

Preventive Care for Physical Activity and Fruit and Vegetable Consumption: A Cross-  
Sectional Survey of Family Carer Expectations of Health Service Delivery for People  
with a Mental Health Condition

Jacqueline Mary Bailey

BPsyc (Hons) PhD (Psychology)

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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 copyright Act 1968.

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Dr Jacqueline Bailey

Research Student

21.11.2019

### Acknowledgement of Collaboration

I hereby certify that the work embodied in this thesis has been done in collaboration with other researchers. I have included as part of this thesis a statement clearly outlining the extent of collaboration, with whom and under what auspices.

I contributed to the: development of the research question, research design and methodology, development and modification of the survey instrument, managed data collection procedures, cleaned the data, led the statistical analysis, interpretation of results and writing of the manuscript. Dr Tara Clinton-McHarg contributed to the development of the research question, interpretation of results, preparation and editing of the manuscript. Professor Jenny Bowman contributed to the development of the research question, research design and methodology, development and modification of the survey instrument, interpretation of results, preparation and editing of the manuscript. Dr Paula Wye contributed to the development of the research question, research design and methodology, data collection, development and modification of the survey instrument, interpretation of results, preparation and editing of the manuscript. Professor John Wiggers contributed to the development of the research question, interpretation of results, preparation and editing of the manuscript. Dr Kate Bartlem contributed to the development of the research question, interpretation of results, preparation and editing of the manuscript.

Dr Jacqueline Bailey

Research Student

21.11.2019

Statement of Authorship

I hereby certify that the work embodied in this thesis contains a manuscript of which I am a joint author. I have included as part of the thesis a written statement, endorsed by my supervisor, attesting to my contribution to the joint work.

Dr Jacqueline Bailey

Research Student

21.11.2019

Dr Tara Clinton-McHarg

Primary Research Supervisor

21.11.2019

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Manuscript:

Preventive Care for Physical Activity and Fruit and Vegetable Consumption: A Cross-  
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This thesis is formatted for submission to peer-reviewed journal BMC Health  
Services Research, refer to Appendix A for submission guidelines.

This manuscript has been published since submission in partial fulfillment for the award of degree. The published manuscript underwent minor edits as part of the peer-review process and may contain minor differences to the manuscript in this thesis. Refer to Appendix F for the published manuscript. The details of the published manuscript are:

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Preventive Care for Physical Activity and Fruit and Vegetable Consumption: A Cross-  
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Jacqueline M. Bailey BPsych Hons,<sup>a,b\*</sup> Tara L. Clinton-McHarg PhD,<sup>a,b</sup> Paula M. Wye  
PhD,<sup>a,b</sup> John H. Wiggers, PhD<sup>b,c,d</sup> Kate M. Bartlem PhD,<sup>a,b</sup> & Jennifer A. Bowman  
PhD,<sup>a,b</sup>

- a. School of Psychology, Faculty of Science and Information Technology, The  
University of Newcastle, University Drive, Callaghan, NSW, 2308, Australia.
- b. Hunter Medical Research Institute, Clinical Research Centre, Lot 1 Kookaburra  
Circuit, New Lambton Heights, NSW, 2305, Australia.
- c. Population Health, Hunter New England Local Health District, Booth Building,  
Wallsend Health Services, Longworth Avenue, Wallsend, NSW, 2287, Australia.
- d. School of Medicine and Public Health, Faculty of Health and Medicine, The  
University of Newcastle, University Drive, Callaghan, NSW, 2308, Australia.

\*Corresponding author: Jacqueline Bailey: [jacqueline.m.bailey@uon.edu.au](mailto:jacqueline.m.bailey@uon.edu.au)

Telephone: +61249854485

Fax: +61249 216 980

Postal address: School of Psychology, Faculty of Science and Information Technology,  
The University of Newcastle, University Drive, Callaghan, NSW, 2308, Australia.

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### Abstract

**Background:** Chronic disease is a leading cause of death globally, where inadequate fruit and vegetable consumption and inadequate physical activity are consistently implicated as key contributing risk factors. People with a mental health condition are reported to experience a higher prevalence of such risks and experience increased morbidity and mortality from resultant chronic disease. Despite guidelines identifying a need for services accessed by people with a mental health condition to provide care to address such health risk behaviours, sub-optimal care is frequently reported suggesting a need for innovative strategies to increase the provision of physical health care. An exploratory study was conducted to examine: 1) family carers' expectations of care provision regarding fruit and vegetable consumption and physical activity by health and community services for people with a mental health condition; 2) carer's own health risk behaviour status and perceptions of the influence of the health risk behaviours on mental health; and 3) possible associations of socio-demographic, clinical and attitudinal factors with carer expectations of care provision for fruit and vegetable consumption and physical activity.

**Methods:** Family carers of people with a mental health condition completed a cross-sectional survey. Participants were members of a mental health carer support organisation from New South Wales, Australia.

**Results:** A high proportion of participants (n=144 total, 38.8% response rate) believed care for fruit and vegetable consumption and physical activity respectively should be provided by: mental health hospitals (78.5%, 82.7%); community mental health services (76.7%, 85.9%); general practice (81.1%, 79.2%); and non-government organisations (56.2%, 65.4%). Most participants perceived that adequate fruit and vegetable consumption (55.9%), and physical activity (71.3%) would have a very positive impact on mental health. Carers who perceived adequate fruit and vegetable consumption and

physical activity would have a positive impact on mental health were more likely to expect care for such behaviours from some services.

**Conclusions:** The majority of participants expected care for fruit and vegetable consumption and physical activity be provided by all services catering for people with a mental health condition. Findings reinforce the appropriateness for such services to provide physical health care for clients in a systematic manner.

Preventive Care for Physical Activity and Fruit and Vegetable Consumption: A Cross-Sectional Survey of Family Carer Expectations of Health Service Delivery for People with a Mental Health Condition

## Background

Physical chronic diseases, such as cardiovascular diseases, cancer, and diabetes, are a leading cause of death globally and contributed to 71% of deaths in 2017 (1, 2). Chronic conditions such as overweight and obesity (conservatively measured by Body Mass Index [BMI]) were also estimated to account for 4.7 million deaths globally in 2017 and 148 million Disability Adjusted Life Years (DALYs, sum of years lived with a disability and years of life lost) (3). In 2014, 38% to 40% of adults were overweight and 11% to 15% obese; with the worldwide prevalence of obesity nearly doubling between 1980 and 2014 (1). Such prevalence estimates continue to increase, with 2016 prevalence estimates of obesity ranging from 20% to 36% among adults in Australia, United Kingdom, United States, Canada, and many European nations (4).

Compared to these global figures, the reported figures in Australia are somewhat higher, with physical chronic diseases contributing to 87% of deaths in 2015 (5). For example, the prevalence of diabetes in Australia has tripled over the last 25 years with 6.1% (1.2 million people) of the adult population reported to have the condition in 2015 (5). A recent study of more than 10 million adults from 239 prospective studies found that Australian and New Zealand adults with a BMI above the 'normal weight' range ( $\text{BMI} > 25 \text{ kg/m}^2$ ) had an increased risk of death from all causes of 31%, for each 5  $\text{kg/m}^2$  increase in BMI (6). Further, compared to people with a 'normal weight' range BMI, life expectancy was reduced by 2–4 years for people with class I obesity ( $\text{BMI} = 30\text{--}34.99$ ), and by 8–10 years for people with class III obesity ( $\text{BMI} = >39.99$ ) (7).

Inadequate physical activity and inadequate fruit and vegetable consumption are two modifiable health risk behaviours that are consistently implicated as contributing to the incidence of physical chronic disease and overweight and obesity (3, 8, 9).

Inadequate physical activity is a risk factor for the development of chronic diseases such as ischemic heart disease, stroke, diabetes mellitus, and cancer, as well as the development of conditions that contribute to these chronic diseases such as overweight, obesity and hypertension (3, 10). Similarly, inadequate fruit and/or vegetable consumption are risk factors for the development of obesity, and chronic diseases such as: ischemic heart disease; stroke; diabetes mellitus; stomach, oesophageal, colorectal, and lung cancer (3, 8, 9, 11-13). National guidelines vary slightly between countries regarding what is considered to be an inadequate level of physical activity or inadequate fruit and vegetable consumption (14-20). In Australia, current national guidelines state that the following behaviours may place an individual at risk of developing a chronic disease: 1) consuming less than five vegetable and two fruit servings per day (21); 2) engaging in less than 150 to 300 minutes of moderate intensity physical activity (e.g. brisk walking, golf) or 75 to 150 minutes of vigorous intensity physical activity (e.g. jogging, aerobics, digging), or an equivalent combination each week; and participating in muscle strengthening activities on less than 2 days each week (22).

Internationally and in Australia, people with a mental health condition experience increased rates of physical chronic disease, and resultant morbidity, mortality and reduced life expectancy compared to people without a mental health condition (23-25). Research among this population group utilises various terminology such as ‘mental illness’ or ‘mental disorder’, the term ‘mental health condition’ will be used throughout this study to define mental health conditions commonly experienced by individuals accessing adult mental health services; that is, categories of mental illness outlined in



the Diagnostic and Statistical Manual of Mental Disorders-5 (26) not including neurodevelopmental or degenerative disorders (for example, not including autism and dementia, but including but not limited to: schizophrenia, depression, anxiety, and personality disorders). The prevalence of overweight and obesity (27-29), inadequate physical activity (30, 31) and inadequate fruit and vegetable consumption (30, 31) is higher among people with a mental health condition than those without. A systematic review that included four studies of national survey data found that people with severe mental health conditions such as schizophrenia are significantly more likely to be overweight or obese than other members of the population (32). For example, one study included in the review found that Australian's living with psychotic illness were two times more likely to be obese (BMI > 30) compared to the general population in the same time period (33, 34). Additionally, having a chronic mental health condition (such as depression), has been independently linked to the development of physical chronic diseases such as cardiovascular disease (23-25, 35), demonstrating the complexities in addressing the contributions of both physical and mental health conditions to the development of chronic disease among this group.

In the research literature, the prevalence of inadequate physical activity (30, 31, 36-41) and inadequate fruit and vegetable consumption (30, 31, 39, 40) among people with a mental health condition is consistently reported to be higher than people without a mental health condition, and appear to be highest for people with mental health conditions that require inpatient care. This higher prevalence of risk behaviour is demonstrated by comparing the results of three studies conducted in the same geographic region of Australia, utilising comparable methodologies, and consistent definitions of risk behaviours as per national guidelines. Cross-sectional surveys conducted amongst general community health clients (n=1284), community mental

health clients (n=558), and psychiatric inpatients (n=2075) revealed a higher prevalence of risk behaviours among community mental health clients compared to general health clients, and an even further increased risk for psychiatric inpatients for: inadequate fruit and/or vegetable consumption (81% vs 88% vs 95%), and inadequate physical activity (28% vs 47% vs 50%) (42-44).

Internationally and in Australia, guidelines and policies acknowledge the need to provide care to all health service clients who may be at risk for inadequate physical activity and/or fruit and vegetable consumption (45-47), with additional guidelines and policies existing specifically for clients with a mental health condition (48, 49). Despite the existence of these guidelines and policies, and the reported interest of mental health service clients in receiving support to improve these behaviours (43, 50), sub-optimal care for health risk behaviours from general practitioners (51) and community and inpatient mental health services is consistently reported (52). For instance, a recent a meta-analysis of 26 studies found sub-optimal provision of care (less than 80% of clients in receipt of care) to address inadequate nutrition generally and physical activity across all elements of care (e.g. asking/assessing, advising, assisting, and arranging referral) in community, inpatient, and other mental health services (52). A number of factors have been implicated as barriers to the provision of preventive care in mental health settings including: clinician attitudes and beliefs about their client's capability or interest in changing (53, 54); as well as the risk behaviours of the clinician, where clinicians who are at risk for a particular behaviour themselves may be less likely to provide care to their client for that behaviour (55).

In addition to the existence of policies and guidelines surrounding the type of preventive care to be delivered to people with a mental health condition, guidelines also state the need to include a variety of stakeholders, including clients and their informal

family carers, in the planning, development and implementation of mental health policy and practice (56-59). A family or informal carer is an individual who provides support and assistance without payment to an individual with any physical or mental health condition or disability (60). the inclusion of informal carers in decisions related to the delivery of care is recommended in order to deliver a holistic approach to mental health care and increase the effectiveness of health care service treatments and interventions (61-63). For instance, the New South Wales (NSW) Carer Recognition Act states that carers should be engaged as important stakeholders in the provision of care, including the assessment, planning, delivery, and review of services provided to the person they care for, and should be included in care decision making (64).

The engagement of carers (in addition to people with a mental health condition [consumers]) in all aspects of the design and development of health services, practices, and systems suggested above is referred to as co-design (65-68). Research evaluating the effect of co-design in the context of mental health service provision has identified multiple benefits to consumers, carers, and the mental health care system. Such benefits include: empowerment for consumers and carers through a recognition of their lived experience, resources and skills (66,67), reduction in relapse or rehospitalisation rates (67,69); improved quality of life (66,67,69); reduction in carer burden (69); and more effective engagement with services resulting in reduced service costs (66,67,69). Therefore, a consideration of the expectations of both consumers and carers with respect to the provision of care for people with a mental health condition has the potential to improve service provision and outcomes for this group.

In line the with principles of co-design and the acknowledged role that family carers play in the provision of support to people with a mental health condition, an alignment between carer expectations regarding what type of care should be provided

and the type of care that is actually delivered by services is likely to lead to more positive outcomes for people with a mental health condition (70). The importance of the carer viewpoint is evidenced by the National Mental Health Commission's 2017 establishment of the Equally Well Implementation Committee, which includes carer members, with the aim of bridging the physical and mental health sectors to ensure holistic care for people with a mental health condition (71).

To date however, there has been limited research undertaken with family carers to understand their expectations regarding what type of care should be provided to people with a mental health condition by health and community services in order to address chronic disease risk behaviours. Only two previous studies have focused on this issue relevant to inadequate physical activity and nutrition generally (72-74). One qualitative study from the US of 13 carers of older adults with serious mental illness found that carers reported a need for guidance from health care professionals regarding strategies to promote weight loss by their family member (72).

The second study, an Australian qualitative study of 31 family carers, reported a desire by carers to be informed about any health service interventions which aimed to address the physical health of the person they cared for so that carers could support such interventions (73). Additionally, carers reported a desire for services accessed by their family member to provide holistic care, due to their awareness of the bidirectional relationship between physical and mental health. It has been found previously that carers are aware of the bidirectional relationship between physical and mental health, and this has been associated with carer expectations of smoking cessation care provision by services accessed by people with a mental health condition (74). Further, carers have also reported that their capacity to support their family member in making health behaviour change is impacted by the need to maintain their own physical health and

well-being (73). These two previous studies were limited by small sample sizes, and their lack of focus on physical activity and fruit and vegetable consumption specifically. The absence of any quantitative studies in this area also limits understanding of the prevalence of the reported expectations for chronic disease care delivery among carers more generally.

The physical health inequities experienced by people with a mental health condition require further exploration of potential strategies to address such inequities. Given that inadequate fruit and vegetable consumption and physical inactivity are two key modifiable health risk behaviours consistently implicated in the development of chronic disease, and that suboptimal care for these risk behaviours for people with a mental health condition has been reported, further investigation is warranted. In line with a co-design framework, research suggests there are potential benefits in exploring the perspectives of family carers regarding delivery of care by health services to address these health risk behaviours for people with a mental health condition; and that such a study is warranted given the sparse amount of research conducted to date.

## Methods

### *Aims*

Given the limited research exploring carer expectations regarding health service delivery of care to address physical activity and nutrition risk behaviours for people with a mental health condition, the aims of this study were to:

- 1) examine family carers' expectations of care provision regarding fruit and vegetable consumption and physical activity by health and community services (including mental health hospitals, community mental health services, general practice [GP], and non-government organisations [NGOs]) for people with a mental health condition;
- 2) assess carers' own health risk behaviour status and their perceptions of the influence of fruit and vegetable consumption and physical activity may have on mental health; and
- 3) explore possible associations between socio-demographic, clinical and attitudinal factors, and family carers' expectations of care provision by health services to address fruit and vegetable consumption and physical activity for people with a mental health condition.

### *Design and Setting*

A cross sectional study was undertaken with family carers of adults with a mental health condition in one non-metropolitan region in NSW, Australia from July to November 2013. The study was approved by the Hunter New England Human Research Ethics Committee (No. 13/06/19/5.11) and the University of Newcastle's Human Research Ethics Committee (No. H-2019-0141; refer to Appendix B).

*Participants and Recruitment*

Potential participants were identified through their membership of a non-government carer support organisation that provided free support services, advocacy, training and education to carers of people with a mental health condition (75). The organisation had operated across the study region for approximately 10 years, and worked in partnership with local mental health services, providing individual and group support to carers. Any member of the public who was a carer of a person with any mental health condition was able to join the organisation without cost as a source of support for their role as a carer. Participants were eligible for the study if they were: 18 years or older and identified themselves as a family carer for someone with any mental health condition who was also over 18 years.

The carer organisation identified potential participants throughout the Hunter New England Local Health District based on a list of members who had previously recorded they had an interest in research participation. The organisation mailed these members an invitation to participate in the study (Appendix D), an information statement (Appendix C), survey instrument (Appendix E) and a reply-paid envelope to return the survey. The invitation letter also included a web link for optional online survey completion. Potential participants who had not responded to the letter after one month were mailed a reminder letter. Most surveys were returned within one month; the remainder were received within a four month period. Additionally, potential participants were approached by research team members who attended carer support group meetings that were organised by or affiliated with the carer support organisation. Participants who expressed an interest in completing the survey were able to complete it prior to the commencement of the support group meeting, the researchers then left before the meeting started. Survey completion took approximately 30 minutes.

*Measures*

A full copy of the survey items can be seen in Appendix E. Only the items related to fruit and vegetable consumption and physical activity were included as part of this thesis. Socio-demographic, clinical and risk behaviour questionnaire items were modified from previous research (76). Items examining the carer and family member relationship, perceptions regarding the impact of health risk behaviours on mental health, and carer expectations of care provision for health risk behaviours by services were developed by the research team with input from mental health staff and carers, and underwent pilot testing. The survey (Appendix E) was created for a larger study investigating the role of family carers in chronic disease risk behaviour change for their family member with a mental health condition. The larger study explored the extent to which carers were supporting chronic disease risk behaviour change for their family member with a mental health condition in the home environment, and perceived barriers to doing so (73,74,77).

*Socio-demographic and clinical characteristics:* Six items addressed the age, gender, employment, marital status, highest level of education achieved, and Aboriginal and/or Torres Strait Islander status of both the family carer and person with a mental health condition. Participants were also asked their postcode of residence to determine geographic remoteness and socio-economic index of disadvantage (78, 79).

Participants reported: how many years they had been in a caring role with the person they cared for (years: less than one, 1 to 2, 3 to 10, 11 to 20, more than 20); if they lived in the same residence as that person (yes, no, sometimes); what their relationship was to that person (parent, partner, child, sibling, neighbour, friend, other); and that person's primary psychiatric diagnosis (schizophrenia, depression, anxiety



disorder, panic disorder, bipolar disorder, post-traumatic stress disorder, eating disorder, personality disorder, unsure, other).

*Expectations of care provision:* Participants were asked separate questions for each of four types of health care services: mental health hospitals, community mental health services, GP, and/or NGOs. For each service type, carers were asked whether the service should provide care for a) fruit and vegetable consumption, and b) physical activity for people with a mental health condition (yes, no, unsure). For instance, ‘For someone with a mental health condition, do you think the services below should provide care for fruit and vegetable consumption?’

