Exploring the barriers to the introduction of a best practice nutrition and dietetics service model in rural areas

Leanne Julie Brown

BHSc (N&D), Grad Cert Paed Nutr Diet, Grad Cert Sports Nutr

A thesis submitted for the degree of PhD (Nutrition and Dietetics)

March 2009

Statement of Originality

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

……

Leanne Brown

Acknowledgement of Collaboration

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

……

Leanne Brown

Acknowledgments

I would like to thank my supervisors:

Firstly, Professor Sandra Capra for her vision, enthusiasm and encouragement throughout this research process. I have been inspired her boundless energy and enthusiasm for research and the dietetic profession.

Secondly. Dr Lauren Williams for her expert, detailed advice and excellent editing skills. I am particularly grateful for her support with qualitative data analysis and the writing up qualitative results. Lauren provided me with support and encouragement when it was needed most.

I would also like to acknowledge the support and assistance provided by:

Ms Sue Cassidy and Ms Elizabeth Ferres at the Dietitians Association of Australia (DAA) National Office for the provision of de-identified DAA workforce data.

The staff and patients of the Oncology Clinic at Tamworth Rural Referral Hospital for their support and participation in this research. The dietitians and other health professionals in the Hunter New England Health area who have participated in this research. I would particularly like to thank Deanne Harris and Elesa Crowley for their participation and support.

My colleagues at the University Department of Rural Health Northern NSW who have provided valuable advice and encouragement along the way. I would particularly like to thank Jennifer Lang for her support with providing resources and Colette McLaren for her expert technical support.

I would also like to thank all of my research assistants who have helped with a range of research activities: Mia Winterton, Cathy Viertel, Amanda Horne and Rebecca Martin. Mr Nic Croce for his expert statistical advice.

Last of all, but very importantly friends, family and Bob Scherf for their love, support and encouragement.

Abbreviations and Acronyms

The following is a list of the most commonly used abbreviations and acronyms used throughout this thesis.

ABS	Australian Bureau of Statistics
ACT	Australian Capital Territory
AH	Allied Health
AIHW	Australian Institute of Health and Welfare
APD	Accredited Practising Dietitian
ANZSCO	Australian New Zealand Standard Classification of Organisations
ARIA	Accessibility/Remoteness Index of Australia
ASGC	Australian Standard Geographical Classification
BHC	Better Health Commission
BMI	Body Mass Index
CDM	Chronic Disease Management
CHIS	Community Health Information System
CHIME	Community Health Information Management Enterprise
CINAHL	Cumulative Index to Nursing and Allied Health Literature
CPD	Continuing Professional Development
CPE	Continuing Professional Education
DAA	Dietitians Association of Australia
DHHS	Department of Health and Human Services
DOHRS	Department of Health Reporting System
EPC	Enhanced Primary Care
F/T	Full-time
FTE	Full-time equivalent
GP	General practitioner
HNEH	Hunter New England Health
HP	Health professional
IT	Information Technology
ICT	Information and communication technology
MAHS	More Allied Health Services
MCAS	Modified Constipation Assessment Scale
NI	Nutritional Intervention
NRRAHAS	National Rural and Remote Allied Advisory Service

NSW	New South Wales
NT	Northern Territory
NZ	New Zealand
OT	Occupational Therapist
OOS	Occasions of service
PG-SGA	Patient generated Subjective Global Assessment
PHC	Primary Health Care
PHCRED	Primary Health Care Research and Education Development
P/T	Part-time
PT	Physiotherapist
Qld	Queensland
QLQ-C30	Quality of life questionnaire - C30
QOL	Quality of Life
RR	Response rate
SARRAH	Services for Australian Rural and Remote Allied Health
SA	South Australia
SED	Socioeconomic disadvantage
SGA	Subjective Global Assessment
SP	Speech Pathologist
Tas	Tasmania
TCA	Team Care Arrangements
TRRH	Tamworth Rural Referral Hospital
UANOVA	Univariate Analysis of Variance
UC	Usual care
UDRH	University Department of Rural Health
UK	United Kingdom
USA	United States of America
Vic	Victoria
WA	Western Australia
WTE	Whole Time Equivalent

Table of Contents

Index of Figures

Index of Tables

Preface

In order to ensure rigour in qualitative research it is important that researchers are able to reflect on and acknowledge the influence of their own views and experiences and how these may influence the data collection and interpretation (Mathers and Huang 2004). Reflexivity refers to the ongoing examination of what is known and how it is known "to have an ongoing conversation about experience while simultaneously living in the moment" (Hertz 1997). According to Patton reflexivity requires the qualitative researcher to be aware of their own perspectives (cultural, political, social, linguistic and ideological) and that of the research interview participants (Patton 2002).

As the author of this manuscript it is important that I acknowledge my current position as a Lecturer in Nutrition and Dietetics at the University Department of Rural Health Northern New South Wales. In this position I have worked closely with the rural based dietitians in the area under study for the past five years. In this role I have been responsible for providing clinical outpatient services, continuing education for local dietitians and support for student placements. In this role I am known to many local dietitians and some of those interviewed in this research were known to me prior to the research being conducted.

Prior to my current appointment I worked for a period of eight years in clinical dietetic positions, primarily in urban areas. This non-rural clinical background provides me with a different perspective which gives me an awareness of the differences between rural and metropolitan dietetic services and practice. In order to maximise the accuracy and objectivity of the data, aspects of the qualitative and quantitative data were triangulated. Field notes were recorded throughout the process of obtaining qualitative data and a second non-rural based researcher provided double coding of the interview themes. These methodological processes were designed to ensure the rigour of this research.

Abstract

This body of research explores the barriers that exist to the introduction of best practice models for dietetics services in rural areas of Australia. Best practice in this thesis refers to workforce staffing and organisational best practice, rather than clinical best practice. For the purpose of this thesis a best practice dietetic service has been defined as *a timely, accessible, up-to-date nutrition and dietetic service that is effective in meeting the identified needs of the community* based on a quality health service definition (Halton 2005). There is no known previous research that has investigated the elements of a best practice dietetics staffing model and the factors that support or inhibit the development of a best practice dietetic service model in rural areas. A review of the literature was conducted to determine the potential features of a best practice dietetic service for rural areas and the factors that are known to affect the development of a best practice service. A theoretical model of best practice dietetic services for rural areas was tested using a series of case studies. An exploratory sequential mixed methods approach has been used in six case study sites to investigate the barriers to best practice using rural sites in northern New South Wales (NSW), Australia as the setting. The mixed method multiple case study investigated the dietetics workforce characteristics and development in the study sites. Best practice dietetic service delivery was tested with cancer patients using the implementation and evaluation of best practice dietetic clinical guidelines in a rural setting. Key findings from this research include: retention issues related to a lack of management support, limited career pathways and professional isolation. Key drivers for the creation of dietetics positions included the actions of champions and the support of management. The main barriers to the creation of positions included a general lack of funds and competing priorities. The outcomes of this research are important for future workforce planning for dietitians in rural areas.

Background to this thesis

Health status in rural areas

People who live in rural and remote areas of Australia generally have poorer health than those who live in major cities. They experience higher death rates, poorer health outcomes (Phillips 2006), lower life expectancy and higher hospitalisation rates for some illnesses (Humphreys 1999). Compared to people living in major cities, those living in rural and remote areas are more likely to be smokers, to drink excessive quantities of alcohol, to be overweight or obese, to be physically inactive (AIHW 2006a) and have sustained unhealthy nutrition (Smith, Humphreys et al. 2008). They also have less access to specialist medical services and other health services (AIHW 2005).

It is likely that these higher levels of health risk factors and poorer access to health services combined with factors such as lower incomes, lower levels of education and occupational and environmental issues (such as road travel and rural occupations) contribute to this general poorer health status (Dixon and Welch 2000; AIHW 2006a). The poorer health outcomes of people in rural areas have also been attributed in part to the higher proportion of Indigenous people located there (2% inner regional, 5% outer regional) (AIHW 2006a; AIHW 2008a).

Most rural areas have a higher proportion of their population aged over 65 years, compared to metropolitan areas (Larson 2006). Those living in rural areas tend to have higher rates of chronic conditions (Grimmer and Bowman 1998) and experience a lower socio-economic status and relative social isolation (AIHW 1998), which impact on the health service needs of the population. The delivery of health care in rural areas is affected by low incomes, distance, inadequate transport, an ageing population and economic decline (Orloff and Tynmann 1995). Given these issues it is difficult to provide accessible quality health care to individuals with chronic and complex conditions in rural areas, particularly to vulnerable groups, such as, the elderly, disabled or minority groups (Jensen and Royeen 2002) (Sypek, Clugston et al. 2008).

Morbidity and mortality in rural Australia

In 2002-04 the death rate in rural and remote areas of Australia was significantly higher than in major cities and an excess of 4 400 deaths occurred ('excess deaths' determined using 2002-04 major city rates as the standard). The main causes for these excess deaths are summarised in Table 1. In 2002-03 the incidence of cancer was 4% higher in regional areas compared to major cities, with significantly higher incidence rates for preventable cancers such as melanoma and lung cancer (AIHW 2008a).

Table 1: Cause of death as a percentage of excess deaths in inner and outer regional areas of Australia 2002-04

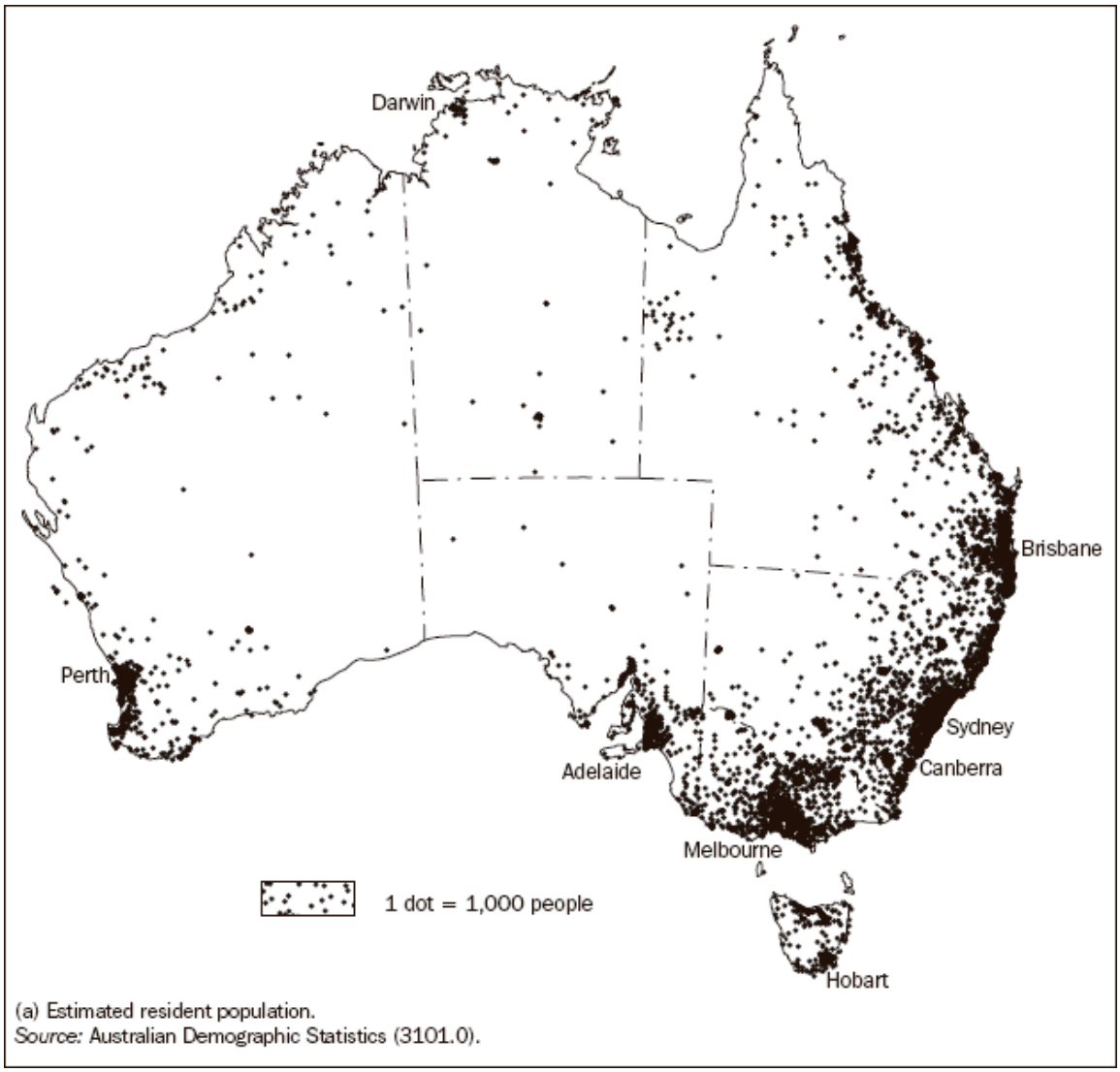
Cause of Death	Percentage of excess deaths Inner Regional areas (%)	Percentage of excess deaths in Outer Regional areas (%)
Coronary heart disease	37	32
Neoplasms	29	23
Injury	21	22
Respiratory diseases	6	9
Diseases of the digestive system	4	5
Endocrine diseases	2	7

Source: Adapted from (AIHW 2007)

In inner and outer regional areas the death rates for males were 10% (1.10 times) and 15% (1.15 times) higher than in major cities and for females they were 10% and 25% higher respectively, compared to major cities (AIHW 2007). The life expectancy of people living in regional and remote areas is 1-2 years lower than those in major cities (AIHW 2006b). This may be attributed to the higher proportion of Indigenous residents in regional areas and their lower life expectancy (about 17 years less than the national average) (AIHW 2008a).

In a rural setting, factors such as distance, service accessibility, indigenous population and local health problems impact on the needs of the community (AIHW 1998). The future health service needs of people living in rural areas are influenced by the growth or decline in populations and changes in chronic health care needs due to an ageing population. An eight per cent

increase is predicted for the rural population of Australia by 2011 to 1 561 250 people, with an expected migration to rural coastal areas and from smaller rural communities to larger regional centres (NSW Health Department 2002). In addition to this, over the next 20 years the proportion of people aged 65 years and over is expected to increase from 13.6% to around 20% (NSW Health Department 2006). Figure 1 shows the distribution of the Australian population in June 2006.



Source: Reproduced from ABS (ABS 2008c)

Figure 1: Australian population distribution, June 2006

Role of nutrition in health

Adequate and appropriate nutrition and dietary advice is crucial to the prevention and treatment of numerous nutrition-related health conditions, including diabetes, obesity, cardiovascular disease and some types of cancers. Poor nutrition contributes significantly to the burden of disease and cost of health care in Australia (Mathers, Vos et al. 1999; Marks, Pang et al. 2002). Dietitians are the nutrition experts who are able to provide a range of services in the public and private sector at tertiary, secondary and primary levels of health care (Hughes 1996; Queensland Health 2005). Nutrition and dietetics is the only allied health profession with specific positions allocated to cover the entire continuum of care (Shirtcliff and O'Neil 2006). Given the higher prevalence of conditions amenable to dietary prevention or requiring dietary management such as diabetes, cerebrovascular disease and obesity in rural and remote Australia (AIHW 1998) there is an important role for dietitians in these areas. There is also evidence that the cost of healthy food choices is greater in rural areas, with 20-40% of a welfare income required for the cost of a Healthy Food Basket (HFB) (Palermo, Walker et al. 2008). A lack of dietetic service is likely to contribute to the ongoing poorer health outcomes experienced in rural areas, particularly in relation to chronic diseases.

Chapter One: Literature review

1.0 Introduction

This chapter provides a comprehensive review of research that identifies possible barriers and drivers to the development of a best practice nutrition and dietetics service in rural areas. The overall objective of this chapter is to identify what is known from the current body of research and what factors there are little or no evidence for. This chapter begins with a description of the chapter structure, followed by an outline of relevant definitions and concepts (background) and an overview of the search strategy used for the review of the literature. The review of the literature is organised into four sections:

i. benchmarks for dietetic services,

ii. rural allied health workforce,

iii. rural allied health recruitment and retention and

iv. allied health workforce staffing models in rural areas.

The literature review leads on to the development of a proposed theoretical model and statement of research questions, hypotheses and an overall summary of research design and methodology. This review concludes with a summary of the deficiencies in the current literature and outlines how this research addresses some of these gaps.

1.1 Background

Best practice and benchmarking

Best practice can be defined as the pursuit of excellence in service delivery (DeLise and Leasure 2001) and can be applied to any aspect of an organisation. Best practice has also been defined as “a comprehensive and integrated approach to continuous improvement in all facets of an organisation’s performance” (National Rural Health Alliance 1997). As previously stated, for the purpose of this thesis, best practice refers to

workforce staffing and organisational best practice in terms of service delivery, rather than clinical or therapeutic best practice.

Benchmarking is described as an ongoing systematic process to search for and introduce best practice (Ellis 2002) or a process about finding new ways of doing things to improve the quality of care (Department of Health 2001). Benchmarking is a process by which practitioners compare and measure their own practices, processes, philosophies, policies and performance against those of high-performing, high quality areas (DeLise and Leasure 2001). The features of a best practice dietetic service need to be determined before benchmarking of dietetic services can occur (Foreman 1995). Benchmarking can apply to staffing ratios of particular services or populations.

Benchmarking figures for the dietetics profession have been suggested in the literature (Better Health Commission 1986; State Public Services Federation 1994). These figures are based on the number of dietitians per head of population or as a ratio of dietitians per patient bed numbers in institutional settings. These benchmarking figures are usually based on comparisons to other countries or institutional settings, without considering if these are best practice dietetic service models. Despite flaws in the way these benchmarks are determined they have been summarised in the following literature review to provide an overview of what is documented.

Quality rural health services

A quality health service has been defined as one that is timely, accessible, appropriate, safe, continuous and effective (Smith, Humphreys et al. 2006). Researchers have identified key factors to providing good quality health care in rural areas to include: adequate numbers of well-trained staff, stable staffing, well-equipped and well-managed health service settings (Moscovice and Rosenblatt 2000). More specifically, in order to provide quality services, health professionals need to be well skilled, provide quality personal interactions with patients and be flexible and responsive to the needs of individual patients (Moscovice and Rosenblatt 2000).

The ability to attract and retain health professionals in rural and remote areas is crucial in order to be able to provide a quality health service that is sustainable and accessible (NSW Department of Health 2007). Workforce problems relate to the supply, distribution, availability, recruitment and retention and accessibility of health professionals (Williams and Cutchin 2002). Rural areas are typically underserviced and the availability of health professionals is inconsistent (NRRAHAS 2004a). A high turnover of staff in rural areas leads to instability in the provision of health care and to problems of overburdened practitioners and inadequate services to rural patients (Williams and Cutchin 2002).

The needs of rural health consumers are a key consideration in order to achieve quality health care services. While the expectations of health care consumers in general have increased, rural consumers are often reluctant to seek health assistance due to a strong desire to remain independent (Rowan 1998). Major issues identified by rural consumers include: the cost of health services, the ease of access to health information (Bourke 2001) and the lack of choice and accessibility of health care professionals (FitzGerald, Pearson et al. 2001). In recent years increased access to videoconferencing technology and the internet has enabled the use of these modes of health education delivery in rural areas, with varying levels of success and consumer satisfaction (Faulkner and McClelland 2002).

Quality dietetic services

A **quality dietetics service** has been defined as one that provides a consistent treatment with identical standards of care or as a service that meets or exceeds the expectations of customers (Schiller, Miller-Kovach et al. 1994). While adequate staffing is needed for a quality service, high staffing ratios are not necessarily an indicator of a quality dietetic service as the actual service provided is not defined by the number of staff (Foreman 1995). Conversely, understaffing may lead to a high quality service if delivered to a limited client base or lower quality service if delivered to a broad client base (Foreman 1995). A certain, as yet undetermined, amount of adequate staffing is required in order to provide a quality service to a specific population, based on population characteristics. These include:

distances travelled to provide services, demography of the client base (for example high Aboriginal or multi-cultural populations) and other factors that contribute to increased demands on a practitioner's time.

The processes of nutrition screening and referral are an important part of a quality nutrition and dietetic service (Kruizenga, Van Tulder et al. 2005; Anthony 2008). Failure to detect nutritional problems, a lack of nutritional data, lack of appropriate referrals, fragmented work practices and failures in education and training compromise service delivery. Adequate processes need to be in place to ensure dietitians and other health professionals are using appropriate systems for nutritional screening and diagnosis and that referral systems work (Mason and Brady 2003). Up-to-date best practice dietetic education and interventions with clients relies on rural practitioners having access to the latest information. A lack of access to adequate continuing professional development (CPD) and the internet means outdated practices or advice may be used with clients in rural areas (Fitzgerald, Hornsby et al. 2000; Glynn 2003).

In order to determine what is already known about the potential barriers and drivers of the development of a best practice dietetic service in rural areas, the literature was reviewed for research on health service provision and workforce issues in rural and remote areas. Dietetics specific health service and workforce data were reviewed, and as this literature is limited, the wider rural health and allied health service literature was also included in the search.

1.2 Search strategy

A review of the literature was conducted in the following topic areas: workforce, allied health, best practice, benchmarking, rural health services and allied health staffing models, using the search terms listed in Appendix 1.3. The following electronic databases were searched: CINAHL (1982 to current), PsychINFO, PubMed, EMBASE, The Cochrane Database of Systematic Reviews, The Cochrane Register of Controlled Trials, Medline Advanced (1950- 2007) and the Australasian Digital Theses (ADT) Program.

No language restrictions were employed. Studies and review articles were eligible for inclusion in this review if they were:

i. related to the dietetics workforce and/or

ii. related to similar allied health professions (such as occupational therapy, psychology and physiotherapy) and

iii. based in developed countries (such as Australia, Canada, NZ, USA and UK).

Studies were excluded from the review if they were:

i. based on the medical or nursing workforce issues in rural areas [i]

ii. based on specialised services not directly relevant to dietetics or without a dietetic role and/or

iii. based on non-rural dietetic services

In addition to electronic databases, other reputable websites and other sources of data were accessed to provide additional unpublished or grey literature. These included commonwealth and state health department web sites, the Services for Australian Rural and Remote Allied Health website and the Rural and Remote Health Papers CD Rom (National Rural Health Alliance 2007). A total of 3 481 abstracts matching the search criteria were reviewed. From these studies, 107 studies matched the inclusion criteria and 3 374 were excluded. The remaining 107 studies were reviewed for the literature reviews in Chapters One and Two. Of these 51 were published articles, 17 were conference papers, 36 were workforce reports and three were dissertations. Individual literature reviews relevant to each case study have been included in each of the relevant chapters.

[i] While the medical and nursing literature is extensive, it is not directly relevant to the allied health workforce.

