristics are reported in Table 1.

Table 1. Demographic characteristics of participating clients at baseline (*n* = 20)

	M	SD
Age	39.84	14.22
Average number of years smoked	23	13.3
	<i>n</i>	%
Gender		
Male	10	50
Female	10	50
Education		
Secondary school years 7–10	9	45
Secondary school years 11–12	4	20
Technical and further education college	4	20
University degree	3	15
Income		
\$A100–200	4	20
\$A200–300	5	25
\$A300–400	6	30
>\$A500	3	15
Prefer not to answer	2	10
Aboriginal or Torres Strait Islander		
Yes	2	10
No	18	90
Employment		
Currently unable to work	12	60
Unemployed	4	20
Part-time or casual employment	1	5
Student	1	5
Retired	1	5
Home duties	1	5
Patient Health Questionnaire-2		
Depressed mood—yes	18	90
Anhedonia—yes	12	60
Smoking status		
Daily	20	100
Attempted to quit smoking previously		
Yes	17	85
No	3	15
Intention to quit		
Next 30 days	7	35
Next 6 months	9	45
Sometime, but not in next 6 months	1	5
Don't know	3	15

Support worker outcomes

Nine support workers participated in training and completed the initial survey. Six support workers had clients who enrolled in the program and thus were included in the study. All support workers completed the 3 month follow-up survey. One support worker left the service between the 3 and 6 month follow-up points. The remaining five workers completed the 6 month follow-up survey. At baseline, 50% of participating support workers were male and had an average age of 26.5 years ($SD = 3.78$). All but one support worker had a university degree. None were current smokers. Support workers had an average caseload of 9.5 clients and all had been in their current position for less than 12 months.

Usefulness of training and program acceptability. Support worker ratings of the usefulness of training and program acceptability are reported in Table 2. The majority of the components of training were rated as somewhat or very useful, with all but one caseworker rating access to free NRT as very useful. Program acceptability was generally high. All support workers agreed that smoking did not have a negative effect on their relationships with clients and were happy to attend extra training. Two support workers thought that

providing support was difficult, and more than half either agreed or were undecided about whether providing support to clients took too much time. Most agreed it would be better to refer clients to external programs than provide support within the PHaMs program.

Provision of support. Assessing willingness to quit, providing advice to quit smoking and providing access to NRT increased from baseline to 3 month follow up, and then decreased at 6 month follow up (Table 3). The average amount of time spent discussing tobacco use increased from 3.8 min per visit at baseline ($SD = 2.6$, range 0–7.5 min) to 33.3 min at 3 month follow up ($SD = 43.3$, range 5–120 min), and then decreased to 15.5 min per visit at 6 month follow up ($SD = 8.7$, range 7.5–30 min).

Client outcomes

Program acceptability. Client ratings of program acceptability are reported in Tables 4 and 5. The majority of clients agreed that it was probably or definitely OK to be asked about their smoking by their support worker, and all agreed that they would return to the service in the future.

Support received. Client reports of support received during the program are reported in Table 6. The

Table 2. Support worker ratings of the usefulness of cessation training and resources (3 month follow up, $n = 6$), and program acceptability at 6 month follow up ($n = 5$)

Usefulness of training	Not at all useful	Somewhat useful	Very useful
How to approach the issue of smoking	0	3	3
Appropriate use of NRT	0	3	3
Use of motivational interviewing	1	3	2
Quit kits, Quit plans and Quitline referral forms	0	4	2
Access to free NRT ^a	0	0	5
Program acceptability	Strongly agree or agree	Neither agree nor disagree	Strongly disagree or disagree
Providing quit support is not too difficult	3	0	2
Providing quit support does not take up too much time	2	1	2
Providing quit support has had a negative effect on my relationships with clients	0	0	5
The majority of my clients were receptive to talking about their smoking	4	0	1
It would be better to refer clients to external quit programs than provide support within PHaMs	4	1	0
I would be happy to attend further training to revise or improve my quit smoking skills	5	0	0
I would recommend training to other support workers working with disadvantaged clients	5	0	0

^aOne participant answered 'Not applicable' to this question. NRT, nicotine replacement therapy; PHaMs, Personal Helpers and Mentors program.

Table 3. Support worker provision of support at baseline (n = 9), 3 month follow up (n = 6) and 6 month follow up (n = 5)

Provision of support	Never or rarely	Sometimes	Often or almost always
Ask about smoking status?			
Baseline	3	3	3
3 months	0	1	5
6 months	1	1	3
Assess willingness to quit?			
Baseline	3	5	1
3 months	0	2	4
6 months	1	2	2
Advise to stop smoking?			
Baseline	6	3	0
3 months	2	1	3
6 months	2	1	2
Provide support and encouragement?			
Baseline	5	1	3
3 months	0	0	6
6 months	0	1	4
Provide access to nicotine replacement therapy?			
Baseline	9	0	0
3 months	1	2	4
6 months	0	3	2

Table 4. Client acceptability of the smoking care program at 4 (n = 17) and 6 month follow up (n = 13)

	Strongly agree or agree	Neither agree or disagree	Strongly disagree or disagree
Talking to my support worker about my smoking was helpful			
4 months	14	0	2
6 months	12	1	0
Talking to my support worker about my smoking made me think about quitting			
4 months	14	1	0
6 months	9	4	0
I did not like being asked about my smoking by my support worker			
4 months	2	3	10
6 months	0	4	9

majority of clients (70%) initiated NRT use during the program; however, few reported using NRT consistently.

Smoking characteristics at 6 month follow up. At 6 month follow up, no participants reported 7 day point prevalence abstinence; however, all participants

Table 5. Client reports of support received at 4 (n = 15^a) and 6 month (n = 13) follow up

	Yes	No
Asked about smoking		
4 months	13	2
6 months	8	5
Asked if interested in quitting		
4 months	13	2
6 months	6	7
Advised to quit		
4 months	9	6
6 months	4	9
Received support and encouragement		
4 months	12	3
6 months	5	8
Received free NRT		
4 months	12	3
6 months	5	8
Referred to Quitline		
4 months	6	9
6 months	2	11
Referred to general practitioner		
4 months	3	12
6 months	1	12

^aData from two participants missing at 4 month follow up. NRT, nicotine replacement therapy.

Table 6. Client acceptability of the smoking care program at 4 (n = 16^a) and 6 month follow up (n = 13)

	Definitely not	Probably not	Probably yes	Definitely yes
Was it OK to be asked about your smoking by your support worker?				
4 months	0	1	5	10
6 months	0	1	3	9
Would it be OK to be asked about your smoking at your next visit?				
4 months	0	3	4	9
6 months	0	1	3	9
Would you return to [organisation] to use other services?				
4 months	1	0	7	8
6 months	0	0	5	8

^aData from one participant missing at 4 month follow up.