*Health risk behaviour status:* Participants were asked: how many serves of fruit (0, 1, 2 or more, unsure) and vegetables they usually ate each day (0, 1, 2, 3, 4, 5 or more, unsure); and how many days a week they usually did 30 minutes or more of physical activity (0, 1, 2, 3, 4, 5, 6, 7, unsure, can’t do physical activity for health or treatment reasons).

*Perceived health effects of fruit and vegetable consumption and physical activity:* All participants were asked to respond to four items: ‘to what extent do you think eating enough fruit and vegetables can have a positive impact on mental health?’, ‘to what extent do you think doing enough physical activity can have a positive impact on mental health?’, ‘to what extent do you think not eating enough fruit and vegetables can have a negative impact on mental health?’, and ‘to what extent do you think not doing enough physical activity can have a negative impact on mental health?’ (not at all, a little, moderately, very, unsure).

*Data Analysis*

SPSS version 23 (80) was used to analyse the data. Participant postcode was used to determine the geographic remoteness (major cities, regional, rural) and socio-economic index of disadvantage (disadvantaged, average/advantaged) of the area in which they resided (78, 79). Response categories for socio-demographic and clinical characteristics were collapsed to two or three categories as shown in Table 1; with the exception of psychiatric diagnosis (four categories). Fruit and vegetable consumption and physical activity levels were dichotomised (adequate vs inadequate) based on the Australian national guidelines (21, 81), where consuming two or more serves of fruit and five or more serves of vegetables each day was adequate, and participating in at least 30 minutes of physical activity, at least five days per week was deemed adequate. Items regarding expectations of care provision by the four health and community service settings were condensed to two categories (yes vs no or unsure).

Descriptive statistics were used to summarise socio-demographic and clinical characteristics, participants' expectations of care provision by health and community services, risk behaviour status, and perceived effect of fruit and vegetable consumption and physical activity on mental health.

Chi-square analyses using Fisher's Exact test statistic were used to examine possible associations between all independent variables listed in Table 1 and carers' perceptions of the impact of the health risk behaviours on mental health with carers' expectations of care provision for fruit and vegetable consumption and physical activity by each of the four service settings (dependent variables). Independent variables associated at  $p < .25$  were subsequently entered into backward stepwise logistic regression models to examine the independent association ( $p < .05$ ) with expectation of care provision (for fruit and vegetable consumption, and physical activity separately) in

each of the four service settings (eight models total). Results are reported as Odds Ratios with 95% confidence intervals.

## Results

### *Sample characteristics*

Of the 371 eligible carers invited to take part; 144 completed the survey (38.8%); 97 by mail, 46 in a carer support group, and 1 online. Participants who completed the survey in a support group were more likely to be 75 years or older (21.7% vs 7.1%,  $p = .005$ ) and to live in a major city (57.8% vs 18.6%,  $p < .001$ ) than participants who completed the survey by post. The majority of participants were female (81.0%), over the age of 54 (75.4%), the parent of the person they cared for (61.5%), and resided with that person (52.4%; Table 1).

Table 1. *Socio-demographic characteristics*

Characteristic	Carer	n(%)	Person with a mental health condition n(%)
Age (Years) <sup>1</sup>	18-54: 35 (24.6)		18-34: 58 (40.3)
	55-74: 92 (64.8)		35-54: 67 (46.5)
	75 and over: 15 (10.6)		55 and over: 19 (13.2)
Gender <sup>1</sup>			
Male	27 (19.0)		96 (66.7)
Employment status			
In the workforce <sup>2</sup>	45 (31.9)		28 (20.3)
Ethnicity <sup>3</sup>			
Aboriginal and/or Torres Strait Islander origin	5 (3.6)		6 (4.4)
Marital Status <sup>4</sup>			
Married/ living together in a relationship	105 (73.4)		36 (25.9)
Highest Education Level <sup>5</sup>			
Less than 4 years high school completed	28 (19.6)		31 (22.6)
4 years high school completed	30 (21.0)		29 (21.2)
More than 4 years high school completed	85 (59.4)		77 (56.2)
Socio-economic index of disadvantage <sup>1</sup>			
Lowest tertile (Disadvantaged)	78 (54.9)		
Middle/highest tertile (average/advantaged)	64 (45.1)		
Geographic remoteness <sup>1</sup>			
Major cities (Highly accessible)	44 (31.0)		
Inner regional (Accessible)	77 (54.2)		
Outer regional (Moderately accessible)	21 (14.8)		
Years spent caring for the person with mental illness <sup>1</sup>			
20 years or less	100 (70.4)		
More than 20 years	42 (29.6)		
Carer and person with mental illness living in the same residence			
Yes <sup>6</sup>	75 (52.4)		
Carer relationship to person with mental illness <sup>6</sup>			
Parent	88 (61.5)		
Other relation	55 (38.5)		
Psychiatric diagnosis			
Schizophrenia			56 (38.9)
Bipolar disorder			31 (21.5)
Depression			22 (15.3)
Other- single or multiple disorders			35 (24.3)
Fruit consumption <sup>6</sup>			
Inadequate	49 (34.0)		
Vegetable consumption <sup>6</sup>			
Inadequate	98 (68.5)		
Combined fruit and vegetable consumption <sup>6</sup>			

Inadequate	107 (74.8)
Physical activity <sup>7</sup>	
Inadequate	76 (57.6)

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<sup>1</sup> Two missing carer responses

<sup>2</sup> Three missing carer responses, six missing person with a mental illness responses

<sup>3</sup> Four missing carer responses, eight missing person with a mental illness responses

<sup>4</sup> One missing carer response, five missing person with a mental illness responses

<sup>5</sup> One missing carer response, seven missing person with a mental illness responses

<sup>6</sup> One missing carer response

<sup>7</sup> Twelve missing carer responses

*Expectations of care provision*

The majority of participants expected all four types of health care services to provide care for fruit and vegetable consumption to people with a mental health condition, with the highest expectation for GPs (81.1%), and the lowest for NGOs (56.2%) (Table 2). The majority of participants also expected all service settings to provide care for physical activity, with the highest expectation for community mental health services (85.9%), and the lowest for NGOs (65.4%).

Table 2. *Expectations of care in health and community service settings*

Item	Response		
	n(%)	n(%)	n(%)
	Yes	No	Unsure
<b>Fruit and Vegetable Consumption Care</b>			
Mental health hospital <sup>1</sup>	106 (78.5)	17 (12.6)	12 (8.9)
Community mental health service <sup>2</sup>	102 (76.7)	17 (12.8)	14 (10.5)
General practice <sup>3</sup>	107 (81.1)	18 (13.6)	7 (5.3)
Non-government organisation <sup>4</sup>	72 (56.2)	28 (21.9)	28 (21.9)
<b>Physical Activity Care</b>			
Mental health hospital <sup>2</sup>	110 (82.7)	10 (7.5)	13 (9.8)
Community mental health service <sup>1</sup>	116 (85.9)	6 (4.4)	13 (9.7)
General practice <sup>1</sup>	107 (79.2)	14 (10.4)	14 (10.4)
Non-government organisation <sup>5</sup>	83 (65.4)	13 (10.2)	31 (24.4)

<sup>1</sup> Nine missing responses<sup>2</sup> Eleven missing responses<sup>3</sup> Twelve missing responses<sup>4</sup> Sixteen missing responses<sup>5</sup> Seventeen missing responses

*Health risk behaviour status*

The majority of carers were consuming inadequate amounts of vegetables (68.5%), and approximately one third were consuming inadequate amounts of fruit (34.0%). The proportion of carers consuming inadequate fruit or vegetables overall was 74.8%. More than half of the carers reported engaging in inadequate amounts of physical activity (57.6%; Table 1).

*Perceived mental health effects of fruit and vegetable consumption and physical activity*

Approximately half the carers perceived that consuming adequate amounts of fruit and vegetables could have a ‘very’ positive impact on mental health (55.9%); 48.6% perceived that inadequate fruit and vegetable consumption would have a ‘very’ negative impact on mental health. Approximately two thirds of participants perceived that adequate physical activity would have a ‘very’ positive impact on mental health (71.3%), and that inadequate physical activity would have a ‘very’ negative impact on mental health (63.8%). Very few participants reported that fruit and vegetable consumption or physical activity would have no impact on mental health (2.1% to 7.0% respectively; Table 3).



Table 3. *Perceived health effects of fruit and vegetable consumption and physical activity on mental health*

Item	Response				
	n(%)	n(%)	n(%)	n(%)	n(%)
	Very	Moderately	A little	Not at all	Unsure
Adequate fruit and vegetable consumption- positive influence on mental health <sup>1</sup>	80 (55.9)	41 (28.7)	11 (7.7)	6 (4.2)	5 (3.5)
Inadequate fruit and vegetable consumption- negative influence on mental health <sup>2</sup>	69 (48.6)	39 (27.5)	13 (9.2)	10 (7.0)	11 (7.7)
Adequate physical activity- positive influence on mental health <sup>1</sup>	102 (71.3)	29 (20.3)	7 (4.9)	3 (2.1)	2 (1.4)
Inadequate physical activity - negative influence on mental health <sup>3</sup>	90 (63.8)	30 (21.3)	6 (4.3)	7 (5.0)	8 (5.6)

<sup>1</sup> One missing response<sup>2</sup> Two missing responses<sup>3</sup> Three missing responses

*Associations between socio-demographic and attitudinal variables, with expectations of care provision*

Final regression models are presented in Table 4. Participants perceiving that ‘eating enough fruit and vegetables would have a very positive impact on mental health’ had greater odds of expecting care for fruit and vegetable consumption to be provided in: mental health hospitals (Odds ratio [OR]: 2.61, 95% Confidence Interval [CI]: 1.09-6.26,  $p = .03$ ); GP (OR: 3.30, 95% CI: 1.24-8.51,  $p = .02$ ); and NGOs (OR: 2.30, 95% CI: 1.02-5.17,  $p = .04$ ), compared to carers not holding that view.

Carers who perceived ‘doing enough physical activity would have a very positive impact on mental health’ were almost four times more likely to expect care for physical activity in mental health hospitals (OR: 3.70, 95% CI: 1.44-9.84,  $p = <.01$ ), compared to carers not holding that view. Carers who completed four years of high school (School Certificate) had lower odds of expecting physical activity care in community mental health services (OR: .15, 95% CI: .04-.50,  $p = <.01$ ) and GPs (OR: .28, 95% CI: .10-.80,  $p = .02$ ), compared to carers who had completed more than four years high school. There were no other significant associations.

Table 4. *Variables associated with expectations of fruit and vegetable consumption and physical activity care provision*

Predictor	OR	95% CI	<i>p</i>
<b>FRUIT AND VEGETABLE CONSUMPTION</b>			
<b>Mental health hospitals<sup>1</sup></b>			
Fruit and vegetable consumption- very positive impact on mental health	2.61	1.09 - 6.26	0.03*
<b>Community mental health services<sup>2</sup></b>			
Living in same residence	0.47	0.20 - 1.12	0.09
Married/de facto carers	0.39	0.13 – 1.24	0.11
<b>GPs<sup>3</sup></b>			
Carer inadequate nutrition	0.30	0.08 - 1.12	0.07
Carer in workforce	3.20	0.98 – 10.45	0.05
Fruit and vegetable- very positive impact on mental health	3.30	1.24 - 8.51	0.02*
<b>NGOs<sup>4</sup></b>			
Carer gender - female	2.32	0.95 – 5.65	0.07
Fruit and vegetable- very positive impact on mental health	2.30	1.02-5.17	0.04*
Family member psychiatric diagnosis			0.05
Schizophrenia	2.63	0.95-7.27	0.06
Depression	0.83	0.23-2.97	0.77
Bipolar	3.42	1.04-11.18	0.05
Other			Reference
<b>PHYSICAL ACTIVITY</b>			
<b>Mental health hospitals<sup>5</sup></b>			
Physical activity- very positive impact on mental health	3.70	1.44 - 9.48	< 0.01*
<b>Community mental health services<sup>6</sup></b>			
Carer highest education level			< 0.01*
Less than four years high school	0.57	0.15 – 2.21	0.41
Four years high school	0.15	0.04 - 0.50	< 0.01*
More than four years high school			Reference

**GPs<sup>7</sup>**

Carer highest education level			0.03*
Less than four years high school	0.38	0.13 - 1.10	0.07
Four years high school	0.28	0.10 – 0.80	0.02*
More than four years high school			Reference

**NGOs<sup>8</sup>**

Carer inadequate physical activity	0.48	0.21 - 1.10	0.10
Married/de facto carer	0.39	0.14 – 1.09	0.07

\*Significant at  $p < .05$

Variables entered into regression model at  $p < .25$ :

<sup>1</sup> Carer gender, carer and family member residential status, impact of fruit and vegetable consumption on mental health.

<sup>2</sup> Carer and family member residential status, carer employment status, carer marital status.

<sup>3</sup> Family member age, carer nutrition risk status, impact of fruit and vegetable consumption on mental health, carer employment status.

<sup>4</sup> Carer age, carer gender, carer nutrition risk status, impact of fruit and vegetable consumption on mental health, carer highest education level, family member psychiatric diagnosis.

<sup>5</sup> Impact of physical activity on mental health, family member highest education level, carer marital status.

<sup>6</sup> Carer highest education level, impact of physical activity on mental health, carer marital status, family member marital status, socio-economic index of disadvantage.

<sup>7</sup> Carer highest education level. Family member highest education level.

<sup>8</sup> Carer age, years in caring relationship, carer physical activity risk status, carer marital status.

## Discussion

This is the first study to explore the prevalence of family carer expectations regarding care provision for fruit and vegetable consumption and physical activity to people with a mental health condition by a variety of health and community service settings, and factors associated with these expectations. These findings are important given the increasing need to recognise and include carers in health service delivery for people with a mental health condition. Many carers expected all four service settings to provide care for fruit and vegetable consumption, (56.2% - 81.1%) and physical activity (65.4% - 85.9%). The majority of carers consumed inadequate fruits and vegetables and engaged in inadequate physical activity. A large majority of carers perceived that consuming adequate amounts of fruits and vegetables and engaging in adequate amounts of physical activity would have a very positive impact on mental health.

The findings of a high prevalence of carers expecting care to be delivered for both health risk behaviours across all care delivery settings studied align with the recommendations of guidelines and policies regarding the provision of physical health care in all services accessed by people with a mental health condition (45-49). The results are also consistent with research reporting that people with a mental health condition would find it acceptable to be provided with support to change health risk behaviours from the services they access (30, 43, 50, 82-84). Such findings highlight the need for health and community services to adhere to existing policies and increase the provision of care for these health risk behaviours to people with a mental health condition given the reported sub-optimal provision of preventive care to date (52).

Given the previously acknowledged benefit of co-design in mental health services (i.e. engaging consumers and carers in the design and development of health

services, practices, and systems) (65-69). utilising such a framework may prove beneficial when investigating strategies to increase the provision of care for health risk behaviours to people with a mental health condition. It is possible that a greater consideration of consumer and carer expectations regarding the planning and provision of health risk behaviour care may lead to more effective consumer engagement with services, leading to increased preventive care provision, as has been reported in other aspects of mental health care provision (66,67,69).

Perceptions that the health risk behaviours would have a positive impact on mental health were associated with expectations of care. Carers who held the view that adequate fruit and vegetable consumption would have a very positive impact on mental health were more likely to expect such care in mental health hospitals, GP, and NGOs; whilst carers who believed adequate physical activity would have a very positive impact on mental health were more likely to expect care for that risk behaviour in mental health hospitals. A perception that physical chronic disease health risk behaviours can have an impact on mental health is consistent with previous research among family carers (73). This perception of a bidirectional relationship was reported in a study where carers expressed expectations for smoking cessation care to be provided to clients with a mental health condition (74). Similar associations between carer expectations of smoking cessation care provision by services in this present study, and associations between carer expectations of physical activity and nutrition care provision by services in the current study, were observed (74). Carers who perceived that smoking cessation would have a positive impact on mental health were more likely to expect smoking cessation care in mental health hospitals, community mental health services, and non-government organisations. Such findings suggest that carers are aware of the impact of health risk behaviours on mental health. Given the prioritisation of mental over physical

health care by some services, reported by carers (85-87) and mental health professionals (88,89), further dissemination of evidence outlining the bidirectional relationship between physical and mental health (90-94) - and the knowledge of such a link by carers - may aid in increasing the provision of physical health care by services catering to clients with a mental health condition. It may be that carers' knowledge about the link between mental and physical health could be used to advocate for improved preventive care provision to be included in the mental health care being delivered to their family member.

Carer risk status was not associated with expectations of care for the relevant health risk behaviour in any service studied; similar to the findings of the previous study of carer expectations on smoking cessation care by the same service types (74). Such findings may suggest that carers' own risk status may not impact on their perceptions of whether physical health care would be beneficial for their family members with a mental health condition. Further research is required to explore if carers may have the potential to support health risk behaviour change among people with a mental health condition (which a limited body of research suggests could be possible (72,73,77,85,95,96)) and if their own risk status may impact on such a potential. Research among mental health professionals suggests that the provision of support to change health risk behaviours may be decreased in those professionals who engage in the same health risk behaviours themselves (55).

Carers who completed four years of high school were less likely, than carers who completed more than four years of high school, to expect physical activity care provision in community mental health services and GP. The association between carer education level and expectations of physical activity care in community mental health services and GP requires further investigation. Previous research has found that

individuals with lower levels of education have less knowledge of physical activity guidelines (97). A recent Australia study (n = 615) found that individuals were more likely to be physically active if they were aware of the benefits of physical activity (knowledge decreased risk of disease resulting from physical inactivity) (98). It may be that participating carers with more than four years of high school completed, may have had an increased knowledge of the benefits of physical activity and thus were more likely to expect care within community mental health services; however further research is needed to explore this speculation.

The results of this research should be considered in the context of the following limitations. This study had a low response rate (< 38%), yielding a small sample (n = 144), drawn from members of a carer support organisation within one regional health district in Australia. The experiences of these carers may not be representative of all carers of people with a mental health condition. However, the geographic and socio-economic profile of the participants were largely consistent with characteristics of carers in Australia (60). The self-reported nature of the data may also be prone to recall and social desirability biases (99); which would perhaps most likely result in an under-estimation of engagement in chronic disease risk behaviours. Some evidence does suggest however that older adults' recall of their health behaviours is reliable (100).

## **Conclusions**

Given the increasing need to recognise and include family carers as key stakeholders in the provision of care to people with a mental health condition, this research provides novel insight. Findings highlight the potential benefits that could be obtained by stronger engagement between health services and carers and people with a mental health condition regarding the benefits of physical activity and healthy fruit and



vegetable consumption for mental health. Further research is required to confirm the study findings and to explore more comprehensively how family carers may play a role in enhancing the effectiveness of physical health care provided by health and community services. However, this study reinforces the need for and appropriateness of health services to provide care for fruit and vegetable consumption and physical activity to people with a mental health condition in a systematic and routine manner.

**Abbreviations:**

BMI: Body Mass Index

CI: Confidence Interval

DALY: Disability Adjusted Life Years

GP: General Practice

NGO: Non-Government Organisation

NSW: New South Wales

OR: Odds Ratio

**Declarations:**

**Ethics approval and consent to participate:** The study was approved by the Hunter New England Human Research Ethics Committee (No. 13/06/19/5.11) and was registered with the University of Newcastle's Human Research Ethics Committee (No. H-2019-0141). All participants provided written informed consent.

**Consent for publication:** Not applicable.

**Availability of data and materials:** The dataset used and analysed during the current study is available from the corresponding author on reasonable request.

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## Appendices

### Appendix A: Journal Submission Guidelines

#### BMC Health Services Research Submission Guidelines

Retrieved 13 November 2019 from:

<https://bmchealthservres.biomedcentral.com/submission-guidelines>

#### **Aims and scope**

BMC Health Services Research is an open access, peer-reviewed journal that considers articles on all aspects of health services research, including delivery of care, management of health services, assessment of healthcare needs, measurement of outcomes, allocation of healthcare resources, evaluation of different health markets and health services organizations, international comparative analysis of health systems, health economics and the impact of health policies and regulations.