1.3 Literature Review: Benchmarking and best practice for dietetic services

Benchmarks for the dietetics profession

Dietitians may practice in a range of areas including clinical (acute hospital and ambulatory care), food service, management, community, public health and nutrition promotion, food industry, private practice and consultancy, education and research (Yeatman 1990; Payne-Palacio and Canter 2006). Dietitians who work in areas other than frontline health service delivery also contribute to the overall nutritional health of Australians through the education of future dietitians, influencing policy and practice across the food system and research into dietetic practice. Dietitians in all of these work areas can be included in benchmarks aimed at a population level.

In Australia there has been at least one attempt to suggest an appropriate benchmark for the number of dietitians per head of population. The Better Health Commission in 1986 suggested a figure of 14 dietitians per 100 000 population, however this figure appears to be based on comparisons to numbers of dietitians per 100 000 population in other countries at the time, with no justification for why the figure was chosen. Table 2 summarises the dietitians per 100 000 population in 1986 as outlined in the Better Health Commission document. At the time there was a high of 22 dietitians per 100 000 population in the United States and a low of 6.5 per 100 000 in Australia, with Canada at 14 dietitians per 100 000 (Better Health Commission 1986). This suggested benchmark figure, which is often quoted, was based on 1986 Canadian rates, but this was not justified. Some 20 years later, this figure has even less relevance given the higher rates of obesity and diabetes in Australia (Brown, Capra et al. 2006).

Table 2: Dietitians per 100 000 population in 1986

Country	Dietitians per 100 000 population
Australia	6.5
New Zealand	11.5
Canada	14.0
United States	22.0

Source: Reproduced from (Better Health Commission 1986)

The use of national averages per head of population as a benchmark for health professionals does not take into account different service needs, skill requirements or issues of distance and travel time in rural and remote areas (Bishop 1998). This crude form of benchmarking also assumes that current average levels of staffing in those countries are adequate.

Benchmarks for hospital-based dietetic services

Some benchmarks for dietetic staffing in hospitals and specialist areas of practice have been suggested over the past 30 years. The original hospital-based benchmark was set in 1935 by MacEarchern, at a ratio of one dietitian per 100 patients (MacEachern 1935). The ratios of one dietitian per 100 acute general beds and one dietitian per 200 long-stay beds were suggested by Sax in 1975 (Sax 1975). In 1984, a Canadian committee estimated one full-time equivalent (FTE) dietitian per 100 acute care beds and one dietitian per 300 extended care beds (Federal/Provincial Sub-committee on Productivity Improvement 1984). Other countries have suggested ratios of one dietitian per 160 beds in Britain (British Dietetic Association 1987) and one dietitian per 196 beds in Scotland (Coubrough and Logan 1987). In Australia the State Public Services Federation suggested of a minimum of one FTE dietitian for every 35-40 inpatient referrals per month and one FTE dietitian for every 30-40 outpatient episodes per week, plus one FTE dietitian for administrative tasks per every six dietitians (State Public Services Federation 1994).

In more specialised acute care units, such as oncology, renal disease, diabetes, aged care and burns, ratios of one dietitian per 50 patients and

one dietitian per 25 patients have been suggested and up to two to four dietitians per 100 patients for complex cases (Byas 1986). Recent guidelines for dietitians working in rehabilitation services (for neurology, burns, head and spinal injury) have recommended 0.2-0.4 FTE per 10 inpatients (Allied Health in Rehabilitation Consultative Committee 2004).

Benchmarks for dietetic staffing in primary health care (PHC) settings exist, in addition to the acute care setting. The British Diabetic Association has suggested a benchmark of one dietitian per 167 000 population, with a ratio of dietitians to diabetes nurses of 1:2 (British Diabetic Association 1999). A recent estimate for dietetic staffing in Canada for PHC services, to provide counselling and health promotion, suggested that one FTE is needed per 15 800 to 29 000 population (Witt, Brauer et al. 2006).

The basis for these suggested benchmarks is unclear and the estimated figures appear to be arbitrary (Foreman 1995). In institutional settings, dietetic staffing has been influenced by a number of factors: including the type of institution, type of patients, budgets, and staffing ratios (Marcason 2006). Existing staffing ratios have typically been used to determine appropriate staffing, as best practice target levels do not exist (Marcason 2006). To assess staffing needs in the hospital setting the American Dietetic Association (ADA) suggests focusing on five areas: the facility, department services and operations, legislation, accreditation standards and professional practice issues and guidelines (Biesemeier 2004).

1.4 Literature Review: Rural allied health workforce

Rurality can be defined and classified in many different ways. Typically classifications take into account population size, services, accessibility and distance from metropolitan area (Hugo 2002; Couper 2003) refer to Appendix 1.1 for further explanation. For the purpose of this research ‘rural’ is defined as any area outside a major metropolitan area or capital city that is not considered ‘remote’ or ‘very remote’. Information about the dietetics workforce in Australia is limited, particularly for rural areas. Difficulties recruiting, prolonged vacancies and high turnover of some allied health positions in NSW Health have been reported anecdotally. Other indicators

such as consumer complaints, service waiting times and limited service accessibility also suggest localised problems (McLeod 2006). The literature on the broader allied health rural workforce is a growing area in which dietetics workforce data is often included, but not always reported as a separate profession.

Allied health can be defined as those health professionals which are not medicine and nursing and can include the professions of audiology, dietetics, pharmacy, medical imaging, occupational therapy, orthoptics, orthotics and prosthetics, physiotherapy, podiatry, psychology, social work and speech pathology (Services for Australian Rural and Remote Allied Health 2000). Studies on professions similar to dietetics, such as physiotherapy, psychology and occupational therapy were also included in this literature review. The allied health workforce in rural and remote areas appears to have developed in an *ad hoc* way, with a lack of systematic planning to meet the needs of communities (Bishop 1998). The low levels of allied health professionals in rural areas has been attributed to problems with recruitment and retention, as well as a shortage of positions to meet the needs of rural communities (Hodgson 1992).

Dietitians working in rural areas are typical of other rural health professionals in having a generalist role, where they deal with a wide range of case types on a daily basis (Hodgson and Berry 1993; Sheppard 2001) and specialist positions are uncommon. The work practices of rural and remote allied health professionals are reported to involve a wider variety of tasks (Sheppard 2001) to a broad range of client groups (Boshoff and Hartshorne 2008) and to utilise different methods of service delivery (Hodgson and Berry 1993; Boshoff and Hartshorne 2008). Where discipline specific managers exist, they usually have a high clinical workload with up to two thirds of their time dedicated to clinical work (Boshoff and Hartshorne 2008). Additional time is also spent in travel, outreach services, management and clerical tasks (Hodgson and Berry 1993). A high client-to-clinician ratio might lead to the development of less labour-intensive service delivery models (Boshoff and Hartshorne 2008) and the multi-skilling of staff. The utilisation of new information and communication technologies (such as videoconferencing) for client education, has been one way to

address the difficulties of covering vast geographical areas (Cooper and Brown 2006). Table 3 below provides a summary of the literature on the allied health workforce in rural areas.

Table 3: Allied health workforce in rural areas literature

(Authors, year) Publication source	Sample Location	Method	Results	Conclusions and Limitations
(Morris and Palmer 1994) Journal of Allied Health	N = 102 55% RR 10 AH professions urban and rural Georgia, United States of America	Workforce study Employment and vacancies in ten AH fields across four categories of hospitals (large and small, rural and urban).	Significant differences in employment rates for some professions	Rurality and hospital size may impact on levels of employment and vacancies Nursing included as an AH professional.
(Elliott-Schmidt and Strong 1995) Australian Journal of Rural Health	N = 38 63% RR Occupational therapy delegates attending a state OT conference in 1993 Queensland, Australia	Questionnaire	75% from a rural upbringing 67% had lived in a rural area for more than 5 years Difficulties experienced: Isolation and lack of resources Positive aspects of rural practice: Personal involvement , job satisfaction or community appreciation, nature of work	Isolation, a lack of professional support and inadequate professional supervision identified as difficulties for OTs in rural areas. Sampling methodology and small sample size
(Adams 1997) National Rural Health Conference	N = 300 RR not reported Physiotherapists Rural New South Wales, Australia	Questionnaire	Variable staffing levels not related to hospital bed numbers Smaller populations < 5 000 spent 80% of their time in outpatient services, > 20 000 population less than 30% of time in outpatients.	Unplanned nature of physiotherapy services has led to variability in staffing levels in rural communities RR unclear

(Authors, year) Publication source	Sample Location	Method	Results	Conclusions and Limitations
(Hughes 1998) Australian Journal of Rural Health	N = 140 ~ 30% RR Members of Dietitians Association of Australia	Questionnaire	16% less than 1 years experience 46% more than 5 years 35% worked in sole positions 25% P/T, 7% F/T private practice Incentives for rural practice: variety of work, lifestyle and autonomy. Disincentives: limited CPD opportunities, lack of professional support, limited career structure. Intention to stay: 11% leaving within 1 year, half intended to stay another 5 years.	General information about the features and challenges for rural dietetic workforce. Sampling methodology Low RR Rural classification self -reported and not standardised.
(Rowan 1998) Australian Health Review	N = 113 45% RR 20 focus groups with AH staff and consumers of health services Grampians region of Victoria, Australia	Focus groups using an interview schedule	Perceived poor knowledge of AH services. Local management and support of AH seen as a positive. Issues unique to rural areas – inadequate distribution of public services and difficulty of recruiting and retaining staff. Pressure on existing staff, lack of peer support and limited career advancement.	Consumers – concerned with the outcome Providers – concerned with service delivery issues Limited generalisation of results to the general population

(Authors, year) Publication source	Sample Location	Method	Results	Conclusions and Limitations
(Sheppard 2001) Australian Journal of Rural Health	N = 105 72% RR Rural and remote South Australia and Northern Territory, Australia	Questionnaire	Predominantly private practice (65%), 30% part-time 79% solo practices, only 15% offered specialist services	Diverse role with less access to multi-disciplinary teams and reduced opportunity for specialisation. Grouping of practice locations was used to account for smaller numbers, limited the wider application of the results.
(O'Kane and Curry 2003) 7th National Rural Health Conference	2001 Census data, rural and remote, Australia	Analysis of AH workforce data from the 2001 Census	Five major issues identified: Poor quality data and planning for rural AH workforce. Inequitable access to AH in rural and remote areas. Many AH professionals not employed in their discipline. Low number of Indigenous background AH professionals. Relatively large private and non-government sector.	Better quality data is needed Dietetics specific data may not fit with the overall AH issues. Census data now outdated and detailed 2006 data not available yet.

(Authors, year) Publication source	Sample Location	Method	Results	Conclusions and Limitations
(Lindsay, Hanson et al. 2008) Australian Journal of Rural Health	N = 96 98% RR Three large regional physiotherapy departments in Victoria, Australia	Questionnaire included a stress rating scale for potential workplace stressors and a self- assessed symptoms of stress rating scale	Main workplace stressors included: caseload quantity, periods of increased activity and staff shortages. Younger physiotherapists were significantly more likely to report a higher number of workplace stressors. Main symptoms of stress included: anxiety (58.7%), fatigue (84.6%) and headaches (59%).	Strategies needed to monitor, prevent and manage stress in regional physiotherapists. Insufficient information to quantify any critical levels of stressors or to make causal associations. Limited purposive sample
(Smith, Cooper et al. 2008) Australian Journal of Rural Health	N = 225 49.8% RR Northern New South Wales – Hunter New England area, Australia	Questionnaire	Average age 43 years Average time since qualification 20 years, mean time in current position 10 years. Half of the respondents indicated they intended leaving within five years. 65% were of rural origin Ratio of private to public 0.75:1, with 64% working full-time	Suggests targeting new graduates of rural origin to encourage them to stay. A large proportion (22%) of respondents were pharmacists and had been working for a long time post graduation, which may have skewed results.

AH – allied health, CPD – continuing professional development, HP - health professional, OT – occupational therapist, RR – response rate.

1.5 Literature Review: Rural allied health recruitment and retention

Problems with the recruitment and retention of allied health professionals in rural areas is well reported in the literature (Best 2000). A range of personal, professional and location factors have all been identified and suggested as key factors in the recruitment of health professionals into rural areas (Williams and Cutchin 2002). A summary of the personal, professional and location factors, obtained from existing literature, are outlined in Table 4 below. The data in this table has been linked to a conceptual recruitment and retention model (Schoo, Stagnitti et al. 2005).

Table 4: Factors linked to recruitment and retention of rural allied health professionals

Factor Category	General factors	Rural allied health references
Professional	Job Variety	Job/career opportunities
	Career Options	(Mills and Millsteed 2002; Belcher, Kealey et al. 2005; Williams 2007)
	Remuneration	Risk of de-skilling (Stagnitti, Schoo et al. 2005b).
	Workload	Financial incentives
	Flexibility	(Gillham and Ristevski 2007) (Stagnitti, Schoo et al. 2005b).
	Autonomy	Lack of professional support and development (Mills and Millsteed 2002) (Wolfenden, Blanchard et al. 1996) (Steenbergen and Mackenzie 2004)
	Support	Management structure (Stagnitti, Schoo et al. 2005b; Stagnitti, Schoo et al. 2006) and policy (Gillham and Ristevski 2007).
	Management	Lack of access to professional development has been linked to job satisfaction (Solomon, Salvatori et al. 2001) and intention to leave a workplace (Belcher, Kealey et al. 2005).
	Professional development	Health service resources
	Respect	(Gillham and Ristevski 2007)
	Recognition	Tiring because of travel (Stagnitti, Schoo et al. 2005b).
	Job Security	
	Resources	
	Travel	

Factor Category	General factors	Rural allied health references
Personal	Spouse support/work	Personal (Belcher, Kealey et al. 2005) (Solomon, Salvatori et al. 2001; Mills and Millsteed 2002; Stagnitti, Schoo et al. 2005b)
	Family commitments	Proximity to friends and family or family needs (Solomon, Salvatori et al. 2001; Mills and Millsteed 2002; Belcher, Kealey et al. 2005)
	Friends/ social networks	Family ties (social and community connections) in the area (Stagnitti, Schoo et al. 2005b)
	Image	Social isolation (Stagnitti, Schoo et al. 2005b; Gillham and Ristevski 2007)
	Motivation	
	Generation	Links with family and social ties in the area
	Making a difference	(Lee and Mackenzie 2003; Belcher, Kealey et al. 2005)
	Personal goals	Rural background or experience (Harding, Whitehead et al. 2006) (Heaney, Tolhurst et al. 2004) (Hays, Nichols et al. 1995) (Playford, Larson et al. 2006)
	Rural background or experience	
Location	Cost of living	Lifestyle
	Leisure activities	(Mitchell 1996; Solomon, Salvatori et al. 2001; Mills and Millsteed 2002; Belcher, Kealey et al. 2005; Williams 2007)
	Community	
	Environment	
	Lifestyle	
	Image	
	Sense of belonging	
	Safety and security	

Source: Table adapted from (Schoo, Stagnitti et al. 2005)

Table 5 provides a summary of the key allied health recruitment and retention literature.

Table 5: Allied health recruitment and retention literature

(Authors, year) Publication source	Sample Location	Method	Results	Conclusions and Limitations
(Wolfenden, Blanchard et al. 1996) Australian Journal of Rural Health	N = 478 52% RR Mental health workers (including psychologists, social worker, occupational therapist) Rural New South Wales , Victoria and Queensland	Survey Distributed by mental health co-ordinators at central and regional levels in all states.	Work related issues were generally more important than lifestyle/personal issues as reasons for applying for rural work. A lack of organisational support and professional isolation were detractors for rural work.	Recruitment strategies to focus on: the diversity, challenge and autonomy of rural work. Retention strategies: professional and organisational support. Representativeness of respondents unknown. Survey instrument limitations.
(Mills and Millsteed 2002) Australian Occupational Therapy Journal	N = 10 OTs who had left rural practice Western Australia, Australia	Ethnographic interviews	Themes of experiences in rural practice and later reflections: initial appeal, facing the challenge, rural practice issues, the social sphere, reasons for leaving and the value of rural experience.	Both professional and personal factors contributed to leaving rural practice. Small sample size
(Heaney, Tolhurst et al. 2004) Australian Journal of Rural Health	N = 23 students of new graduates dietitians from the University of Newcastle, New South Wales, Australia	Focus groups with qualitative data analysis	Factors influencing the decision to work in a rural area: job prospects, rural lifestyle, comfort zones, support networks, promotion opportunities, professional development, type of work/work role, rural needs and time frame.	Three intersecting factors affecting decision to work in a rural area: professional issues, personal issues and location issues. Small sample size

(Authors, year) Publication source	Sample Location	Method	Results	Conclusions and Limitations
(Stagnitti, Schoo et al. 2005b) Australian Journal of Rural Health	N = 138 37.4% RR AH staff in south-west Victoria, Australia	Survey	People aged 30-59 years were more likely to stay. Private practitioners intended to stay. Multi-professional work, locum support and rural experience were not related to intention to stay.	Good management practices are required to improve the retention of AH professionals in south-west Victoria. Low RR. Results may not be generalisable to other areas.
(Taylor and Lee 2005) Australian Occupational Therapy Journal	N = 413 (rural based n = 82) 36% RR Surveys sent to all registered occupational therapists in Western Australia, Australia	Survey Used to identify Information and Communication Technology (ICT) access, support and literacy.	45.5% indicated that ICT influenced their decision to continue to work in a rural area. Higher ICT usage by rural therapists – email, internet, Teleconferencing and videoconferencing	ICT was considered to be useful for overcoming professional and social isolation in rural areas. Lower numbers of rural based therapists compared to the urban counterparts.
(Devine 2006) Australian Occupational Therapy Journal	N = 10 50% RR OT graduates and academic staff from James Cook University working in rural areas in Queensland and Victoria, Australia	Semi-structured in-depth interviews. Qualitative methodology using a phenomenological approach.	Undergraduates need to develop broader skills for rural practice, for example administration, primary health care, health promotion and public health skills and rural health issues.	Importance of understanding professional issues in rural areas to prepare OT's at an undergraduate level. Small sample size and limited range of locations.
(Harding, Whitehead et al. 2006) Australian Journal of Rural Health	N = 12 community pharmacists, Purposive sample Rural and remote NSW, Australia	Qualitative semi-structured in depth interviews	Reasons for taking up rural practice included: previous rural experience and a preference for working in rural areas. Main factors supporting retention included: high level of professional satisfaction and inter-professional rapport.	Demographics of pharmacy graduates Small sample size

(Authors, year) Publication source	Sample Location	Method	Results	Conclusions and Limitations
(Playford, Larson et al. 2006) Australian Journal of Rural Health	N = 429 62% RR AH (12 disciplines, including dietetics) and nursing students who had a rural placement in their final year of study between 2000 and 2003 From three universities in Western Australia, Australia.	Longitudinal survey by email and/or telephone	25% had a rural based position post graduation. Positive factors with rural employment: rural background, health discipline, self-reported value of placement, non-compulsory rural placement and placements of four weeks or less. Value and duration of the placement were significantly associated with rural employment.	Students completing voluntary rural placements were more likely to enter into rural practice. The quality of the rural placement is a highly significant factor. No long-term follow up to determine length of stay in rural area.
(Stagnitti, Schoo et al. 2006) Journal of Allied Health	N = 138 AH staff 28% RR University trained HPs (other than physicians and nurses) involved in patient care and/or work in the community. South-west Victoria, Australia	Workforce survey based on SARRAH workforce survey (Services for Australian Rural and Remote Allied Health 2000)	Reasons for intending to leave were related to: management structure, lack of career structure and lack of professional support. Reasons for not recommending current position included: not for long term career, risk of deskilling if staying too long and financially unrewarding. Positive reasons for staying included: flexible work conditions, variety of clinical and management experience, good working environment, good support and autonomy.	Management issues related to intention to stay in position. Low RR Results may not be generalisable to other locations/areas.

(Authors, year) Publication source	Sample Location	Method	Results	Conclusions and Limitations
(Daniels, VanLeit et al. 2007) The Journal of Rural Health	N = 765 graduates from 12 HP programs 59 % RR New Mexico, United States of America	Survey	Recruitment and retention factors: rural background and preference for smaller sized communities. Loan forgiveness and rural training programs appeared to support recruitment. Retention factors included: financial incentives, professional opportunity and desirability of rural locations.	Rural background and preference for smaller sized communities were associated with recruitment and retention. Possible biased sample with students who were interested in rural practice. Small sample sizes
(Gillham and Ristevski 2007) Australian Journal of Rural Health	N = 43 AH students and staff 39% RR A regional public health service and a community health service in central eastern Victoria, Australia.	Qualitative semi-structured interviews	Recruitment and retention factors: career opportunities and social and community connections. Financial incentives were important for recruiting staff. Staff retention linked to: organisational management, health service resources and policies.	Career progression, mentoring and professional development, connecting people with social networks and financial remuneration are important fro recruitment and retention. Low RR
(MacRae, van Diepen et al. 2007) Australian Journal of Rural Health	N = 468 medical, nursing and AH 75% RR South-eastern Ontario, Canada	Mixed method, two part study Self-administered questionnaire	Students more willing to undertake a placement in an underserved community if travel stipends (75%), rent-free housing (92%) and IPE opportunities (65%) are provided.	Students are more willing to complete placements in rural areas if provided incentives Assumption that students intentions will lead to action.

(Authors, year) Publication source	Sample Location	Method	Results	Conclusions and Limitations
(Williams 2007) Australian Journal of Rural Health	N = 84 79% RR Practising and non-practising physiotherapists from the Shepparton region of Victoria, Australia	Survey by mail or telephone interview	Two thirds worked P/T, with most in the public sector (70%), with one third having more than one P/T position. Professional challenges: lack of career path, professional support, access to professional development and post graduate education. Compounded by the cost and time to attend courses, travel time/distance and inadequate resources. Positive elements of rural practice: part-time employment opportunities, independence, variety in practice and some community recognition.	Require strategies that highlight existing positive features of rural practice with tangible rewards and recognition. Failed to enquire about intention to stay in rural area.

AH – allied health, HP - health professional, ICT – information and communication technology, IPE – Inter-professional education, OT – Occupational therapist, P/T – part-time, RR – response rate.

1.6 Literature Review: Rural allied health staffing models

Given the health workforce issues in rural and remote Australia a number of organisations have attempted to overcome these issues by using innovative models of health service staffing and delivery. Most of these models have been multidisciplinary in nature and run by private organisations or Divisions of General Practice. A review of the literature by Humphreys et al in 2008 provided a comprehensive summary of the enablers and requirements for a sustainable rural and remote PHC services. They identified three main environmental enablers to be supportive policy, federal-state relations and community readiness (Humphreys, Wakerman et al. 2008). They also identified from the literature the essential service requirements for a sustainable PHC service to include workforce organisation and supply, funding, governance, management and leadership, linkages and infrastructure (Humphreys, Wakerman et al. 2008).

A range of service delivery models have been utilised in rural and remote areas to assist with the shortage of workforce and large geographical areas. These are largely PHC service delivery models that have been classified into four general types: discrete services, integrated services, comprehensive PHC services and outreach services (Humphreys, Wakerman et al. 2008). Bishop (Bishop 1996) has suggested that allied health specific service delivery models can be grouped under four main types: community development, outreach, consultancy and traditional. Table 6 below summarises relevant allied health service examples that fit into these model categories.