(100%) reported that they had reduced the number of cigarettes they smoked in order to quit. There was a significant reduction in the number of cigarettes smoked by participants from 20.5 cigarettes per day (SD = 9.9, range 8–45) at baseline to 15 cigarettes per day (SD = 9.3, range 4–40) at 6 month follow up ($t = 2.26$, $P = 0.04$). There was a non-significant reduction in dollars spent on tobacco from an average of \$A70.95 at baseline (SD = 35.9, range \$A25–140) to

\$A60.69 (SD = 42.3, range \$A12–145) at 6 month follow up ($t = 1.13$, $P = 0.28$).

Discussion

Our findings support evidence that training SCSO staff to provide cessation support is feasible and acceptable [10,12]. All components of training were rated as somewhat or very useful by the majority of support workers, and all support workers reported that they would recommend training to others. Recently, Cancer Council New South Wales has provided smoking care training to more than 40 SCSOs across NSW, further demonstrating acceptability and interest in this type of program across a range of services. That two-thirds of eligible clients enrolled in the program and 68% were retained at 6 month follow up provides further evidence of the feasibility of this approach for a traditionally hard-to-reach group, and supports earlier work showing strong client support for receiving cessation support in this setting [9,10].

While support worker attitudes towards the program were positive overall, feedback at 6 month follow up suggested that many believed that providing support took too much time, and that referral to external programs would be preferable. Evidence of the relative effectiveness of integrating support into the SCSO setting versus using SCSOs as a referral point to existing services is needed to enable organisations to consider the relative costs and benefits of providing in-house cessation support. Despite these concerns, the amount of time spent addressing smoking during routine visits increased following training. Provision of the 5A's at 3 month follow up was similar to levels reported in a similar larger trial [12].

While NRT increases the success of quit attempts, the cost is often prohibitive to smokers on a low income [22]. Although development of the intervention drew heavily on formative research which identified strong support for the provision of free NRT [9,22], overall uptake and use was inconsistent. Poor adherence to NRT has been found for a number of highly disadvantaged groups, including in community-based trials with adolescents [23] and homeless smokers [24]. Heavily subsidised NRT patches became available via prescription in Australia in February 2011 for individuals receiving government welfare benefits. Rates of uptake are yet to be determined.

No participants reported 7 day point prevalence abstinence; however, there was a significant reduction in the number of cigarettes smoked, and all participants reported cutting down to quit at 6 month follow up. This is a positive finding, although complete abstinence remains the ultimate goal [25].

Limitations

Difficulties obtaining data from clients meant that the first follow up occurred 4 months post baseline rather than 3 months post baseline as planned. The small sample size limits the generalisability of conclusions and resulted in wide standard deviations. An adequately powered randomised controlled trial which will provide rigorous evidence of the effectiveness of providing cessation support in this novel setting is currently underway [26]. Client diagnosis was not assessed. This means it is likely that the study population had a heterogeneous mix of mental illness of varying type and severity.

Conclusions

Innovative methods for accessing and engaging disadvantaged smokers may help reduce the burden of smoking-related morbidity and mortality that falls disproportionately on individuals of lower socioeconomic position. This study adds to the emerging literature demonstrating the potential of a novel setting in providing cessation support to highly disadvantaged smokers. Given the size and potential reach of the sector, further well-controlled trials to evaluate the effectiveness of this approach in reducing smoking rates are needed.

Acknowledgements

The study was conducted by the University of Newcastle and Cancer Council New South Wales' Centre for Health Research and Psycho-oncology (CHeRP) with infrastructure support from the Hunter Medical Research Institute. This study was funded by Cancer Council NSW and a Cancer Institute NSW Research Scholars award awarded to J. B. The authors would like to thank the staff and clients at the participating community service organisation for taking part in the study. We wish to extend particular thanks to Ms Brianna Pike for managing the project at the community organisation, and Ms Ashleigh Smith for assistance with data collection.

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Appendix 6.2: Staff Information Statement



V#3
17/03/2010



INFORMATION STATEMENT

Staff

Tackling Tobacco Research Project

You are invited to take part in an evaluation of the Tackling Tobacco research project that has recently been conducted in your organisation.

Who is conducting this research?

Dr Billie Bonevski, Dr Chris Paul and Ms Jamie Bryant from the Centre for Health Research and Psycho-oncology of Cancer Council NSW and the University of Newcastle are conducting this evaluation. The research is part of Ms Bryant's studies at the University of Newcastle and is supervised by Dr Bonevski and Dr Paul. This research is funded by Cancer Council NSW.

Who can take part in the research?

Staff of [community service organisation] are invited to take part.

What will the evaluation involve?

If you agree to take part, you will be asked to participate in a group discussion to tell us your thoughts about the Tackling Tobacco project. This discussion will include other staff members from [community service organisation] who have been involved with implementing the Tackling Tobacco research project. This discussion will take no more than 1.5 hours and will be audio-taped.

What choice do you have?

Taking part in this evaluation is completely voluntary. Only staff who agree to take part will be included in the project, and whether or not you decide to participate, your decision will not

affect your employment in any way. If you do decide to take part, you can change your mind at any time without giving a reason, can withdraw from the discussion at any time, and can withdraw any data you have provided by contacting the researchers. At the conclusion of the discussion, you will have the option of listening to the audio-tape of the discussion and deleting any of your own comments if you wish.

How will your privacy be protected?

We will ensure your privacy is protected. All information we collect is private and confidential, and will be kept in locked cabinets that can only be accessed by the researchers. On completion of the study, all paper documents will be stored in a locked storage facility, and stored in a locked storeroom for five years. We will not use your contact details for anything other than to contact you about this study and will not give your name to anyone, apart from the researchers involved in this study.

What will the information collected be used for?

This research will provide important information about the acceptability of the Tackling Tobacco smoking intervention. The information may be used by Cancer Council NSW to support people who want to quit smoking, and may be published in scientific journals, used in presentations, and included in student work for Ms Jamie Bryant.

Can I be informed of the outcomes of the study?

At the end of the evaluation, we can provide you with a report of the results. If you would like to receive a copy, please provide your address or email address on the attached consent form.

What are the risks and benefits of participating?

You may benefit from taking part in this research by gaining an understanding of smoking cessation in your organisation. There are no known risks of participation.

What do you need to do to participate?

Please read this information statement and be sure you understand its contents before you consent to participate. If you would like to participate in this evaluation, please contact the researchers toll free on 1800 033 246, or by email on Jamie.Bryant@newcastle.edu.au.