#### **Research article**

##### **Criteria**

Research articles should report on original primary research, but may report on systematic reviews of published research provided they adhere to the appropriate reporting guidelines which are detailed in our editorial policies. Please note that non-commissioned pooled analyses of selected published research will not be considered. Studies reporting descriptive results from a single institution will only be considered if analogous data have not been previously published in a peer reviewed journal and the conclusions provide distinct insights that are of relevance to a regional or international audience.

BMC Health Services Research strongly encourages that all datasets on which the conclusions of the paper rely should be available to readers. We encourage authors to ensure that their datasets are either deposited in publicly available repositories (where available and appropriate) or presented in the main manuscript or additional supporting files whenever possible. Please see Springer Nature's information on recommended repositories. Where a widely established research community expectation for data archiving in public repositories exists, submission to a community-endorsed, public repository is mandatory. A list of data where deposition is required, with the appropriate repositories, can be found on the Editorial Policies Page.

### **Preparing your manuscript**

The information below details the section headings that you should include in your manuscript and what information should be within each section.

Please note that your manuscript must include a 'Declarations' section including all of the subheadings (please see below for more information).

### **Title page**

The title page should: present a title that includes, if appropriate, the study design e.g.:

"A versus B in the treatment of C: a randomized controlled trial", "X is a risk factor for Y: a case control study", "What is the impact of factor X on subject Y: A systematic review" or for non-clinical or non-research studies a description of what the article reports. List the full names and institutional addresses for all authors if a collaboration group should be listed as an author, please list the Group name as an author. If you

would like the names of the individual members of the Group to be searchable through their individual PubMed records, please include this information in the “Acknowledgements” section in accordance with the instructions below.

Indicate the corresponding author.

### **Abstract**

The Abstract should not exceed 350 words. Please minimize the use of abbreviations and do not cite references in the abstract. Reports of randomized controlled trials should follow the CONSORT extension for abstracts. The abstract must include the following separate sections:

Background: the context and purpose of the study

Methods: how the study was performed and statistical tests used

Results: the main findings

Conclusions: brief summary and potential implications

Trial registration: If your article reports the results of a health care intervention on human participants, it must be registered in an appropriate registry and the registration number and date of registration should be stated in this section. If it was not registered prospectively (before enrollment of the first participant), you should include the words 'retrospectively registered'. See our editorial policies for more information on trial registration

### **Keywords**

Three to ten keywords representing the main content of the article.

**Background**

The Background section should explain the background to the study, its aims, a summary of the existing literature and why this study was necessary or its contribution to the field.

**Methods**

The methods section should include:

- the aim, design and setting of the study
- the characteristics of participants or description of materials
- a clear description of all processes, interventions and comparisons. Generic drug names should generally be used. When proprietary brands are used in research, include the brand names in parentheses
- the type of statistical analysis used, including a power calculation if appropriate

**Results**

This should include the findings of the study including, if appropriate, results of statistical analysis which must be included either in the text or as tables and figures.

**Discussion**

This section should discuss the implications of the findings in context of existing research and highlight limitations of the study.

**Conclusions**

This should state clearly the main conclusions and provide an explanation of the importance and relevance of the study reported.

**List of abbreviations**

If abbreviations are used in the text they should be defined in the text at first use, and a list of abbreviations should be provided.

**Declarations**

All manuscripts must contain the following sections under the heading 'Declarations':

- Ethics approval and consent to participate
- Consent for publication
- Availability of data and materials
- Competing interests
- Funding
- Authors' contributions
- Acknowledgements
- Authors' information (optional)

Please see below for details on the information to be included in these sections.

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**Ethics approval and consent to participate**

Manuscripts reporting studies involving human participants, human data or human tissue must:

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- include the name of the ethics committee that approved the study and the committee's reference number if appropriate

Studies involving animals must include a statement on ethics approval.

See our editorial policies for more information.

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If your manuscript contains any individual person's data in any form (including any individual details, images or videos), consent for publication must be obtained from that person, or in the case of children, their parent or legal guardian. All presentations of case reports must have consent for publication.

You can use your institutional consent form or our consent form if you prefer. You should not send the form to us on submission, but we may request to see a copy at any stage (including after publication).

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If your manuscript does not contain data from any individual person, please state "Not applicable" in this section.

### **Availability of data and materials**

All manuscripts must include an ‘Availability of data and materials’ statement. Data availability statements should include information on where data supporting the results reported in the article can be found including, where applicable, hyperlinks to publicly archived datasets analysed or generated during the study. By data we mean the minimal dataset that would be necessary to interpret, replicate and build upon the findings reported in the article. We recognise it is not always possible to share research data publicly, for instance when individual privacy could be compromised, and in such instances data availability should still be stated in the manuscript along with any conditions for access.

Data availability statements can take one of the following forms (or a combination of more than one if required for multiple datasets):

- The datasets generated and/or analysed during the current study are available in the [NAME] repository, [PERSISTENT WEB LINK TO DATASETS]
- The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.
- All data generated or analysed during this study are included in this published article [and its supplementary information files].
- The datasets generated and/or analysed during the current study are not publicly available due [REASON WHY DATA ARE NOT PUBLIC] but are available from the corresponding author on reasonable request.
- Data sharing is not applicable to this article as no datasets were generated or analysed during the current study.
- The data that support the findings of this study are available from [third party name] but restrictions apply to the availability of these data, which were used under license for the current study, and so are not publicly available. Data are

however available from the authors upon reasonable request and with permission of [third party name].

Not applicable. If your manuscript does not contain any data, please state 'Not applicable' in this section.

More examples of template data availability statements, which include examples of openly available and restricted access datasets, are available here.

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Hao Z, AghaKouchak A, Nakhjiri N, Farahmand A. Global integrated drought monitoring and prediction system (GIDMaPS) data sets. figshare. 2014.  
<http://dx.doi.org/10.6084/m9.figshare.853801>

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The datasets generated during and/or analysed during the current study are available in the [NAME] repository, [PERSISTENT WEB LINK TO DATASETS].[Reference number]

If you wish to co-submit a data note describing your data to be published in BMC Research Notes, you can do so by visiting our submission portal. Data notes support open data and help authors to comply with funder policies on data sharing. Co-published data notes will be linked to the research article the data support (example).



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### **Funding**

All sources of funding for the research reported should be declared. The role of the funding body in the design of the study and collection, analysis, and interpretation of data and in writing the manuscript should be declared.

### **Authors' contributions**

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### **Acknowledgements**

Please acknowledge anyone who contributed towards the article who does not meet the criteria for authorship including anyone who provided professional writing services or materials.

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## References

Examples of the Vancouver reference style are shown below.

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<http://tumor.informatics.jax.org/mtbwi/index.do>. Accessed 20 May 2013. If an author or group of authors can clearly be associated with a web link, such as for weblogs, then they should be included in the reference.

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Article within a journal

Smith JJ. The world of science. *Am J Sci*. 1999;36:234-5.

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Article within a journal by DOI

Slifka MK, Whitton JL. Clinical implications of dysregulated cytokine production. *Dig J Mol Med*. 2000; doi:10.1007/s801090000086.

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Book chapter, or an article within a book

Wyllie AH, Kerr JFR, Currie AR. Cell death: the significance of apoptosis. In: Bourne GH, Danielli JF, Jeon KW, editors. *International review of cytology*. London: Academic; 1980. p. 251-306.

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Saito Y, Hyuga H. Rate equation approaches to amplification of enantiomeric excess and chiral symmetry breaking. *Top Curr Chem*. 2007. doi:10.1007/128\_2006\_108.

Complete book, authored

Blenkinsopp A, Paxton P. *Symptoms in the pharmacy: a guide to the management of common illness*. 3rd ed. Oxford: Blackwell Science; 1998.

Online document

Doe J. Title of subordinate document. In: The dictionary of substances and their effects. Royal Society of Chemistry. 1999. [http://www.rsc.org/dose/title of subordinate document](http://www.rsc.org/dose/title%20of%20subordinate%20document). Accessed 15 Jan 1999.

#### Online database

Healthwise Knowledgebase. US Pharmacopeia, Rockville. 1998. <http://www.healthwise.org>. Accessed 21 Sept 1998.

#### Supplementary material/private homepage

Doe J. Title of supplementary material. 2000. <http://www.privatehomepage.com>. Accessed 22 Feb 2000.

#### University site

Doe, J: Title of preprint. <http://www.uni-heidelberg.de/mydata.html> (1999). Accessed 25 Dec 1999.

#### FTP site

Doe, J: Trivial HTTP, RFC2169. <ftp://ftp.isi.edu/in-notes/rfc2169.txt> (1999). Accessed 12 Nov 1999.

#### Organization site

ISSN International Centre: The ISSN register. <http://www.issn.org> (2006). Accessed 20 Feb 2007.

#### Dataset with persistent identifier

Zheng L-Y, Guo X-S, He B, Sun L-J, Peng Y, Dong S-S, et al. Genome data from sweet and grain sorghum (*Sorghum bicolor*). GigaScience Database. 2011. <http://dx.doi.org/10.5524/100012>.

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### **Preparing figures**

When preparing figures, please follow the formatting instructions below.

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Figures should be uploaded in the correct orientation.

Figure titles (max 15 words) and legends (max 300 words) should be provided in the main manuscript, not in the graphic file.

Figure keys should be incorporated into the graphic, not into the legend of the figure.

Each figure should be closely cropped to minimize the amount of white space surrounding the illustration. Cropping figures improves accuracy when placing the

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width of 85 mm for half page width figure

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Tables larger than one A4 or Letter page in length can be placed at the end of the document text file. Please cite and indicate where the table should appear at the relevant location in the text file so that the table can be added in the correct place during production.

Larger datasets, or tables too wide for A4 or Letter landscape page can be uploaded as additional files. Please see [below] for more information.

Tabular data provided as additional files can be uploaded as an Excel spreadsheet (.xls ) or comma separated values (.csv). Please use the standard file extensions.

Table titles (max 15 words) should be included above the table, and legends (max 300 words) should be included underneath the table.

Tables should not be embedded as figures or spreadsheet files, but should be formatted using 'Table object' function in your word processing program.

Color and shading may not be used. Parts of the table can be highlighted using superscript, numbering, lettering, symbols or bold text, the meaning of which should be explained in a table legend.

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All Additional files will be published along with the accepted article. Do not include files such as patient consent forms, certificates of language editing, or revised versions of the main manuscript document with tracked changes. Such files, if requested, should be sent by email to the journal's editorial email address, quoting the manuscript reference number. Please do not send completed patient consent forms unless requested.

Results that would otherwise be indicated as "data not shown" should be included as additional files. Since many web links and URLs rapidly become broken, BioMed Central requires that supporting data are included as additional files, or deposited in a recognized repository. Please do not link to data on a personal/departmental website. Do

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Additional files should be named "Additional file 1" and so on and should be referenced explicitly by file name within the body of the article, e.g. 'An additional movie file shows this in more detail [see Additional file 1]'.

For further guidance on how to use Additional files or recommendations on how to present particular types of data or information, please see [How to use additional files](#).



## Appendix B: Ethics Approval



15 July 2013

A/Professor J Bowman  
School of Psychology  
University of Newcastle

Dear Dr Bowman,

**Re: The Views of Carers in Addressing the 'SNAP' Risk Factors (13/06/19/5.11)**

**HNEHREC Reference No: 13/06/19/5.11**

**NSW HREC Reference No: LNR/13/HNE/243**

Thank you for submitting the above protocol for single ethical review. This project was considered to be eligible to be reviewed as Low and Negligible risk research and so was reviewed under the by the Hunter New England Human Research Ethics Committee expedited process at an executive meeting held on **15 July 2013**. This Human Research Ethics Committee is constituted and operates in accordance with the National Health and Medical Research Council's *National Statement on Ethical Conduct in Human Research (2007)* (National Statement) and the *CPMP/ICH Note for Guidance on Good Clinical Practice*. Further, this Committee has been accredited by the NSW Department of Health as a lead HREC under the model for single ethical and scientific review. The Committee's Terms of Reference are available from the Hunter New England Local Health District website: [http://www.hnehealth.nsw.gov.au/Human\\_Research\\_Ethics](http://www.hnehealth.nsw.gov.au/Human_Research_Ethics).

I am pleased to advise that following acceptance under delegated authority of the requested clarifications and changes to the Information Statement by Dr Nicole Gerrand Manager, Research Ethics & Governance, the Hunter New England Human Research Ethics Committee has granted ethical approval of the above project.

The following documentation has been reviewed and approved by the Hunter New England Human Research Ethics Committee:

- For the Information Statement (Version 1 dated 30 May 2013);
- For the Consent Form (Version 1 dated 30 May 2013); and
- For the Views of Carers Towards Addressing Physical Health Risk Behaviours Survey (Version dated 30 May 2013)

For the protocol: **The Views of Carers in Addressing the 'SNAP' Risk Factors**

Approval has been granted for this study to take place at the following site:

- **Hunter New England Local Health District**

**Hunter New England Research Ethics & Governance Unit**

(Locked Bag No 1)

(New Lambton NSW 2305)

Telephone (02) 49214 950 Facsimile (02) 49214 818

Email: [hnehrec@hnehealth.nsw.gov.au](mailto:hnehrec@hnehealth.nsw.gov.au)

[http://www.hnehealth.nsw.gov.au/research\\_ethics\\_and\\_governance\\_unit](http://www.hnehealth.nsw.gov.au/research_ethics_and_governance_unit)

- Approval from the Hunter New England Human Research Ethics Committee for the above protocol is given for a maximum of **3** years from the date of this letter, after which a renewal application will be required if the protocol has not been completed.

The *National Statement on Ethical Conduct in Human Research (2007)*, which the Committee is obliged to adhere to, include the requirement that the committee monitors the research protocols it has approved. In order for the Committee to fulfil this function, it requires:

- A report of the progress of the above protocol be submitted at 12 monthly intervals. Your review date is **July 2014**. A proforma for the annual report will be sent two weeks prior to the due date.
- A final report must be submitted at the completion of the above protocol, that is, after data analysis has been completed and a final report compiled. A proforma for the final report will be sent two weeks prior to the due date.
- All variations or amendments to this protocol, including amendments to the Information Sheet and Consent Form, must be forwarded to and approved by the Hunter New England Human Research Ethics Committee prior to their implementation.
- The Principal Investigator will immediately report anything which might warrant review of ethical approval of the project in the specified format, including:
  - any serious or unexpected adverse events
    - Adverse events, however minor, must be recorded as observed by the Investigator or as volunteered by a participant in this protocol. Full details will be documented, whether or not the Investigator or his deputies considers the event to be related to the trial substance or procedure. These do not need to be reported to the Hunter New England Human Research Ethics Committee
    - Serious adverse events that occur during the study or within six months of completion of the trial at your site should be reported to the Manager, Research Ethics & Governance, of the Hunter New England Human Research Ethics Committee as soon as possible and at the latest within 72 hours.
    - All other safety reporting should be in accordance with the NHMRC's Safety Monitoring Position Statement – May 2009 available at [http://www.nhmrc.gov.au/health\\_ethics/hrecs/reference/files/090609\\_nhmrc\\_position\\_statement.pdf](http://www.nhmrc.gov.au/health_ethics/hrecs/reference/files/090609_nhmrc_position_statement.pdf)
    - Serious adverse events are defined as:
      - Causing death, life threatening or serious disability.
      - Cause or prolong hospitalisation.
      - Overdoses, cancers, congenital abnormalities whether judged to be caused by the investigational agent or new procedure or not.
  - Unforeseen events that might affect continued ethical acceptability of the project.
- If for some reason the above protocol does not commence (for example it does not receive funding); is suspended or discontinued, please inform Dr Nicole Gerrand, as soon as possible.

**Hunter New England Research Ethics & Governance Unit**

(Locked Bag No 1)

(New Lambton NSW 2305)

Telephone (02) 49214 950 Facsimile (02) 49214 818

Email: [hnehrec@hnehealth.nsw.gov.au](mailto:hnehrec@hnehealth.nsw.gov.au)

[http://www.hnehealth.nsw.gov.au/research\\_ethics\\_and\\_governance\\_unit](http://www.hnehealth.nsw.gov.au/research_ethics_and_governance_unit)

**You are reminded that this letter constitutes ethical approval only. You must not commence this research project at a site until separate authorisation from the Chief Executive or delegate of that site has been obtained.**

A copy of this letter must be forwarded to all site investigators for submission to the relevant Research Governance Officer.

Should you have any concerns or questions about your research, please contact Dr Gerrand as per the details at the bottom of the page. The Hunter New England Human Research Ethics Committee wishes you every success in your research.

Please quote **13/06/19/5.11** in all correspondence.

The Hunter New England Human Research Ethics Committee wishes you every success in your research.

Yours faithfully

For: Professor M Parsons  
Chair  
Hunter New England Human Research Ethics Committee

**Hunter New England Research Ethics & Governance Unit**

(Locked Bag No 1)

(New Lambton NSW 2305)

Telephone (02) 49214 950 Facsimile (02) 49214 818

Email: [hnehrec@hnehealth.nsw.gov.au](mailto:hnehrec@hnehealth.nsw.gov.au)

[http://www.hnehealth.nsw.gov.au/research\\_ethics\\_and\\_governance\\_unit](http://www.hnehealth.nsw.gov.au/research_ethics_and_governance_unit)

## HUMAN RESEARCH ETHICS COMMITTEE

## Notification of Expedited Approval

To Chief Investigator or Project Supervisor:	Professor Jennifer Bowman
Cc Co-investigators / Research Students:	Miss Jacqueline Bailey Doctor Tara Clinton-Mcharg
Re Protocol:	Secondary analysis: Exploring carers' expectations of chronic disease risk behaviour care provided to people with a mental illness
Date:	27-May-2019
Reference No:	H-2019-0141
Date of Initial Approval:	27-May-2019

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

Your submission was considered under **L1 Low Risk Research Expedited** review by the Ethics Administrator.

We are pleased to advise that the decision on your submission is **Approved** effective **27-May-2019**.

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-2019-0141**.

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 (via RIMS at <https://rims.newcastle.edu.au/login.asp>) 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* (via RIMS at <https://rims.newcastle.edu.au/login.asp>). 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.

**Human Research Ethics Committee**

*For communications and enquiries:*

**Human Research Ethics Administration**

Research & Innovation Services

Research Integrity Unit

The University of Newcastle

Callaghan NSW 2308

T +61 2 492 17894

[Human-Ethics@newcastle.edu.au](mailto:Human-Ethics@newcastle.edu.au)

RIMS website - <https://RIMS.newcastle.edu.au/login.asp>

*Linked University of Newcastle administered funding:*

Funding body	Funding project title	First named investigator	Grant Ref
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## Appendix C: Information Statement and Consent Form



Jenny Bowman  
School of Psychology, the University of Newcastle  
University Drive, Callaghan, 2308  
Phone: 49215958  
Fax: 49216980  
Jenny.Bowman@newcastle.edu.au

**Information Statement for the Research Project:  
Exploring the Views of Carers in Addressing the 'SNAP' Risk Factors for People  
with Mental Illness  
Jenny Bowman, Paula Wye and Jacqueline Bailey**

Document Version 1; dated 30/05/2013

You are invited to participate in the research project identified above which is being conducted by Jenny Bowman, Principal investigator, Paula Wye, investigator, and Jacqueline Bailey, student researcher, from the School of Psychology at the University of Newcastle.

The research is part of Jacqueline Bailey's studies at the University of Newcastle, supervised by Jenny Bowman and Paula Wye from the School of Psychology.