Table 6: Allied health rural staffing models literature

(Authors, year) Publication source	Sample size Model, Location	Method/Development	Results	Comments/Conclusions
(Stephens and Strasser 1994) Proceedings National Rural Health Conference Gippsland, Victoria, Australia	Traditional Group education and GP education General Practices, Latrobe Valley, Australia	Group education for patients with hypercholesterolemia, with GP follow up. Education for GPs in nutrition.	Limited dietetic service in the local area led to the use of group work to provide a service that was not available previously.	Meeting service demands with limited staffing. No outcomes reported to date
(O'Kane and Curry 2003) Proceedings 7th National Rural Health Conference Hobart, Tasmania, Australia	Outreach and Community Development Katherine Remote AH Therapy Program Katherine, Northern Territory, Australia	Focus on remote Aboriginal communities providing outreach therapy services (PT, OT, SP, audiology and podiatry)	Philosophy and practice of community based rehabilitation with local community disability co-ordinators.	No outcomes reported to date
(Summersett, Richards et al. 2003) Pediatric Diabetes	N = 57 (19 rural) Outreach Rural outreach specialist service, with local rural dietetic services Seattle and Wenatchee, United States of America	Retrospective cohort study	Urban patients more likely to complete four visits per year. Rural children were more likely to have had a dietetic review (89.5% vs 36.8%).	Diabetes care using a rural outreach model can closely approximate, but not duplicate care provided in an urban setting.
(Ward, Williams et al. 2003) Proceedings 7th National Rural Health Conference Hobart, Tasmania, Australia	Community Development Community nutrition services in rural Tasmania, Australia	Effective partnerships and coalition building to provide innovative and flexible community nutrition services	Improving nutritional knowledge of nurses Standardised quality, credible nutrition given to families	Training of peer educators and local health workers has increased the reach of nutrition messages and initiatives. No outcomes reported to date

(Authors, year) Publication source	Sample size Model, Location	Method/Development	Results	Comments/Conclusions
(Amos 2006) Proceedings National SARRAH conference Albury, Australia	Consultancy Walk-in-walk out private practice model Bourke, New South Wales, Australia	Limited access to AH staff in remote NSW led to the development of a not-for-profit entity Kini Health in 2003, which provides a walk-in walk-out private practice for full time AH professionals in Bourke.	This private health partnership model involves pooling money from a range of sources in order to establish the AH positions. This model currently supports a psychologist, physiotherapist, an occupational therapist and more recently a dietitian.	Private practice partnership model can be successful in remote areas No outcomes reported to date
(Cuss 2006) Proceedings National SARRAH Conference Albury, NSW, Australia	Traditional Central Hume Region, north-east Victoria, Australia	Implementation of an agreed interagency collaborative model of support, professional development and role definition. Attractive employment arrangements.	Peer and professional support. Improved AH management structures across agencies. More effective and efficient models of service delivery Opportunities for skill development Innovative recruitment strategies Focus on population health	No outcomes reported to date
(Davies 2006) Proceedings National SARRAH conference Albury, NSW Australia	Outreach Rural Beginnings Project Specialist service to 70 families who have children with disabilities Wagga Wagga, New South Wales, Australia	Hub and Spoke structure for service delivery to rural areas. Three teams of therapists (OT, PT, SP), educators and a family support worker.	Trans-disciplinary approach incorporates cross discipline communication, interaction, peer support and co-operation to maximise communication and treatment.	Challenges of attracting and retaining staff. No outcomes reported to date

(Authors, year) Publication source	Sample size Model, Location	Method/Development	Results	Comments/Conclusions
(Shirtcliff and O'Neil 2006) Proceedings National SARRAH conference, Albury, NSW Australia	Outreach Professional network of rural and remote dietitians (Bush Nuts) Development of an outreach dietitian position Charleville, Queensland, Australia	Difficulties recruiting and retaining a dietitian in Charleville led to the development of a position at Princess Alexandra hospital in Brisbane, which provides regular outreach and video-conferenced services to Charleville.	Advocacy group for rural and remote nutrition issues in southern Queensland. Bush Nuts support group established in 2005 to support isolated dietitians.	Important network and staffing models to achieve improved job satisfaction and retention. No outcomes reported to date
(Symons 2006) Proceedings National SARRAH conference Albury, NSW, Australia	Outreach PHC AH outreach service Mt Isa, Queensland, Australia	Established in 2001 with Regional Health Services funding. Use of attractive recruitment and retention package.	Employed 7.75 FTE AH in 2001 and now employs 21 AH staff, including dietitians.	Growth and retention of AH staff over five years No other measures of outcomes of the outreach service model
(Peel Health Care Ltd 2007) Report	Consultancy Peel Health Care Tamworth, New South Wales, Australia	A rural based AH staffing model has been explored by the North West Slopes Division of General Practice	The original Peel Health Care model has adapted into a new entity – Life Solutions	No outcomes reported to date
(Boshoff and Hartshorne 2008) Australian Journal of Rural Health	N= 18 RR not reported Outreach Occupational Therapy Managers Rural and remote South Australia, Australia	Questionnaire	Service delivery models used included: pre-dominantly consultation and one-on-one service delivery with a range of teamwork models. Multi-skilling of therapists and use of therapy assistants.	Innovative service delivery and staffing strategies are required to overcome the challenges of rural and remote occupational therapy practice.

(Authors, year) Publication source	Sample size Model, Location	Method/Development	Results	Comments/Conclusions
(Lyle, Hobba et al. 2008) Australian Journal of Rural Health	N = 371 ~10% RR Community Development Wellington, New South Wales, Australia	Before-after project study Whole –of-community project to support rural community to lose weight Improved access to healthy food choices and promotion of physical activity in the community	Average weight loss of 3kg per participant over 12 weeks, with positive changes in diet and physical activity.	Modest weight reduction in participants Low RR at 36 week follow up, longer term results unclear.

AH – allied health, FTE – full-time equivalent, GP – general practitioner, HP - health professional, OT – occupational therapist, PHC – primary health care, PT – physiotherapist , RR – response rate, SARRAH – Services for Australian Rural and Remote Allied Health, SP – speech pathologist

Difficulties with the current literature

While the current literature contains an array of research into rural allied health workforce issues, there is little dietetic specific data. Detailed data on the development and range of dietetic services in rural areas does not exist, and little is known about the private practice service in rural areas. No published research could be found on key factors for the development of dietetics in rural areas and the reasons why some areas have higher levels of staffing compared to others. The barriers and drivers for the development of a best practice dietetic service in rural areas need to be elucidated.

1.7 Theoretical model

A range of factors identified as potential barriers or facilitators to the development of a best practice dietetic service in rural areas was identified in the literature review. The following theoretical model, outlined in Figure 2 has been developed from the preceding literature review. Contributing factors listed in **bold text** in Figure 2 below, have some evidence documented in research or workforce literature.

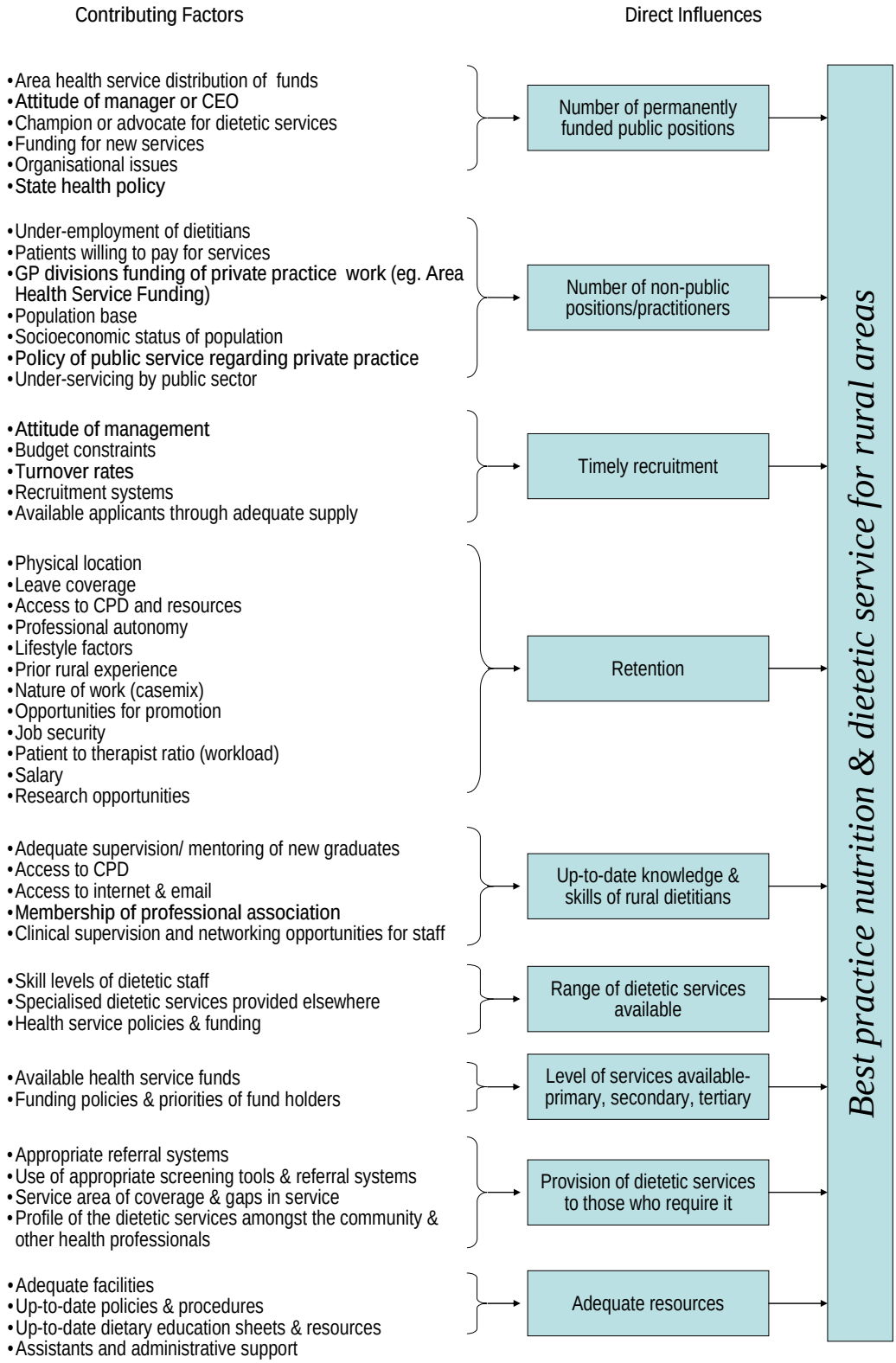


Figure 2: Theoretical model

1.8 Aims and research questions

The aims of this body of research are to:

1. To review currently available data that describes the dietetics workforce in Australia and trends in employment.

2. To identify the elements of a dietetics staffing model that constitutes best practice in six different nutrition and dietetics service settings in the targeted study area.

3. To explore the factors that support or inhibit the development of a best practice dietetic service in rural NSW.

4. To test a predetermined model of best practice dietetic service delivery for rural patients.

The preceding literature review and subsequently developed theoretical model have led to the development of the following research questions.

1. What are the current levels of dietetic staffing in rural compared with urban Australia?

2. What do dietetic services in rural areas look like?

3. What are the recruitment and retention issues for dietitians in rural Australia?

4. How do patient service levels vary with the number of dietitians in rural areas?

5. What are the necessary actions or activities that support the development of a best practice dietetic service in rural areas?

6. Is there a sequence of events that can be identified that lead to the creation of dietetic positions in rural areas?

7. What are the features of a best practice dietetic service model for a rural area?

8. What effect does the addition of dietetic resources have on service levels to the rural community?

9. What are the barriers and drivers for the development of private practice dietetic services in rural areas?

Hypotheses

The subsequent hypotheses for this research are:

1. The theoretical model will provide the key drivers and barriers for the provision of a best practice dietetic service for rural areas.

2. Key drivers for the development of dietetic positions in rural areas are the attitudes towards dietetic services possessed by management and the role of a champion for dietetic services.

3. The rural sites of dietetic service delivery with key drivers will have greater workforce growth and stability.

4. A pre-determined best practice dietetic service model will provide improved patient outcomes and satisfaction.

Overview of research studies

This thesis reports on the development of a theoretical best practice model following a review of the literature, the investigation of components of the model and testing of a theoretical best practice service model. Eight separate research questions were investigated in three separate studies that included:

Study One: A description of the dietetics workforce in Australia

Study Two: An investigation of the drivers and barriers to the development of the dietetics workforce in rural areas

Study Three: An implementation phase using a theoretical best practice service model

Study one involved a review of the available dietetic workforce data from a range of sources. De-identified Dietitians Association of Australia (DAA) membership data from 2003-2006 was analysed and a descriptive analysis undertaken. Data items included: gender, hours of work and work areas. Data were mapped by postcode to classify rurality. Specific data regarding the Australian and rural dietetic workforce is reported on.

Study two involved a mixed methods multiple case study investigation of the history and development of the dietetics workforce in six rural sites in northern NSW. Sites were chosen due to their geographical proximity and variable service characteristics, as case studies of the rural dietetic workforce. Theoretical sampling of sites was done to minimise and maximize the differences between the cases being compared to seek explanations. This mixed methods study involved the triangulation of data obtained from document searches and individual interviews with 40 key informants.

Study three, a pseudo-randomised controlled trial methodology was used in the implementation of best practice clinical guidelines for dietetic services to oncology patients in a rural practice setting. In this study a theoretical best practice service model was implemented and evaluated against a usual care model. Patient outcomes and satisfaction were measured and compared for the two groups. The three studies are summarised in Table 7 below.

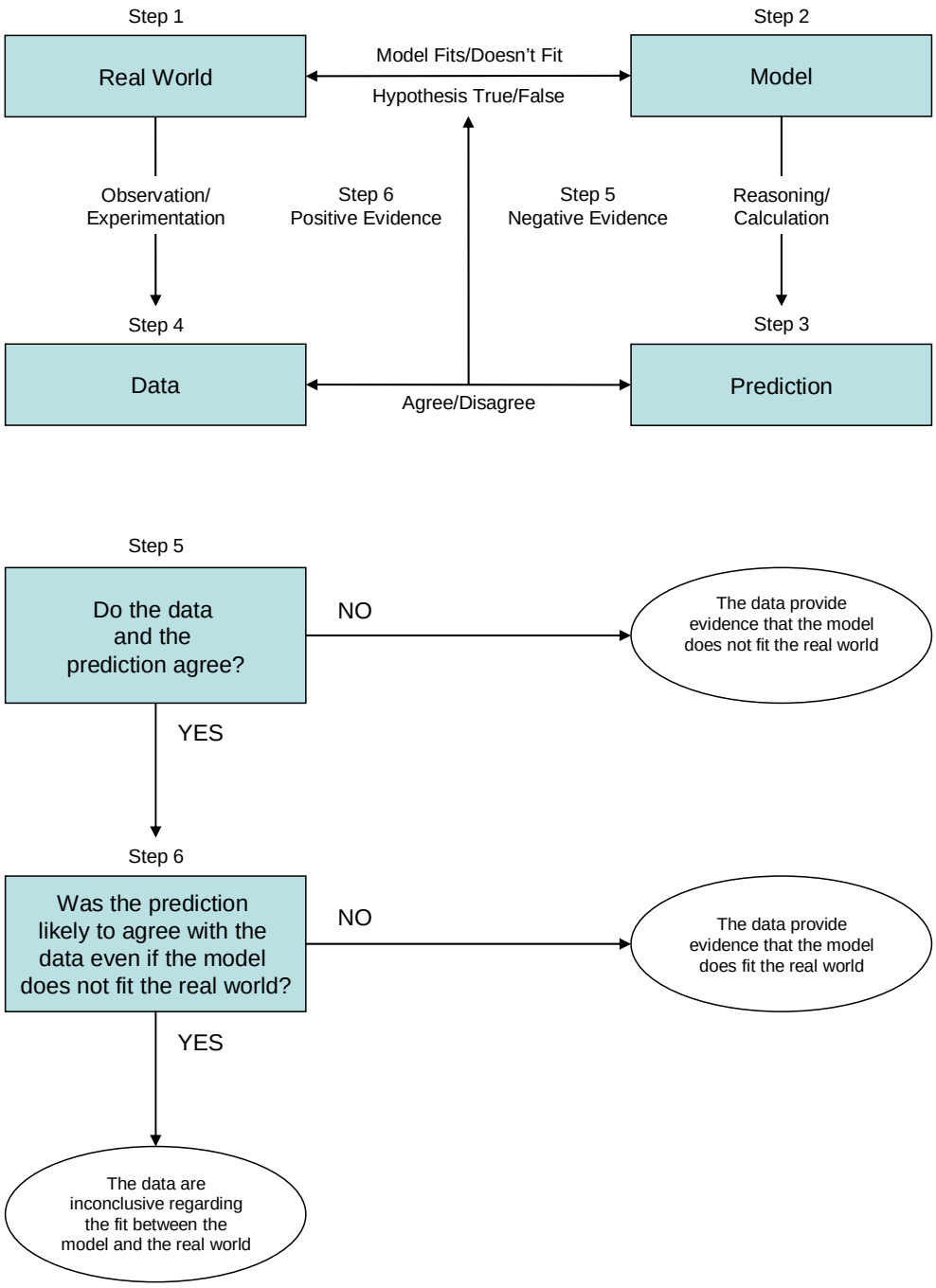
Table 7: Overview of research studies contributing to thesis

Study	Title	Research Questions Addressed	N in Study	Participants	Data Source	Design	Analysis	Factors Measured	Reported in Chapter/s
Research Study One	Dietetics workforce in Australia	1	N = 1 830 - 2 255	Database	Dietitians Association of Australia Membership database ABS data	Retrospective data	Counts and proportions Data mapped to postcodes and ASGC	Gender Hours of Work Work Areas Year of Graduation New Graduate by location	2
Research Study Two	Dietetics Workforce Case Study	2, 3, 5 ,6 ,7 and 8	N = 64 documents	Dietitians in Management Managers	Document searches	Multiple Case Study Explanatory sequential mixed methods	Qualitative thematic analysis Convergent validation of themes Spearman's rank correlation co-efficient and UANOVA Kruskal-Wallis	Workforce data Submission documents Job descriptions Occasions of service	3, 4, 5, 6
			N = 40 individual interviews	Dietitians (past and present) Dietitians in Management People of Influence who have worked in the case study sites	Semi-structured individual interviews			Themes relating to recruitment and retention and development of positions	3, 4, 5, 6
Research Study Three	Oncology Case Study	4	N = 23	Oncology patients attending rural chemotherapy clinic	Dietetic services for Oncology Patients in rural areas	Pseudo-randomised controlled trial	Independent t tests Mann Whitney test Chi square	BMI Patient satisfaction and feedback Malnutrition status Quality of Life Bowel Health	7

ABS – Australian Bureau of Statistics, ASGC – Australian Standard Geographical Classification, BMI – Body mass index, UANOVA - Univariate Analysis of Variance

Overall research design and methodology

The process of testing a theoretical hypothesis is outlined in Figure 3 below.

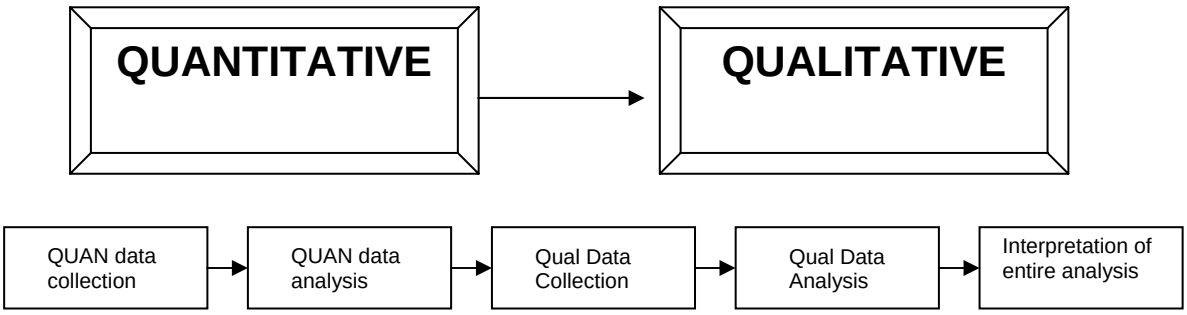


Source: Reproduced from (Giere 1997)

Figure 3: Theoretical hypotheses diagram

Sequential explanatory mixed methods

A sequential explanatory mixed methods design was used. This approach involves using a theoretical model or basis as an overarching perspective within a study that provides a framework for topics of interest and methods for collecting data (Creswell 2009). A mixed methods design has been used which incorporates qualitative and quantitative approaches to data collection and analysis. Both approaches have been used in tandem so that the overall strength of the study is greater (Creswell 2009). In this study the mixed methods were conducted in a sequential manner, with quantitative data (document searches) collected first, followed by qualitative data (individual interviews), with collection and interpretation and analysis of both sets of data at the end of data collection, as demonstrated in Figure 4.



Source: Reproduced from (Cresswell, Plano Clark et al. 2008)

Figure 4: Sequential explanatory mixed methods design

In explanatory design mixed methods research the qualitative data can help to explain the quantitative results and the qualitative cases study data can provide insights into the quantitative results (Creswell and Plano Clark 2007).

Validity in case study research

Construct validity can be achieved in case study research by using multiple sources of evidence to establish a chain of evidence (Yin 2003). Table 8 outlines the methods that can be employed to ensure qualitative case study

research has construct, internal and external validity. This research has employed most of these tactics to ensure study validity.

Table 8: Case study strategies for four research design tests

Tests	Case Study Tactic	Phase of research
Construct validity	Use multiple sources of evidence Establish a chain of evidence Have key informants review Draft case study report	Data collection Composition
Internal validity	Do pattern matching Do explanation building Address rival explanations Use logic models	Data analysis
External validity	Use theory in single case studies Use replication logic in multiple-case studies	Research design
Reliability	Use case study protocol Develop case study database	Data collection

Source: Adapted from Cosmos corporation (Yin 2003)

Thematic analysis

A constant comparison inductive approach was used to thematically analyse the qualitative data from the individual semi-structured interviews. Themes to emerge from the data were compared to construct a revised theoretical framework. When no new categories emerged from the data, theoretical saturation was reached and data analysis completed.

Triangulation

Triangulation has been defined as “the combination of methodologies in the study of the same phenomenon” (Denzin 1978). Campbell and Fiske first used triangulation in the social science context and argued that more than one method should be used in order to ensure that any variation was due to the factor or trait rather than the method. The convergence or agreement between two methods provides validation and, equally importantly, any divergence of the data provides useful information. Triangulation of the qualitative and quantitative data has been undertaken in order to try to get a more accurate picture and for the degrees of convergence and divergence

in the data to be considered. A range of triangulation designs are shown in Figure 5, these designs are used to blend and integrate data, ranging from simple designs, such as scaling, to more complex designs of convergent validation and holistic description. In this research convergent validation and holistic description have been used.