For more information

If you have any questions about participating in the study, please contact myself, Jamie Bryant, on this toll free number 1800 033 246 or on 49138618, or by email on

Jamie.Bryant@newcastle.edu.au. You can also contact Dr Billie Bonevski on (02) 49 138619 or by email on Billie.Bonevski@newcastle.edu.au (Monday, Wednesday and Friday).

Thank you for considering this invitation.

Yours sincerely,

Dr Billie Bonevski
Senior Research Academic
CHERP
Billie.Bonevski@newcastle.edu.au
(02) 49138619

D. Chris Paul
Senior Research Academic
CHERP
Chris.Paul@newcastle.edu.au
(02) 49138472

Ms Jamie Bryant
PhD Candidate
CHERP
Jamie.Bryant@newcastle.edu.au
(02) 49138618

*This project has been approved by the University's Human Research Ethics Committee, Approval No. **H-2008-0382**. Should you have concerns about your rights as a participant in this research, or you have a complaint about the manner in which the research is conducted, it may be given to the researcher, or, if an independent person is preferred, to the Human Research Ethics Officer, Research Office, The Chancellery, The University of Newcastle, University Drive, Callaghan NSW 2308, telephone (02) 49216333, email Human-Ethics@newcastle.edu.au*

Appendix 6.3. Staff consent form



V#5
17/03/2010



CONSENT FORM

Tackling Tobacco Research Project

I agree to participate in the evaluation of the Tackling Tobacco research project and give my consent freely.

I have had the opportunity to have all questions answered to my satisfaction.

I consent to:

- Participate in a group discussion to talk about my thoughts and feelings about implementing the Tackling Tobacco research project.

I understand that

- The evaluation will be conducted as described in the Information Statement, a copy of which I have retained.
- Taking part in this evaluation is voluntary.
- My decision to participate or not participate will not affect my employment in any way.
- My personal information will remain confidential to the researchers.
- I can withdraw from the evaluation at any time, without giving a reason.
- I have the right to review, edit or delete my comments in the transcript of the discussion.

Consent to participate:

I give my consent to participate in the discussion group.

Print name:	
Signature:	
Date:	



Request for Results

On completion of this research, a summary of the results will be made available to those who would like a copy. Please indicate below whether you would like to receive a copy of the results of this research.

☐

Yes, I would like to receive a copy of the results

☐

No, I would not like to receive a copy of the results

First name:	
Last name:	
Mailing and/or email address:	

Yours sincerely,

Dr Billie Bonevski
Senior Research Academic
CHERP
Billie.Bonevski@newcastle.edu.au
(02) 49138619

Dr Chris Paul
Senior Research Academic
CHERP
Chris.Paul@newcastle.edu.au
(02) 49138472

Ms Jamie Bryant
PhD Candidate
CHERP
Jamie.Bryant@newcastle.edu.au
(02) 49138618

*This project has been approved by the University's Human Research Ethics Committee, Approval No. **H-2008-0382**. Should you have concerns about your rights as a participant in this research, or you have a complaint about the manner in which the research is conducted, it may be given to the researcher, or, if an independent person is preferred, to the Human Research Ethics Officer, Research Office, The Chancellery, The University of Newcastle, University Drive, Callaghan NSW 2308, telephone (02) 49216333, email Human-Ethics@newcastle.edu.au*

Appendix 6.4: Staff baseline survey

DOB (dd/mm/yy): _____

V1: 17/3/2010

STAFF SURVEY

Initial Tackling Tobacco Research Project

First, we would like to know your thoughts and opinions about providing quit smoking care to your clients.

1. Please rate whether you agree or disagree with the following statements:

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
The majority of my clients who are smokers want to quit					
Quitting smoking would help my clients who do smoke					
Smoking with clients is an important part of establishing relationships with my clients					
Providing quit smoking support to clients should be a part of my role as a support worker					
Smoking helps my clients deal with the stress in their lives					
Enforcing smoke-free policies at [community service organisation] should be a part of my role as a support worker					
I know how to support my clients when they want to stop smoking					

The majority of my clients are aware of the effects of smoking on their health					
My clients are not interested in quitting smoking					
Community service organisations should enforce smoke-free policies to limit the exposure of staff and clients to tobacco smoke					
Quitting smoking will have a negative effect on my clients' mental health					

The next few questions are about the type of smoking care you currently provide to your clients:

2. How would you best describe your current strategy for discussing smoking with your clients:

<input type="checkbox"/>	I discuss smoking only if my client brings up the subject
<input type="checkbox"/>	I discuss smoking only if clients have a smoking-related health or financial issue
<input type="checkbox"/>	I discuss smoking with some clients who smoke, regardless of their health or interest in quitting
<input type="checkbox"/>	I discuss smoking with all clients who smoke, regardless of their health or interest in quitting
<input type="checkbox"/>	I do not discuss smoking with my clients

3. When meeting with a client, how often do you:

	Never	Rarely	Sometimes	Often	Almost always
Ask about their smoking status?					
Record their smoking status in case notes?					
Assess their motivation to quit?					
Advise them to stop smoking?					
Assist them to quit smoking by providing support and encouragement?					
Assist them to quit smoking by providing access to nicotine replacement therapy?					
Refer them to specialised quit services such as Quitline if they want to quit smoking?					

4. How much time, on average, do you spend discussing tobacco use at each visit with clients who smoke? Please give an estimate in minutes

_____ minutes

Finally, we would like to know some information about you:

5. Are you male or female?

<input type="checkbox"/>	Male
<input type="checkbox"/>	Female

6. In what year were you born?

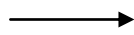
1	9		
---	---	--	--

7. Do you currently smoke tobacco products?

<input type="checkbox"/>	Yes, daily	Go to question 9
<input type="checkbox"/>	Yes, at least once a week	Go to question 9
<input type="checkbox"/>	Yes, but less often than once a week	Go to question 9
<input type="checkbox"/>	No, not at all	Go to question 8

8. Have you ever been a daily smoker?

Yes
No



*How long ago did you quit smoking?*_____

9. What is the highest level of education you have completed?

10. What is your current client caseload?

10. How many hours do you work per week?

11. What is the title of your position within [community service organisation]?

12. How long have you been in your current position?

Appendix 6.5: Staff three month and six month follow-up survey

STAFF SURVEY

Follow-up

Tackling Tobacco Research Project

1. Please enter your date of birth: _____ (dd/mm/yyyy)

2. Please rate whether you agree or disagree with the following statements:

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
The majority of my clients who are smokers want to quit smoking					
Quitting smoking would help my clients who smoke					
Smoking with clients is an important part of establishing relationships with my clients					
Providing quit smoking support to clients should be a part of my role as a support worker					
Smoking helps my clients deal with the stress in their lives					
Enforcing smoke-free policies at [community service organisation] should be a part of my role as a support worker					
I know how to support my clients when they want to stop smoking					
The majority of my clients are aware of the effects of smoking on their health					

My clients are not interested in quitting smoking					
Community services organisations should enforce smoke-free policies to limit the exposure of staff and clients to tobacco smoke					
Quitting smoking will have a negative effect on my clients' mental health					

The next few questions are about the type of smoking care you have provided to your clients in the last 3 months, regardless of whether they are enrolled in the smoking care program.