***Why is the research being done?***

The purpose of the research is to explore the views of carers of people with mental illness in addressing physical health behaviour risks of the people they care for. The physical health risk behaviours being investigated are Smoking tobacco, Nutrition (in terms of fruit and vegetable consumption), harmful Alcohol use and inadequate Physical activity (SNAP). The risk status of both the carer and the person being cared for will be explored. Carers will also be asked their opinions on their role in addressing the physical health risks of the person they care for and whether it is appropriate for physical health behaviours to be addressed in various health care settings.

In the past carers have not been asked their opinions regarding physical health risks so this study will give carers the opportunity to share their opinions which will make a valuable contribution to research regarding the physical health risk behaviours of people with mental illness.

***Who can participate in the research?***

Any carer who is over the age of 18 is invited to participate in our research. You will only be contacted through your carers support organisation from which you received this statement. Therefore you must be affiliated with a carers support organisation to participate in the research.

***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.

***What would you be asked to do?***

If you agree to participate, you will be asked to participate in an online survey or a paper copy can be made available to people without internet access.

Your support organisation will send you a link to the survey along with a unique identification number. You will need to enter this number when completing the survey. This number ensures that the researchers will not be given your name, they will only be provided with the responses you provide in the survey. Your responses will only be made available to the researchers; your support organisation will not be given access to any of your responses. If not completing the survey online, a similar process will be used for distribution and return of paper surveys where you cannot be identified by the researchers.

You will be asked some basic personal questions such as your age, marital, education and work status and similar questions will be asked about the person you care for. You will also be asked your opinions on addressing the physical health risks of the person you care for and in particular asked about any personal experiences you might have had with smoke free policy or smoking cessation support in inpatient or community mental health settings.

***How much time will it take?***

The survey should take between 20-40 minutes to complete.

***What are the risks and benefits of participating?***

There are no risks to participating in this study.

By participating in this study you will be able to share your opinions regarding the physical health risks of the person you care for. Your responses could help guide





practice and policy of care provision for mental health services and/or guide the design of future health behaviour interventions which include a role for carers in helping to address the physical health risk behaviours of those they care for.

***How will your privacy be protected?***

Your privacy will be protected as the researchers will never be given any identifying information such as your name or address. You will be contacted through your support organisation to ensure your privacy. Your organisation will not be given access to any of the information you provide individually in the survey. Any report of the study will not identify individual responses, just the combined views of all participants.

***How will the information collected be used?***

The information collected in the survey will be analysed and used in a thesis to be submitted for Miss Jacqueline Bailey's Bachelor of Psychology. A short presentation on the thesis will also be conducted at a University Conference in November, 2013. The information will also be used to create a brief report, in lay language, of the findings which will be made available to participants, support organisations and Hunter New England Mental Health at the completion of the study. The information collected may also be written up for publication in a scientific journal. At no time will information be written up that identifies any individual.

***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 there is anything you do not understand, or you have questions, contact your support organisation or the researchers.

***Further information***

If you would like further information you can email any queries to your support organisation which will forward your questions to the research team who will then provide answers which can then be distributed to you. Otherwise you can contact the researchers directly; you do not need to provide your name.

Jenny Bowman, Principal Investigator

Phone: 49215958

Email: [Jenny.Bowman@newcastle.edu.au](mailto:Jenny.Bowman@newcastle.edu.au)

**NEWCASTLE** | **CENTRAL COAST** | **PORT MACQUARIE** | **SINGAPORE**  
The University of Newcastle   enquirycentre@newcastle.edu.au   T +61 2 4921 5000  
Callaghan NSW 2308 Australia   CRICOS Provider Number: 00109J   www.newcastle.edu.au



Paula Wye, Investigator  
Phone: 0458090467  
Email: [Paula.Wye@hnehealth.gov.au](mailto:Paula.Wye@hnehealth.gov.au)  
Based in Tamworth

Jacqueline Bailey, Student Researcher  
Phone: 0400343044  
Email: [jacqueline.m.bailey@uon.edu.au](mailto:jacqueline.m.bailey@uon.edu.au)

Thank you for considering this invitation.

Jenny Bowman  
Principal Investigator and Supervisor

#### ***Complaints about this research***

This project has been approved by the Hunter New England Human Research Ethics Committee, Approval No. 13/06/19/5.11

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 Executive Officer, Dr Nicole Gerrand, Hunter New England Health, Locked Bag 1, New Lambton, NSW, 2305, Australia, telephone (02) 49214950, fax (02) 49214818, email [nicole.gerrand@hnehealth.nsw.gov.au](mailto:nicole.gerrand@hnehealth.nsw.gov.au)

## Carers Views: Addressing Physical Health Risk Behaviours (version 2, 26/7/13)

Thank you for taking the time to complete this survey.

Please complete the survey only once. As we will be contacting carers via a number of services, it is possible that you could come across the survey a couple of times.

Some of the questions in this survey are about you, and some are about a person you care for who has a mental illness, and who is 18 years of age or older. You should only be completing this if you are aged 18 years or older, and provide care to someone with a mental illness.

If you care for more than one person with a mental illness, we will ask you to select just one person to answer the survey questions about.

Most of the questions in this survey require you to make a response by replacing a cross or a tick in a circle corresponding to your answer.

Not all questions may be relevant to you and you will be instructed to skip certain questions where appropriate. Depending on the answer you give, a skip statement will be alongside and look like this (Skip question 7, Go to question 8 on page 10).

1. I consent to completing this survey. I understand that my personal information will remain confidential to the researchers and that the researchers will only gain the information I provide in my responses.

I understand that the survey is part of a university project and will be conducted as described in the Information Statement, a copy of which I have received.

I have had the opportunity to have questions answered to my satisfaction.

Please check the box to indicate your consent.

☐

2. Please enter your Identification Number (ID) provided to you by your support organisation. Your Identification Number is attached to a piece of paper attached to this survey. It is a five digit number.

Please write your ID number here:

## Appendix D: Recruitment Material



Office 2, Tenison Woods Centre  
78 Wynter Street  
Tare NSW 2430  
PO Box 1121  
Tare NSW 2430  
Phone: (02) 6551 4333  
Fax: (02) 6551 4200  
infohne@carerassist.org.au  
www.carerassist.org.au

Dear [insert name],

We are collaborating with a research team from the University of Newcastle to examine the views and experiences of carers with regards to the provision of care for 'physical' health risk behaviours for people with mental illness.

The researchers have created a survey which can be completed online or, for those who don't have internet access as a pen and paper questionnaire. We are assisting by making the survey as available to as many of our clients as possible. It should take between 20 and 40 minutes to complete.

In the past carers have not been asked their opinions regarding these issues, and this is an important opportunity to share your views and experiences so that carers as a group may be more included in future policies and decisions.

The survey asks you about the health behaviours of smoking, fruit and vegetable consumption, alcohol use and physical activity. You will be asked questions about the health risk behaviours of both the person you care for and yourself. You will also be asked your opinions on the roles of health care services and carers in addressing these health risk behaviours.

It would be great if you would be able to complete the survey online. All you need to do is type the following survey link into the address bar of your internet. You will then need to enter the following Identification number in order to complete the survey.

Survey Link: <https://psych.newcastle.edu.au/survey/index.php?sid=41251&newtest=Y&lang=en>

Your Identification Number: [insert ID number]

If you would prefer to complete a paper version of the survey one has been attached to this letter with a reply paid envelope. You can also return any completed surveys to any Carer Assist office if you prefer.

We have attached an information statement to this letter. This document is from the researchers you should read this before you complete the survey.

If you have any trouble accessing the survey online or have any questions about the survey you can contact the researchers directly or let us know and we will ask them for you. If you would like to contact the researchers they can be contacted by phone or email.

Jenny Bowman, Principal Investigator  
Phone: 49215958  
Email: [Jenny.Bowman@newcastle.edu.au](mailto:Jenny.Bowman@newcastle.edu.au)

Jacqueline Bailey, Student Researcher  
Phone: 0400343044  
Email: [jacqueline.m.bailey@uon.edu.au](mailto:jacqueline.m.bailey@uon.edu.au)

Thank you for considering this invitation.

If you have any questions don't hesitate to contact us or Jenny Bowman or Jacqueline Bailey.

INFORMATION — EDUCATION — ADVOCACY — SUPPORT

ABN 58 903 786 913  
Funded by the NSW Ministry of Health

## Appendix E: Research Survey

The Views of Carers Towards Addressing Physical Health Risk Behaviours

## Carers Views: Addressing Physical Health Risk Behaviours (version 2, 26/7/13)

Thank you for taking the time to complete this survey.

Please complete the survey only once. As we will be contacting carers via a number of services, it is possible that you could come across the survey a couple of times.

Some of the questions in this survey are about you, and some are about a person you care for who has a mental illness, and who is 18 years of age or older. You should only be completing this if you are aged 18 years or older, and provide care to someone with a mental illness.

If you care for more than one person with a mental illness, we will ask you to select just one person to answer the survey questions about.

Most of the questions in this survey require you to make a response by replacing a cross or a tick in a circle corresponding to your answer.

Not all questions may be relevant to you and you will be instructed to skip certain questions where appropriate. Depending on the answer you give, a skip statement will be alongside and look like this (Skip question 7, Go to question 8 on page 10).

1. I consent to completing this survey. I understand that my personal information will remain confidential to the researchers and that the researchers will only gain the information I provide in my responses.

I understand that the survey is part of a university project and will be conducted as described in the Information Statement, a copy of which I have received.  
I have had the opportunity to have questions answered to my satisfaction.

Please check the box to indicate your consent.

☐

2. Please enter your Identification Number (ID) provided to you by your support organisation. Your Identification Number is attached to a piece of paper attached to this survey. It is a five digit number.

Please write your ID number here:

We would like to begin by asking some questions about a person you care for who has a mental illness, and who is aged 18 years or older...

3. How many people with a mental illness, 18 years or older, are you currently caring for?  
Please choose only one of the following:

- ☐ 1 (*Skip question 4, Go to question 5 on page 3*)  
☐ 2  
☐ 3  
☐ 4 or more

For the remaining questions in the survey which ask about the person you care for please answer questions about only one of the people you care for.

If you care for multiple people but only live with one person over the age of 18 years then answer all questions about the person that you live with.

If you live with multiple people with a mental illness that you care for then you can choose which person you want to tell us about as long as they are over 18 years old.

4. Can you please tell us why you chose to talk about that person?

You might choose the person you live with, who you spend the most time with, who needs the most care or the person you have been caring for the longest.

It is important that you answer the rest of the questions in this survey about that person only.

Please choose all that apply:

- ☐ I live with this person  
☐ This person needs the most care  
☐ This person is acutely unwell and cannot care for themselves  
☐ I spend the most time with this person  
☐ I have been caring for this person the longest  
☐ I am closest with this person  
☐ I receive a carer pension for this person  
☐ I spend more of my energy on this person than the other people I care for  
☐ Other:

Please describe



For the following questions about the person you care for, please answer in terms of your 'usual' relationship with them.

For example, if the person you care for usually lives with you but is in an inpatient facility at the current time, please answer questions based on what your behaviours are like when you are living together.

5. How many years have you been caring for this person?

Please choose only one of the following:

- ☐ Less than one year
- ☐ 1-2 years
- ☐ 3-10 years
- ☐ 11-20 years
- ☐ more than 20 years

6. Are you living in the same residence as the person you provide care for?

Please choose only one of the following:

- ☐ Yes
- ☐ No
- ☐ Sometimes

7. What is your relationship to the person you are providing care for?

What are you to them? For example, if you are their mother select 'parent'.

Please choose only one of the following:

I am their:

- ☐ Parent
- ☐ Partner
- ☐ Child
- ☐ Sibling (brother or sister)
- ☐ Neighbour
- ☐ Friend
- ☐ Other:

Please describe

## The Views of Carers Towards Addressing Physical Health Risk Behaviours

8. How many days a week would you usually spend time with the person you care for?

9. Are you the sole carer of this person?

Please choose only one of the following:

- ☐ Yes *(skip question 10. Go to question 11 on this page)*  
☐ No

10. If no, who else cares for this person?

Please choose all that apply:

- ☐ My spouse/ partner  
☐ Another relative of the person being cared for  
☐ Neighbour  
☐ Friend of mine  
☐ Friend of the person being cared for  
☐ Other

11. What is the age of the person you care for?

12. What is their gender?

- ☐ Female  
☐ Male



**13. What is the primary psychiatric diagnosis of the person you care for?**

Please choose only one of the following:

- ☐ Schizophrenia
- ☐ Depression
- ☐ Anxiety disorder
- ☐ Panic disorder
- ☐ Bipolar disorder
- ☐ Post-traumatic stress disorder
- ☐ Eating disorder
- ☐ Personality disorder
- ☐ Dementia
- ☐ Unsure
- ☐ Other:

Please describe

**14. What is their current employment status?**

- ☐ Employed full time
- ☐ Employed part time or casual
- ☐ Not currently employed- but seeking employment
- ☐ Not currently employed- not seeking employment

**15. Are they of Aboriginal or Torres Strait Islander origin?**

- ☐ Yes, Aboriginal origin
- ☐ Yes, Torres Strait Islander origin
- ☐ Yes, both Aboriginal and Torres Strait Islander origin
- ☐ No

## The Views of Carers Towards Addressing Physical Health Risk Behaviours

16. What is their present marital status?

- ☐ Never married
- ☐ Married or living together in a relationship
- ☐ Divorced/ Separated
- ☐ Widowed

17. What is the highest level of education they have achieved?

- ☐ No formal schooling or attended primary school only
- ☐ Some high school with less than four years completed
- ☐ School certificate, Intermediate, Year 10, 4<sup>th</sup> Form
- ☐ Completed HSC, Leaving, Year 12 or 6<sup>th</sup> Form
- ☐ TAFE certificate or diploma
- ☐ University, College of Advanced Education, Degree or higher

The questions in this next section are about the physical health behaviours of the person you care for.

The questions are about smoking, fruit and vegetable consumption, alcohol consumption and physical activity.

Please answer these questions about the person you care for.

18. How many serves of vegetables does the person you care for usually eat each day?

One serve of vegetables or legumes is equal to: ½ cup green leafy vegetables like cabbage, spinach, Brussels sprouts or cauliflower; ½ cup green beans, zucchini, mushrooms, turnips, swede or eggplant; 1 cup salad vegetables such as tomato, capsicum and celery; 1 medium sized potato or parsnip.

Please choose only one of the following:

- ☐ 0
- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5 or more
- ☐ Unsure

## The Views of Carers Towards Addressing Physical Health Risk Behaviours

## 19. How many serves of fruit do they usually eat each day?

One serve of fruit is equal to: 150 grams (5.29 oz.) of fresh fruit or; one medium sized fruit (e.g. apple); 2 smaller pieces (e.g. apricots); 1 cup canned or chopped fruit; ½ cup/ 125 ml (5 fl oz.) 100% fruit juice; 1.5 tablespoon dried fruit (e.g. sultanas or 4 dried apricot halves).

Please choose only one of the following:

- ☐ 0
- ☐ 1
- ☐ 2 or more
- ☐ Unsure

## 20. How many days a week does the person you care for usually do 30 minutes or more of physical activity?

By physical activity we mean any activity that increases your heart rate or makes you breathe harder than normal. This can include brisk walking, swimming, team sports or even things like gardening. You can add up your total time during the day, for example walking to the shops and back.

Please choose only one of the following:

- |                         |  |
|-------------------------|--|
| <input type="radio"/> 0 | <input type="radio"/> 6  |
| <input type="radio"/> 1 | <input type="radio"/> 7, everyday  |
| <input type="radio"/> 2 | <input type="radio"/> Unsure   |
| <input type="radio"/> 3 | <input type="radio"/> Can't do physical activity for health or treatment reasons |
| <input type="radio"/> 4 |  |
| <input type="radio"/> 5 |  |

## 21. Do they live in a smoke-free household?

By this we mean people may be smokers but no smoking is permitted inside the residence.

Please choose only one of the following:

- ☐ Yes
- ☐ No
- ☐ Unsure

## The Views of Carers Towards Addressing Physical Health Risk Behaviours

22. Is the person you care for a smoker of any tobacco products?

This could include 'roll your own', cigars, pipe etc.

Please choose only one of the following:

- ☐ Yes, daily [\(go to the next question\)](#)
- ☐ Yes, at least once a week [\(go to the next question\)](#)
- ☐ Yes, less than once a week [\(go to the next question\)](#)
- ☐ No, quit within the last 4 months [\(go to question 30 on page 10\)](#)
- ☐ No, quit longer than 4 months ago [\(go to question 30 on page 10\)](#)
- ☐ No, never smoked [\(go to question 31 on page 10\)](#)

23. How many cigarettes (or cigars or pipes) are they usually smoking each day?

Please choose only one of the following:

- ☐ 10 or less
- ☐ 11 to 20
- ☐ 21 to 30
- ☐ 31 or more
- ☐ Unsure

24. How soon after waking are they usually having their first smoke?

Please choose only one of the following:

- ☐ Within 5 minutes
- ☐ 6 to 30 minutes
- ☐ 31 to 60 minutes
- ☐ More than 60 minutes
- ☐ Unsure

25. In the last year, did they ever on purpose quit smoking for at least 24 hours?

Please choose only one of the following:

- ☐ Yes
- ☐ No
- ☐ Unsure

## The Views of Carers Towards Addressing Physical Health Risk Behaviours

26. How many times have they ever made an attempt to quit smoking in the past?

Please choose only one of the following:

- ☐ Never (*Skip question 27. Go to question 28 on this page*)
- ☐ Once
- ☐ 2 to 4 attempts
- ☐ 5 or more attempts
- ☐ Unsure (*Skip question 27. Go to question 28 on this page*)

27. How long ago was their last quit attempt?

Please choose only one of the following:

- ☐ Currently trying to quit
- ☐ 3 months or less
- ☐ Between 3 and 12 months ago
- ☐ More than one year ago
- ☐ Unsure

28. Do they plan to quit smoking?

Please choose only one of the following:

- ☐ Yes
- ☐ No (*Skip question 29. Go to question 30 on page 10*)
- ☐ Unsure (*Skip question 29. Go to question 30 on page 10*)

29. When do they plan to quit smoking?

Please choose only one of the following:

- ☐ Within the next month
- ☐ Within the next 2 to 6 months
- ☐ More than 6 months
- ☐ Unsure

## The Views of Carers Towards Addressing Physical Health Risk Behaviours

30. Which of the following have they ever used in an attempt to quit smoking?

Please choose all that apply:

- |  |   |
|--|---|
| <input type="radio"/> Nicotine Replacement Therapy (NRT); such as the patches or the chewing gum |   |
| <input type="radio"/> E cigarette  | <input type="radio"/> Zyban (Bupropion)   |
| <input type="radio"/> Quitline   | <input type="radio"/> Other medications   |
| <input type="radio"/> GP (doctor) advice   | <input type="radio"/> Cold turkey (they just stopped on their own with no assistance) |
| <input type="radio"/> Hypnosis   | <input type="radio"/> None of these   |
| <input type="radio"/> Acupuncture  |   |
| <input type="radio"/> Champix (Varenicline)  |   |

31. How often does the person you care for have a drink containing alcohol?

Please choose only one of the following:

- ☐ Never, not drinking alcohol ([go to question 34 on page 13](#))
- ☐ Monthly or less
- ☐ 2 to 4 times a month
- ☐ 2 to 3 times a week
- ☐ 4 or more times a week
- ☐ Unsure ([go to question 34 on page 13](#))