Scaling….. Reliability…..Convergent Validation….. Holistic Description

———————————————————————————————————————

Simple Design Complex Design

Source: Reproduced from (Jick 2008)

Figure 5: Continuum of triangulation in mixed methods research

Convergent validation involves comparing and contrasting quantitative and qualitative data results during the interpretation phase (Creswell and Plano Clark 2007). Holistic description involves developing a more complete and contextual description of cases under study. The use of multiple measures allows for unique variance to be uncovered (Jick 2008). Matrices of qualitative and quantitative data have been used to visually display the triangulated data. The links between the quantitative data and the qualitative themes are illuminated to achieve a greater understanding of rural workforce issues and barriers to best practice. Similar to the mixed methods research by Breitmayer and colleagues, combined quantitative and qualitative data have been displayed in tables to show convergent validation (Breitmayer, Ayers et al. 1993).

Data transformation and consolidation

The transformation of data refers to the process of transforming one type of data into another (Caracelli and Greene 2008). Qualitative data from interviews can be transformed into numeric ratings (quantitative data) so that all variables can be analysed together. This method of integrative data analysis was used in 1987 by Larner, Nagy and Halpern where the characteristics of their interviewees determined through thematic analysis was converted into a numeric variable and included in the quantitative

analysis (Larner, Nagy et al. 1987). Alternatively, quantitative data can be transformed into narrative and included with qualitative data in thematic analysis (Caracelli and Greene 2008). Data consolidation or merging involves the joint use of both types of data to create new or consolidated variables of data sets (Caracelli and Greene 2008). Both these approaches to mixed method data analysis have been used in Study Two in order to gain a more complete picture from the combined data.

Value of this Research

This research is important for future workforce planning for dietitians in rural areas as it will help to identify the elements of a best practice dietetics staffing model. The development of a best practice staffing model will ensure quality dietetic services for people living in rural Australia. There is no known previous research that has investigated the elements of a best practice dietetics staffing model and the factors that support or inhibit the development of a best practice dietetic service model in rural areas. It is anticipated that by identifying best practice dietetic services for rural areas that recommendations can be made for improvement in the delivery of nutrition and dietetics services to people living in rural areas and ultimately improvements in nutrition-related health outcomes.

1.9 Conclusions

This research addressed deficiencies in the current literature by examining some of the unknown factors in the development of a best practice dietetic service in rural areas. Chapter Two provides a description of the dietetics workforce in Australia with a focus on the rural and remote workforce.

Chapter Two Study One: The Australian dietetic workforce 1991-2006

2.0 Introduction

The purpose of this chapter is to provide an overview of the dietetics workforce data for the 15 year period from 1991 to 2006. Some of the information in this chapter was published in the journal *Nutrition and Dietetics* in March 2006. A copy of this publication is provided in Appendix 4.2. Since publishing this paper more recent data has emerged with the publication of additional workforce data from the 2006 ABS Census and more recent and complete DAA membership data. These data have been integrated with earlier findings to provide a comprehensive and up-to-date review. This chapter provides a detailed summary of available dietetics workforce data and discuss issues of data access, accuracy and interpretation. The dietetics workforce in rural areas is highlighted in a sub-section.

2.1 Background

The Accredited Practising Dietitian (APD) title used by the DAA is the recognised credential for dietetics professionals in Australia. Dietitians are identified as the professionals that "assist individuals, groups and communities to attain, maintain and promote good health through good diet and nutrition" (ABS 2000). The term 'nutritionist' is often used alternately with 'dietitian' however, dietitians are the only professionals who are recognised by the Commonwealth to provide individual dietary counselling, medical nutrition therapy and group dietary therapy (ABS 2000). The APD credential is required for dietitians to obtain government rebates through Medicare funding for interventions with individuals who have chronic conditions (DAA 2004b). The Accredited Nutritionist trademark has recently been introduced by the DAA to identify tertiary qualified nutrition professionals who have expertise in areas of nutrition, but not in dietetics (DAA 2007a). This research focuses on those who have qualifications in nutrition and dietetics recognised and accredited by the DAA. These

dietitians must be eligible for full membership of DAA to apply for APD status.

In 1990, Jane Scott predicted that the dietetics workforce would be unlikely to meet the consumer need and demand for nutrition services in the future given the projected workforce at the time (Scott 1990). This chapter reports on current available workforce data. The data are limited and ongoing inadequacies hinders future professional workforce planning. A clearer picture of the current dietetics workforce in Australia is needed, due to the limited and fragmented nature of previous workforce data. It is anticipated that this information will help to inform health service planners, providers and tertiary educators in the 21st century.

2.2 Aims

This study aims to review currently available data that describes the dietetics workforce in Australia and trends in employment.

2.3 Sources of data: The dietetics workforce in Australia 1991 – 2006

There are limited dietetics workforce data described in the literature and much of the published work has focused on particular sections of the workforce, such as state based public sector dietitians (Northern Territory Government 1999; Queensland Health 2001; Health Department of Western Australia 2002; Tasmanian Department of Health and Human Services 2003) or members of the professional association, the DAA (DAA 1991; Williams 1993; DAA 1996; Hughes 1998; DAA 2001; Meyer, Gilroy et al. 2002; DAA 2003). Previous attempts to describe the Australian dietetics workforce have been conducted on an infrequent basis, using incomplete samples and limited data collection methods (AIHW 2000; AIHW 2001; AIHW 2003). The currently available sources of data have used different methodologies making comparisons difficult. While some conclusions can be drawn from existing data, a co-ordinated approach to workforce data collection and reporting is lacking.

Independent research

Independent researchers (Boyce and Jackway 1985; Scott and Binns 1988; Scott and Binns 1989a; Scott and Binns 1989b; Williams 1993; Hughes 1998; Meyer, Gilroy et al. 2002) have conducted surveys of dietitians within Australia in order to obtain workforce data. Scott and Binns (Scott and Binns 1988; Scott and Binns 1989a; Scott and Binns 1989b) undertook a national dietetic workforce study in 1984 that profiled the demographic, professional and employment characteristics of the dietetic profession. They accessed dietitians through DAA membership details and then used the snowballing technique to locate other dietitians who were not members of DAA. They received 623 responses (reported as a 68% response rate) made up of 90.2% DAA members and 9.8% non-DAA members (Scott and Binns 1988). Boyce and Jackway (Scott and Binns 1988) investigated public sector hospital based dietitians in Australia in 1985. A total of 190 hospitals were surveyed with 97 responses received (51% response rate). Their study investigated staffing patterns, workforce data and perceived staffing needs.

Research by Capra in 1986 and Foreman in 1995 reported on the typical dietitian ratios per patient in the acute care setting. Foreman (Foreman 1995) found that publicly funded hospitals had an average of one dietitian per 75 to 85 patients (Foreman 1995), while Capra and colleagues found one dietitian per 115 beds nearly a decade earlier (Capra, Wright et al. 1986). In 1984 and 1991 the NSW Branch of DAA organised surveys of dietitians in NSW by sending questionnaires to every hospital in NSW with 100 beds or more and smaller hospitals known to employ dietitians (Williams 1993). Dietitians working outside the hospital system were accessed from DAA membership records. A further survey of NSW dietitians was conducted in 2000 by Meyer, Gilroy and Williams (Meyer, Gilroy et al. 2002) which aimed to update the profile of dietitians in NSW in 2000 and to review changes in the NSW dietetic workforce compared to 1984 (Williams 1993).

Other surveys have been conducted by the then Commonwealth Department of Health in 1980 (Commonwealth Department of Health 1980) and more recently by State health departments as part of recruitment and

retention strategies (Northern Territory Government 1999; Queensland Health 2001; Health Department of Western Australia 2002; Tasmanian Department of Health and Human Services 2003). In addition to state based surveys, specific groups of dietitians, such as public health nutritionists (Hughes 2004) and rural dietitians (Hughes 1998) have been surveyed about workforce issues.

Surveys conducted via the professional association include data collected annually (DAA 1991; DAA 1996; DAA 2001; DAA 2003; DAA 2004a; DAA 2005a; DAA 2006), surveys collected through particular state branches (Williams 1993; Meyer, Gilroy et al. 2002) and those collected via branch informants (Capra, Wright et al. 1986). A national survey of dietitians was conducted in 1986 (Capra, Wright et al. 1986) and 1995 (Foreman 1995) by DAA. These national surveys were not limited to DAA members, as other known dietitians were accessed through DAA state branches.

Professional association data and surveys

The DAA membership statistics are summarised annually and include information on: main areas of employment, membership category and employment status (DAA 1991; DAA 1996; DAA 2001; DAA 2003; DAA 2004a; DAA 2005a; DAA 2006). When the membership database is updated at the beginning of each year, the raw data from previous years is deleted. As a result, only a limited annual snapshot is available preventing longitudinal analysis. De-identified DAA data for this research was collected on a yearly basis between 2003 and 2006.

Census workforce data

Data are also collected via the national Census (AIHW 1996; AIHW 2001). Census data has the advantage of having a high response rate and being nationwide. It has the disadvantage of relying on self reporting, providing limited detail and is out-of-date by the time it becomes available (Phillips 2006). Census data specific for the dietetics occupational group i.e. ‘practising dietitians’ and the number of people with a ‘highest qualification

in nutrition and dietetics' are available for 1991, 1996, 2001 and 2006[ii] (AIHW 1996; AIHW 2000; AIHW 2001; AIHW 2003; AIHW 2008b). These data are derived from self reported qualifications and occupations that are coded using the Australian New Zealand Standard Classification of Occupations (ANZSCO) codes (Australian Bureau of Statistics and Statistics New Zealand 2006). The ANZSCO six digit code 2393-11 defines dietitians as a profession that 'assists individuals, groups and communities to attain, maintain and promote health through good diet and nutrition' (Australian Bureau of Statistics and Statistics New Zealand 2006). This data provides details about gender, age, hours worked, income and public/private sector employment. Dietetics specific workforce data have been extracted from the Australian Bureau of Statistics Census data in 1991, 1996, 2001 and 2006 at the request of the DAA (AIHW 2000; AIHW 2003).

In 1995, Selby Smith and Crowley analysed 1991 Census data to obtain details about the allied health professional workforce, providing some dietetics specific data (Selby Smith and Crowley 1995). More recently, allied health organisations such as the National Rural and Remote Allied Health Advisory Service (NRRAHAS) have provided data on rural and remote dietitians, as part of it's allied health workforce reports using ABS 2001 Census data (Fitzgerald, Hornsby et al. 2000; Glynn 2003; O'Kane and Curry 2003; NRRAHAS 2004a). This further analysis of the 2001 ABS data provides more detailed information about occupation, gender, age, hours worked, income and public/private sector employment by geographical location or remoteness (NRRAHAS 2004a).

2.4 Methods

Data for this research were drawn from a variety of sources. Literature was searched using CINAHL and hand searches. Sources of workforce data included: the ABS 1991, 1996, 2001 and 2006 Census data (AIHW 1996; AIHW 2000; AIHW 2001; AIHW 2003; AIHW 2008b), DAA annual membership data (DAA 1991; DAA 1996; DAA 2001; DAA 2003), DAA reports (Capra, Wright et al. 1986; Foreman 1995), state health

[ii] Prior to 1991 dietetics was not identified as a unique employment category.

department (Northern Territory Government 1999; Queensland Health 2001; Health Department of Western Australia 2002; Tasmanian Department of Health and Human Services 2003) and national workforce reports (Commonwealth Department of Health 1980), reports by allied health organisations (NRRAHAS 2004a), and published independent research (Boyce and Jackway 1985; Scott and Binns 1988; Scott and Binns 1989a; Scott and Binns 1989b; Williams 1993; Foreman 1995; Hughes 1998; Meyer, Gilroy et al. 2002; Hughes 2004). Annual summaries of DAA data were accessed from 1991-2006. These are self reported by main area of employment, membership category and employment status and are available for geographic locations, by state or territory.

2.5 Analysis

Annual summaries of DAA membership data from 1991, 1996, 2001 and 2006 (DAA 1991; DAA 1996; DAA 2001; DAA 2003; DAA 2006) were compared with ABS data (AIHW 1996; AIHW 2000; AIHW 2001; AIHW 2003; AIHW 2008b) where possible and data were reviewed for quality and completeness. National DAA membership data for dietitians was obtained from 2003 to 2006 and a descriptive analysis undertaken. The de-identified variables obtained from the membership data included: gender, hours of work and work areas. The data were mapped by postcode with the Australian Standard Geographical Classification (ASGC) (refer to Appendix 1.1: Table 41) for remoteness to determine the geographic location of dietitians. Other recent sources of dietetics workforce data (Northern Territory Government 1999; Queensland Health 2001; Health Department of Western Australia 2002; Tasmanian Department of Health and Human Services 2003) were summarised. Counts and proportions were used to present data.

2.6 Results

Profile of the dietetics workforce in Australia

The number of people reporting their occupation as ‘dietitian’ or ‘nutritionist’ (classified as ‘practising dietitians’) in the ABS Census has increased since 1991. From 1 291 to 1 994 in 2001, an increase of 54.5% over the 10 year

period (AIHW 2001; AIHW 2003). In 2006 the number increased by a further 23% to 2 588 (AIHW 2008b). The ABS figures for 'practising dietitians' in Australia per 100 000 population is summarised in Table 9 for 1991, 1996, 2001 and 2006, showing an overall increase of 41.3% (AIHW 2001; AIHW 2003). The proportion of 'practising dietitians' as a percentage of 'qualified dietitians' (classified by the ABS as those with a 'highest qualification in nutrition and dietetics'), decreased from 45.3% in 1991 to 39.8% in 2001 (AIHW 2001; AIHW 2003).

Dietitians are unevenly distributed across the country with the highest rate of 23.3 in the Australian Capital Territory and the lowest rate of 7.3 in Tasmania (AIHW 2001; AIHW 2008b). From 1991 to 2001 all states and territories experienced increases in the number of 'practising dietitians', the highest increase being in the Northern Territory with a 56.3% increase and the lowest increase in South Australia 3.4% increase (AIHW 2003). The most recent Census data from 2006[iii] shows an increase in all states and territories, except for the Northern Territory where there was a decrease of one dietitian per 100 000, between 2001 and 2006 (AIHW 2008b). Victoria and Queensland had the highest increase in dietitians per 100 000, with an increase of 2.6 and 3.7 dietitians per 100 000 respectively in the same time period (AIHW 2008b). Twenty four per cent of the dietetic workforce is located in rural and remote areas even though 32% of the population is based in these areas (based on ASGC classifications).

[iii] The current published 2006 Census data lacked any further breakdown of dietetics specific workforce data at the time of writing this thesis.

Table 9: Number of practising dietitians per 100 000 population for states and territories from Census data

	Year			
State or Territory	**1991**	**1996**	**2001**	**2006**
New South Wales	8.1	10.3	12.2	13.1
Victoria	8.1	9.5	10.5	13.1
Queensland	5.5	8	8.5	12.2
South Australia	7.6	10	10.3	11.5
Western Australia	6.1	7.5	8.6	9.5
Tasmania	4.7	5.1	6.3	7.3
Northern Territory	7.3	8.8	13.3	12.3
Australian Capital Territory	15.9	19.8	22.6	23.3
Total	7.5	9.4	10.6	12.5

Source: Adapted from (AIHW 1996; AIHW 2001; AIHW 2008b)

The 2001 Census data indicates that dietitians are relatively young, with 94% of the profession under 54 years of age (49.5% of whom were 34 years or younger (AIHW 2001). The dietetics profession is female dominated, with males making up only 9.1 % of the workforce in 2001 (AIHW 2001). Table 10 indicates the number of practising dietitians by age and gender in 2001. The number of male 'practising dietitians', as a percentage of the profession, has increased by 2.6% since 1991, while the numbers have more than doubled from 87 male dietitians in 1991 to 181 in 2001 (AIHW 2003). This increase occurred primarily between 1991 and 1996, with an increase of only 29 male 'practising dietitians' between 1996 and 2001 (AIHW 2003). The proportion of males in dietetics is slightly higher than that of other allied health professions, such as, occupational therapy (7% males) and speech pathology (3% males), but lower than the average for the allied health workforce (23% males) (NRRAHAS 2004a).

The NSW dietetic workforce study in 2000 reported that the proportion of males in the NSW dietetic workforce declined from 8.1% in 1984 to 7% in 1991 and 6.7% in 2000 (Meyer, Gilroy et al. 2002). Census data also shows the male dietetic workforce in NSW decreased as a proportion of the workforce from 9.1% in 1996 to 8.1% in 2001 (AIHW 1996; AIHW 2001), which is a higher proportion than that reported by Meyers and colleagues.

This discrepancy may be due to differences in the completeness of the data samples.

Table 10: Number of practising dietitians by age and gender, 2001

	Age						
	15-24	**25-34**	**35-44**	**45-54**	**55-64**	**>65**	**All**
Males	26	64	41	35	12	3	181
Females	165	729	472	341	91	15	1813
Total	191	793	513	376	103	18	1994
Percentage (%)	9.5	40	25.7	18.8	5.1	0.9	100

Source: Adapted from (AIHW 2001)

DAA membership

DAA membership increased from 1 049 in 1991 (DAA 1991) to 1 714 in 2001 (DAA 2001) and 2 255 in 2006 (DAA 2006). These figures are lower than the ABS figures for the same period, 1 291 in 1991 (AIHW 1996), 1 994 in 2001 (AIHW 2001) and 2 588 in 2006 (AIHW 2008b). Thus the DAA membership database might only account for approximately 85% of the actual workforce. Other studies have estimated a similar proportion of DAA membership, although samples have been incomplete. The national workforce study by Scott and Binns (Scott and Binns 1988; Scott and Binns 1989a; Scott and Binns 1989b) in 1984, surveyed 623 dietitians of whom 90.2% were DAA members. Meyer and colleagues (Meyer, Gilroy et al. 2002) found that 88% of the NSW workforce surveyed in 2000 were members of DAA. At the end of 2004, DAA membership figures for working dietitians was 1 967 (personal communication, S Capra), which is still below the ABS figure for 'practising dietitians' of 1 994 in 2001 (AIHW 2001).

Number of hours worked

The 2001 ABS Census data reported that 56.3% of 'practising dietitians' worked 35 hours or more per week and 25.6% less than 25 hours per week (AIHW 2001). Table 11 provides a summary of the hours of work reported by practising dietitians by gender in the 1996 and 2001 Census.

Table 11: Hours of work reported by practising dietitians, 1996, 2001

		Hours of work per week							
		None	1 - 15	16 – 24	25 – 34	35 – 40	41 - 48	>49	Not stated
	Males	8	4	9	19	33	53	26	0
	Females	69	170	237	198	312	509	57	12
	Total	77	174	246	217	345	562	83	12
1996*	Percentage	4.5	10.1	14.3	12.6	20.1	32.8	4.8	0.8
	Males	‡	7	23	16	68	21	40	6
	Females	‡	192	289	233	711	173	109	106
	Total	‡	199	312	249	779	194	149	112
2001†	Percentage	‡	10	15.6	12.5	39.1	9.7	7.5	5.6

Source: Adapted from (AIHW 1996; AIHW 2001)

* n = 1 716, † n = 1 994, ‡ no data recorded.

The proportion of dietitians working less than 35 hours per week dropped from 41.5% in 1996 to 38.1% in 2001. While the proportion of dietitians working 35 hours or more per week did not change (57.7% in 1996 and 56.3% in 2001), the percentage of dietitians working 41-48 hours per week dropped (AIHW 1996; AIHW 2001), with a subsequent increase in the percentage of dietitians working 35-40 hours (AIHW 1996; AIHW 2001) suggesting that, on average, full time dietitians are working fewer hours per week. There was a slight increase in those working more than 49 hours per

week from 4.8% in 1996 to 7.5% in 2001 (AIHW 1996; AIHW 2001). Data from the DAA membership database provided different results for the number of hours worked. Approximately 50% of DAA members reported working 35 hours or more per week and 38.7% less than 25 hours per week in 2003. Table 12 summarises the results from the 2006 DAA membership database, which showed similar hours of work to 2003 and 2004.

Table 12: Hours of work of DAA members 2003, 2004, 2006

Hours/week	2003		2004		2006	
	No. of members	Percentage (%)	No. of members	Percentage (%)	No. of members	Percentage (%)
<15 hours	358	19.6	391	19.9	363	16.8
16 to 24	349	19.1	386	19.6	402	18.6
25 to 34	121	6.6	167	8.5	215	9.9
35 to 40	767	41.9	799	40.6	961	44.4
41 to 48	84	4.6	35	1.8	153	7.1
> 49	53	2.9	42	2.1	72	3.3
Full time*	98	5.3	147	7.5	-	-
Total	1830	100.0	1967	100.0	2166	100.1

* precise hours not provided by some full-time employees in 2003 and 2004

In 2003 there were 1 830 working DAA members, of these 1043 (57%) provided sufficient detail about hours of work and work categories for further analysis. These data showed that 22.9% of dietitians worked two to four part time jobs and of these, 76.2% worked 35 hours per week or more (ranging from 35-60 hours). In 2004 there were 1 967 working members and of these 1145 (58%) reported sufficient detail to indicate that 21.7% of dietitians were working two to four part time jobs and of these, 78.2% were working 35 hours or more per week.

Income

The ABS Census data provides some information about income levels of 'practising dietitians' and these data are summarised in Table 13. In 1996, 22% of dietitians earned more than $41 599 per year (AIHW 1996) compared with 42% in 2001 (AIHW 2001). This apparent increase in income is probably due to increases in salaries in line with the cost of living. The average ordinary earnings in Australia increased from $37 512 in August 1996 to $42 104 in February 2001 (ABS 1997; ABS 2001b). The income of dietitians is similar to other allied health professions, such as occupational therapy, which is not surprising given that public sector awards are uniform in most states. In 2001, 43.6% of occupational therapists earned between $20,800 and $41 599, 41.9% between $41,600 and $77,999 and only 1.7% earned greater than $78,000 per year (AIHW 2000; AIHW 2001).

Table 13: Income levels of practising dietitians, 1996 and 2001

	Annual Income	Nil	$1-$10 399	$10 400-$20 799	$20,800-$41 599	$41 600-$77 999	>$78 000	Not stated
	Number of dietitians	3	113	287	936	344	14	19
1996	Percentage	0.2	6.6	16.7	54.5	20	0.8	1.1
	Percentage of average weekly earnings	0	27.7	55.4	110.9	207.9	>207.9	-
	Number of dietitians	3	92	203	860	787	34	20
2001	Percentage	0.2	4.6	10.2	43	39.3	1.7	1
	Percentage of average weekly earnings	0	24.7	49.4	98.8	185.3	>185.3	-

Source: Adapted from (AIHW 1996; AIHW 2001)

Categories of employment

Table 14 shows the proportion of dietitians employed in the main areas of work between 1991 and 2006. The proportion of dietitians employed in public hospitals has decreased, over the 15 year period shown. Small increases have been experienced across other areas of practice, such as private practice, government departments and educational/research institutions. DAA membership data records include the work areas for all positions, which may include more than one work area per person.