3. In the last 3 months, how would you best describe your strategy for discussing smoking with your clients?

<input type="checkbox"/>	I discuss smoking only if my client brings up the subject
<input type="checkbox"/>	I discuss smoking only if clients have a smoking-related health or financial issue
<input type="checkbox"/>	I discuss smoking with some clients who smoke, regardless of their health or interest in quitting
<input type="checkbox"/>	I discuss smoking with all clients who smoke, regardless of their health or interest in quitting
<input type="checkbox"/>	I do not discuss smoking with my clients

4. In the last 3 months when meeting with a client, how often did you :

	Never	Rarely	Sometimes	Often	Almost always
Ask about their smoking status?					
Record their smoking status in case notes?					
Assess their willingness to quit?					
Advise them to stop smoking?					
Assist them to quit smoking by providing support and encouragement?					
Assist them to quit smoking by providing access to nicotine replacement therapy?					

5. In the last 3 months, how much time on average did you spend discussing tobacco use at each visit with clients who smoke? Please give an estimate in minutes

_____ minutes

6. Please rate how useful each of the following was or is in helping you to provide smoking care to your clients enrolled in the smoking care program:

	Not at all useful	Somewhat Useful	Very useful	N/A
[community service organisation] endorsement of the program as part of our work				
Training in how to approach the issue of smoking with clients				
Training in the appropriate use of nicotine replacement therapy				
Training in the use of motivational interviewing				
Resources like quit kits, quit plans and Quitline referral forms				
Access to free nicotine replacement therapy				
Using the carbon monoxide monitor to track client smoking status				
Hearing on the training day how staff at another community service organisation implemented a similar program				
Hearing from other staff at [community service organisation] about how they are providing support to their clients				
Case-study examples used in training that provided practice in how to approach the issue of smoking with clients				
[community service organisation] smoking policies				
Recent increase in the price of cigarettes				

7. What was the most useful component of the smoking care program?

8. What other training or support would help you provide smoking care to your clients?

9. What is needed to sustain the smoking care program long term?

10. How often will you continue to implement the following components of the smoking care program as part of usual care:

	Never	Rarely	Sometimes	Usually	Always
Asking clients about their smoking status					
Recording client smoking status in case notes					
Assessing client willingness to quit smoking					
Advising clients to stop smoking					
Providing support and encouragement to clients who want to quit					
Suggesting quit strategies to clients					
Advising clients about the benefits of nicotine replacement therapy					
Providing clients with free nicotine replacement therapy					
Referring clients to specialised quit services such as Quitline					

11. Please rate whether you agree or disagree with the following statements:

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Providing quit support to clients is not too difficult					
Providing quit support to clients who want to quit smoking does not take up too much time					

Providing quit support has had a negative effect on my relationship with clients					
The majority of my clients were receptive to talking about their smoking					
It would be better to refer clients to external quit programs than to provide support within the PHaMs program					
I would be happy to attend further training to revise or improve my quit smoking skills					
I would recommend the smoking care training to other community organisation staff working with disadvantaged clients					

Finally, we would like to know some information about you:

13. Are you male or female?

<input type="checkbox"/>	Male
<input type="checkbox"/>	Female

13. What is your current client caseload?

14. How many of your clients are currently enrolled in the smoking care program?

15. Do you currently smoke tobacco products?

<input type="checkbox"/>	Yes, daily
<input type="checkbox"/>	Yes, at least once a week
<input type="checkbox"/>	Yes, but less often than once a week
<input type="checkbox"/>	No, not at all

1. Have you ever been a daily smoker?

<input type="checkbox"/>	Yes	—————>	<i>How long ago did you quit smoking?</i> _____
<input type="checkbox"/>	No		

18. If you have any other comments, feedback or suggestions about the smoking care program please enter these into the box below:

Thank you for your feedback.

Appendix 6.6: Client Information Statement



V#4
17/03/2010



INFORMATION STATEMENT Client Information Statement Tackling Tobacco Research Project

You are invited to take part in a research project looking at ways to help people quit smoking.

Who is conducting this research?

- Dr Billie Bonevski, Dr Chris Paul and Ms Jamie Bryant from the Centre for Health Research and Psycho-oncology of Cancer Council NSW and the University of Newcastle are conducting this research. The research is part of Ms Bryant's studies at the University of Newcastle and is supervised by Dr Bonevski and Dr Paul.
- This research is funded by Cancer Council NSW.

Who can take part in the research?

- People aged over 18 years who smoke tobacco and can speak and understand English are invited to take part.
- The Chief Executive Officer of [community service organisation] has given permission for the organisation to be involved in this research.

What will the research involve?

- If you agree to take part, you will be asked to complete a survey which asks for information about you and your smoking. We can help you complete the survey, if you like.
- You will also be asked to complete surveys in three months' and six months' time. Your support worker at [community service organisation] may ask you to complete these surveys, or the researchers may contact you by telephone or by letter if you are no longer seeing your support worker.
- As part of your participation, staff you see at [community service organisation] may advise you to consider stopping or cutting down your smoking, and tell you about quit

smoking programs such as Quitline. You may also be offered some free nicotine patches or nicotine gum to help you quit.

What choice do you have?

- Taking part in this research is up to you. Only people who agree to take part will be included in the project.
- This project is an additional service provided by [community service organisation], and whether or not you decide to take part will not affect the care you receive in any way.
- If you do decide to take part, you can stop at any time without giving a reason, and can withdraw, prior to 31 December 2010, any data you have provided by contacting the researchers.
- You do not have to complete all three surveys if you do not want to.
- If you withdraw from the study, it may restrict your access to nicotine replacement therapy, but you can continue receiving that type of therapy at cost through your pharmacist.

How will your privacy be protected?

- We will ensure your privacy is protected.
- All information we collect is private, and will be kept in locked cabinets that can only be accessed by the researchers.
- At the end of the study, all paper documents will be stored in locked storage, and electronic information will be stored in password-protected files and kept for five years.
- We will not use your contact details for anything other than to contact you about this study and will not give your name to anyone except the researchers involved in this study.

What will the information collected be used for?

- This research will provide important information about the best way to help people who want to quit smoking.
- The information may be used by Cancer Council NSW to support people who want to quit smoking, and may be published in scientific journals, used in presentations and included in student work for Ms Jamie Bryant.

Can I be informed of the outcomes of the study?