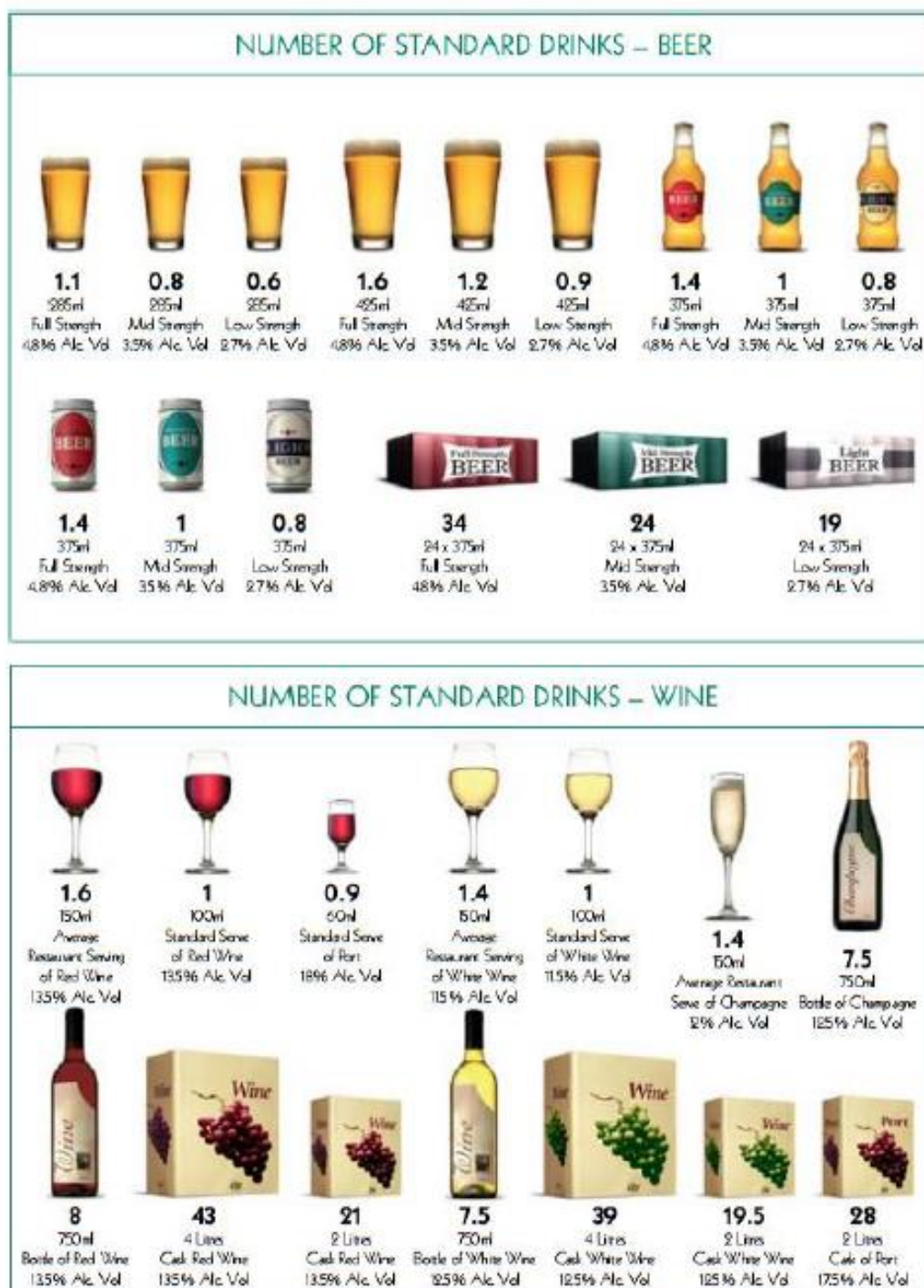
32. How many standard drinks would they have on a typical drinking day?

Please refer to the diagrams on the following pages as a guide of standard drink measurements.

Please choose only one of the following:

- ☐ 1 to 2
- ☐ 3 to 4
- ☐ 5 to 6
- ☐ 7 to 9
- ☐ 10 or more
- ☐ Unsure

## The Views of Carers Towards Addressing Physical Health Risk Behaviours



The Views of Carers Towards Addressing Physical Health Risk Behaviours



\* Ready-to-Drink



## The Views of Carers Towards Addressing Physical Health Risk Behaviours

33. How often would they have four or more standard drinks on one occasion?

Please choose only one of the following:

- ☐ Never  
☐ Less than monthly  
☐ Monthly  
☐ Weekly  
☐ Daily or almost daily  
☐ Unsure

34. In the last year, has the person you care for ever expressed an interest in improving any of the following health behaviours?

Please choose the appropriate response for each item:

You may want to answer Not Applicable for "Alcohol" or "Smoking" if the person you care for is not a smoker or does not drink alcohol.

	Yes	No	Unsure	Not Applicable, not a smoker or not drinking alcohol
Fruit and vegetable consumption	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Physical activity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Alcohol	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Smoking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

35. Do you think any of the following factors are health risks for the person you care for?

Please choose the appropriate response for each item:

	Yes	No	Unsure	Not Applicable, not a smoker or not drinking alcohol
Not eating enough fruit and vegetables	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Not doing enough physical activity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Alcohol use	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Smoking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Mental Health Services**

The next few questions are about whether mental health services should provide care for physical health behaviours for people with mental illness.

They are important for everyone to answer.

We would like you to answer the following questions even if the person you care for has not visited that type of service.

Please provide one answer for each service listed in each question.

36. For someone with a mental illness, do you think the services below should provide care for smoking?

	Yes	No	Unsure
Hunter New England mental health hospital/ unit (e.g. The Mater; Banksia)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hunter New England community mental health service/ team (e.g. Newcastle Mental Health Services)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Doctor/ General Practitioner (GP)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Non-Government Organisation (NGO) (e.g. NEAMI, Richmond PRA)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Psychiatrist in private practice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Psychologist in private practice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Community drug and alcohol service	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
General hospital emergency service	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Private mental health hospital/ unit (e.g. Warners Bay Private Hospital, Lake Side Clinic)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## The Views of Carers Towards Addressing Physical Health Risk Behaviours

37. For someone with a mental illness, do you think the services below should provide care for fruit and vegetable consumption?

	Yes	No	Unsure
Hunter New England mental health hospital/ unit	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hunter New England community mental health service/ team	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Doctor/ General Practitioner (GP)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Non-Government Organisation (NGO)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Psychiatrist in private practice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Psychologist in private practice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Community drug and alcohol service	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
General hospital emergency service	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Private mental health hospital/ unit	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

38. For someone with a mental illness, do you think the services below should provide care for alcohol?

	Yes	No	Unsure
Hunter New England mental health hospital/ unit	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hunter New England community mental health service/ team	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Doctor/ General Practitioner (GP)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Non-Government Organisation (NGO)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Psychiatrist in private practice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Psychologist in private practice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Community drug and alcohol service	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
General hospital emergency service	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Private mental health hospital/ unit	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## The Views of Carers Towards Addressing Physical Health Risk Behaviours

39. For someone with a mental illness, do you think the services below should provide care for physical activity?

	Yes	No	Unsure
Hunter New England mental health hospital/ unit	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hunter New England community mental health service/ team	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Doctor/ General Practitioner (GP)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Non-Government Organisation (NGO)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Psychiatrist in private practice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Psychologist in private practice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Community drug and alcohol service	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
General hospital emergency service	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Private mental health hospital/ unit	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

This set of questions is about mental health services that the person you care for may have visited. We want to know if the physical health behaviours of the person you care for have been discussed through these services. If the person you care for hasn't used a particular type of service, then you will be directed to skip the remaining questions about that type of service, and go to the next type of service.

Care received from a Hunter New England mental health hospital or inpatient unit e.g. the Mater; Banksia.

40. When was the most recent time that the person you provide care for attended (received care from) a Hunter New England mental health hospital/ unit?

- ☐ Within the last year
- ☐ More than 1 year ago
- ☐ Never [\(Go to question 49, on page 19\)](#)
- ☐ Unsure [\(Go to question 49, on page 19\)](#)

41. Has the person you care for ever been asked, when attending a Hunter New England mental health hospital/ unit, if they smoke?

- ☐ Yes
- ☐ No [\(Go to question 43, on this page\)](#)
- ☐ Unsure [\(Go to question 43, on this page\)](#)

42. And if so, were they provided with any advice, treatment or referral relating to smoking?

- ☐ Yes
- ☐ No
- ☐ Unsure

43. Has the person you care for ever been asked, when attending a Hunter New England mental health hospital/ unit, about their fruit and vegetable consumption?

- ☐ Yes
- ☐ No [\(Go to question 45, on page 18\)](#)
- ☐ Unsure [\(Go to question 45, on page 18\)](#)

44. And if so, were they provided with any advice, treatment or referral relating to their fruit and vegetable consumption?

- ☐ Yes
- ☐ No
- ☐ Unsure

45. Has the person you care for ever been asked, when attending a Hunter New England mental health hospital/ unit, if they drink alcohol?

- ☐ Yes
- ☐ No [\*\(Go to question 47, on this page\)\*](#)
- ☐ Unsure [\*\(Go to question 47, on this page\)\*](#)

46. And if so, were they provided with any advice, treatment or referral relating to their alcohol use?

- ☐ Yes
- ☐ No
- ☐ Unsure

47. Has the person you care for ever been asked, when attending a Hunter New England mental health hospital/ unit about their physical activity levels?

- ☐ Yes
- ☐ No [\*\(Go to question 49, on page 19\)\*](#)
- ☐ Unsure [\*\(Go to question 49, on page 19\)\*](#)

48. And if so, were they provided with any advice, treatment or referral relating to their physical activity levels?

- ☐ Yes
- ☐ No
- ☐ Unsure

Care received from a Hunter New England community mental health service/ team e.g. Newcastle Mental Health Services, Lake Macquarie Mental health services.

49. When was the most recent time that the person you provide care for attended (received care from) a Hunter New England community mental health service/ team?

- ☐ Within the last year
- ☐ More than 1 year ago
- ☐ Never *(Go to question 58, on page 21)*
- ☐ Unsure *(Go to question 58, on page 21)*

50. Has the person you care for ever been asked, when attending a Hunter New England community mental health service/ team, if they smoke?

- ☐ Yes
- ☐ No *(Go to question 52, on this page)*
- ☐ Unsure *(Go to question 52, on this page)*

51. And if so, were they provided with any advice, treatment or referral relating to smoking?

- ☐ Yes
- ☐ No
- ☐ Unsure

52. Has the person you care for ever been asked, when attending a Hunter New England community mental health service/ team, about their fruit and vegetable consumption?

- ☐ Yes
- ☐ No *(Go to question 54, on page 20)*
- ☐ Unsure *(Go to question 54, on page 20)*

## The Views of Carers Towards Addressing Physical Health Risk Behaviours

53. And if so, were they provided with any advice, treatment or referral relating to their fruit and vegetable consumption?

- ☐ Yes
- ☐ No
- ☐ Unsure

54. Has the person you care for ever been asked, when attending a Hunter New England community mental health service/ team, if they drink alcohol?

- ☐ Yes
- ☐ No *(Go to question 56, on this page)*
- ☐ Unsure *(Go to question 56, on this page)*

55. And if so, were they provided with any advice, treatment or referral relating to their alcohol use?

- ☐ Yes
- ☐ No
- ☐ Unsure

56. Has the person you care for ever been asked, when attending a Hunter New England community mental health service/ team, about their physical activity levels?

- ☐ Yes
- ☐ No *(Go to question 58, on page 21)*
- ☐ Unsure *(Go to question 58, on page 21)*

57. And if so, were they provided with any advice, treatment or referral relating to their physical activity levels?

- ☐ Yes
- ☐ No
- ☐ Unsure



The Views of Carers Towards Addressing Physical Health Risk Behaviours

Care received from a Doctor/ General Practitioner (GP).

58. When was the most recent time that the person you provide care for attended (received care from) a doctor/ GP?

- ☐ Within the last year
- ☐ More than 1 year ago
- ☐ Never *(Go to question 67, on page 23)*
- ☐ Unsure *(Go to question 67, on page 23)*

59. Has the person you care for ever been asked, when attending a doctor/ GP, if they smoke?

- ☐ Yes
- ☐ No *(Go to question 61, on this page)*
- ☐ Unsure *(Go to question 61, on this page)*

60. And if so, were they provided with any advice, treatment or referral relating to smoking?

- ☐ Yes
- ☐ No
- ☐ Unsure

61. Has the person you care for ever been asked, when attending a doctor/ GP, about their fruit and vegetable consumption?

- ☐ Yes
- ☐ No *(Go to question 63, on page 22)*
- ☐ Unsure *(Go to question 63, on page 22)*

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62. And if so, were they provided with any advice, treatment or referral relating to their fruit and vegetable consumption?

- ☐ Yes  
☐ No  
☐ Unsure

63. Has the person you care for ever been asked, when attending a doctor/ GP, if they drink alcohol?

- ☐ Yes  
☐ No *(Go to question 65, on this page)*  
☐ Unsure *(Go to question 65, on this page)*

64. And if so, were they provided with any advice, treatment or referral relating to their alcohol use?

- ☐ Yes  
☐ No  
☐ Unsure

65. Has the person you care for ever been asked, when attending a doctor/ GP, about their physical activity levels?

- ☐ Yes  
☐ No *(Go to question 67, on page 23)*  
☐ Unsure *(Go to question 67, on page 23)*

66. And if so, were they provided with any advice, treatment or referral relating to their physical activity levels?

- ☐ Yes  
☐ No  
☐ Unsure

Care received from a Non-Government Organisation (NGO) e.g. NEAMI, Richmond PRA.

67. When was the most recent time that the person you provide care for attended (received care from) a NGO?

- ☐ Within the last year
- ☐ More than 1 year ago
- ☐ Never *(Go to question 76, on page 25)*
- ☐ Unsure *(Go to question 76, on page 25)*

68. Has the person you care for ever been asked, when attending a NGO, if they smoke?

- ☐ Yes
- ☐ No *(Go to question 70, on this page)*
- ☐ Unsure *(Go to question 70, on this page)*

69. And if so, were they provided with any advice, treatment or referral relating to smoking?

- ☐ Yes
- ☐ No
- ☐ Unsure

70. Has the person you care for ever been asked, when attending a NGO, about their fruit and vegetable consumption?

- ☐ Yes
- ☐ No *(Go to question 72, on page 24)*
- ☐ Unsure *(Go to question 72, on page 24)*

## The Views of Carers Towards Addressing Physical Health Risk Behaviours

71. And if so, were they provided with any advice, treatment or referral relating to their fruit and vegetable consumption?

- ☐ Yes
- ☐ No
- ☐ Unsure

72. Has the person you care for ever been asked, when attending a NGO, if they drink alcohol?

- ☐ Yes
- ☐ No [\*\(Go to question 74, on this page\)\*](#)
- ☐ Unsure [\*\(Go to question 74, on this page\)\*](#)

73. And if so, were they provided with any advice, treatment or referral relating to their alcohol use?

- ☐ Yes
- ☐ No
- ☐ Unsure

74. Has the person you care for ever been asked, when attending a NGO, about their physical activity levels?

- ☐ Yes
- ☐ No [\*\(Go to question 76, on page 25\)\*](#)
- ☐ Unsure [\*\(Go to question 76, on page 25\)\*](#)

75. And if so, were they provided with any advice, treatment or referral relating to their physical activity levels?

- ☐ Yes
- ☐ No
- ☐ Unsure

Care received from a psychiatrist in private practice.

76. When was the most recent time that the person you provide care for attended (received care from) a psychiatrist in private practice?

- ☐ Within the last year
- ☐ More than 1 year ago
- ☐ Never *(Go to question 85, on page 27)*
- ☐ Unsure *(Go to question 85, on page 27)*

77. Has the person you care for ever been asked, when attending a psychiatrist in private practice, if they smoke?

- ☐ Yes
- ☐ No *(Go to question 79, on this page)*
- ☐ Unsure *(Go to question 79, on this page)*

78. And if so, were they provided with any advice, treatment or referral relating to smoking?

- ☐ Yes
- ☐ No
- ☐ Unsure

79. Has the person you care for ever been asked, when attending a psychiatrist in private practice, about their fruit and vegetable consumption?

- ☐ Yes
- ☐ No *(Go to question 81, on page 26)*
- ☐ Unsure *(Go to question 81, on page 26)*

## The Views of Carers Towards Addressing Physical Health Risk Behaviours

80. And if so, were they provided with any advice, treatment or referral relating to their fruit and vegetable consumption?

- ☐ Yes
- ☐ No
- ☐ Unsure

81. Has the person you care for ever been asked, when attending a psychiatrist in private practice, if they drink alcohol?

- ☐ Yes
- ☐ No [\*\(Go to question 83, on this page\)\*](#)
- ☐ Unsure [\*\(Go to question 83, on this page\)\*](#)

82. And if so, were they provided with any advice, treatment or referral relating to their alcohol use?

- ☐ Yes
- ☐ No
- ☐ Unsure

83. Has the person you care for ever been asked, when attending a psychiatrist in private practice, about their physical activity levels?

- ☐ Yes
- ☐ No [\*\(Go to question 85, on page 27\)\*](#)
- ☐ Unsure [\*\(Go to question 85, on page 27\)\*](#)

84. And if so, were they provided with any advice, treatment or referral relating to their physical activity levels?

- ☐ Yes
- ☐ No
- ☐ Unsure

Care received from a psychologist in private practice.

85. When was the most recent time that the person you provide care for attended (received care from) a psychologist in private practice?

- ☐ Within the last year
- ☐ More than 1 year ago
- ☐ Never *(Go to question 94, on page 29)*
- ☐ Unsure *(Go to question 94, on page 29)*

86. Has the person you care for ever been asked, when attending a psychologist in private practice, if they smoke?

- ☐ Yes
- ☐ No *(Go to question 88, on this page)*
- ☐ Unsure *(Go to question 88, on this page)*

87. And if so, were they provided with any advice, treatment or referral relating to smoking?

- ☐ Yes
- ☐ No
- ☐ Unsure

88. Has the person you care for ever been asked, when attending a psychologist in private practice, about their fruit and vegetable consumption?

- ☐ Yes
- ☐ No *(Go to question 90, on page 28)*
- ☐ Unsure *(Go to question 90, on page 28)*

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89. And if so, were they provided with any advice, treatment or referral relating to their fruit and vegetable consumption?

- ☐ Yes
- ☐ No
- ☐ Unsure

90. Has the person you care for ever been asked, when attending a psychologist in private practice, if they drink alcohol?

- ☐ Yes
- ☐ No *(Go to question 92, on this page)*
- ☐ Unsure *(Go to question 92, on this page)*

91. And if so, were they provided with any advice, treatment or referral relating to their alcohol use?

- ☐ Yes
- ☐ No
- ☐ Unsure

92. Has the person you care for ever been asked, when attending a psychologist in private practice, about their physical activity levels?

- ☐ Yes
- ☐ No *(Go to question 94, on page 29)*
- ☐ Unsure *(Go to question 94, on page 29)*

93. And if so, were they provided with any advice, treatment or referral relating to their physical activity levels?

- ☐ Yes
- ☐ No
- ☐ Unsure



Care received from a community drug and alcohol service.

94. When was the most recent time that the person you provide care for attended (received care from) a community drug and alcohol service?

- ☐ Within the last year
- ☐ More than 1 year ago
- ☐ Never [\(Go to question 103, on page 31\)](#)
- ☐ Unsure [\(Go to question 103, on page 31\)](#)

95. Has the person you care for ever been asked, when attending a community drug and alcohol service, if they smoke?

- ☐ Yes
- ☐ No [\(Go to question 97, on this page\)](#)
- ☐ Unsure [\(Go to question 97, on this page\)](#)

96. And if so, were they provided with any advice, treatment or referral relating to smoking?

- ☐ Yes
- ☐ No
- ☐ Unsure

97. Has the person you care for ever been asked, when attending a community drug and alcohol service, about their fruit and vegetable consumption?