Table 14: Work categories of DAA national membership

	Percentage of DAA members per year				
Work category	1991	1996	2003*	2004*	2006*
Hospital/Nursing home	54.1	48.2	45.7	43†	32
Food service	1.3	§	0.6	2‡	3
Community health	14	14	12	17.5	14
Government department	2.7	4.3	4.4	4	8
Educational institution	5.8	6.5	4.9	5	9
Private practice	15.1	18.6	19.3	21	22
Industry	3.2	3.6	5.4	5	5
Other"	4	4.8	7.7	2.5	6
Total	100	100	100	100	99

Source: 1991 and 1996 data adapted from (DAA 1991; DAA 1996)

These data were collated from Dietitians Association of Australia (DAA) membership data 2004 and 2006.

* raw data obtained from DAA membership database, † does not include those working in Nursing Homes, ‡ includes those working in Nursing Homes§ food services as a category of employment were not recorded. "Mixed practice was added to this category in 2006.

Public sector dietitians increased from 52.8% in the 1996 Census to 57% in the 2001 Census (AIHW 1996; AIHW 2001). The ABS definition of public sector refers to government agencies (national, state, territory and local government) (Australian Health Workforce Advisory Committee 2006). The Census data does not provide any further detail (such as work area, multiple positions) of the employment of dietitians.

Rural, remote and metropolitan workforce

Services for Australian Rural and Remote Allied Health (SARRAH), the administrator of NRRAHAS recently analysed ABS data from the 2001 Census to provide more detailed information about the rural and remote allied health workforce. Dietetics specific information has been summarised in Tables 15-17. On the basis of population alone, rural and remote areas are underserviced. Table 15 summarises the location of dietitians by ASGC remoteness classifications of: major city, inner regional, outer regional and remote or very remote.

Table 15: Locations of dietitians by ASGC remoteness classification from 2001 Census data

	Number	Major Capital	Inner Regional	Outer Regional	Remote*	Very Remote*
State or Territory						
New South Wales	777	613	137	26	0	0
Victoria	492	388	71	33	0	0
Queensland	296	198	51	47	0	3
South Australia	147	123	9	9	6	0
Western Australia	148	114	13	15	3	3
Tasmania	30	0	21	9	0	0
Northern Territory	32	0	0	14	12	6
Australian Capital Territory	72	72	0	0	0	0
Total (percentage)	1993	1508 (76)	302 (15)	144 (7)	21 (1)	12 (0.6)
		12.5	3.9	2.0	0.3	0.2
Total population (10^6) (percentage)		(66)	(20.5)	(10.6)	(1.8)	(1.1)

Source: Adapted from (NRRAHAS 2003a; NRRAHAS 2003b; NRRAHAS 2003c; NRRAHAS 2004b; NRRAHAS 2004c; NRRAHAS 2004d; NRRAHAS 2004e)and from (ABS 2001a)

ASGC – Australian Standard Geographical Classification

*These figures may be unreliable due to introduced random adjustments used to avoid identifying individual data.

57

Table 16 shows the number of dietitians employed in the health workforce by remoteness classification; 52% of the 'qualified dietitians' in remote areas were employed as dietitians, compared to 34% in regional areas and 27% in major capitals (O'Kane and Curry 2003). Those with a 'highest qualification in nutrition and dietetics' living in remote and regional areas were more likely to also be employed as a dietitian, compared with those located in major capitals. The proportion of all 'qualified dietitians' who participate in the health workforce was 30%, ranging from 28% in major capitals to 54% in some regional areas (NRRAHAS 2004a). Table 17 provides data on the percentage of dietitians employed in public versus private practice according to the ASGC remoteness structure areas of major capitals, inner regional, outer regional, remote and very remote areas. The percentage of private practice dietitians compared to public sector dietitians, varies between states/territories and according to rurality within states/territories.

In 1999 SARRAH surveyed 102 dietitians working in rural and remote areas of Australia as part of a broader allied health survey (40.5% response rate). The survey found that, 53.9% of respondents were aged 29 or under, 38.2% were aged 30-44 and only 7.9% were aged 45 or over (Services for Australian Rural and Remote Allied Health 2000). Approximately 24% were aged 25 years or younger, suggesting that at least one quarter of dietitians working in rural and remote areas are recent graduates. However, the proportion aged 30 years or more suggest that many experienced dietitians also work in these areas (Services for Australian Rural and Remote Allied Health 2000). Fifty two percent of the dietitians in the survey worked as sole practitioners in a rural or remote setting (Services for Australian Rural and Remote Allied Health 2000).

Table 16: Dietitians employed in the health workforce by ASGC remoteness structure regions in each state or territory

	Major Capital			Regional			Remote and Very Remote *		
	Working in areas other than health	Not active in workforce	Health Workforce (%)	Working in areas other than health	Not active in Workforce	Health Workforce (%)	Working in areas other than health	Not active in Workforce	Health Workforce
New South Wales	862	471	441(25)	157	89	127 (34)	0	3	3
South Australia	64	76	101(42)	19	0	14 (42)	0	0	3
Queensland	186	141	138 (30)	85	70	81 (34)	0	9	3
Western Australia	158	114	98 (26)	16	10	30 (54)	4	0	3
Victoria	415	264	306 (31)	74	44	66 (36)	0	0	0
Northern Territory	0	0	0	9	3	6 (33)	6	3	9
Tasmania	0	0	0	17	20	19 (36)	0	0	3
Totals	1685	1066	1084 (28)	377	236	343 (36)	10	15	24

Source: Adapted from (NRRAHAS 2003a; NRRAHAS 2003b; NRRAHAS 2003c; NRRAHAS 2004b; NRRAHAS 2004c; NRRAHAS 2004d; NRRAHAS 2004e) and (ABS 2001a)

ASGC – Australian Standard Geographical Classification

* These figures may be unreliable due to introduced random adjustments used to avoid identifying individual data. Note: ACT data not included in original data.

Table 17: Dietitians in public versus private practice for ASGC remoteness structure regions by state or territory

	Major Capital			Regional			Remote[(a)]			Very Remote*		
	Public	Private (%)	Total	Public	Private (%)	Total	Public	Private (%)	Total	Public	Private (%)	Total
New South Wales	350	256 (42)	606	102	63 (38)	165	0	0	0	0	0	0
South Australia	73	51 (41)	124	11	9(45)	20	3	3 (50)	6	0	0	0
Queensland	94	102(52)	196	62	39(37)	101	3	6 (67)	9	0	0	0
Victoria	189	191 (50)	380	51	40(44)	91	0	0	0	0	0	0
Northern Territory	0	0	0	8	0	8	11	0	11	3	3(50)	6
Western Australia	56	59(51)	115	23	10 (30)	33	6	0	6	0	0	0
Tasmania	0	0	0	21	9 (30)	30	0	0	0	0	0	0
Totals	762	659	1421	278	170	448	23	9	32	3	3	6

Source: Adapted from (NRRAHAS 2003a; NRRAHAS 2003b; NRRAHAS 2003c; NRRAHAS 2004b; NRRAHAS 2004c; NRRAHAS 2004d; NRRAHAS 2004e) and (ABS 2001a)

ASGC – Australian Standard Geographical Classification

* *These figures may be unreliable due to introduced random adjustments used to avoid identifying individual data. Note: ACT data not included in original data.*

New and recent graduate dietitians

Figure 6 indicates that recent graduates[iv] comprise 30.2% of the DAA membership. A further 28.3 % graduated in the previous 10 years. This may be due to the increase in the number of dietetic university places and programs since 1991 at the University of Wollongong, the University of Newcastle and more recently Griffith, Charles Sturt and Monash Universities. Future increases in dietetic graduates are expected when Canberra University, Edith Cowan and the University of the Sunshine Coast have their first graduates.

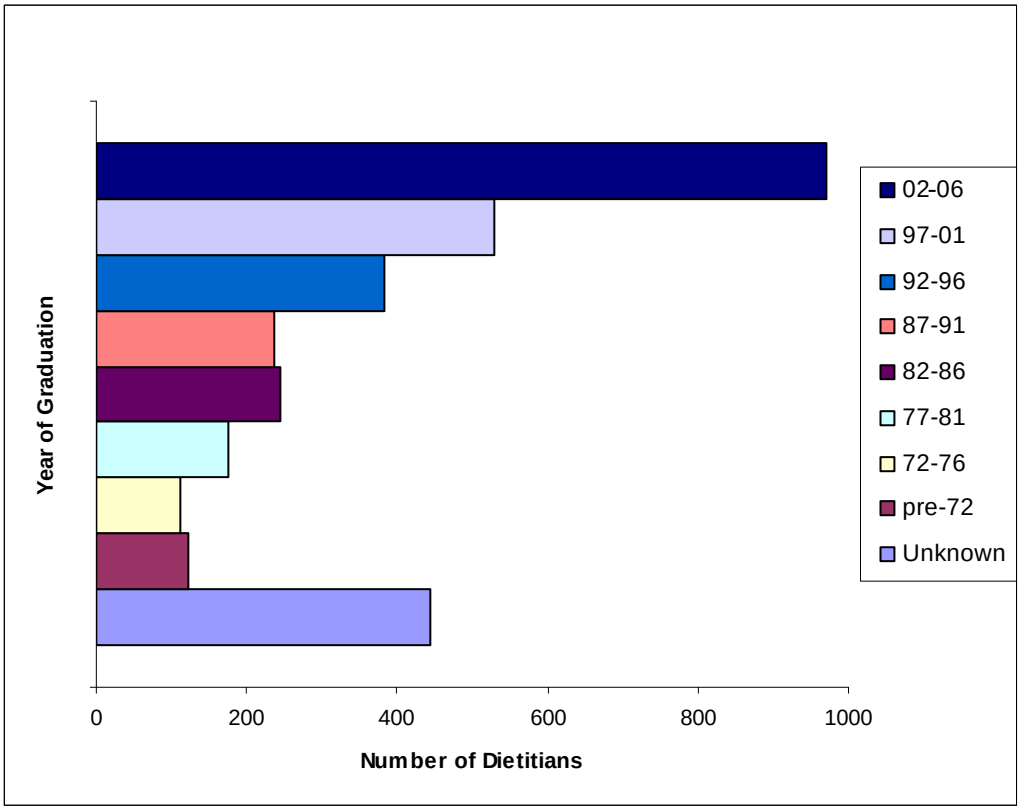


Figure 6: Year of graduation of Dietitian Association of Australia members

Source: raw data obtained from DAA membership database 2003-2007

The number of graduates from higher education courses in nutrition and dietetics was 448 in 2005, an increase of 81% since 2001. The number of

[iv] Recent graduates considered to be those who have graduated in the past four years

males graduating from nutrition and dietetics fields of study at university has increased from 26 in 2001 to 42 in 2005 (AIHW 2008a). In 2007 approximately 24% of new graduate DAA members[v] were located outside major cities, a decrease from approximately 60% in 2003. Figure 7 shows an increasing proportion of new graduates being employed in major city areas.

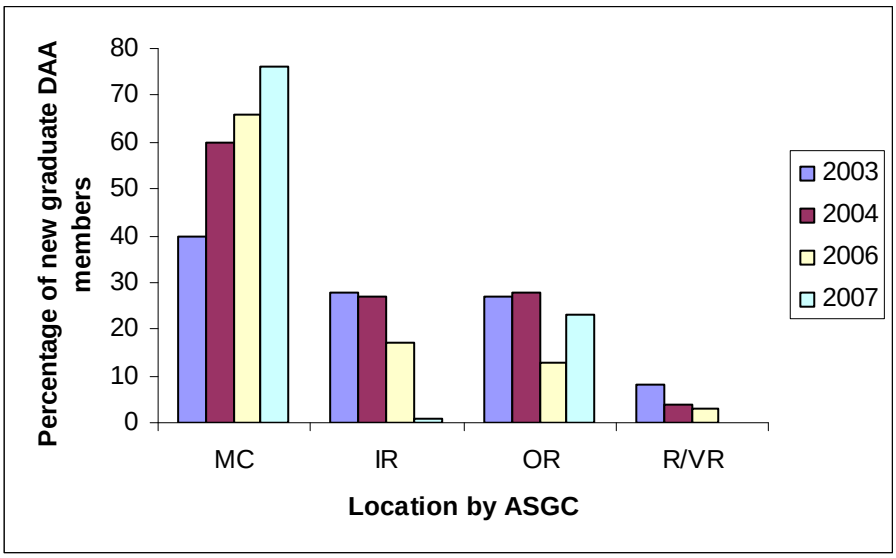


Figure 7: Location of new graduate Dietitians Association of Australia members

ASGC – Australian Standard Geographical Classification, MC – major city, IR – inner regional, OR – outer regional, R – remote, VR - very remote

Source: raw data obtained from DAA membership database 2003-2007

State public sector data

Available state public sector dietetic workforce data is limited. A total of 143 dietitians, 73% permanent, 21% temporary and 6% casual, were employed by Queensland Health in 1999 (Queensland Health 2001). The Health Department of Western Australia employed a total of 72.5 FTE dietitians, 71.9% of these dietitians employed full-time in 2002 (Western Australian Allied Health Taskforce on Workforce Issues 2002). In Tasmania the

[v] New graduates considered to be those who have graduated in the past two years

Department of Health and Human Services (DHHS) employed 15.63 FTEs in 2001, with a total of 24 dietitians employed (Tasmanian Department of Health and Human Services 2003). Ninety six per cent of dietitians were female and the median age was 32 years (Tasmanian Department of Health and Human Services 2003). A staff survey conducted by DHHS Tasmania (71% response rate) found that five out of 17 dietitians were considering leaving their positions in the next six to 12 months. Various reasons were given for this possible departure, including 'contract ends', 'family reasons' and 'need for a break' (Tasmanian Department of Health and Human Services 2003). In the Northern Territory 85% of health service dietitians were employed full time, 8% part time and 7% on a casual basis (Northern Territory Government 1999).

Turnover rates for dietitians working for Queensland Health varied from a high of 26.9% in 1995-1996 to a low of 10.5% in 1997-1998, where these dietitians left Queensland Health for employment by another employer. There was a trend towards lower turnover rates within Queensland Health from 31% in 1995-1996 to 14% in 1997-1998 (Queensland Health 2001). In Tasmania there was a turnover rate of 21 per cent in 2000/2001. An average of five permanent, temporary and casual dietitians left the DHHS per year with an average of nine dietitian positions advertised each year (Tasmanian Department of Health and Human Services 2003). The turnover rate was acknowledged to be unusually high at the time due to maternity leave and secondments (Tasmanian Department of Health and Human Services 2003).

2.7 Discussion

This research provides the most comprehensive and up-to-date review of the available dietetics workforce data. The dietetics profession in Australia is continuing to grow with an increasing number of dietitians entering the workforce. The growth of the profession has continued despite a decline in the proportion of 'practising dietitians' to 'qualified dietitians', indicating a loss of 'qualified dietitians' from the active nutrition workforce. Despite this, the total number of dietitians in Australia is still below the 14.0 dietitians per 100 000 population suggested more than 20 years ago by the Better

Health Commission (Better Health Commission 1986). Dietetic professionals are predominantly young and female. While the proportion of males in the profession remains low there has been a slight increase in the proportion nationally. It has been suggested by Meyer et al that the profession needs to actively recruit males to enter the profession (Meyer, Gilroy et al. 2002).

The reasons for the uneven distribution of dietitians across the country are unclear. The higher rate of dietitians in some areas (such as the ACT or metropolitan areas) may be in part due to the location of national or state based organisations, who provide national or state-wide services. The lower rates in rural and remote areas may be due to the inadequate funding of public positions, a reluctance of people to move to some areas for work or a lack of opportunities for work and issues of underemployment. When access issues are considered, rural and remote areas may require higher ratios of dietitians due to the vast distances, high indigenous populations and food access issues.

National data (ABS and DAA) suggest that approximately 50-60% of dietitians work full time hours (40 hours per week) and there is a trend towards working multiple part time jobs to provide full time work. Some state and territory health department workforce data (Northern Territory Government 1999; Queensland Health 2001; Western Australian Allied Health Taskforce on Workforce Issues 2002; Tasmanian Department of Health and Human Services 2003) indicate that the majority of health service dietetic positions are permanent (approximately 70%) and full time (approximately 70-80%). It has been previously suggested that increases in part time positions in NSW, with 83% of new positions between 1991 and 2000 being part time, may be a result of meeting the needs of a largely female workforce and 'job share' arrangements (Williams 1993). While there may be an increase in the number of part time jobs in NSW, the national data does not support the assumption that more dietitians are working part time. It is not clear if these part time jobs exist due to the reasons mentioned by Meyer and colleagues (Meyer, Gilroy et al. 2002) or for reasons such as a desire for workload variety, to make up full time hours due to underemployment or a lack of sufficient funding to support a full time position.

The high proportion of new graduates (those who have graduated in the past two years) in regional, remote and very remote areas, emphasises the need for adequate support and mentoring of new graduates. It is encouraging that the majority of these new graduates are provisional or full APDs. However, what is not known is how many new graduates are working in sole positions in regional and remote areas who are not members of DAA. Although only 24% of the total dietetic workforce works in rural and remote locations, up to 60% of the new graduate workforce may be located in these areas, which has major implications for the ongoing mentoring of these graduates. The reduction in the number of new graduate DAA members located outside major cities by 20% from 2003 to 2004 could indicate a growth of job opportunities in metropolitan areas compared to non-metropolitan.

The majority of dietitians are employed outside the acute public hospital system, but the broader public sector (national, state, local government) still employs the majority of dietitians. Growth areas for dietitians in recent years have been in private practice, government and educational institutions. This suggests that the profession is diversifying beyond a typical clinical dietetic role. The variation in the proportion of public sector versus private practice dietitians across the country and within states/territories indicates that demands for private practice dietitians may to some extent be dependent on the supply of public sector services. The new initiatives that provide Medicare rebates for specified dietetic services in the Strengthening Medicare arrangements (DAA 2004b) offer an opportunity for the profession to grow, particularly in the non-metropolitan areas where public sector services are under represented.

Implications of this analysis for health service providers

The uneven distribution of dietitians across Australia and, in particular in rural areas, suggests that state and national planners of health services need to reconsider the distribution and future allocation of services. Distribution of dietitians cannot, however, be based simply on number of dietitians per head of population, as this does not take into account other factors that affect service provision. Needs are increased in rural areas by:

the outreach services provided beyond the main hospital or community health service, the distances travelled by rural and remote dietitians and/or the time involved in counselling clients from indigenous communities. Future workforce planning for dietetics also needs to consider the adequate provision of primary, secondary and tertiary level services to the population.

Approximately 60 per cent of 'qualified dietitians' reported that they were not in the active workforce. This would suggest that there are adequate numbers of 'qualified dietitians' however they have either left the workforce due to a career change, an inability to find work in a desired location, retirement from the workforce or due to a temporary change in circumstances, such as pregnancy and child rearing. This loss of qualified dietitians from the workforce suggests the need for improved career paths for dietitians and improved strategies for staff retention. It is unclear how effective retention strategies will be, as the reasons for this loss of qualified dietitians from the workforce has not been adequately elucidated. Some sources of data (Northern Territory Government 1999; Queensland Health 2001; Western Australian Allied Health Taskforce on Workforce Issues 2002; Tasmanian Department of Health and Human Services 2003) support the picture of a shifting dietetics workforce, in terms of movement within the workforce and in and out of the health workforce. State based data (Northern Territory Government 1999; Queensland Health 2001; Western Australian Allied Health Taskforce on Workforce Issues 2002; Tasmanian Department of Health and Human Services 2003) also indicate that the majority of dietitians are employed in entry level graded positions and that there are limited opportunities for advancement in non-metropolitan areas. This suggests a need for flexible and timely recruitment strategies by health service providers to ensure that dietetic service levels remain consistent. While new graduates appear to be willing to go to non-metropolitan areas to work, they need to be supported professionally by experienced dietitians. Adequate staffing levels and incentives are required to encourage them to stay.

In 1990 Jane Scott suggested that 2 100 dietitians would be needed in Australia by the year 1995 based on the recommendations of the Nutrition Taskforce of the Better Health Commission and a projected Australian

population of 18 000 000 (Scott 1990). In 2001 this figure was still not achieved, and given the increasing incidence of nutrition-related health problems, such as diabetes and obesity, this figure is likely to grossly underestimate the need some 15 years later. In order to meet and ultimately exceed the rate of dietitians per 100 000 population there needs to be more equitable funding of public dietetic positions, as well as growth of the private sector.

Implications of this analysis for tertiary educators

Given the changing employment pattern of dietitians, tertiary educators need to produce graduate dietitians with a broad range of skills, including management and marketing skills, to encourage potential growth in private sector dietetics. The trend towards employment in areas other than acute care indicates a need to emphasise a broader community, public health nutrition and private practice focus to dietetics programs. For the dietetic profession to continue to grow and diversify in the 21st Century, there is a need to imbue new graduates with the innovation and creativity to pursue novel or new areas in nutrition and dietetics.

Lower dietetic staffing levels in rural areas may also be due to recruitment and retention difficulties. The location of university dietetic programs contributes to the supply of graduate dietitians to particular areas. There are now three dietetics programs in NSW that are located outside the Sydney metropolitan area. It has been suggested that students with an increased exposure to rural practice during their undergraduate education (Hayes, Nichols et al. 1995) or a rural upbringing, are more likely to return to work in a rural area in the future (Harris 1992). This highlights the importance of exposing student dietitians to a variety of practice locations and the inclusion of a rural experience as part of their undergraduate professional practice.

Limitations of current workforce data

The available workforce data has a number of limitations that need to be carefully considered in interpretation. The ABS Census data is collected at regular intervals and in a systematic way, and provides some valuable

information about the workforce across Australia. However, these data are reliant on the accuracy of the individual responses provided and can quickly become out of date as they are only collected once every five years and take time to become available (NRRAHAS 2004a). Completion of the Census is voluntary, so some questions may not be completed accurately and data is altered by the ABS to protect the privacy of individuals[vi], such as sole practitioners working in remote or very remote areas (O'Kane and Curry 2003). This leads to discrepancies with the totals for some of the data. Data on the number of 'practising dietitians' does not equate to FTE positions, as dietitians may work a wide range of hours.

A major limitation with the Census data is the way dietitians are classified by the ABS, as 'qualified dietitians' and/or 'practising dietitians'. The ABS definitions are not equivalent with the DAA definition of a dietitian, which are those with dietetic qualifications or the DAA status of an Accredited Practising Dietitian (APD). The ABS definitions both include and exclude individuals who are, in fact, APDs. 'Qualified dietitians' are classified as those with a 'highest qualification in nutrition and dietetics', which results in any dietitian with a higher qualification in another area, such as, public health or health promotion, not being included in the statistics. Hence, the number of 'qualified dietitians' may be under-represented in the ABS data. 'Practising dietitians' are classified as those who record their occupation as a 'dietitian' or 'nutritionist'. Dietitians working in fields such as marketing, academia and health promotion may be excluded if their reported occupation does not include the terms 'dietitian' or 'nutritionist'. However, these data also include individuals who report their employment as a 'nutritionist' and who may have no formal qualifications in the areas of nutrition and dietetics. The Census data may, therefore, under or over-estimate the number of 'practising dietitians' depending on how individuals self report their occupation.