- At the end of the study, we can provide you with a report about the results. If you would like a copy of the results, please indicate on the consent form. The report will also be available from [community service organisation] for you to pick up.

What are the risks and benefits of participating?

- You may benefit from taking part in this research by cutting down or stopping smoking. This is good for your health.
- If you are given nicotine replacement therapy, it is important that you read the product information you get from the pharmacist.

What do you need to do to participate?

- Please read this information statement and be sure you understand its contents before you consent to participate.
- If you would like to participate in this research, please sign the attached consent form and return it to the research assistant who gave you this information.

For more information

- If you have any questions about participating in the study, please contact myself, Jamie Bryant, on this toll free number 1800 033 246 or on 49138618, or by email on Jamie.Bryant@newcastle.edu.au.
- You can also contact Dr Billie Bonevski on (02) 49 138619 or by email on Billie.Bonevski@newcastle.edu.au (Monday, Wednesday and Friday).

Thank you for considering this invitation.

Yours sincerely,

Dr Billie Bonevski
Senior Research Academic
CHERP
Billie.Bonevski@newcastle.edu.au

Dr Chris Paul
Senior Research Academic
CHERP
Chris.Paul@newcastle.edu.au

Ms Jamie Bryant
PhD Candidate
CHERP
Jamie.Bryant@newcastle.edu.au

This project has been approved by the University's Human Research Ethics Committee, Approval No.H-2008-0382 . Should you have concerns about your rights as a participant in this research, or you have a complaint about the manner in which the research is conducted, it may be given to the researcher, or, if an independent person is preferred, to the Human Research Ethics Officer, Research Office, The Chancellery, The University of Newcastle, University Drive, Callaghan NSW 2308, telephone (02 49216333, email Human-Ethics@newcastle.edu.au

Appendix 6.7: Client consent form



V#4

17/03/2010

CONSENT FORM Tackling Tobacco Research Project

I agree to participate in the Tackling Tobacco research project and give my consent freely. I have had the opportunity to have all questions answered to my satisfaction.

I consent to:

- Completing a short survey now then again in three months' and six months' time.
- Being offered a quit smoking program by staff at [community service organisation]. This may include counselling and vouchers for free nicotine patches or gum.
- Being contacted by the researchers by telephone or letter if I am no longer seeing [community service organisation] PHaMs in three months' or six months' time.

I understand that

- Taking part in this research is voluntary.
- This project is an additional service provided by [community service organisation], and deciding to take part or not to take part will not affect the care provided to me.
- The project will be conducted as described in the Information Statement, a copy of which I have kept.
- My personal information will remain confidential to the researchers.
- I can withdraw from the study at any time, without giving a reason.

Consent to participate:

Print name:	
Signature:	
Date:	

Your Contact Details

As you are aware, we will need to contact you again in three months' and six months' time so that you can complete two more surveys about your smoking.

If you are still coming to [community service organisation] and seeing your support worker, your support worker will help you complete these surveys. However, if you are no longer seeing your support worker, we would like to contact you by telephone to complete the surveys.

So that we can contact you, we would like you to tell us your contact details. Please note that you do not have to provide us with these details if you do not wish to.

Please print your contact details below:

First name:	
Last name:	
Address:	
State:	
Postcode:	
Telephone (home):	
Mobile:	
Email address:	

Secondary Contact Information

In case we cannot contact you through your support worker or through the contact information you have given us, we would also like you to provide us with the details of a *secondary contact*. A secondary contact is a person who has different contact details from you, but who will always know how to get in contact with you. We will only contact your *secondary contact* **if we cannot reach you *via* any of the contact details you have already given us.** Please note that you do not have to provide us with these details if you do not wish to.

Please print the details of your secondary contact:

First name:	
Last name:	
Address:	
State:	
Postcode:	
Telephone (home):	
Mobile:	
Email address:	



Request for Results

On completion of this research, a summary of the results will be made available to those who would like a copy. Please indicate below whether you would like to receive a copy of the results of this research.

☐

Yes, I would like to receive a copy of the results

☐

No, I would not like to receive a copy of the results

Yours sincerely,

Dr Billie Bonevski
Senior Research Academic
CHeRP
Billie.Bonevski@newcastle.edu.au
(02) 49138619

Dr Chris Paul
Senior Research Academic
CHeRP
Chris.Paul@newcastle.edu.au
(02) 49138472

Ms Jamie Bryant
PhD Candidate
CHeRP
Jamie.Bryant@newcastle.edu.au
(02) 49138618

*This project has been approved by the University's Human Research Ethics Committee, Approval No. **H2008-0382**. Should you have concerns about your rights as a participant in this research, or you have a complaint about the manner in which the research is conducted, it may be given to the researcher, or, if an independent person is preferred, to the Human Research Ethics Officer, Research Office, The Chancellery, The University of Newcastle, University Drive, Callaghan NSW 2308, telephone (02) 49216333, email Human-Ethics@newcastle.edu.au*

Appendix 6.8: Client baseline survey

V1
17/3/2010

CLIENT SMOKING SURVEY

Initial Survey

Tackling Tobacco Research Project

1. Are you male or female?

<input type="checkbox"/>	Male
<input type="checkbox"/>	Female

2. In what year were you born?

<input type="text" value="1"/>	<input type="text" value="9"/>	<input type="text"/>	<input type="text"/>
--------------------------------	--------------------------------	----------------------	----------------------

3. Are you of Aboriginal or Torres Strait Islander origin?

<input type="checkbox"/>	No
<input type="checkbox"/>	Yes

4. What is your marital status?

<input type="checkbox"/>	Married
<input type="checkbox"/>	De facto or living with a partner
<input type="checkbox"/>	Separated or divorced
<input type="checkbox"/>	Widowed
<input type="checkbox"/>	Never married, or single

5. What is the postcode of the suburb where you live? If you don't know the postcode or are homeless, please write '0000'

--	--	--	--

6. What is the highest level of education you have completed?

	Primary school
	High school years 7-10
	High school years 11-12
	TAFE
	University degree
	Other: <i>specify:</i> _____

7. What is your household income each week?

	Less than \$100 per week
	Between \$100 and \$200 per week
	Between \$200 and \$300 per week
	Between \$300 and \$400 per week
	Between \$400 and 500 per week
	More than \$500 per week
	Prefer not to answer

8. How would you best describe your employment situation at the moment?

<input type="checkbox"/>	Employed full-time
<input type="checkbox"/>	Employed part-time or casual
<input type="checkbox"/>	Unemployed
<input type="checkbox"/>	Student
<input type="checkbox"/>	Retired
<input type="checkbox"/>	Currently unable to work
<input type="checkbox"/>	Home duties
<input type="checkbox"/>	Other: <i>specify:</i> _____