- ☐ Yes
- ☐ No [\(Go to question 99, on page 30\)](#)
- ☐ Unsure [\(Go to question 99, on page 30\)](#)

## The Views of Carers Towards Addressing Physical Health Risk Behaviours

98. And if so, were they provided with any advice, treatment or referral relating to their fruit and vegetable consumption?

- ☐ Yes
- ☐ No
- ☐ Unsure

99. Has the person you care for ever been asked, when attending a community drug and alcohol service, if they drink alcohol?

- ☐ Yes
- ☐ No [\*\(Go to question 101, on this page\)\*](#)
- ☐ Unsure [\*\(Go to question 101, on this page\)\*](#)

100. And if so, were they provided with any advice, treatment or referral relating to their alcohol use?

- ☐ Yes
- ☐ No
- ☐ Unsure

101. Has the person you care for ever been asked, when attending a community drug and alcohol service, about their physical activity levels?

- ☐ Yes
- ☐ No [\*\(Go to question 103, on page 31\)\*](#)
- ☐ Unsure [\*\(Go to question 103, on page 31\)\*](#)

102. And if so, were they provided with any advice, treatment or referral relating to their physical activity levels?

- ☐ Yes
- ☐ No
- ☐ Unsure

Care received from a general hospital emergency service.

103. When was the most recent time that the person you provide care for attended (received care from) a general hospital emergency service?

- ☐ Within the last year
- ☐ More than 1 year ago
- ☐ Never *(Go to question 112, on page 33)*
- ☐ Unsure *(Go to question 112, on page 33)*

104. Has the person you care for ever been asked, when attending a general hospital emergency service, if they smoke?

- ☐ Yes
- ☐ No *(Go to question 106, on this page)*
- ☐ Unsure *(Go to question 106, on this page)*

105. And if so, were they provided with any advice, treatment or referral relating to smoking?

- ☐ Yes
- ☐ No
- ☐ Unsure

106. Has the person you care for ever been asked, when attending a general hospital emergency service, about their fruit and vegetable consumption?

- ☐ Yes
- ☐ No *(Go to question 108, on page 32)*
- ☐ Unsure *(Go to question 108, on page 32)*

## The Views of Carers Towards Addressing Physical Health Risk Behaviours

107. And if so, were they provided with any advice, treatment or referral relating to their fruit and vegetable consumption?

- ☐ Yes
- ☐ No
- ☐ Unsure

108. Has the person you care for ever been asked, when attending a general hospital emergency service, if they drink alcohol?

- ☐ Yes
- ☐ No [\(Go to question 110, on this page\)](#)
- ☐ Unsure [\(Go to question 110, on this page\)](#)

109. And if so, were they provided with any advice, treatment or referral relating to their alcohol use?

- ☐ Yes
- ☐ No
- ☐ Unsure

110. Has the person you care for ever been asked, when attending a general hospital emergency service, about their physical activity levels?

- ☐ Yes
- ☐ No [\(Go to question 112, on page 33\)](#)
- ☐ Unsure [\(Go to question 112, on page 33\)](#)

111. And if so, were they provided with any advice, treatment or referral relating to their physical activity levels?

- ☐ Yes
- ☐ No
- ☐ Unsure

Care received from a private mental health hospital/ unit e.g. Warners Bay Private Hospital, Lake Side Clinic.

112. When was the most recent time that the person you provide care for attended (received care from) a private mental health hospital?

- ☐ Within the last year
- ☐ More than 1 year ago
- ☐ Never *(Go to question 121, on page 35)*
- ☐ Unsure *(Go to question 121, on page 35)*

113. Has the person you care for ever been asked, when attending a private mental health hospital, if they smoke?

- ☐ Yes
- ☐ No *(Go to question 115, on this page)*
- ☐ Unsure *(Go to question 115, on this page)*

114. And if so, were they provided with any advice, treatment or referral relating to smoking?

- ☐ Yes
- ☐ No
- ☐ Unsure

115. Has the person you care for ever been asked, when attending a private mental health hospital, about their fruit and vegetable consumption?

- ☐ Yes
- ☐ No *(Go to question 117, on page 34)*
- ☐ Unsure *(Go to question 117, on page 34)*

## The Views of Carers Towards Addressing Physical Health Risk Behaviours

116. And if so, were they provided with any advice, treatment or referral relating to their fruit and vegetable consumption?

- ☐ Yes
- ☐ No
- ☐ Unsure

117. Has the person you care for ever been asked, when attending a private mental health hospital, if they drink alcohol?

- ☐ Yes
- ☐ No [\*\(Go to question 119, on this page\)\*](#)
- ☐ Unsure [\*\(Go to question 119, on this page\)\*](#)

118. And if so, were they provided with any advice, treatment or referral relating to their alcohol use?

- ☐ Yes
- ☐ No
- ☐ Unsure

119. Has the person you care for ever been asked, when attending a private mental health hospital about their physical activity levels?

- ☐ Yes
- ☐ No [\*\(Go to question 121, on page 35\)\*](#)
- ☐ Unsure [\*\(Go to question 121, on page 35\)\*](#)

120. And if so, were they provided with any advice, treatment or referral relating to their physical activity levels?

- ☐ Yes
- ☐ No
- ☐ Unsure

## The Views of Carers Towards Addressing Physical Health Risk Behaviours

These two questions are about your view of whether health behaviours influence mental health.

In general, do you think health behaviours can influence mental health?

121. To what extent do you think health behaviours can have a **positive impact** on mental health?

Please choose the appropriate response for each item:

	Not at all	A little	Moderately	Very	Unsure
Eating enough fruit and vegetables	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Doing enough physical activity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Decreasing alcohol use	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Quitting smoking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

122. To what extent do you think health behaviours can have a **negative impact** on mental health?

Please choose the appropriate response for each item:

	Not at all	A little	Moderately	Very	Unsure
Not eating enough fruit and vegetables	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Not doing enough physical activity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Using too much alcohol	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Smoking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Carer Role**

This set of questions is about your role as a carer.

123. How important do you feel it is for you to try and have a positive influence on the health behaviours of the person you care for?

Please choose the appropriate response for each item:

You may want to answer Not Applicable for "Alcohol" or "Smoking" if the person you care for is not a smoker or does not drink alcohol.

	Not at all important	A little important	Somewhat important	Very important	Unsure	Not applicable, not a smoker or not drinking alcohol
Fruit and vegetable consumption	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Physical activity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Alcohol	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Smoking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

124. To what extent do you currently try to have a positive influence on the health behaviours of the person you care for?

Please choose the appropriate response for each item:

	I don't try	I try to address their behaviours sometimes	I try to address their behaviours most of the time	I try to address their behaviour all the time	Unsure	Not applicable, not a smoker or not drinking alcohol
Fruit and vegetable consumption	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Physical activity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Alcohol	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Smoking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



## The Views of Carers Towards Addressing Physical Health Risk Behaviours

125. To what extent do you think it's possible for you to have a positive influence on the health behaviours of the person you care for?

Please choose the appropriate response for each item:

	Not at all possible	Sometimes possible	Often possible	Always possible	Unsure	Not applicable, not a smoker or not drinking alcohol
Fruit and vegetable consumption	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Physical activity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Alcohol	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Smoking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

126. The person I care for finds it acceptable for me to talk with them about their health behaviours.

Please choose the appropriate response for each item:

	Strongly agree	Agree	Unsure	Disagree	Strongly disagree	Not applicable, not a smoker or not drinking alcohol
Fruit and vegetable consumption	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Physical activity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Alcohol	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Smoking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## The Views of Carers Towards Addressing Physical Health Risk Behaviours

127. I feel confident to talk to the person I care for about their health behaviours.

Please choose the appropriate response for each item:

	Strongly agree	Agree	Unsure	Disagree	Strongly disagree	Not applicable, not a smoker or not drinking alcohol
Fruit and vegetable consumption	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Physical activity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Alcohol	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Smoking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

128. I have the knowledge and skills to encourage healthy behaviours for the person I care for.

Please choose the appropriate response for each item:

	Strongly agree	Agree	Unsure	Disagree	Strongly disagree	Not applicable, not a smoker or not drinking alcohol
Fruit and vegetable consumption	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Physical activity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Alcohol	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Smoking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## The Views of Carers Towards Addressing Physical Health Risk Behaviours

129. My encouraging healthy behaviours for the person I care for may harm our relationship.  
Please choose the appropriate response for each item:

	Strongly agree	Agree	Unsure	Disagree	Strongly disagree	Not applicable, not a smoker or not drinking alcohol
Fruit and vegetable consumption	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Physical activity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Alcohol	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Smoking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Experience of Smoke Free Policy

This section of the survey contains questions about smoking bans and treatment for smoking provided within inpatient and community mental health settings. Currently total smoking bans exist in all health care facilities including mental health facilities.

130. Total smoking bans in public places such as public transport, shopping centres and restaurants are a good thing.

Strongly agree	Agree	Unsure	Disagree	Strongly disagree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

131. Total smoking bans in general hospitals are a good thing.

Strongly agree	Agree	Unsure	Disagree	Strongly disagree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

132. Total smoking bans in mental health hospitals are a good thing.

Strongly agree	Agree	Unsure	Disagree	Strongly disagree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

133. Total smoking bans in other mental health treatment facilities (e.g. community mental health services) are a good thing.

Strongly agree	Agree	Unsure	Disagree	Strongly disagree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

134. Smoking bans in a mental health hospital need to be properly put in place so that no smoking actually occurs.

Strongly agree	Agree	Unsure	Disagree	Strongly disagree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

135. Smoking bans in a mental health hospital need to include treatment for smokers such as Nicotine Replacement Therapy (NRT).

Strongly agree	Agree	Unsure	Disagree	Strongly disagree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

136. Is there anything you would like to comment on regarding your personal experience, or the person you care for, of smoking bans in inpatient and community mental health settings?

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## The Views of Carers Towards Addressing Physical Health Risk Behaviours

137. Is there anything you would like to comment on regarding your personal experience, or the person you care for, of smoking treatment (e.g. Nicotine Replacement Therapy (NRT)) in inpatient and community mental health settings?

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Please answer the following questions about yourself.

138. This question asks about how you have been feeling in the *last four weeks*.

Please tick the appropriate response for each item:

*In the last four (4) weeks...*

	None of the time	A little of the time	Some of the time	Most of the time	All of the time
About how often did you feel so depressed nothing could cheer you up?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
About how often did you feel hopeless?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
About how often did you feel restless or fidgety?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
About how often did you feel that everything was an effort?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
About how often did you feel worthless?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
About how often did you feel nervous?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## The Views of Carers Towards Addressing Physical Health Risk Behaviours

139. What is your age?

140. Gender?

☐ Female☐ Male

141. What is your current employment status?

Please choose only one of the following:

☐ Employed full time☐ Employed part time or casual☐ Not currently employed- but seeking employment☐ Not currently employed- not seeking employment

142. Are you of Aboriginal or Torres Strait Islander origin?

Please choose only one of the following:

☐ Yes, Aboriginal origin☐ Yes, Torres Strait Islander origin☐ Yes, both Aboriginal and Torres Strait Islander origin☐ No

143. What is your present marital status?

Please choose only one of the following:

☐ Never married☐ Married or living together in a relationship☐ Divorced/ Separated☐ Widowed

144. What is the highest level of education you have achieved?

Please choose only one of the following:

- ☐ No formal schooling or attended primary school only
- ☐ Some high school with less than four years completed
- ☐ School certificate, Intermediate, Year 10, 4<sup>th</sup> Form
- ☐ Completed HSC, Leaving, Year 12 or 6<sup>th</sup> Form
- ☐ TAFE certificate or diploma
- ☐ University, College of Advanced Education, Degree or higher

145. What is your postcode?

146. Have you ever been diagnosed with a mental illness?

Please choose only one of the following:

- ☐ Yes
- ☐ No *(Skip question 147. Go to question 148 on page 44)*

147. What was, or is your primary psychiatric diagnosis?

Please choose only one of the following:

- ☐ Schizophrenia
- ☐ Depression
- ☐ Anxiety disorder
- ☐ Panic disorder
- ☐ Bipolar disorder
- ☐ Post-traumatic stress disorder
- ☐ Eating disorder
- ☐ Personality disorder
- ☐ Dementia
- ☐ Unsure
- ☐ Other:

Please describe:

The questions in this section are about **your own physical health behaviours**.

It will contain questions about smoking, fruit and vegetable consumption, alcohol consumption and physical activity.

**Please answer these questions about yourself.**

148. How many serves of vegetables do you usually eat each day?

One serve of vegetables or legumes is equal to:  $\frac{1}{2}$  cup green leafy vegetables like cabbage, spinach, Brussels sprouts or cauliflower;  $\frac{1}{2}$  cup green beans, zucchini, mushrooms, turnips, swede or eggplant; 1 cup salad vegetables such as tomato, capsicum and celery; 1 medium sized potato or parsnip.

Please choose only one of the following:

- |                         |                                 |
|-------------------------|---------------------------------|
| <input type="radio"/> 0 | <input type="radio"/> 4         |
| <input type="radio"/> 1 | <input type="radio"/> 5 or more |
| <input type="radio"/> 2 | <input type="radio"/> Unsure    |
| <input type="radio"/> 3 |                                 |

149. How many serves of fruit do you usually eat each day?

One serve of fruit is equal to: 150 grams (5.29 oz.) of fresh fruit or; one medium sized fruit (e.g. apple); 2 smaller pieces (e.g. apricots); 1 cup canned or chopped fruit;  $\frac{1}{2}$  cup/ 125 ml (5 fl oz.) 100% fruit juice; 1.5 tablespoon dried fruit (e.g. sultanas or 4 dried apricot halves).

Please choose only one of the following:

- ☐ 0
- ☐ 1
- ☐ 2 or more
- ☐ Unsure



## The Views of Carers Towards Addressing Physical Health Risk Behaviours

150. How many days a week do you usually do 30 minutes or more of physical activity?

By physical activity we mean any activity that increases your heart rate or makes you breathe harder than normal. This can include brisk walking, swimming, team sports or even things like gardening. You can add up your total time during the day, for example walking to the shops and back.

Please choose only one of the following:

- |                         |  |
|-------------------------|--|
| <input type="radio"/> 0 | <input type="radio"/> 6  |
| <input type="radio"/> 1 | <input type="radio"/> 7, everyday  |
| <input type="radio"/> 2 | <input type="radio"/> Unsure   |
| <input type="radio"/> 3 | <input type="radio"/> Can't do physical activity for health or treatment reasons |
| <input type="radio"/> 4 |  |
| <input type="radio"/> 5 |  |

151. Do you live in a smoke-free household?

By this we mean people may be smokers but no smoking is permitted inside the residence.

Please choose only one of the following:

- ☐ Yes
- ☐ No
- ☐ Unsure

152. Are you a smoker of any tobacco products?

This could include 'roll your own', cigars, pipe etc.

Please choose only one of the following:

- |   |   |
|---|---|
| <input type="radio"/> Yes, daily                        | <a href="#"><i>(go to the next question)</i></a>        |
| <input type="radio"/> Yes, at least once a week         | <a href="#"><i>(go to the next question)</i></a>        |
| <input type="radio"/> Yes, less than once a week        | <a href="#"><i>(go to the next question)</i></a>        |
| <input type="radio"/> No, trying to quit                | <a href="#"><i>(go to question 160, on page 47)</i></a> |
| <input type="radio"/> No, quit longer than 4 months ago | <a href="#"><i>(go to question 160, on page 47)</i></a> |
| <input type="radio"/> No, never smoked                  | <a href="#"><i>(go to question 161, on page 48)</i></a> |

## The Views of Carers Towards Addressing Physical Health Risk Behaviours

153. How many cigarettes are you usually smoking each day?

Please choose only one of the following:

- ☐ 10 or less ☐ 31 or more  
☐ 11 to 20 ☐ Unsure  
☐ 21 to 30

154. How soon after waking are you usually having your first smoke?

Please choose only one of the following:

- ☐ Within 5 minutes  
☐ 6 to 30 minutes  
☐ 31 to 60 minutes  
☐ More than 60 minutes  
☐ Unsure

155. In the last year, did you ever on purpose quit smoking for at least 24 hours?

Please choose only one of the following:

- ☐ Yes  
☐ No  
☐ Unsure

156. Have you ever made an attempt to quit smoking in the past?

Please choose only one of the following:

- ☐ Never (*skip question 157, go to question 158 on page 47*)  
☐ Once  
☐ 2 to 4 attempts  
☐ 5 or more attempts  
☐ Unsure (*skip question 157, go to question 158 on page 47*)

## The Views of Carers Towards Addressing Physical Health Risk Behaviours

157. How long ago was your last quit attempt?

Please choose only one of the following:

- ☐ Currently trying to quit
- ☐ 3 months or less
- ☐ Between 3 and 12 months ago
- ☐ More than one year ago
- ☐ Unsure

158. Do you plan to quit smoking?

Please choose only one of the following:

- ☐ Yes
- ☐ No (*Skip question 159, go to question 160, on this page*)
- ☐ Unsure (*Skip question 159, go to question 160, on this page*)

159. When do you plan to quit smoking?

Please choose only one of the following:

- ☐ Within the next month
- ☐ Within the next 2 to 6 months
- ☐ More than 6 months
- ☐ Unsure

160. Which of the following have you ever used in an attempt to quit smoking?

Please choose all that apply:

- ☐ Nicotine Replacement Therapy (NRT); such as patches or gum
- ☐ E cigarette
- ☐ Quitline
- ☐ GP (doctor) advice
- ☐ Hypnosis
- ☐ Acupuncture
- ☐ Champix (Varenicline)
- ☐ Zyban (Bupropion)
- ☐ Other medications
- ☐ 'Cold turkey' (I just stopped on my own with no assistance)
- ☐ None of these

161. How often do you have a drink containing alcohol?

Please choose only one of the following:

- ☐ Never, not drinking alcohol ([go to question 164 on page 49](#))
- ☐ Monthly or less
- ☐ 2 to 4 times a month
- ☐ 2 to 3 times a week
- ☐ 4 or more times a week
- ☐ Unsure

162. How many standard drinks would you have on a typical drinking day?

Please refer back to the diagrams on pages 11 and 12 as a guide of standard drink measurements.

Please choose only one of the following:

- ☐ 1 to 2
- ☐ 3 to 4
- ☐ 5 to 6
- ☐ 7 to 9
- ☐ 10 or more
- ☐ Unsure

163. How often would you have four or more standard drinks on one occasion?

Please choose only one of the following:

- ☐ Never
- ☐ Less than monthly
- ☐ Monthly
- ☐ Weekly
- ☐ Daily or almost daily
- ☐ Unsure

## The Views of Carers Towards Addressing Physical Health Risk Behaviours

164. In the last year, have you had an interest in improving any of your own health behaviours?

Please choose the appropriate response for each item:

You may want to answer Not Applicable for "Alcohol" or "Smoking" if the person you care for is not a smoker or does not drink alcohol.

	Yes	No	Unsure	Not Applicable, not a smoker or not drinking alcohol
Fruit and vegetable consumption	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Physical activity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Alcohol	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Smoking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

165. Do you think any of the following factors are health risks for you?

Please choose the appropriate response for each item:

	Yes	No	Unsure	Not Applicable, not a smoker or not drinking alcohol
Not eating enough fruit and vegetables	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Not doing enough physical activity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Alcohol use	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Smoking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

166. Can you please tell us roughly how long it took you to complete this survey?

In minutes.

167. Any comments you would like to make on the survey would be appreciated. Was it easy? Hard? Were any questions difficult to understand? If you have any ideas on how to improve the survey that would be greatly appreciated. Thank you.

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168. We may want to ask you some questions based on your responses to this survey and similar issues discussed within this survey.

If you are comfortable with this, you can check the box below that says "I consent to being contacted through my organisation" where we will ask your organisation (the organisation that you received this survey from) to contact you. If you check the box we will not gain access to your personal information, your organisation will contact you and provide you with the details of what we want to discuss with you and you can respond if you wish.