The DAA membership database is limited by the voluntary nature of DAA membership only accounting for approximately 85% of the workforce. The data collected by DAA is also limited in its nature, not being compulsory,

[vi] Small numbers are randomly assigned to zero or three.

missing data and being open to differing interpretations, limiting the usefulness of the data. While data is summarised each year, the original data is not stored, preventing longitudinal analysis. Workforce data on private practitioners has been difficult to capture in the past, as not all practitioners were members of DAA. With the introduction of Medicare rebates for dietetic services provided to those with chronic and complex care needs requiring private practitioners to be members of the APD program (DAA 2004b), increased numbers of private practitioners should now be included in DAA membership data. Data on those who have left the profession or who are working in non-traditional areas (and therefore are not easily identified as dietitians) is difficult to obtain, as there is no means by which to adequately collect these data at present.

Due to the lack of state based workforce data, there may be a temptation to make assumptions from other states and regions or combined data for allied health professions. However, the information from individual state health reports indicate the need to have specific workforce data for each profession for each state and region. The limited data that is available from public sector allied health workforce suggests that the workforce profile of dietetics varies from state/territory to state/territory and even within a state or territory.

Future workforce data collection

A coordinated national approach to the collection of dietetics specific workforce data would provide adequate data for health service providers, planners and educators. Recommendations have been made by allied health organisations (Fitzgerald, Hornsby et al. 2000) to improve the collection and reporting of public sector allied health data at a national level. Even if a more organised national approach to public sector data collection occurs, there will be gaps in the dietetics data for the non-public sector workforce. The dietetic profession needs to investigate ways to derive more useful dietetics workforce data from the ABS Census and DAA membership data. Future data collection needs to clearly define those who are dietitians as those who have obtained a university qualification recognised by DAA.

2.8 Conclusions

The dietetics profession in Australia has grown and diversified since 1991. The dietetic workforce is relatively young, predominantly female and unevenly distributed across the country. The reasons underlying this uneven growth of the profession across the country are unclear. In order to achieve equitable distribution, members of the profession need to advocate more strongly for rural positions and be willing to seek opportunities for work in private practice and non-traditional areas.

There is a need to standardise workforce data across the country and to have consistent methods of data collection that provide the required information. The fragments of data that are available provide some insight into the dietetics profession in Australia, but leave many questions unanswered. The inadequacies of current data highlight the need to be cautious about how data is interpreted and used. Further work is required to adequately describe the dietetics workforce in Australia.

2.9 Summary

This chapter has reported on the current state of dietetics workforce data in Australia, with a focus on the rural and remote workforce, which is under-staffed compared to urban areas. One of the major barriers to the development of a best practice dietetic service in rural areas is a lack of adequate staffing to provide the services required. As outlined in chapter one, the allied health workforce data suggest that this is in part due to inadequate public sector staffing and difficulties with recruitment and retention of staff in rural areas. Chapter three provides a summary of the aims, methods and analysis for the second research study.

Chapter Three Study Two: Case study of six rural sites in NSW – aims, methods and analysis

3.0 Introduction

This chapter provides the methodological overview of a mixed methods case study of six rural sites of dietetic service delivery in NSW over a 15 year period. The results from this study are reported in Chapters Four, Five and Six. Chapter Four provides the results relating to the characteristics and history of dietetic staffing and recruitment and retention issues. Chapter Five covers the results relating to the drivers and barriers to the development of positions. Chapter Six covers results that pertain to the gaps and opportunities that exist in the rural dietetics workforce.

3.1 Background

Little is known about the dietetics workforce in the geographic area under study. Anecdotally, there have been reports of difficulties recruiting, long periods of vacancies and high turnover of some positions. Dietetics specific workforce data were reported in a study conducted in the local area in 2005 (Smith, Cooper et al. 2008). Dietitians (n=10, 58.8% response rate) compared to other allied health professionals, had the youngest average age (29 years), the lowest average years qualified (7.7 years), the lowest ratio of private to public practitioners (0.03:1) and one of the lowest average years in their current position (4.3 years). This second research study in this thesis provides a current study of dietetic workforce history and development will help to confirm workforce issues and guide future workforce planning.

3.2 Overall Aims

The overall aims of this study were to:

1. examine the characteristics and history of dietetic staffing in six different rural case study settings
2. determine the drivers and barriers to the recruitment and retention of dietetic staff
3. determine the drivers and barriers to the development of dietetics staffing in rural areas

Table 18 summarises the case study strategies used throughout the development of the research design, data collection, composition and data analysis processes in order to ensure the validity and reliability of the results.

Table 18: Validity in case study mixed methods research

Tests	Case study strategies	Phase of research	This research study
Construct validity	Use multiple sources of evidence Establish a chain of evidence Have key informants review draft case study report	Data collection Composition	Used documents searches with multiple sources of evidence Established a chain of evidence for each site and new positions Key informants reviewed draft case study reports
Internal validity	Do pattern matching Do explanation building Address rival explanations Use logic models	Data analysis	Patterns and explanations discussed in thematic results
External validity	Use replication logic in multiple-case studies	Research design	A range of sites where chosen within the study area to represent different models of dietetic service delivery to make the results generalisable
Reliability	Use case study protocol Develop case study database	Data collection	Standard case study protocols were developed and used for data collection and a case study database developed

Adapted from source: Cosmos corporation (Yin 2003)

3.3 Method

This research study used a multiple case study design, with an exploratory sequential mixed methods approach to data collection. Six different rural sites were chosen, from the Hunter New England Area Health Service region of NSW. These sites were chosen as they represented different models of dietetic service within the same area health region. The case study sites for this study were chosen from the following clusters of Hunter New England Area Health: Tablelands, Mehi, Peel, Lower Mid North Coast and Upper Hunter (see Figure 9, Chapter Four). These sites included two Rural Referral Hospitals and four District Health Services, as described in Appendix 1.2.

For ethical reasons the sites used in this study have not been identified in this thesis. Site names are not reported in order to provide anonymity[vii] and to comply with ethics requirements. Sites are signified as Sites A, B, C, D, E and F. Table 19 below provides a summary description of each site. Ethics approval for the study was granted by the Hunter New England Human Research Ethics Committee (HNEHREC) (Reference No: 06/05/24/4.01) and the University of Newcastle Human Research Ethics Committee (Reference No:H-299-0906). Copies of the Certificates of Approval for conducting this research are provided in Appendix 2.1. Letters seeking the involvement of the Divisions of General Practice were required and obtained for the HNEHREC ethics committee, these letters have not been included to ensure the anonymity of the sites.

[vii] Due to the small numbers of dietitians and the existence of sole practitioners in rural areas, sites are not identified.

Table 19: Summary of demographic and service details for the six sites

Site	Description of dietetic services	Service Facilities	ARIA + Score ASGC*	Population covered including outreach sites †
A	Small department, plus private practice	District Health Service	4.16 Outer Regional	24, 302
B	Sole position	District Health Service	3.60 Outer Regional	8,674
C	Sole position, plus temporary Division of GP position	District Health Service	6.47 Remote	11,700
D	Sole position, plus temporary project position	District Health Service	2.29 Inner Regional	18,508
E	Mixed service	Rural Referral Hospital	2.90 Outer Regional	48,000
F	Mixed Service	Rural Referral Hospital	2.08 - 2.43 Inner Regional	43,984

*Source: Data sourced from * (ABS 2003) †(ABS 2001a),*

ARIA+ - Accessibility /Remoteness Index of Australia, ASGC – Australian Standard Geographical Classification, GP – general practice

Data collection

Data was collected retrospectively for the period 1991 to 2006 using document searches (Part A) and in-depth individual interviews (Part B). Potential interview participants included key staff employed or previously employed in health service facilities and Divisions of General Practice (GP) in the area. An overview of the health service facilities and Divisions of GP is provided in Appendix 1.2. The Information letters and Consent forms were posted to potential participants by mail at their work address by administration staff at the University Department of Rural Health (UDRH) Northern NSW. Copies of the forms are provided in Appendices 2.2 to 2.5. An existing database of work contact details for dietitians and health professionals across the area was utilised. Those who returned their consent form in the stamped addressed envelope indicated their willingness to participate in the study. Returned consent forms were addressed to

administrative staff rather than the principal researcher, so that their decision to participate was not unduly influenced by contact with the researcher. Participants were given two weeks to consider the invitation, if they had not responded a reminder was sent by mail and if there was still no response, no further contact was made.

Part A: Document searches (quantitative data)

Document searches were conducted to obtain information relating to the employment of dietitians and the development of staffing in the six sites for the time period between 1991 and 2006. Participants in Part A of the study were asked to provide de-identified documents and data to the principal researcher. Participants included: dietetic service managers, Divisions of GP practice managers or administrative staff who had access to departmental documents. The Workforce database was searched by health service staff, using salary classifications[viii] to locate all occasions of dietitian employment. The data collected included: job descriptions, start and end dates of employment, salary classifications, job titles, location of the position, periods of position vacancies and information regarding the development of positions. Participants were required to provide the principal researcher with de-identified departmental collections of letters, emails, employment data sets (from the Workforce program) and other documents, where the data was available. De-identified patient activity data previously collected and stored by the health service, using the Community Health Information System (CHIS), Community Health Information Management Enterprise (CHIME) and Department of Health Reporting System (DOHRS) programs, was accessed by participants, for information on occasions of service for inpatients, outpatients, group talks and other activities, as available. These data were routinely collected as part of clinical practice and did not include any personal information about patients or staff. Data items included: the number of direct and indirect occasions of service (OOS) performed by dietitians and number of indirect OOS and type of service provided. Data collection forms were used to collate data obtained from the de-identified

[viii] Based on dietetic pay scales

documents provided by the research participants. Copies of the data collection sheets are provided in Appendices 3.5 and 3.6.

Part B: Individual interviews (qualitative data)

Interviews were sought with key personnel to determine the themes relating to the development of dietetic positions and factors influencing dietetic staffing in the study sites.

Protocol development

The interview questions focused on: the development and funding of dietetic positions, recruitment and retention factors and the barriers and drivers for dietetic staffing. Four semi-structured interview protocols were developed and used as the basis for interview questioning. The interview protocol questions were developed following a review of the literature to determine the factors likely to influence the development of a best practice dietetics service in rural areas. The interview protocols were developed for:

1. managers and other people in positions of influence,
2. dietitians in management,
3. dietitians in positions (present) and
4. dietitians in positions (past)

Copies of the interview protocols are provided in Appendices 3.1 to 3.4.

Recruitment of interview participants

Interview participants were recruited using purposive, non-probability sampling. Dietitians and other key informants who were currently working in positions in the study area were selected and invited to participate in Part B of the study. The snowballing recruitment technique was used to further identify potential participants that were not initially identified through publicly available lists of health service employees (such as people who have previously worked in a position and are no longer employed locally). In the snowballing recruitment, participants were asked to provide the

principal researcher with contact details for other potential participants, if they were currently employed within Hunter New England Health (HNEH). If this was not the case, then the researcher's details were given to the participant to be passed on to the third party.

Individual semi-structured interview procedure

Individual semi-structured interviews were conducted over an 11 month period between November 2006 and September 2007. Individual interviews were conducted with key informants: dietitians, dietetic managers, health service managers and people of influence. Those working in the health service, Divisions of GP and private practice were included. Interviews were conducted face-to-face, with the principal researcher travelling to the participant, with the exception of two interviews. One interview was conducted by telephone and one by videoconference, due to distance and the limited availability of the interview participants. In one interview the recruited participant requested to be interviewed with her predecessor, this person also consented to participate in the study and was interviewed jointly with the original participant. The length of interview was anticipated to take approximately 30 minutes.

Interviews were carried out at the participant's place of work or at a University of Newcastle site within the study area and at a time to suit them during or after work. The interviews were conducted in a quiet, private room to ensure confidentiality and attempts were made to minimise any interruptions during the interview. The tape was stopped for interruptions or at the request of the participant. At the start of each interview participants were reminded of the purpose of the research and what was required of them as a participant. Participants were given the opportunity to ask further questions regarding anything they did not understand or were unsure of in regards to the research and their participation in it.

Some participants were asked questions from more than one interview protocol, if it was relevant. For example, some dietitians had worked in more than one position within the study sites and were therefore asked questions from protocol three (present) and protocol four (past). Field notes

were kept by the researcher during and following each interview. These notes included thoughts and feelings about each interview, along with any interesting points that emerged from the interview. Individual interviews were continued until a saturation point was achieved with the emerging themes. Attempts were made to obtain interviews with a range of key informants from each site.

Transcription process

Participants were not identified by name on the tape or in the transcript and each participant was given an identification number. Any identifying information provided in the course of the interview was removed and replaced with a code so that any sites or individuals mentioned could not be identified. The date of the interview, site of employment (A-F) (refer to Table 19), interview identification number and interview protocol number (1-4) used were recorded at the start of each interview. Taped individual interviews were transcribed by an administrative assistant. The accuracy of the transcripts were checked and corrected against the original taped interviews by the principal researcher. The coding was checked by a second researcher. Themes relating to the history and development of positions, recruitment and retention are reported on. Interview transcripts with quotes relating to the drivers or barriers for establishing private practice work in rural areas were identified. A subset of 15 interviews were analysed for themes relating to private practice work. Participants were offered the opportunity to review the transcript of their interview to verify accuracy. Copies of the transcripts were posted out to participants to review, if requested by them or if clarification of the transcription was required. Transcripts were edited to ensure anonymity and clarity. All identifiable data (such as locations, names and service providers) was replaced with a code and standard symbols were used to indicate the editing (see transcription conventions below).

Transcription conventions

Extracts from interview transcripts have been edited where needed to maintain anonymity and to ensure that quotes are understandable. The

following transcription conventions and symbols have been followed throughout the thesis.

…	Indicates a pause by the speaker or that the extract has been truncated to exclude irrelevant material
[ ]	Explanation of a term or replacement of an identifiable term with a generic code. For example, the [name] dietitian in [Site A].
‘ ’	A direct quotation of less than two lines included within the text
( )	Used to add or indicate other verbal sounds, such as laughter

Any quotes of 30 words or less have been included in the text of the thesis and those greater than or equal to 30 words have been indented. Thematic quotes were labelled using the following protocol (position, employment status, interview ID number and Site/s listed in order of employment). For example, the following label (dietitian, currently employed, 4CAE) denotes a quote from participant four who has worked in Sites C, A, E respectively and is currently employed in Site E. In Chapter Six, the label also includes an indication of their involvement in private practice as well, for example (dietitian past, not in private practice, 35E).

3.4 Analysis

Part A: Document Searches

Descriptive and inferential statistical analysis of the quantitative data was conducted. Descriptive statistics such as frequency distribution, proportion, mean, median, standard deviation and range were used to show trends in data. Continuous data was converted to categorical variables where appropriate (such as years of work experience at time of employment, number of years working in study site) for ease of interpretation of the data. Counts and percentages are provided for categorical variables and mean (±SD) for normally distributed continuous data. Statistical significance was set at the conventional 95% level (two tailed). For

continuous variables, repeat measure analysis were used. For categorical variables cross tabulation and chi squared tests were used. Independent t tests were used for normally distributed data, the Mann Whitney test was used for data not normally distributed and chi square for categorical data. Spearman's rank correlation co-efficient and Univariate Analysis of Variance (UANOVA) Kruskal-Wallis were used to determine the relationships between the potential predictors (variables) and length of service. The following model (see Figure 8) was developed from the measurable variables in Figure 2, Chapter One. This was used as the basis for the analysis of the correlation of variables with length of stay in a rural position. Statistical analyses were carried out using SPSS version 15 (SPSS Inc 2006) with the assistance of a statistician.

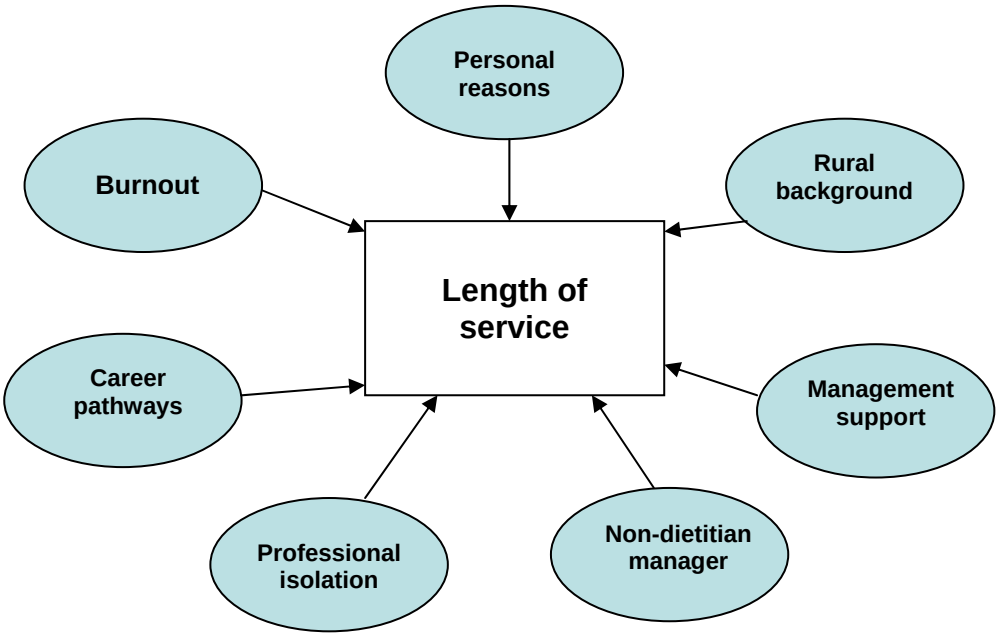


Figure 8: Multiple regression model for length of stay in a rural position

Part B: Individual Interviews

Qualitative thematic analysis of the individual interviews was undertaken with the aid of NVivo 7 (QSR International Pty Ltd 2006). Themes were coded into common categories, using a constant comparison, inductive approach. Qualitative data was transformed into numeric ratings (quantitative data) to develop a consolidated data set. The historical development and characteristics of positions across the six sites was

determined from the triangulation of data. The main qualitative themes were tabulated against quantitative data to show convergent validation and timelines constructed to provide a visual presentation of workforce changes for each site.

3.5 Summary

The preceding aims, methods and analyses for study two relate to the results in the following Chapters Four, Five and Six.

Chapter Four Study Two: Results – history and characteristics

4.0 Introduction

Research into the rural allied health workforce has confirmed difficulties with recruiting and retaining allied health staff in rural and remote areas (Services for Australian Rural and Remote Allied Health 2000; Stagnitti, Schoo et al. 2005b; Stagnitti, Schoo et al. 2006; Gillham and Ristevski 2007). Barriers to retention include a lack of career structure, lack of professional support and lack of management structure (Stagnitti, Schoo et al. 2005b; Gillham and Ristevski 2007). Factors favouring retention include flexible work conditions, a variety of clinical and management experience, a good work environment, good support and autonomy (Stagnitti, Schoo et al. 2005b; Stagnitti, Schoo et al. 2006; Gillham and Ristevski 2007).

Recruitment and retention issues for dietitians in rural areas are inadequately reported in the literature. Dietitians may have differing issues to other allied health professionals due to their smaller numbers and increasing supply of new graduates (Brown, Capra et al. 2006). While allied health studies have focused on geographical areas (Services for Australian Rural and Remote Allied Health 2000; Stagnitti, Schoo et al. 2005b; Gillham and Ristevski 2007) no studies have used a case study or mixed methods approach. The purpose of this doctoral study was to determine the characteristics and historical developments of the dietetic workforce and recruitment and retention issues for rural based dietitians in six case study sites. This chapter reports on the characteristics and historical development of dietetic services and recruitment and retention issues in the area over a 15 year period. The results are presented under sub-headings relevant to the themes and type of data. Document analysis (quantitative data) and individual interviews (qualitative data) are presented separately throughout or combined where data has been triangulated.

4.1 Document analysis

Workforce data

A total of sixty four documents including: de-identified human resources records, position descriptions, funding submissions, service activity reports and emails, were provided for analysis from eight key informants. Ninety dietitians were employed over the six sites between 1991 and 2006. Ninety four per cent of these staff were female and 69% were new graduates[ix], when commencing in their first position in the study area. Thirty two per cent of the dietitians employed remained in the positions for less than six months, 32% for two years or more and 8% for more than five years. The reasons given for dietitians leaving positions included 'personal reasons', to 'travel and work overseas' and 'to find permanent or full-time work'. Figure 9 shows the length of service of individuals employed in the six sites.

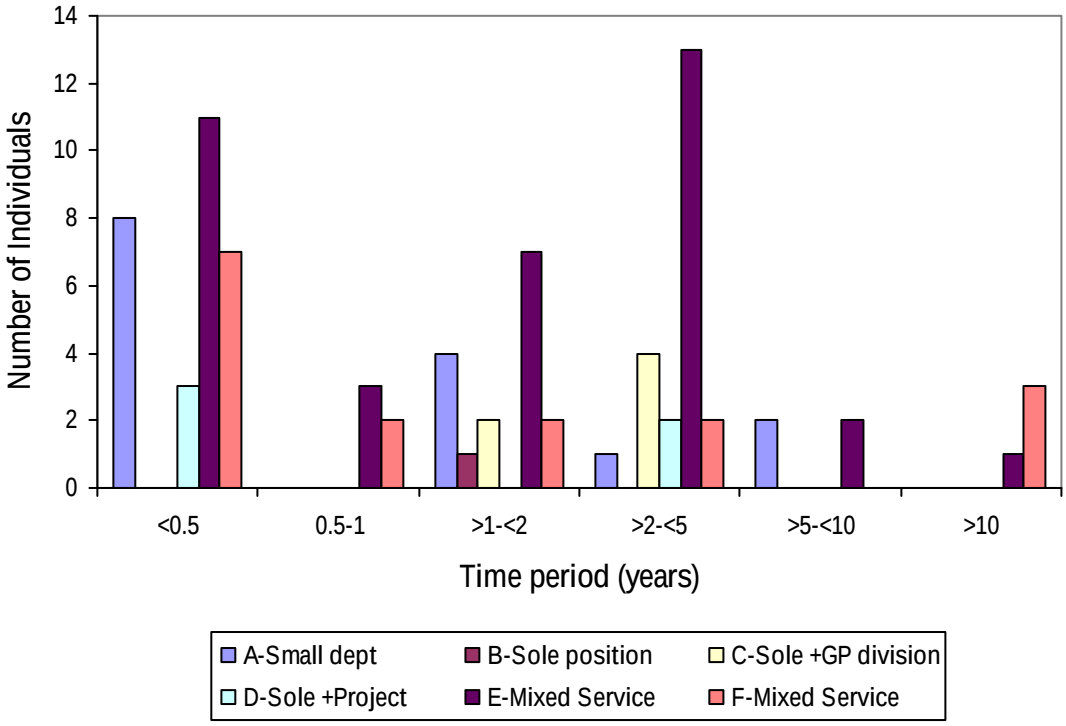


Figure 9: Length of service by individuals in health service and Division of GP positions

[ix] New graduates identified as those with less than two years' experience

4.2 Individual interview data

4.2.1 Employee profiles

Forty interviews were conducted across six rural sites, a response rate of 71%. The interviews were conducted with 28 dietitians, three dietitian managers, seven health service managers or team leaders and two managers from Divisions of GP, as outlined in Table 20. Managers were currently employed in their positions, except as indicated as previous employees.