9. Do you currently smoke tobacco products?

<input type="checkbox"/>	Yes, daily	GO TO Question 10
<input type="checkbox"/>	Yes, at least once a week	GO TO Question 10
<input type="checkbox"/>	Yes, but less often than once a week	GO TO Question 10
<input type="checkbox"/>	No, not at all	GO TO Question 18

10. At what age did you start smoking?

_____ years

11. Have you smoked a cigarette, even a puff, in the past 7 days?

<input type="checkbox"/>	Yes
<input type="checkbox"/>	No

12. What type of tobacco have you used in the past week? (Choose as many answers as apply)

<input type="checkbox"/>	Cigarettes (pre-rolled)
<input type="checkbox"/>	Cigarettes (roll your own)
<input type="checkbox"/>	Cigars or pipe
<input type="checkbox"/>	Chewing tobacco
<input type="checkbox"/>	Chop chop
<input type="checkbox"/>	Snuff
<input type="checkbox"/>	Other

13. On average, how many cigarettes do you smoke each day?

14. On average, how much do you spend on tobacco each week?

\$ _____

15. How soon after you wake up do you smoke?

<input type="checkbox"/>	Within 5 minutes
<input type="checkbox"/>	Between 6 and 30 minutes
<input type="checkbox"/>	Between 31 and 60 minutes
<input type="checkbox"/>	After 60 minutes

16. Does your partner smoke?

<input type="checkbox"/>	I don't have a partner
<input type="checkbox"/>	Yes
<input type="checkbox"/>	No, he/she is an ex-smoker
<input type="checkbox"/>	No, he/she has never smoked

17. In the last 3 months have you spent money on cigarettes that you knew would be better spent on household essentials such as food?

<input type="checkbox"/>	Yes
<input type="checkbox"/>	No

18. In the past month did any of the following happen to you because of a shortage of money?

	Yes	No
Could not pay electricity, gas or telephone bills on time		
Could not pay the mortgage or rent on time		
Pawned or sold something		
Went without meals		
Unable to heat the home		
Asked for financial help from friends or family		
Asked for help from a welfare or community organisation		

19. Have you ever tried to quit smoking?

☐

Yes

☐

No – Go to Question 22

20. In the last 12 months, how many times have you made a quit attempt where you didn't smoke a cigarette for at least one day?

21. Have you tried any of the following to help you quit smoking? (tick as many as apply)

☐

Own willpower (quit "cold turkey")

☐

Reducing the number of cigarettes I smoke

☐

Nicotine patches

☐

Nicotine gum, lozenge or inhaler

☐

Zyban

☐

Chamipix

☐

Individual counselling

☐

Group counselling

☐

Went to general practitioner for help

☐

Telephone Quitline

☐

Acupuncture

☐

Hypnosis

☐

Quit smoking books, pamphlets, videos or computer programs

☐

Other: *specify* _____

22. Have you ever been offered any of the following

<input type="checkbox"/>	Advice from Doctor to quit
<input type="checkbox"/>	Advice from caseworker to quit
<input type="checkbox"/>	Referral to Quitline
<input type="checkbox"/>	Nicotine replacement therapy
<input type="checkbox"/>	Quit smoking program

23. Which statement best describes how interested you are in quitting smoking?

<input type="checkbox"/>	I am not interested in quitting smoking
<input type="checkbox"/>	I am a little bit interested in quitting smoking
<input type="checkbox"/>	I am quite interested in quitting smoking
<input type="checkbox"/>	I am very interested in quitting smoking

24. What are your intentions regarding quitting? Do you plan to:

<input type="checkbox"/>	Quit in the next 30 days
<input type="checkbox"/>	Quit in the next 6 months
<input type="checkbox"/>	Quit some time, but not in the next 6 months
<input type="checkbox"/>	Never quit
<input type="checkbox"/>	Don't know

25. How hard is it for you to quit smoking?

<input type="checkbox"/>	Impossible
<input type="checkbox"/>	Very hard
<input type="checkbox"/>	Hard
<input type="checkbox"/>	Easy

	Very Easy
--	-----------

26. Would you ask for help if you decided to quit smoking?

	Definitely not
	Probably not
	I'm not sure
	Probably yes
	Definitely yes

27. Who would you ask for help to quit smoking?

	Doctor
	Support worker
	Family member
	Friend
	Quitline
	Other: <i>specify:</i> _____

28. Over the last two weeks, have you felt down, depressed or hopeless?

	Yes
	No

29. Over the last 2 weeks, have you felt little interest or pleasure in doing things?

	Yes
	No

30. Please rate how much you agree or disagree with the following statements:

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I am interested in talking to my support worker about quitting smoking					
Receiving help from my support worker would help me quit smoking					
Receiving free nicotine patches or gum from my support worker would help me quit smoking					

Appendix 6.9: Client three month and six month follow-up survey

V#2
29/07/2010

CLIENT SMOKING SURVEY

Three/Six month Follow-up Survey

Tackling Tobacco Research Project

1. Are you male or female?

<input type="checkbox"/>	Male
<input type="checkbox"/>	Female

2. In what year were you born?

<input type="text" value="1"/>	<input type="text" value="9"/>	<input type="text"/>	<input type="text"/>
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3. What is the postcode of the suburb where you live?

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
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4. What is your household income each week?

<input type="checkbox"/>	\$0-\$50 per week
<input type="checkbox"/>	\$50-\$100 per week
<input type="checkbox"/>	\$100-\$150 per week
<input type="checkbox"/>	\$150-\$200 per week
<input type="checkbox"/>	\$200-\$250 per week
<input type="checkbox"/>	\$250-\$300 per week

<input type="checkbox"/>	\$300-\$350 per week
<input type="checkbox"/>	\$350-\$400 per week
<input type="checkbox"/>	\$400-\$450 per week
<input type="checkbox"/>	\$450-\$500 per week
<input type="checkbox"/>	More than \$500 per week

5. What is your main source of income?

<input type="checkbox"/>	Paid employment
<input type="checkbox"/>	Government pension or benefit
<input type="checkbox"/>	Family member
<input type="checkbox"/>	Personal savings
<input type="checkbox"/>	Other: <i>please specify</i> _____

6. Do you currently smoke tobacco products?

<input type="checkbox"/>	Yes, daily
<input type="checkbox"/>	Yes, at least once a week
<input type="checkbox"/>	Yes, but less often than once a week
<input type="checkbox"/>	No, not at all

7. Have you smoked a cigarette, even a puff, in the past 7 days?

<input type="checkbox"/>	Yes Go to Question 9
<input type="checkbox"/>	No Go to Question 8