☐

I consent to being contacted through my organisation in the future.

Thank you very much for taking the time to complete this survey.

If you have any questions regarding the survey you can contact the lead investigator Jenny Bowman by email at [Jenny.Bowman@newcastle.edu.au](mailto:Jenny.Bowman@newcastle.edu.au) or by telephone: 49215958. Alternatively, you can ask any questions through your support organisation.

If answering any of the questions in the survey has left you feeling upset, worried or concerned you can contact Lifeline on 131114 or Beyondblue on 1300224636. Lifeline and Beyondblue are telephone helplines where you can talk to someone about how you are feeling. You can call these numbers and talk to someone 24 hours a day, 7 days a week.

## Appendix F: Published Manuscript

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BMC Health Services Research

## RESEARCH ARTICLE

## Open Access



# Preventive care for physical activity and fruit and vegetable consumption: a survey of family carer expectations of health service delivery for people with a mental health condition

Jacqueline M. Bailey<sup>1,2\*</sup> , Tara L. Clinton-McHarg<sup>1,2</sup>, Paula M. Wye<sup>1,2</sup>, John H. Wiggers<sup>2,3,4</sup>, Kate M. Bartlem<sup>1,2</sup> and Jennifer A. Bowman<sup>1,2</sup>

## Abstract

**Background:** Chronic disease is a leading cause of death globally, where inadequate fruit and vegetable consumption and inadequate physical activity are consistently implicated as key contributing risk factors for such diseases. People with a mental health condition are reported to experience a higher prevalence of such risks and experience an increased morbidity and mortality from resultant chronic disease. Despite guidelines identifying a need for services accessed by people with a mental health condition to provide care to address such health risk behaviours, sub-optimal care is frequently reported suggesting a need for innovative strategies to increase the provision of physical health care. An exploratory study was conducted to examine: 1) family carers' expectations of care provision regarding fruit and vegetable consumption and physical activity by health and community services for people with a mental health condition; 2) carer's own health risk behaviour status and perceptions of the influence of the health risk behaviours on mental health; and 3) possible associations of socio-demographic, clinical and attitudinal factors with carer expectations of care provision for fruit and vegetable consumption and physical activity.

**Methods:** Family carers ( $n = 144$ ) of a person with a mental health condition completed a cross-sectional survey. Participants were members of a mental health carer support organisation operating in New South Wales, Australia.

(Continued on next page)

\* Correspondence: [jacqueline.m.bailey@unsw.edu.au](mailto:jacqueline.m.bailey@unsw.edu.au)

<sup>1</sup>School of Psychology, Faculty of Science and Information Technology, The University of Newcastle, University Drive, Callaghan, NSW 2308, Australia

<sup>2</sup>Hunter Medical Research Institute, Clinical Research Centre, Lot 1

Kookaburra Circuit, New Lambton Heights, NSW 2305, Australia

Full list of author information is available at the end of the article



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**Results:** A high proportion of participants considered care for fruit and vegetable consumption and physical activity respectively should be provided by: mental health hospitals (78.5, 82.7%); community mental health services (76.7, 85.9%); general practice (81.1, 79.2%); and non-government organisations (56.2, 65.4%). Most participants perceived adequate fruit and vegetable consumption (55.9%), and physical activity (71.3%) would have a very positive impact on mental health. Carers who perceived adequate fruit and vegetable consumption and physical activity would have a positive impact on mental health were more likely to expect care for such behaviours from some services.

**Conclusions:** The majority of participants expected care for fruit and vegetable consumption and physical activity be provided by all services catering for people with a mental health condition, reinforcing the appropriateness for such services to provide physical health care for clients in a systematic manner.

**Keywords:** Chronic disease risk behaviours, Caregiver, Mental illness, Health services, Fruit and vegetable consumption, Physical activity

### Background

Physical chronic diseases, such as cardiovascular diseases, cancer, and diabetes, are a leading cause of death globally and contributed to 71% of deaths in 2017 [1, 2]. Chronic conditions such as overweight and obesity (conservatively measured by Body Mass Index [BMI]) were also estimated to account for 4.7 million deaths globally in 2017 and 148 million Disability Adjusted Life Years (DALYs, sum of years lived with a disability and years of life lost) [3]. In 2014, 38 to 40% of adults were overweight and 11 to 15% obese; with the worldwide prevalence of obesity nearly doubling between 1980 and 2014, [1] and continuing to increase [4]. Such prevalence estimates continue to increase, with 2016 prevalence estimates of obesity ranging from 20 to 36% among adults in Australia, United Kingdom, United States, Canada, and many European nations [4].

Compared to these global figures, the reported figures in Australia are somewhat higher, with physical chronic diseases contributing to 87% of deaths in 2015 [5]. The prevalence of diabetes in Australia has tripled over the last 25 years with 6.1% (1.2 million people) of the adult population reported to have the condition in 2015 [5]. A recent study of more than 10 million adults from 239 prospective studies found that Australian and New Zealand adults with a BMI above the 'normal weight' range (BMI > 25 kg/m<sup>2</sup>) had an increased risk of death from all causes of 31%, for each 5 kg/m<sup>2</sup> increase in BMI [6]. Further, compared to people with a 'normal weight' BMI, life expectancy was reduced by 2–4 years for people with class I obesity (BMI = 30–34.99), and by 8–10 years for people with class III obesity (BMI = > 39.99) [7].

Inadequate physical activity and inadequate fruit and vegetable consumption are two modifiable health risk behaviours that are consistently implicated as contributing to the incidence of physical chronic disease and overweight and obesity [3, 8, 9]. Inadequate physical activity is a risk factor for the development of chronic diseases such as ischemic heart disease, stroke, diabetes mellitus, and

cancer, as well as the development of conditions that contribute to these chronic diseases such as overweight, obesity and hypertension [3, 10]. Similarly, inadequate fruit and/or vegetable consumption are risk factors for the development of obesity, and chronic diseases such as: ischemic heart disease, stroke; diabetes mellitus; stomach, oesophageal, colorectal, and lung cancer [3, 8, 9, 11–13]. Additionally, the combination of multiple health risk behaviours increases the risk of developing chronic disease and resultant mortality [14, 15]. National guidelines vary slightly between countries regarding what is considered to be an inadequate level of physical activity or inadequate fruit and vegetable consumption [16–22]. In Australia, current national guidelines state that the following behaviours may place an individual at risk of developing a chronic disease: 1) consuming less than five vegetable or two fruit servings per day [23]; 2) engaging in less than 150 to 300 min of moderate intensity physical activity (e.g. brisk walking, golf) or 75 to 150 min of vigorous intensity physical activity (e.g. jogging, aerobics, digging), or an equivalent combination each week; and participating in muscle strengthening activities on less than 2 days each week [24].

The prevalence of overweight and obesity, [25–27] inadequate physical activity [28, 29] and inadequate fruit and vegetable consumption [28, 29] is higher among people with a mental health condition than those without. Internationally and in Australia, people with a mental health condition experience increased rates of physical chronic disease, and resultant morbidity, mortality and reduced life expectancy compared to people without a mental health condition [30–32]. Research among this population group utilises various terminology such as 'mental illness' or 'mental disorder', the term 'mental health condition' will be used throughout this study to define mental health conditions commonly experienced by individuals accessing adult mental health services; that is, categories of mental illness outlined in the Diagnostic and Statistical Manual of Mental Disorders-5 [33] not including neurodevelopmental or



degenerative disorders (for example, not including autism and dementia, but including but not limited to: schizophrenia, depression, anxiety, and personality disorders). A systematic review that included four studies of national survey data found that people with severe mental health conditions such as schizophrenia are significantly more likely to be overweight or obese than other members of the population [32]. One of the studies included in the review found that Australian's who completed the national survey of psychosis in 2010 were two times more likely to be obese (BMI > 30) compared to the general population in the same time period [34, 35]. Additionally, having a chronic mental health condition, has been independently linked to the development of physical chronic diseases such as cardiovascular disease, [30–32, 36] demonstrating the complexities in addressing the development of chronic disease among this group.

Furthermore, the research literature has also explored the bi-directional impact of physical and mental health. For example, a systematic review and meta-analysis of 26 longitudinal studies among various populations, reported consistent evidence across all populations that smoking cessation was associated with significant reductions in depression, anxiety, stress and increased psychological well-being and positive affect compared to continued smoking [37]. Systematic review evidence similarly suggests that physical activity reduces anxiety symptoms in both people without a mental health condition, [38] and those with anxiety disorders, [39, 40] depression, [38, 40] schizophrenia, [38, 40] post-traumatic stress disorder, [40] and substance dependence [40]. Further, a meta-analysis of 49 prospective studies found physical activity had a protective effect against the emergence of depression in youths, adults, and elderly persons [41]. Such research highlights the benefits for physical and mental health that can be achieved through addressing health risk behaviours.

In the research literature, the prevalence of inadequate physical activity [28, 29, 42–47] and inadequate fruit and vegetable consumption [28, 29, 45, 46] among people with a mental health condition is consistently reported to be higher than people without a mental health condition, and may be highest for people with mental health conditions requiring inpatient care. This higher prevalence of risk behaviour is demonstrated by comparing the results of three studies conducted in the same geographic region of Australia, utilising comparable methodologies, and consistent definitions of risk behaviours as per national guidelines. Cross-sectional surveys conducted amongst general community health clients ( $n=1284$ ), community mental health clients ( $n=558$ ), and psychiatric inpatients ( $n=2075$ ) revealed a higher prevalence of risk behaviours among community mental health clients compared to general health clients, and further increased risk for psychiatric inpatients for: inadequate fruit and/or vegetable

consumption (81% vs 88% vs 95%), and inadequate physical activity (28% vs 47% vs 50%) [48–50].

Internationally and in Australia, guidelines and policies acknowledge the need to provide care to all health service clients who may be at risk for inadequate physical activity and/or fruit and vegetable consumption, [51–53] with additional guidelines and policies existing specifically for clients with a mental health condition [54, 55]. Despite the existence of these guidelines and policies, the reported effectiveness of the provision of preventive care and lifestyle interventions in mental health services to improve such health risk behaviours, [56–60] and the reported interest of mental health service clients in receiving support to improve these behaviours, [49, 61] sub-optimal care for health risk behaviours from general practitioners [62] and community and inpatient mental health services is consistently reported [63]. For instance, a recent meta-analysis of 26 studies found sub-optimal provision of care (less than 80% of clients in receipt of care) to address inadequate nutrition generally and physical activity across all elements of care (e.g. asking/assessing, advising, assisting, and arranging referral) in community, inpatient, and other mental health services [63]. A number of factors have been implicated as barriers to the provision of preventive care in mental health settings including: clinician attitudes and beliefs about their client's capability or interest in changing [64, 65]; as well as the risk behaviours of the clinician, where clinicians who are at risk for a particular behaviour themselves may be less likely to provide care to their client for that behaviour [66].

In addition to the existence of policies and guidelines surrounding the type of preventive care to be delivered to people with a mental health condition, guidelines also state the need to include a variety of stakeholders, including clients and their informal family carers, in the planning, development and implementation of mental health policy and practice [67–70]. A family or informal carer is an individual who provides support and assistance without payment to an individual with any physical or mental health condition or disability [71]. Inclusion of multiple stakeholders is recommended in order to deliver a holistic approach to mental health care and increase the effectiveness of health care service treatments and interventions [72–74]. For instance, the New South Wales (NSW) Carer Recognition Act states that carers should be engaged as important stakeholders in the provision of care, including the assessment, planning, delivery, and review of services provided to the person they care for, and should be included in care decision making [75].

The acknowledged role that family carers play in the provision of support to people with a mental health condition, suggests that an alignment between carer expectations

regarding what type of care should be provided and the type of care that is actually delivered by services may contribute to service design which may lead to more positive outcomes for people with a mental health condition [76]. The importance of the carer viewpoint is evidenced by the National Mental Health Commission's 2017 establishment of the Equally Well Implementation Committee, which includes carer members, with the aim of bridging the physical and mental health sectors to ensure holistic care for people with a mental health condition [77].

To date however, there has been limited research undertaken with family carers to understand their expectations regarding what type of care to address the chronic disease risk behaviours should be provided to people with a mental health condition by health and community services. Only two previous studies have focused on this issue relevant to inadequate physical activity and nutrition generally [78–80]. One qualitative study from the US of 13 carers of older adults with serious mental illness found that carers reported a need for guidance from health care professionals regarding strategies to promote weight loss by their family member [78].

The second study, an Australian qualitative study of 31 family carers, reported a desire by carers to be informed about any health service interventions which aimed to address the physical health of the person they cared for so that carers could support such interventions [79]. Additionally, carers reported a desire for services accessed by their family member to provide holistic care, due to their awareness of the bidirectional relationship between physical and mental health. It has been found previously that carers are aware of the bidirectional relationship between physical and mental health, and this has been associated with carer expectations of smoking cessation care provision by services accessed by people with a mental health condition [80]. Further, carers have also reported that their capacity to support their family member in making health behaviour change is impacted by the need to maintain their own physical health and well-being [79]. These two previous studies were limited by small sample sizes, and their lack of focus on physical activity and fruit and vegetable consumption specifically. The absence of any quantitative studies limits understanding of the prevalence of the reported expectations among carers generally.

## Methods

### Aims

Given the limited research concerning carer expectations regarding health service delivery of care addressing client physical activity and nutrition risk behaviours (despite the existence of guidelines and policies championing for the inclusion of the carer perspective) for people with a mental health condition, a study was undertaken to

examine: 1) family carers' expectations of care provision regarding fruit and vegetable consumption and physical activity by health and community services (mental health hospitals, community mental health services, general practice [GP], and non-government organisations [NGOs]) for people with a mental health condition; 2) carers' own health risk behaviour status and perceptions of the influence of fruit and vegetable consumption and physical activity on mental health; and 3) possible associations of socio-demographic, clinical and attitudinal factors with carer expectations of care provision for fruit and vegetable consumption and physical activity.

### Design and setting

One hundred forty four family carers of adults with a mental illness in one non-metropolitan region in NSW, Australia completed a cross sectional survey from July to November 2013. The study was approved by the Hunter New England Human Research Ethics Committee (No. 13/06/19/5.11) and the University of Newcastle's Human Research Ethics Committee (No. H-2019-0141; refer to Additional file 1).

### Participants and recruitment

Potential participants were identified through their membership of a non-government carer support organisation that provided free support services, advocacy, training and education to carers of people with a mental health condition [81]. The organisation had operated across the study region for approximately 10 years, in partnership with local mental health services, providing individual and group support. Any member of the public who was a carer of a person with any mental health condition was able to join the organisation without cost as a source of support for their role as a carer. Participants were eligible for the study if they were 18 years or older and identified themselves as a family carer for someone with any mental health condition who was also over 18 years.

The carer organisation identified potential participants throughout the Hunter New England Local Health District based on members' previously recorded interest in research participation. The organisation mailed an invitation to participate in the study (Additional file 1), information statement (Additional file 1), survey instrument (Additional file 1) and reply-paid envelope to all such listed members. The invitation letter also included a web link for optional online survey completion. Potential participants who had not responded to the letter after one month were mailed a reminder letter. Most surveys were returned within one month; the remainder were received over a four month period. Additional participants were approached by research team members at carer support group meetings organised by or affiliated with the carer

support organisation. Survey completion took approximately 28 min.

#### Measures

Carers completed items assessing socio-demographic, clinical and health risk behaviours; which were modified from previous research [82]. Items examining the carer and family member relationship, perceptions regarding the impact of health risk behaviours on mental health, and carer expectations of care provision for health risk behaviours by services were developed with input from mental health staff and carers. Refer to [supplementary material](#) for the survey instrument.

#### Socio-demographic and clinical characteristics

Six items addressed the age, gender, employment, marital status, highest level of education achieved, and Aboriginal and/or Torres Strait Islander status of both the family carer and person with a mental health condition. Participants were also asked their postcode of residence to determine geographic remoteness and socio-economic index of disadvantage [83, 84].

Participants reported: how many years they had been in a caring role with the person they cared for (years: less than one, 1 to 2, 3 to 10, 11 to 20, more than 20); if they lived in the same residence as that person (yes, no, sometimes); what their relationship was to that person (parent, partner, child, sibling, neighbour, friend, other); and that person's primary psychiatric diagnosis (schizophrenia, depression, anxiety disorder, panic disorder, bipolar disorder, post-traumatic stress disorder, eating disorder, personality disorder, unsure, other).

#### Expectations of care provision

Participants were asked separate questions for each of four types of health care services: mental health hospitals, community mental health services, GP, and/or NGOs. For each, carers were asked if such a service should provide care for a) fruit and vegetable consumption, and b) physical activity for people with a mental health condition (yes, no, unsure). For instance, 'For someone with a mental health condition, do you think the services below should provide care for fruit and vegetable consumption?'

#### Health risk behaviour status

Participants were asked: how many serves of fruit (0, 1, 2 or more, unsure) and vegetables they usually ate each day (0, 1, 2, 3, 4, 5 or more, unsure); and how many days a week they usually did 30 min or more of physical activity (0, 1, 2, 3, 4, 5, 6, 7, unsure, can't do physical activity for health or treatment reasons).

#### Perceived health effects of fruit and vegetable consumption and physical activity

All participants were asked to respond to four items: 'to what extent do you think eating enough fruit and vegetables can have a positive impact on mental health?'; 'to what extent do you think doing enough physical activity can have a positive impact on mental health?'; 'to what extent do you think not eating enough fruit and vegetables can have a negative impact on mental health?'; and 'to what extent do you think not doing enough physical activity can have a negative impact on mental health?' (not at all, a little, moderately, very, unsure).

#### Data analysis

SPSS version 23 [85] was used to analyse the data. Participant postcode was used to determine the geographic remoteness (major cities, regional, rural) and socio-economic index of disadvantage (disadvantaged, average/advantaged) of the area in which they resided [83, 84]. Response categories for socio-demographic and clinical characteristics were collapsed to two or three categories as shown in Table 1; with the exception of psychiatric diagnosis (four categories). Fruit and vegetable consumption and physical activity levels were dichotomised (adequate vs inadequate) based on the Australian national guidelines, [23, 86] where consuming two or more serves of fruit and five or more serves of vegetables each day was adequate, and participating in at least 30 min of physical activity, at least five days per week was deemed adequate. Items regarding expectations of care provision by the four health and community service settings were condensed to two categories (yes, no or unsure).

Descriptive statistics were used to summarise socio-demographic and clinical characteristics, participants' expectations of care provision by health and community services, risk behaviour status, and perceived effect of fruit and vegetable consumption and physical activity on mental health.

Chi-square analyses using Fisher's Exact test statistic were used to examine possible associations between all independent variables listed in Table 1 and carers' perceptions of the impact of the health risk behaviours on mental health with carers' expectations of care provision for fruit and vegetable consumption and physical activity by each of the four service settings (dependent variables). Independent variables associated at  $p < .25$  were subsequently entered into backward stepwise logistic regression models to examine the independent association ( $p < .05$ ) with expectation of care provision (for fruit and vegetable consumption, and physical activity separately) in each of the four service settings (eight models total).