Table 20: Interviewees by site and interview protocol

Site	Dietitians previous employees	Dietitians current employees	Dietitian managers	Health service or Divisions of GP managers[x]	Total
A	2	3	-	2†	7
B	-	1	-	-	1
C	3	2	-	3†	8
D	1	2	-	3†	6
E	7	9	2*	-	18
F	2	3	1	2	8
Totals	15	20	3	10	48

(N = 40). * one previous dietitian manager, † one previous manager at each site

Table 21 shows the characteristics of the dietitians interviewed. At the time of the study, 25 dietitians were employed across the six sites and 92% of these dietitians were interviewed. Seventy one percent of dietitians interviewed had worked in only one site, during the 15 year period. The majority of dietitians interviewed were graduates of The University of Newcastle[xi] (52%), followed by Sydney University 26%.

[x] One manager covered two sites and has been counted for each site and seven dietitians worked in > one site.
[xi] Geographically the closest university that provides a nutrition and dietetics program.

Table 21: Characteristics of the dietitians interviewed and details of their employment

Characteristic	Dietitians (n= 31)
Gender	
Male	3
Female	28
Employment type	
Permanent	22
Contract	6
Temporary	3
Full time	24
Part time	7
Main position type	
Community	7
Mixed	8
Clinical	6
Clinical specialist	3
Management	3
Division of GP	1
Population health	3
Experience at time of employment in first position (years)	
No experience	17
<1	3
2-5	8
5-10	2
20	1
Number of years working in study site/s	
≤ 1	10
> 1 ≤ 2	7
> 2 ≤ 5	8
> 5 ≤ 10	2
> 10 ≤ 20	2
>20	2
Average years employed at site[xii] (range min-max)	4.5 (2 months – 26 y)
Average years from graduation to initial employment in site (range min-max)	1.8 (0 – 20 y)

[xii] as at 1 December 2006

Summary of six case study sites

Table 22 provides a summary of the six rural sites of dietetic service delivery including a description of the services, the FTE staffing levels and the locality. The social indicators for the six study sites have also been summarised. There was no significant difference between the sites for social indicators, except for the Indigenous percentage of the population (p value = 0.015).

Table 22: Summary of six rural sites of dietetic service delivery in 2006

Site	ASGC and population serviced**	Distance from a Major City (km) and travel time (hr mins) #	Index of relative SED (rank NSW) †	Index of Education and Occupation (rank NSW) †	Unemployed (%) ‡	Born overseas (%) ‡	Indigenous (%) ‡	Total number of GPs § GP: Population ratio	Description of services Direct Line Manager	FTE in July 2006 *
A	Outer Regional 24 302	395 4 40	994 (109)	1044 (125)	8.3	15.5	5.4	37 1:632	Small department, plus private practice Nurse	3 (including 1 private)
B	Outer Regional 8 674	315 4 00	934 (22)	923 (24)	8.3	9.2	10.2	6 1:1921	Sole position Nurse	0.5
C	Remote 11 700	520 6 45	936 (54)	938 (58)	6.3	14.8	19.4	12 1:1165	Sole position, plus temp Division of GP position Nurse	2
D	Inner Regional 18 508	130 1 40	973 (76)	905 (7)	5.4	12.1	4.8	20 1:762	Sole position, plus temporary project position Nurse/Social Worker	2
E	Outer Regional 48 000	285 3 25	972 (77)	942 (60)	6.8	10.1	6.9	88 1:609	Mixed department Dietitian or Allied health manager	10.5 (including 3 temporary)
F	Inner Regional 43 984 (two locations)	170 2 05	942 (41)	914 (16)	10.5	13.2	4.3	42 1:1075	Mixed service Dietitian or Allied health manager	5.4 (including 1.4 private)
NSW average			973 (76)	951 (76)	5.9	23.8	2.1			

*Based on permanent positions in 2006. ASGC – Australian Standard Geographical Classification, GP – General Practitioners, FTE – Full-time equivalents, SED – Socioeconomic disadvantage

*Source: Data sourced from †(ABS 2008b), ‡(ABS 2008a),**(ABS 2001a; ABS 2003), #(Where is it 2008), §(ABS 2008a)*

4.2.2 Historical development of dietetic positions across the six sites

Staffing prior to the study period

The development of staffing varied across the sites over the 15 years of the study period (1991-2006). Some historical facts prior to 1991 reported in the interviews are summarised below to provide the context for subsequent developments. No dietitians were located outside Newcastle, in the area now known as Hunter New England Health, prior to 1974. A map of the current Area Health Service is provided in Figure 10 below.

Site E was the location of the first sole dietitian for the area between 1974 and 1975, with an additional position being added in Site A in 1975 and Site E in 1976. The area covered ranged from Glen Innes and Walcha to the north east, Tenterfield in the north, to Mungindi and Wee Waa in the west and Quirindi in the south. Site A continued with one FTE throughout the early 1980's, until an additional part-time position was added in 1985. Site F had a dietetic position established in 1982 and Site D in the early 1980's. The dietitians were required to drive vast distances to provide services to several towns.

Figure 10: Hunter New England Area Health Service map

Staffing during the study period

In **Site E** the staffing remained at two dietitians for more than 15 years, with only two hospital based dietitians in 1994. A community position was established in the early 1990's. Since 1994 there has been a gradual increase in the number of dietitians at the site located in a range of service settings (for example the Diabetes Centre, Community Health and Population Health services). In late 2006 the hospital and community health based dietetic services consisted of one community dietitian, one diabetes dietitian, one renal dietitian, two clinical dietitians, one management

position plus 0.6 additional FTE[xiii]. In addition to this there were three FTE dietitians working in temporary population health positions and 1.2 FTE dietitians working in contract academic/research positions.

In **Site A** the staffing levels varied from 1.2 FTE to 1.5 FTE over the past 15 years due to variations in funding and available staffing. In 2001/02 the local Division of GP funded a 0.5 FTE position in conjunction with 0.5 FTE from the hospital to create a full-time position. This increase to two FTE ceased with the resignation of a staff member in late 2002. Lobbying of health service mangers eventually led to the health service funding two FTE in late 2005.

In 1991 there was still only one FTE in **Site F**. Additional positions were later established in community (1 FTE) in 1995, clinical (0.5 FTE) and diabetes (1 FTE) in 1998. Small incremental increases in staff funding have occurred over the past 10 years and by 2006 there were 2.0 FTE hospital based dietitians. In the past few years there has been an increase in private practitioners in the local area to an estimated 1.4 FTE in 2006.

Site C initially had a dietetic position in the early 1980s however repeated difficulties with recruitment led to the position being unfilled for many years. Since 1997 the 1 FTE position has been consistently filled. The local Division of GP employed a full-time dietitian in October 2002 and another from March 2005 until June 2006. When one of the staff resigned from the Division of GP position in March 2005 the position was not recruited to again, but the initial full-time position continued.

Dietetic staffing in Sites D and B has only been achieved in the past few years. The first public service dietetic position being established in **Site D** in early 2001. Prior to this, dietetic services were provided on a part-time basis by a private practice dietetic service from an urban area for a few years. In September 2004 a temporary project position was located in Site D to provide outreach services to smaller towns[xiv] surrounding Site D. This position was funded through the Commonwealth Regional Health Services program, initially for a three month trial period and eventually it was

[xiii] 0.6 FTE hours funded for food service and outreach clinics.
[xiv] Towns with a population less than 10 000.

extended until June 2008. **Site B** was staffed with a 0.5 FTE position in October 2005. This area was serviced prior to this by Site E through a monthly outpatient service.

Case study site timelines

The following case study timelines, illustrated by Figures 11-16, provide a summary of the positions and key events in each study site between 1991 and 2006. These timelines are not drawn to scale.