8. How long has it been since you smoked your last cigarette?

_____ Days [Go to Question 18](#)

_____ Weeks [Go to Question 18](#)

_____ Months [Go to Question 18](#)

9. What type of tobacco have you used in the past week? (Choose as many answers as apply)

<input type="checkbox"/>	Cigarettes (pre-rolled)
<input type="checkbox"/>	Cigarettes (roll your own)
<input type="checkbox"/>	Cigars or pipe
<input type="checkbox"/>	Chewing tobacco
<input type="checkbox"/>	Chop chop
<input type="checkbox"/>	Snuff

10. How many cigarettes do you smoke on average each day?

11. How much do you spend on average on tobacco each week?

\$ _____

12. How soon after you wake up do you smoke?

<input type="checkbox"/>	Within 5 minutes
<input type="checkbox"/>	Between 6 and 30 minutes
<input type="checkbox"/>	Between 31 and 60 minutes
<input type="checkbox"/>	After 60 minutes

13. Which statement best describes how interested you are in quitting smoking?

<input type="checkbox"/>	I am not interested in quitting
<input type="checkbox"/>	I am a little bit interested in quitting
<input type="checkbox"/>	I am quite interested in quitting
<input type="checkbox"/>	I am very interested in quitting

14. What are your intentions regarding quitting? Do you plan to:

<input type="checkbox"/>	Quit in the next 30 days
<input type="checkbox"/>	Quit in the next 6 months
<input type="checkbox"/>	Quit some time, but not in the next 6 months
<input type="checkbox"/>	Never quit
<input type="checkbox"/>	Don' t know

15. How hard is it for you to quit smoking?

<input type="checkbox"/>	Impossible
<input type="checkbox"/>	Very hard
<input type="checkbox"/>	Hard
<input type="checkbox"/>	Easy
<input type="checkbox"/>	Very easy

16. If you were to decide to quit smoking in the future, would you ask for help?

<input type="checkbox"/>	Definitely not
<input type="checkbox"/>	Probably not
<input type="checkbox"/>	I'm not sure

<input type="checkbox"/>	Probably yes
<input type="checkbox"/>	Definitely yes

17. Who would you ask for help to quit smoking? Choose as many answers as apply

<input type="checkbox"/>	Doctor
<input type="checkbox"/>	Support worker
<input type="checkbox"/>	Family member
<input type="checkbox"/>	Friend
<input type="checkbox"/>	Quitline
<input type="checkbox"/>	Other: <i>specify:</i> _____

18. Does your partner smoke?

<input type="checkbox"/>	I don't have a partner	Go to Question 20
<input type="checkbox"/>	No, they are an ex-smoker	Go to Question 20
<input type="checkbox"/>	No, they have never smoked	Go to Question 20
<input type="checkbox"/>	Yes	Go to Question 19

19. While you have been receiving help from [community service organisation] about your smoking, did your partner quit smoking or try to quit smoking at the same time?

<input type="checkbox"/>	Yes
<input type="checkbox"/>	No

20. In the last 3 months have you spent money on cigarettes that you knew would be better spent on household essentials such as food?

	Yes
	No

21. In the last 3 months did any of the following happen to you because of a shortage of money?

	Yes	No
Could not pay electricity, gas or telephone bills on time		
Could not pay the mortgage or rent on time		
Pawned or sold something		
Went without meals		
Was unable to heat the home		
Asked for financial help from friends or family		
Asked for help from a welfare or community organisation		

22. In the last 3 months, how many times have you made a quit attempt where you did not smoke a cigarette for at least one day?

23. How long did you stay quit during your last quit attempt?

--	--

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--	--

Days

OR

Weeks

OR

Months

24. In the last 3 months, have you tried to reduce the number of cigarettes you smoke in order to quit?

<input type="checkbox"/>	Yes
<input type="checkbox"/>	No

25. Have you used any type of nicotine replacement therapy (patch, gum, inhaler, lozenge or microtab) in the last 3 months?

<input type="checkbox"/>	Yes
<input type="checkbox"/>	No Go to Question 50

26. In the last three months, have you used a nicotine patch?

<input type="checkbox"/>	Yes
<input type="checkbox"/>	No Go to Question 30

27. For how long have you used the nicotine patch?

<input type="text"/>	<input type="text"/>	OR	<input type="text"/>	<input type="text"/>	OR	<input type="text"/>	<input type="text"/>
Days			Weeks			Months	

28. Are you currently using the nicotine patch?

<input type="checkbox"/>	Yes
<input type="checkbox"/>	No

29. Do you think the nicotine patch has helped you in trying to quit smoking?

<input type="checkbox"/>	Yes
<input type="checkbox"/>	No

30. In the last three months, have you used nicotine gum?

Yes

No **Go to Question 35**

31. For how long have you used nicotine gum?

--	--

Days

OR

--	--

Weeks

OR

--	--

Months

32. Are you currently using nicotine gum?

Yes

No

33. On average, how many pieces of gum have you been using each day?

34. Do you think the nicotine gum has helped you in trying to quit smoking?

Yes

No

35. In the last three months, have you used the nicotine lozenge?

Yes

No **Go to Question 40**

36. For how long have you used the nicotine lozenge?

--	--

Days

OR

--	--

Weeks

OR

--	--

Months

37. Are you currently using the nicotine lozenge?

<input type="checkbox"/>	Yes
<input type="checkbox"/>	No

38. On average, how many lozenges have you been using each day?

39. Do you think the nicotine lozenge has helped you in trying to quit smoking?

<input type="checkbox"/>	Yes
<input type="checkbox"/>	No

40. In the last three months, have you used the nicotine inhaler?

<input type="checkbox"/>	Yes
<input type="checkbox"/>	No Go to Question 45

41. For how long have you used the nicotine inhaler?

<input type="text"/>	<input type="text"/>	<u>OR</u>	<input type="text"/>	<input type="text"/>	<u>OR</u>	<input type="text"/>	<input type="text"/>
Days			Weeks			Months	

42. Are you currently using the nicotine inhaler?

<input type="checkbox"/>	Yes
<input type="checkbox"/>	No

43. On average, how many inhaler cartridges have you been using each day?

44. Do you think the nicotine inhaler has helped you in trying to quit smoking?

<input type="checkbox"/>	Yes
<input type="checkbox"/>	No

45. In the last three months, have you used nicotine microtabs?

<input type="checkbox"/>	Yes
<input type="checkbox"/>	No Go to Question 50

46. For how long have you used nicotine microtabs?

<input type="text"/>	<input type="text"/>	<u>OR</u>	<input type="text"/>	<input type="text"/>	<u>OR</u>	<input type="text"/>	<input type="text"/>
Days			Weeks			Months	