## Results

#### Sample characteristics

Of the 371 eligible carers invited to take part; 144 completed the survey (38.8%); 97 by mail, 46 in a carer



**Table 1** Socio-demographic characteristics

Characteristic	Carer n(%)	Person with a mental health condition n(%)
Age (years) <sup>1</sup>	18–54: 35 (24.6)	18–34: 58 (40.3)
	55–74: 92 (64.8)	35–54: 67 (46.5)
	75 and over: 15 (10.6)	55 and over: 19 (13.2)
Gender <sup>1</sup>		
Male	27 (19.0)	96 (66.7)
Employment status		
In the workforce <sup>2</sup>	45 (31.9)	28 (20.3)
Ethnicity <sup>3</sup>		
Aboriginal and/or Torres Strait Islander origin	5 (3.6)	6 (4.4)
Marital Status <sup>4</sup>		
Married/ living together in a relationship	105 (73.4)	36 (25.9)
Highest Education Level <sup>5</sup>		
Less than 4 years high school completed	28 (19.6)	31 (22.6)
4 years high school completed	30 (21.0)	29 (21.2)
More than 4 years high school completed	85 (59.4)	77 (56.2)
Socio-economic Index of disadvantage <sup>1</sup>		
Lowest tertile (Disadvantaged)	78 (54.9)	
Middle/highest tertile (Average/advantaged)	64 (45.1)	
Geographic remoteness <sup>1</sup>		
Major cities (Highly accessible)	44 (31.0)	
Inner regional (Accessible)	77 (54.2)	
Outer regional (Moderately accessible)	21 (14.8)	
Years spent caring for the person with mental illness <sup>1</sup>		
Less than 12 months	5 (3.5)	
1–2 years	11 (7.7)	
3–10 years	47 (33.1)	
11–20 years	37 (26.1)	
More than 20 years	42 (29.6)	
Carer and person with mental illness living in the same residence		
Yes <sup>6</sup>	75 (52.4)	
Carer relationship to person with mental illness <sup>6</sup>		
Parent	88 (61.5)	
Other relation	55 (38.5)	
Psychiatric diagnosis		
Schizophrenia		56 (38.9)
Bipolar disorder		31 (21.5)
Depression		22 (15.3)
Other- single or multiple disorders		35 (24.3)
Fruit consumption <sup>6</sup>		

**Table 1** Socio-demographic characteristics (Continued)

Characteristic	Carer n(%)	Person with a mental health condition n(%)
Inadequate	49 (34.0)	
Vegetable consumption <sup>6</sup>		
Inadequate	98 (68.5)	
Combined fruit and vegetable consumption <sup>6</sup>		
Inadequate	107 (74.8)	
Physical activity <sup>7</sup>		
Inadequate	76 (57.6)	

<sup>1</sup> Two missing carer responses<sup>2</sup> Three missing carer responses, six missing person with a mental illness responses<sup>3</sup> Four missing carer responses, eight missing person with a mental illness responses<sup>4</sup> One missing carer response, five missing person with a mental illness responses<sup>5</sup> One missing carer response, seven missing person with a mental illness responses<sup>6</sup> One missing carer response<sup>7</sup> Twelve missing carer responses

support group, and 1 online. Participants who completed the survey in a support group were more likely to be 75 years or older (21.7% vs 7.1%,  $p = .005$ ) and to live in a major city (57.8% vs 18.6%,  $p < .001$ ) than participants who completed the survey by post. The majority of participants were female (81.0%), over the age of 54 (75.4%), the parent of the person they cared for (61.5%), and resided with that person (52.4%; Table 1).

#### Expectations of care provision

The majority of participants expected all four types of health care services to provide care for fruit and vegetable consumption to people with a mental health condition, with the highest expectation for GPs (81.1%), and the lowest for NGOs (56.2%) (Table 2). The majority of participants also expected all service settings to provide

care for physical activity, with the highest expectation for community mental health services (85.9%), and the lowest for NGOs (65.4%).

#### Health risk behaviour status

The majority of carers were consuming inadequate amounts of vegetables (68.5%), and approximately one third were consuming inadequate amounts of fruit (34.0%). The proportion of carers consuming inadequate fruit or vegetables overall was 74.8%. More than half of the carers reported engaging in inadequate amounts of physical activity (57.6%; Table 1).

#### Perceived mental health effects of fruit and vegetable consumption and physical activity

Approximately half the carers perceived that consuming adequate amounts of fruit and vegetables could have a 'very' positive impact on mental health (55.9%); 48.6% perceived that inadequate fruit and vegetable consumption would have a 'very' negative impact on mental health. Approximately two thirds of participants perceived that adequate physical activity would have a 'very' positive impact on mental health (71.3%), and that inadequate physical activity would have a 'very' negative impact on mental health (63.8%). Very few participants reported that fruit and vegetable consumption or physical activity would have no impact on mental health (2.1 to 7.0% respectively; Table 3).

#### Associations between socio-demographic and attitudinal variables, with expectations of care provision

Final regression models are presented in Table 4. Participants perceiving that 'eating enough fruit and vegetables would have a very positive impact on mental health' had greater odds of expecting care for fruit and vegetable consumption to be provided in: mental health hospitals (Odds ratio [OR]: 2.61, 95% Confidence Interval [CI]: 1.09–6.26,  $p = .03$ ); GP (OR: 3.30, 95% CI: 1.24–8.51,

**Table 2** Expectations of care in health and community service settings

Item	Response		
	Yes n(%)	No n(%)	Unsure n(%)
Fruit and Vegetable Consumption Care			
Mental health hospital <sup>1</sup>	106 (78.5)	17 (12.6)	12 (8.9)
Community mental health service <sup>2</sup>	102 (76.7)	17 (12.8)	14 (10.5)
General practice <sup>3</sup>	107 (81.1)	18 (13.6)	7 (5.3)
Non-government organisation <sup>4</sup>	72 (56.2)	28 (21.9)	28 (21.9)
Physical Activity Care			
Mental health hospital <sup>2</sup>	110 (82.7)	10 (7.5)	13 (9.8)
Community mental health service <sup>1</sup>	116 (85.9)	6 (4.4)	13 (9.7)
General practice <sup>1</sup>	107 (79.2)	14 (10.4)	14 (10.4)
Non-government organisation <sup>5</sup>	83 (65.4)	13 (10.2)	31 (24.4)

<sup>1</sup> Nine missing responses<sup>2</sup> Eleven missing responses<sup>3</sup> Twelve missing responses<sup>4</sup> Sixteen missing responses<sup>5</sup> Seventeen missing responses

**Table 3** Perceived health effects of fruit and vegetable consumption and physical activity on mental health

Item	Response				
	n(%)	n(%)	n(%)	n(%)	n(%)
	Very	Moderately	A little	Not at all	Unsure
Adequate fruit and vegetable consumption- positive influence on mental health <sup>1</sup>	80 (55.9)	41 (28.7)	11 (7.7)	6 (4.2)	5 (3.5)
Inadequate fruit and vegetable consumption- negative influence on mental health <sup>2</sup>	69 (48.6)	39 (27.5)	13 (9.2)	10 (7.0)	11 (7.7)
Adequate physical activity- positive influence on mental health <sup>1</sup>	102 (71.3)	29 (20.3)	7 (4.9)	3 (2.1)	2 (1.4)
Inadequate physical activity - negative influence on mental health <sup>3</sup>	90 (63.8)	30 (21.3)	6 (4.3)	7 (5.0)	8 (5.6)

<sup>1</sup> One missing response<sup>2</sup> two missing responses<sup>3</sup> three missing responses

$p = .02$ ); and NGOs (OR: 2.30, 95% CI: 1.02–5.17,  $p = .04$ ), compared to carers not holding that view.

Carers who perceived 'doing enough physical activity' would have a very positive impact on mental health<sup>1</sup> were almost four times more likely to expect care for physical activity in mental health hospitals (OR: 3.70, 95% CI: 1.44–9.84,  $p < .01$ ), compared to carers not holding that view. Carers who completed four years of high school (School Certificate) had lower odds of expecting physical activity care in community mental health services (OR: .15, 95% CI: .04–.50,  $p < .01$ ) and GPs (OR: .28, 95% CI: .10–.80,  $p = .02$ ), compared to carers who had completed more than four years high school. There were no other significant associations.

### Discussion

This is the first study to explore the prevalence of family carer expectations regarding care provision for fruit and vegetable consumption and physical activity to people with a mental health condition by a variety of health and community service settings, and factors associated. Many carers expected all four service settings to provide care for fruit and vegetable consumption, (56.2–81.1%) and physical activity (65.4–85.9%). The majority of carers consumed inadequate fruits and vegetables and engaged in inadequate physical activity. The majority of carers perceived that consuming adequate amounts of fruits and vegetables and engaging in adequate amounts of physical activity would have a very positive impact on mental health. Perceptions that the health risk behaviours would have a positive impact on mental health was associated with expectations of care. Carers who held the view that adequate fruit and vegetable consumption would have a very positive impact on mental health were more likely to expect such care in mental health hospitals, GP, and NGOs; whilst carers who believed adequate physical activity would have a very positive impact on mental health were more likely to expect care for that risk behaviour in mental health hospitals. Finally, carers

who completed four years of high school were less likely, than carers who completed more than four years of high school, to expect physical activity care provision in community mental health services and GP.

The findings of a high prevalence of carers expecting care to be delivered for both health risk behaviours across all care delivery settings studied align with the recommendations of guidelines and policies regarding the provision of physical health care in all services accessed by people with a mental health condition [51–55]. The results are also consistent with research reporting that people with a mental health condition would find it acceptable to be provided with support to change health risk behaviours from the services they access [28, 49, 61, 87–89]. Such findings highlight the need for health and community services to adhere to existing policies and increase the provision of care for these health risk behaviours to people with a mental health condition given the reported sub-optimal provision of preventive care to date [63].

Findings from implementation research suggest that in order for such care provision to increase in services accessed by people with a mental health condition, further research is required to develop strategies to overcome barriers to the provision of such care. Identified barriers include: a prioritisation of mental health care over health risk behaviours [65, 90]; a lack of confidence in providing preventive care [66, 91]; perceptions of client lack of interest in improving risk behaviours, [90–94] and; a lack of client receptivity to receive behaviour change support [91, 95]; a lack of time to provide such care [96, 97]; lack of training in the provision of care [90, 98]; lack of organisational policies regarding the recording of care provision, [91, 99] and; a lack of reminders to facilitate care provision [97, 100]. Further implementation research is required to identify and understand mental health service characteristics that impede on the provision of preventive care; and subsequently tailor practice change intervention strategies to

**Table 4** Variables associated with expectations of fruit and vegetable consumption and physical activity care provision

Predictor	OR	95% CI Lower Upper	p
<b>FRUIT AND VEGETABLE CONSUMPTION</b>			
Mental health hospitals <sup>1</sup>			
Fruit and vegetable consumption-very positive impact on mental health	2.61	1.09–6.26	0.03*
Community mental health services <sup>2</sup>			
Living in same residence	0.47	0.20–1.12	0.09
Married/de facto carers	0.39	0.13–1.24	0.11
GPs <sup>3</sup>			
Carer inadequate nutrition	0.30	0.08–1.12	0.07
Carer in workforce	3.20	0.98–10.45	0.05
Fruit and vegetable-very positive impact on mental health	3.30	1.24–8.51	0.02*
NGOs <sup>4</sup>			
Carer gender - female	2.32	0.95–5.66	0.07
Fruit and vegetable-very positive impact on mental health	2.30	1.02–5.17	0.04*
Family member psychiatric diagnosis			
Schizophrenia	2.63	0.95–7.27	0.06
Depression	0.83	0.23–2.97	0.77
Bipolar	3.42	1.04–11.18	0.05
Other			Reference
<b>PHYSICAL ACTIVITY</b>			
Mental health hospitals <sup>5</sup>			
Physical activity-very positive impact on mental health	3.70	1.44–9.48	< 0.01*
Community mental health services <sup>6</sup>			
Carer highest education level			< 0.01*
Less than four years high school	0.57	0.15–2.21	0.41
Four years high school	0.15	0.04–0.50	< 0.01*
More than four years high school			Reference
GPs <sup>7</sup>			
Carer highest education level			0.03*
Less than four years high school	0.38	0.13–1.10	0.07
Four years high school	0.28	0.10–0.80	0.02*
More than four years high school			Reference
NGOs <sup>8</sup>			
Carer inadequate physical activity	0.48	0.21–1.10	0.10
Married/de facto carer	0.39	0.14–1.09	0.07

\*Significant at  $p < .05$ <sup>1</sup>Variables entered into regression model at  $p < .25$ :<sup>2</sup>Carer gender, carer and family member residential status, impact of fruit and vegetable consumption on mental health<sup>3</sup>Carer and family member residential status, carer employment status, carer marital status<sup>4</sup>Family member age, carer nutrition risk status, impact of fruit and vegetable consumption on mental health, carer employment status<sup>5</sup>Carer age, carer gender, carer nutrition risk status, impact of fruit and vegetable consumption on mental health, carer highest education level, family member psychiatric diagnosis<sup>6</sup>Impact of physical activity on mental health, family member highest education level, carer marital status<sup>7</sup>Carer highest education level, impact of physical activity on mental health, carer marital status, family member marital status, socio-economic index of disadvantage<sup>8</sup>Carer highest education level, Family member highest education level<sup>9</sup>Carer age, years in caring relationship, carer physical activity risk status, carer marital status

address such characteristics within mental health services. From the carer perspective, a limited body of literature exists, however it suggests carers do expect holistic care from services accessed by their family members with a mental health condition [79, 101]. Future research could seek to explore expectations of care

provision further. It may be that carers might prioritise mental health support over physical health support for their loved one. Some might believe that offering nutrition support would likely limit the time available to deliver more traditional mental health support. Some consumers, staff, and carers may not be aware of the



evidence that there are mental health benefits, as well as physical health benefits, from improving physical activity and nutrition condition [38–41].

Additionally, higher expectations of care for both health risk behaviours were reported by carers compared to the proportion of carers who perceived engaging in positive risk behaviours would have a very positive impact on mental health. Further research is required to explore this trend and confirm if such findings are consistent among a larger sample. It may be that expectations of care provision were also influenced by carer knowledge of the positive impact on physical health to be gained from engaging in positive health risk behaviours [79, 102]. Subsequent research is required to explore such a speculation.

A perception that the health risk behaviours have an impact on mental health is consistent with previous research among family carers, where carers reported a perception of a bidirectional relationship between physical and mental health, [79] and have expressed expectations for smoking cessation care to be provided to clients with a mental health condition [80]. Similarities were found between the results of the current study and a previous study exploring carer expectations of smoking cessation care by health and community services [80]. Carers, in a previous study, who perceived that smoking cessation would have a positive impact on mental health were more likely to expect smoking cessation care in mental health hospitals, community mental health services, and non-government organisations [80]. Such findings suggest carers are aware of the impact of health risk behaviours on mental health. Given the prioritisation of mental over physical health care by services, reported by carers [101, 103, 104] and mental health professionals, [105, 106] further dissemination of the bidirectional relationship between physical and mental health [37–41] - and the knowledge of such a link by carers - may aid in increasing physical health care by services catering to clients with a mental health condition. It may be that carers' knowledge about the link between mental and physical health could be used to advocate for improved preventive care provision in mental health care delivery for their family member.

Carer risk status was not associated with expectations of care for the relevant health risk behaviour in any service studied; similar to a previous study of carer expectations on smoking cessation care by the same service types [80]. Such findings may suggest carers' own risk status may not impact on their perceptions of physical health care for their family members with a mental health condition. Further research is required to explore this finding to determine if carers may have the potential to support health risk behaviour change among people with a mental health condition (which a limited body of

research suggests [78, 79, 101, 102, 107, 108]) and if their own risk status may impact on such a potential. Research among mental health professionals suggests the provision of support to change health risk behaviours may be decreased in those professionals engage in health risk behaviours [66].

The association between carer education level and expectations of physical activity care in community mental health services and GP requires further investigation. It has been found in previous research that individuals with lower levels of education have less knowledge of physical activity guidelines [109]. A recent Australia study ( $n = 615$ ) found that individuals were more likely to be physically active if they were aware of the benefits of physical activity (knowledge increased risk of disease resulting from physical inactivity) [110]. It may be that participating carers with more than four years of high school completed, may have had an increased knowledge of the benefits of physical activity and thus were more likely to expect care within community mental health services.

The results of this research should be considered in the context of the following limitations. This study had a low response rate (<38%), yielding a small sample ( $n = 144$ ), drawn from members of a carer support organisation within one regional local health district in Australia. Caution should be used when considering the results of the regression analyses given the small sample size. The experiences of participating carers may not be representative of all carers of people with a mental health condition, or of carers from different geographical locations. However, the geographic and socio-economic profile of the participants were largely consistent with characteristics of carers in Australia [71]. Additionally, given participants were recruited based on their previous consent to receive invitations to participate in research; such a recruitment strategy may have resulted in selection bias where these carers who have previously elected to participate in research may not be representative of all carers of people with a mental health condition. The self-reported nature of the data may also be prone to recall and social desirability biases [111]; which would perhaps most likely result in an under-estimation of engagement in chronic disease risk behaviours. Some evidence does suggest however that older adults' recall of their health behaviours is reliable [112]. Chronic physical conditions were not assessed in the current study. It is unclear if carers' responses may have differed if their family member with a mental health condition also had a comorbid physical health condition. Future research could aim to assess such comorbidities and the impact on carers' expectations of support from health services. The current study utilised a broad definition regarding care provision. It is unknown if providing additional details regarding care elements, such as asking about risk behaviours and providing advice, may have



impacted the results. Finally, given the cross-sectional nature of the study, no causal inferences can be made. Future research could seek to explore additional factors that could impact on carer's expectations of care provision in health and community services to people with a mental health condition.

### Conclusions

Given the increasing need to recognise and include family carers as key stakeholders in the provision of care to people with a mental health condition, this research provides novel insight. Findings suggest that many carers are aware of the impact that health risk behaviours can have on mental health and that carers may also expect services accessed by people with a mental health condition to provide care for such risk behaviours. These results reinforce the need for health services to consider providing care for people with a mental health condition that addresses fruit and vegetable consumption and physical activity. Additionally, in line with guidelines recommending the inclusion of client and carer perspectives in service planning, the current findings could be included in discussions regarding the development, provision, and evaluation of new services provided to people with a mental health condition. Future research could explore whether stronger engagement between health services and carers and people with a mental health condition in the development of new services would lead to the implementation of more routine provision of care for chronic disease health risk behaviours.

### Supplementary information

Supplementary information accompanies this paper at <https://doi.org/10.1186/s12913-020-5059-0>.

**Additional file 1.** Carers Views: Addressing Physical Health Risk Behaviours

### Abbreviations

BMI: Body Mass Index; CI: Confidence Interval; DALY: Disability Adjusted Life Years; GP: General Practice; NGO: Non-Government Organisation; NSW: New South Wales; OR: Odds Ratio

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### Author's contributions

Authors JMB, JAB, and PW designed, distributed, and assisted in the conduct of the survey. All authors (JMB, TCM, KB, JW, PW, and JAB) contributed to the article conception, writing, and interpretation of data analyses and editing of the manuscript. Author JMB conducted all data analyses. All authors (JMB, TCM, KB, JW, PW, and JAB) read and approved the final version of the submitted manuscript.

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### Availability of data and materials

The dataset used and analysed during the current study is available from the corresponding author on reasonable request.

### Ethics approval and consent to participate

The study was approved by the Hunter New England Human Research Ethics Committee (No. 13/06/19/5.11) and was registered with the University of Newcastle's Human Research Ethics Committee (No. H-2019-0141). All participants provided written informed consent.

### Consent for publication

Not applicable.

### Competing interests

The authors declare that they have no competing interests.

### Author details

<sup>1</sup>School of Psychology, Faculty of Science and Information Technology, The University of Newcastle, University Drive, Callaghan, NSW 2308, Australia.

<sup>2</sup>Hunter Medical Research Institute, Clinical Research Centre, Lot 1 Koolaburra Circuit, New Lambton Heights, NSW 2305, Australia. <sup>3</sup>Population Health, Hunter New England Local Health District, Booth Building, Wallsend Health Services, Longworth Avenue, Wallsend, Wallsend, NSW 2287, Australia. <sup>4</sup>School of Medicine and Public Health, Faculty of Health and Medicine, The University of Newcastle, University Drive, Callaghan, NSW 2308, Australia.

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