47. Are you currently using nicotine micro-tabs?

<input type="checkbox"/>	Yes
<input type="checkbox"/>	No

48. On average, how many micro-tabs have you been using each day?

49. Do you think the nicotine micro-tabs have helped you in trying to quit smoking?

<input type="checkbox"/>	Yes
<input type="checkbox"/>	No

50. In the last 3 months, have you tried any of the following to help you quit smoking? (tick as many as apply)

<input type="checkbox"/>	Own willpower (quit "cold turkey")
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<input type="checkbox"/>	Prescription Bupropion (Zyban)
<input type="checkbox"/>	Prescription Varenicline (Champix)
<input type="checkbox"/>	Individual counselling
<input type="checkbox"/>	Group counselling
<input type="checkbox"/>	Telephone Quitline
<input type="checkbox"/>	Acupuncture
<input type="checkbox"/>	Hypnosis
<input type="checkbox"/>	Quit book, pamphlet, video or computer quit program
<input type="checkbox"/>	Other: please specify _____

51. Over the last two weeks, have you felt down, depressed or hopeless?

<input type="checkbox"/>	Yes
<input type="checkbox"/>	No

52. Over the last 2 weeks, have you felt little interest or pleasure in doing things?

<input type="checkbox"/>	Yes
<input type="checkbox"/>	No

53. In the last three months, how many times did your support worker:

	None	1-2 times	3-5 times	More than 5 times
Ask you if you smoke				
Talk to you about smoking				
Ask if you were interested in quitting				

Advise you to quit				
Provide you with support to quit smoking				
Give you information about smoking and how to quit				
Provide advice, support and encouragement to help you quit				
Provide you with free nicotine replacement therapy				
Refer you to Quitline for support to help you quit				
Refer you to your general practitioner for support to help you quit				

54. Did you think it was OK to be asked about smoking by your support worker?

<input type="checkbox"/>	Definitely not
<input type="checkbox"/>	Probably not
<input type="checkbox"/>	Probably yes
<input type="checkbox"/>	Definitely yes

55. Would it be OK to be asked about your smoking at your next visit with your support worker?

<input type="checkbox"/>	Definitely not
<input type="checkbox"/>	Probably not
<input type="checkbox"/>	Probably yes
<input type="checkbox"/>	Definitely yes

56. How do you feel about talking to your [community service organisation] support worker about your smoking?

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
It's none of their business					
They should focus on my other needs					
It's for my own good					
They really care for the whole me					

57. Would you return to [community service organisation] to use other services?

<input type="checkbox"/>	Definitely not
<input type="checkbox"/>	Probably not
<input type="checkbox"/>	Probably yes
<input type="checkbox"/>	Definitely yes

58. Please rate how much you agree or disagree with the following statements:

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Talking to my support worker about my smoking was helpful					
Talking to my support worker about my smoking made me think about quitting					
I did not like being asked about my smoking by my support worker					

Appendix 6.10: Ethics Approval

HUMAN RESEARCH ETHICS COMMITTEE



Notification of Expedited Approval

To Chief Investigator or Project Supervisor:	Dr Biljana Bonevski
Cc Co-investigators / Research Students:	Dr Christine Paul Ms Jamie Bryant
Re Protocol:	Tackling tobacco in community based social services: A pilot study.
Date:	09-Dec-2008
Reference No:	H-2008-0382

Thank you for your **Response to Conditional Approval** submission to the Human Research Ethics Committee (HREC) seeking approval in relation to the above protocol.
Your submission was considered under **Expedited** review by the Chair/Deputy Chair.
I am pleased to advise that the decision on your submission is **Approved** effective **09-Dec-2008**.
You are also required to make the following amendments:

1. Attachment F add to the "I understand that" bullet point, the sentence, "I have the right to review, edit or delete the transcript of the interview:"
2. Change "martial" to "marital" in item 3 of the survey.

Please provide us with your amended version of these documents for our records.

The full Committee will be asked to ratify this decision at its next scheduled meeting whereupon a formal *Certificate of Approval* will be issued. In the interim your approval number is **H-2008-0382**.

If the research requires the use of an Information Statement, ensure this number is inserted at the relevant point in the Complaints paragraph prior to distribution to potential participants

You may then proceed with the research. Best wishes for a successful project.

Professor Val Robertson
Chair, Human Research Ethics Committee

For communications and enquiries:
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Funding body	Funding project title	First named investigator	Administering institution	Uni of Newc G Reference
UoN Strategic Pilot Grant	Tackling tobacco...	Dr Billie Bonevski	University of Newcastle	G0189056

Appendix 6.11 Statements of contribution from co-authors

Statement of contribution

I, Dr. Billie Bonevski, attest that Research Higher Degree candidate Jamie Bryant contributed substantially- in terms of study concept and design, data collection and analysis, and preparation of the manuscript- to the publication:

Jamie Bryant, Billie Bonevski, Christine Paul, Phillip Hull, Jon O'Brien. Implementing a smoking cessation program in social and community service organisations: A feasibility and acceptability trial. Drug and Alcohol Review.

Dr. Billie Bonevski (Co-author)

Date

Jamie Bryant (Candidate)

Date

Prof John Rostas (Assistant Dean Research Training)

Date

Statement of contribution

I, A/Prof Christine Paul, attest that Research Higher Degree candidate Jamie Bryant contributed substantially- in terms of study concept and design, data collection and analysis, and preparation of the manuscript- to the publication:

Jamie Bryant, Billie Bonevski, Christine Paul, Phillip Hull, Jon O'Brien. Implementing a smoking cessation program in social and community service organisations: A feasibility and acceptability trial. Drug and Alcohol Review.

A/Prof Christine Paul (Co-author)

Date

Jamie Bryant (Candidate)

Date

Prof John Rostas (Assistant Dean Research Training)

Date

Statement of contribution

I, Phillip Hull, attest that Research Higher Degree candidate Jamie Bryant contributed substantially- in terms of study concept and design, data collection and analysis, and preparation of the manuscript- to the publication:

Jamie Bryant, Billie Bonevski, Christine Paul, Phillip Hull, Jon O'Brien. Implementing a smoking cessation program in social and community service organisations: A feasibility and acceptability trial. Drug and Alcohol Review.

Phillip Hull (Co-author)

Date

Jamie Bryant (Candidate)

Date

Prof John Rostas (Assistant Dean Research Training)

Date

Statement of contribution

I, Jon O'Brien, attest that Research Higher Degree candidate Jamie Bryant contributed substantially- in terms of study concept and design, data collection and analysis, and preparation of the manuscript- to the publication:

Jamie Bryant, Billie Bonevski, Christine Paul, Phillip Hull, Jon O'Brien. Implementing a smoking cessation program in social and community service organisations: A feasibility and acceptability trial. Drug and Alcohol Review.

Jon O'Brien (Co-author)

Date

Jamie Bryant (Candidate)

Date

Prof John Rostas (Assistant Dean Research Training)

Date