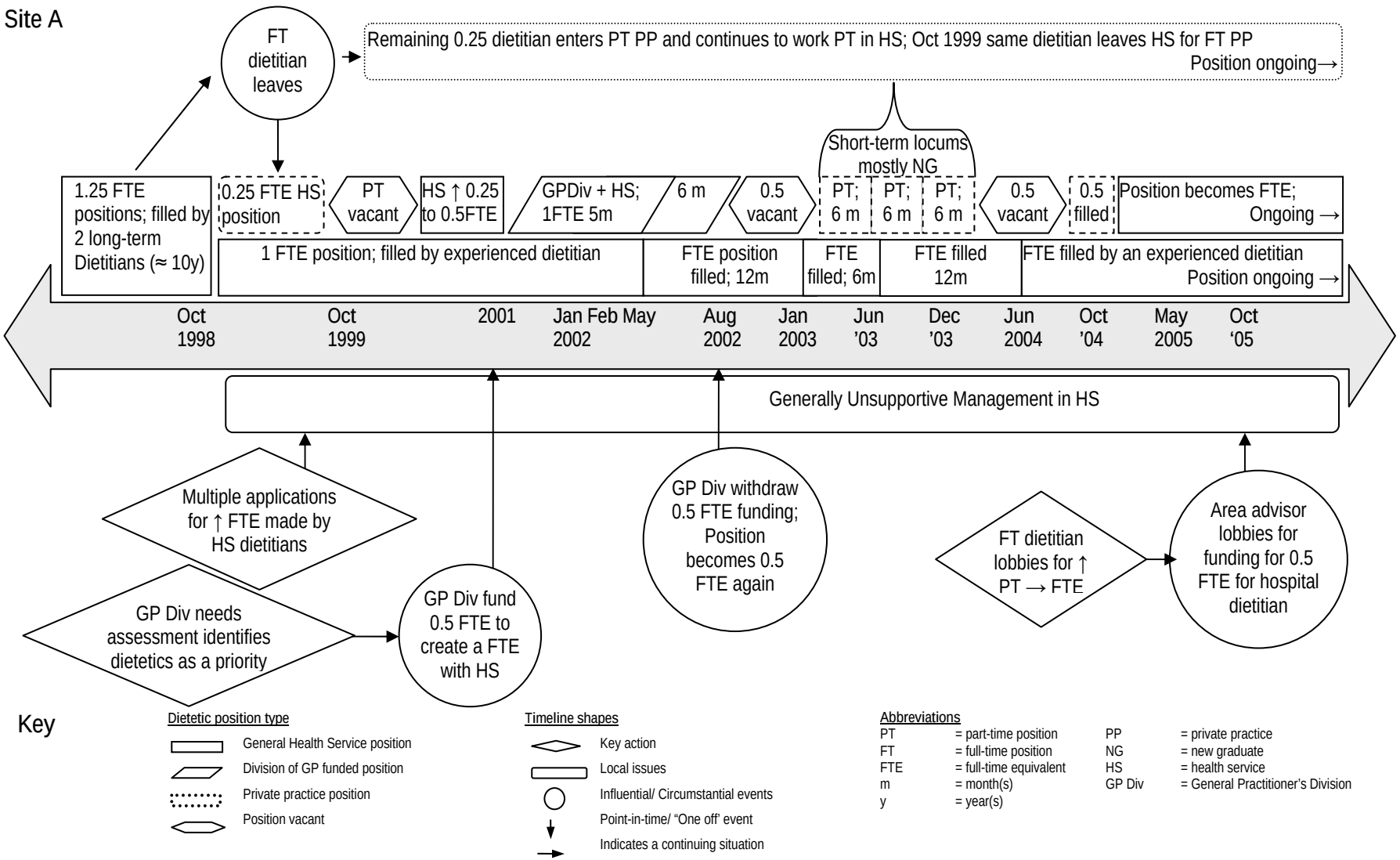


Figure 11: Case study timeline Site A: 1991-2006

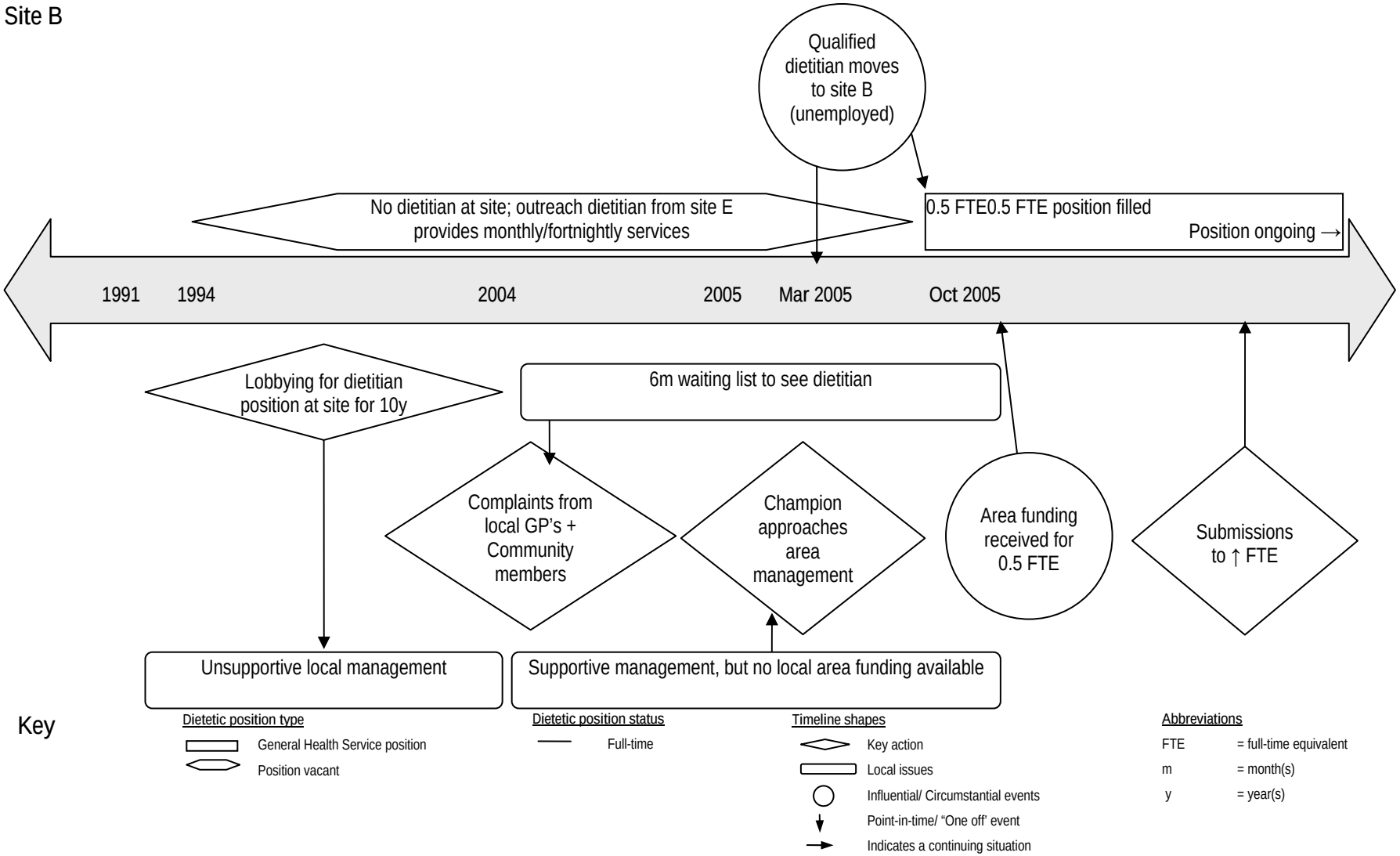


Figure 12: Case study timeline Site B: 1991-2006

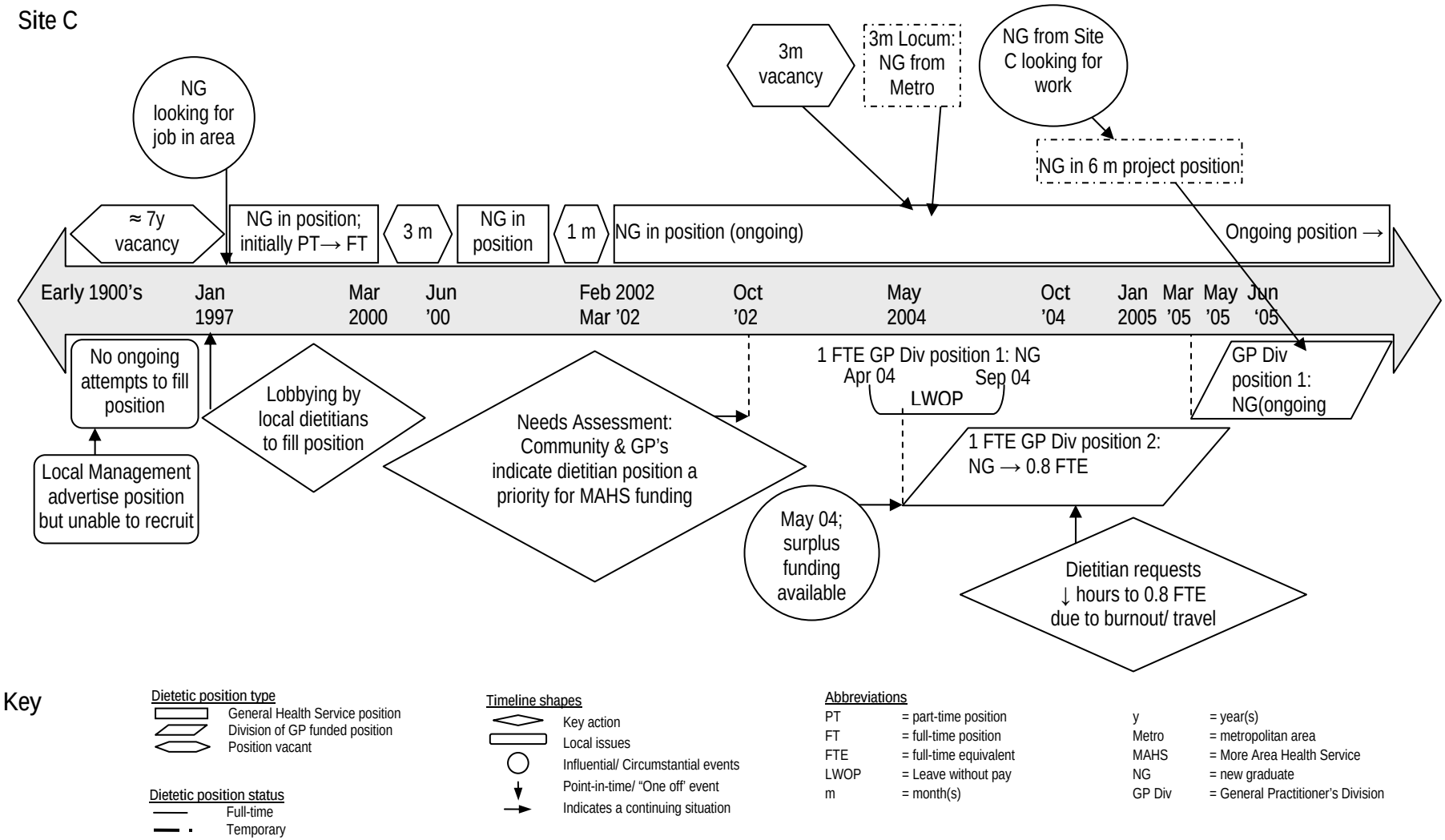


Figure 13: Case study timeline Site C: 1991-2006

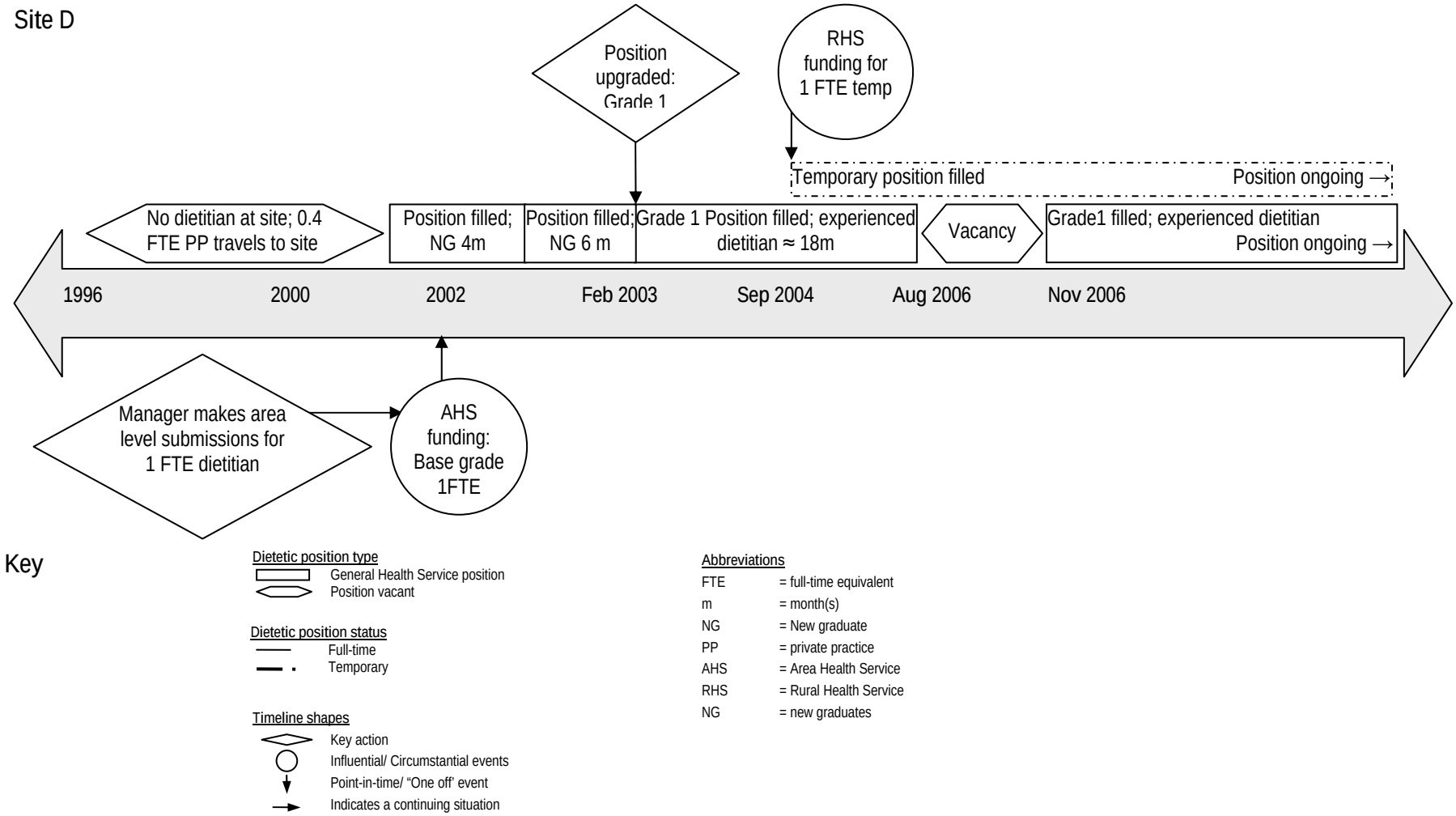


Figure 14: Case study timeline Site D: 1991-2006

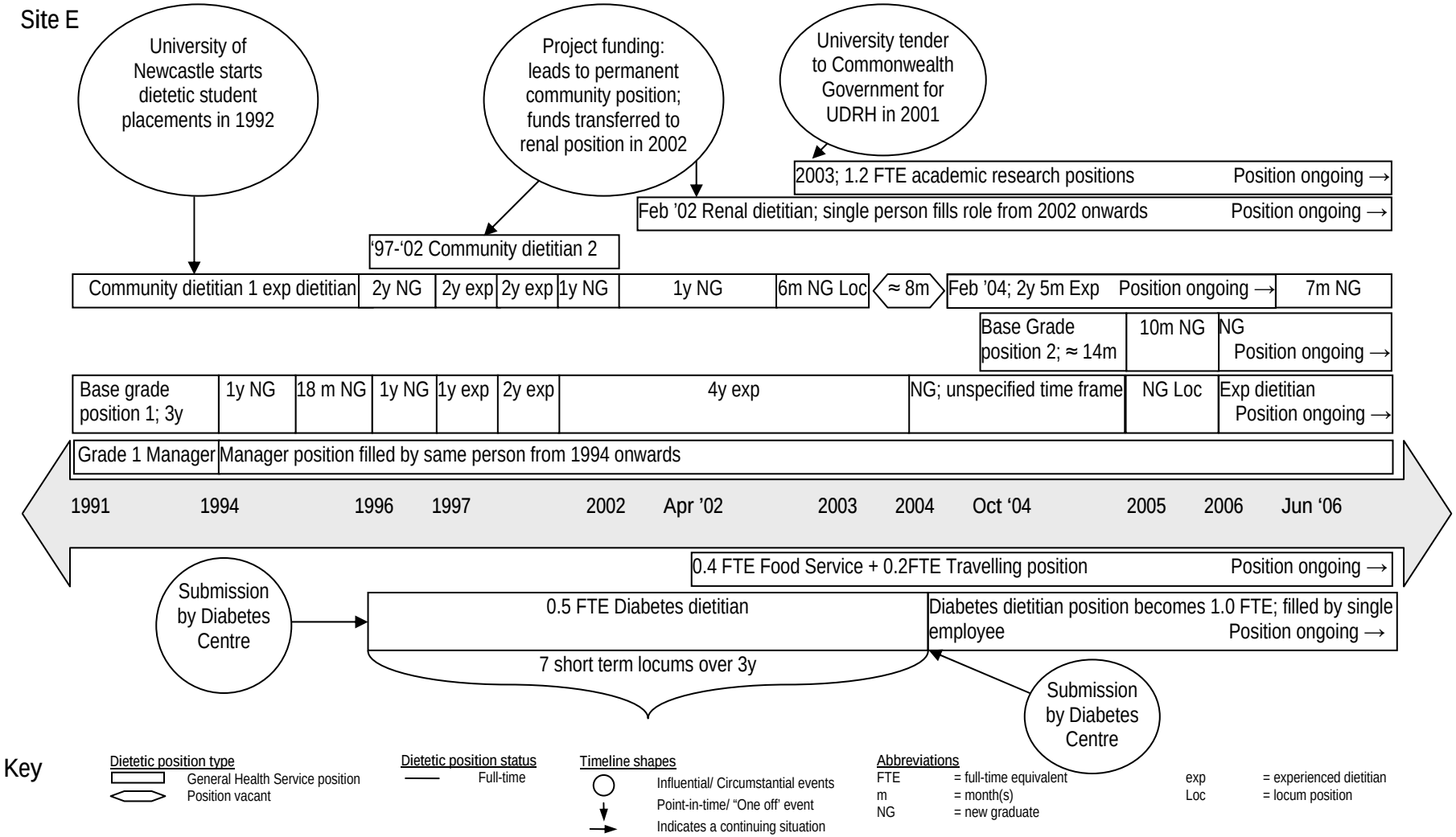


Figure 15: Case study timeline Site E: 1991-2006

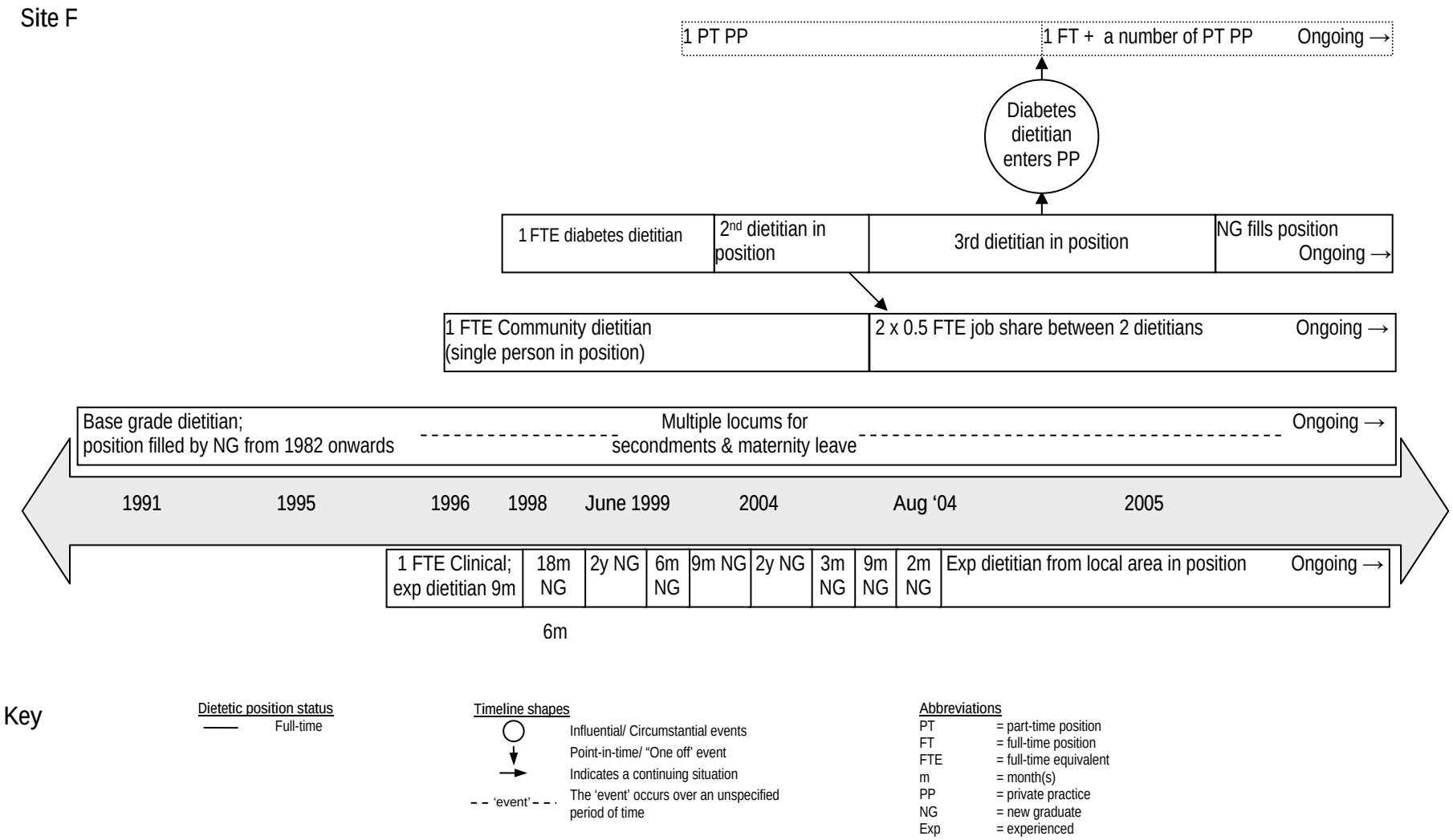


Figure 16: Case study timeline Site F: 1991-2006

4.2.3 Dietetic services

The dietetic services provided in each site (summarised in Table 23) varied depending on the number of positions, their employment base (such as community health or hospital based) and the scope of their job description. Dietetic positions for population health services were only located in Site E and these were temporary positions. Only Sites E and F had dedicated community dietetic positions that were responsible for community project work, as well as a small outpatient clinic workload. The generalist community based positions in Sites A, B, C and D were required to contribute to health promotion or community project work, however no hours were specifically allocated for this work and the clinical workload was their main focus of these positions.

All sites consisted of base grade[xv] positions, with only Sites E and F having a grade 1 dietetics management position. Site D changed it's sole base grade position to a grade 1 position in 2003, in order to assist with recruitment, even though there were no management responsibilities for the position. The only funded 'specialist' positions were diabetes in Site F and diabetes, renal and food service in Site E. None of these positions were graded[xvi].

All sites provided outreach clinics to a range of smaller sites in the local area as summarised in Table 23. The number of sites ranged from one to seven, with most services being provided on a monthly basis. An average of 77km return travel was required to reach these sites. Most distances travelled were less than 100km, with only Sites A and C providing outreach services to sites over 150km away.

[xv] 'Base grade' refers to the entry-level grade and pay scale for new graduate dietitians in the public health service prior to October 2007. These pay scales range from year 1 to year 7 for base grade positions.
[xvi] Dietetic pay scale grades for higher paid positions.

Table 23: Dietetic services provided by dietitians in each site in 2006

Site	Number of Hospital beds*	Outpatient services	Graded positions /specialised services	Community position	Population health	Outreach services Number of sites Distance from site (km)†
A	86	Diabetes and general clinics	Nil	Yes	Nil	4 sites 25 - 190
B	43	General clinics	Nil	Yes	Nil	1 site 40
C	48	General clinics	Nil	Yes	Nil	7 sites 86 - 196
D	63	General clinics	Grade 1 since 2003 (non management role)	Yes	Nil	4 sites 26 – 67
E	270	General and diabetes clinics	Grade 1 Dietetics Manager 1 FTE Diabetes 1 FTE Renal 1 FTE Food Service 0.4 FTE	1 FTE	3 FTE (temporary)	5 sites 45 - 92
F	166	General and diabetes clinics	Grade 1 Dietetics Manager 1 FTE Diabetes 1 FTE	1 FTE	Nil	3 sites 12 - 79

*Sources: Data sourced from * (New South Wales Health 2008), † (Where is it 2008)*

Dietetic workload: Occasions of service (OOS) data

A summary of the OOS data for the six sites in 2006 is provided in Table 24. The OOS data was compared for number of FTE per site over a 12 month period. Data has been displayed as direct and indirect[xvii] OOS data, as a further breakdown of data was not consistently available across all sites. This data indicates an average patient load of five to nine OOS per dietitian per day.

Table 24: Occasion of service data in the six sites in 2006

Sites	Direct patient OOS per month	Indirect patient OOS per month	OOS per FTE per month
A†	153	*	102
B	57	36	186
C	174	4	178
D	117	32	149
E	367	28	104
F	282	*	141
Median (range)	192 (57-367)	17 (4-36)	143 (102-186)

* Nil indirect patient OOS available † One employee on sick leave for extended period of time during 2006

Dietetic casemix

Dietetics managers at Sites E and F commented on the change in the client base that dietitians were experiencing in their larger rural sites[xviii], with more complex and varied cases and longer term patients that would have in the past been transferred to larger metropolitan hospitals. This has

[xvii] Indirect OOS refer to patient service activities that do not involve direct contact with the patient, such as the organisation of the supply of dietary supplements for post hospital discharge.
[xviii] Sites E and F include a Rural Referral Hospital base with medical specialities and more than 150 beds.

coincided with increases in specialist doctors and medical units in these hospitals.

> *Site E itself has grown a lot and also the clinical specialities for the doctors in Site E has changed a lot, so we are actually getting referred a lot more difficult stuff and a lot more long-term clients than we used to see. They used to go to Sydney or wherever and now we get them and we look after them for quite a long period of time.* (dietitian manager, currently employed, 6E)

> *The case mix has also changed…certainly in the last twenty years we're getting more varied case mixes, more complex people with lots of co-morbidities that require expertise and so the workload is increasing. Probably too we've got more doctors with expertise which means we're…keeping patients, that perhaps would have been transferred out.* (dietetics manager, currently employed, 16F)

The other reason given for the increased number of complex patients staying in rural sites was due to a shortage of beds in larger metropolitan hospitals.

> *…it seems to be that we are keeping more complex patients on site versus transfer or have patients extremely unwell and sick that are waiting on beds at metropolitan hospitals because of bed blocks…* (dietitian, currently employed, 26F)

The change in client base in the larger rural hospitals has meant that dietitians who were previously dealing with a generalist case load were having to deal with more complex cases for extended periods of time. This requires the development of specialist skills, while maintaining a varied caseload, and this poses challenges for dietitians.

> *…we are sort of expected just to know what to do, whereas it's a really expertise clinical area…and just trying to keep your skills up in those areas is really difficult.* (dietitian, currently employed, 26F)

While some sites acknowledged an increase in dietetic staffing and the range of services that they could offer, the gains in staffing were reported to be matched or exceeded by the increased demand for their services.

> *I think that's the biggest thing with dietetics is staff create demand and the more staff we get the more demand we are getting…I think the service has grown and we have definitely expanded what we can offer, but demand is actually keeping up with that.* (dietitian manager, currently employed, 6E)

While larger rural hospitals reported increased specialist services there was often no dedicated funding for dietetic positions to go with the enhanced medical services, or if funding was provided it was for part-time FTE that could not be recruited to. In one site, a dietetics manager diverted dietetic department funds from another area to create a specialist renal position where one was deemed to be needed, given no area funding was provided.

> *Renal was growing rapidly here and we just couldn't keep up with the demand clinically. We also needed someone with a bit more specialised knowledge, so we created that specialist position to cover that demand.* (dietetics manager, currently employed, 6E)

The managers and other senior staff also talked about the fact that services were 'built up' and that this created more demand. The more a service grew and became well known, the more it's services were sought and utilised. A dietitian in Site F (dietitian, currently employed, 26F) reported *'I think I built up the service to the point where I couldn't service it (laughs)'.* As the dietetics profession itself grows the demand for services continues to expand.

> *I think you'll find that anywhere really if you start to shine a flashlight and say look this is the service...we can [provide]...GPs were quite aware of how limited the service was so when they saw it had capacity to do more they did refer more. (dietitian, past, 23D)*

Another dietitian commented on the increasing demand with additional staff leading to long waiting lists.

It's a lot more comprehensive service now, but the trouble is the demand for dietetics has kept up with our numbers, so our waiting lists are still reasonably long at times…I think that's the biggest thing with dietetics is staff create demand and the more staff we get the more demand we are getting. (dietitian manager, currently employed, 6E)

4.2.4 Recruitment and retention

The main themes to emerge from the interview transcripts that relate to recruitment and retention are summarised in Table 25, as discussed with quotes in the text that follows.

Table 25: Summary of recruitment and retention themes

Main themes	Categories
Nature of living in a rural area	General appeal of the area Personal relationships with colleagues Social networks
Personal experiences and preferences	Freedom in personal life or no ties Changes to personal life situation or problems Comes from a rural area or rural upbringing Urban upbringing and returned as soon as possible Positive practicum experience at site within the study area Moving out of dietetics as a career
Characteristics of a rural role	High workload and burnout Lack of career progression Professional isolation Diversity and autonomy of workload High profile in the community Access to continuing education and resources Travelling times to outreach sites
Management in a rural site	Different management teams Support by management Support for new graduates
Establishing and maintaining rural staff	High staff turnover and vacancies New graduates taking positions Inability to recruit

Nature of living in a rural area

The 'nature of living in a rural area' is a theme that encompasses a range of factors that encapsulate the rural lifestyle that often attracts people to live and work in rural areas.

General appeal of the area

The general appeal of a town and surrounding areas had a positive influence on the recruitment and retention of dietitians. Factors such as: the weather, lifestyle, size of the town, the general location and access to services were all mentioned as important considerations when considering moving to a rural area for work. As one dietitian expressed it:

> *I do prefer to live rural. This is really a lifestyle choice…family and lifestyle is a huge part in my work decisions. I've got a young family, so to work out where is the best environment to live as well...* (dietitian, currently employed, 27D)

The size of a town that was considered appealing varied, with some indicating that Site E with a population of 48 000 was a good size town. '*It's a more relaxed lifestyle, it's a smaller area and a smaller town, so that's also attractive for some reason (laughs).'* (dietitian, currently employed, 15CE referring to Site E). The distance of the town from a major metropolitan city was of importance to some, with a distance of approximately 300km from a major city considered to be close enough. *'It was a nice sized town to go and work in. It wasn't too far from everything either.'* (dietitian, past, 7E). Another dietitian was looking for a smaller town, such as Site C, with a population of 11 700. *'I wanted to move to a smaller town, so when they said would you like to move to Site C, I thought that was fantastic.'* (dietitian, currently employed, 11C).

Rural locations that were close enough to family were considered acceptable by some dietitians. One dietitian from an urban area found work in a rural location within 300km of her family. *'Site E was a good option for me 'cause it wasn't a long way from where my home base was.'* (dietitian, past, 7E). The proximity of the rural location to family was part of the appeal of the

site. Another dietitian found work in a rural location not far from her family. *'I was only an hour and a half away from my family and my cousin lived here in Site C…'* (dietitian, currently employed, 11C).

The weather in a particular site was an important factor for some. Cold weather was mentioned as a negative factor and this was associated with Site A[xix]. *'Most people don't like the cold (laughs), so they'll leave because of that.'* (dietitian, past, 20A). In the other sites the weather was also a consideration in the appeal of a town as a place to move to. Site E was considered to be a location that had appealing weather conditions[xx]. *'…it just appealed to me I guess in terms of it's location and where it was, even [the] weather…'* (dietitian, currently employed, 30E).

The reputation of a town was an important factor, with one site suggested to have had a bad reputation, resulting in difficulties recruiting staff to the town. This is supported by the fact that the dietetics position could not be recruited to for a period of about seven years during the 1980s and early 1990s.

> *…back in the 1990s it wasn't a town that had a very good reputation, so it wouldn't be a town that people would choose to come to unless they were desperate (laughs).* (manager, currently employed, 29C)

Personal relationships with colleagues

Once employed, the development of personal relationships with colleagues was an important factor in staff satisfaction and to facilitate team work in the workplace. As one dietitian commented *'…it's a really positive team…it's a very cohesive team, we meet regularly, everyone tries to work together'* (dietitian, currently employed, 4CAE). The friendliness of the workplace and the sense of everyone working together and supporting each other was considered important.

> *I really, really love working with the department…very supportive and also the hospital is really fantastic to work in, a really friendly*

[xix] Site A is located at a high elevation above sea level and has cold winters.
[xx] Site E experiences hot summers and cool winters.

hospital…it's a fantastic supportive environment…I really enjoy work in a country atmosphere and the friendliness of it. (dietitian, currently employed, 33E)

Managers also acknowledged the importance of a happy work environment.

I think we've all worked very hard to create a very happy work atmosphere and it is a very good…community health team…that is very supportive of each other. (manager, present, 31D)

A number of dietitians indicated that establishing social connections and friendships with colleagues were important in making the workplace atmosphere appealing. *'I liked the atmosphere and the team…the health professionals were quite sociable and friendly'* (dietitian, currently employed, 36E). Dietitians also reported working closely with other health professionals, (such as other allied health staff and diabetes educators) and establishing good working relationships with them.

'I've met some great people through the hospital and I enjoy working with [my] colleagues that I am working with now and I have established friendships...I've gotten to know the people at the hospital quite well and feel comfortable working here' (dietitian, currently employed, 34E)

Social networks

Outside of work, social networks were also important factors in a positive connection with the local area. Living at the on-site nurse's quarters was identified as a useful way to facilitate meeting people and socialising outside of work.

I lived in quarters for six months and that was good...that's quite an important thing to offer people in the country because I made a lot of friends…that was a really important thing I think to be able to establish friendships. It's also how I met my husband (laughs). (dietitian, past, 7E)

Dietitians also mentioned the importance of participating in sport, theatre and other local activities.

> *I joined the Musical Society and did two musicals in a year….I went to small country shows…stuff like that was really good, we did tend to get out and do a lot of things on weekends, we used to go to karaoke quite regularly as well (laughs).* (dietitian, past, 7E)

The perceived friendliness of a town and the ease with which one can make friends was identified as both a positive and a negative factor.

> *[Site A] is a bit of a transient population town which makes it hard sometimes, hard to make friends because people that have always lived in [Site A] sort of stick with themselves and it's the newcomers that stick together.* (dietitian, currently employed, 20A)

In another site the transient nature of the health professionals in the area was thought to make the social scene more 'inclusive and sociable'.

> *I think because a lot of health professionals had come from other places, they hadn't grown up and always lived in [Site E]...they were sort of more inclusive and sociable. I think many people were transient, so it was much more encompassing in that way.* (dietitian, past, 36E)

Personal experiences and preferences

'Personal experiences and preferences' refers to a range of factors that lead to a person's decision to work in or leave a rural area, such as personal freedom, urban or rural upbringings and personal life situations.

Changes to personal life situation or problems

Personal situations and problems in one's personal life was a common reason for dietitians to come to a rural area and/or to leave a rural area. Relationships with a boyfriend, partner or spouse being a common reason for leaving a rural area.

> *The first dietitian left because she went overseas, she...met a boy, came back and then decided she couldn't live without him so disappeared off overseas again and they're now married.* (manager, currently employed, 12C referring to past dietitian)

Those who met partners from outside the rural locality, generally moved away with the partner to a metropolitan or inter-state area. As commented on by one manager *'…generally they left for the same reasons to be with their partners, who were in more metropolitan areas'* (dietitian manager, currently employed, 16F). Even those from rural areas followed their partners elsewhere *'…she was from [Site B] and she stayed quite a while until she got married'* (dietitian manager, past, 17E).

Some dietitians met their partners in their rural work location. In some cases this resulted in the dietitian remaining in a rural area in the longer term. *'I wanted to stay in the area because I had met my significant other'* (dietitian, currently employed, 5E). However, others met a partner locally only to follow them elsewhere due to work or other factors such as moving closer to family and friends. *'If they met someone while they were here, then of course…following the partner somewhere else'* (manager, currently employed, 10C). Dietitians were prepared to stay in a rural location, if their partner was based there: *'I just married a guy who is a [Site A] boy, so I guess I'll be here for some time, I don't see myself going anywhere…I don't see myself going anywhere in a hurry.'* (dietitian, currently employed, 20A) or to follow them to another location.

> *…I had also started a relationship with someone that was going to work in Townsville, so that was part of the reason why I left, that was probably, a much bigger part of the reason why I left at the time that I did.* (dietitian, past, 7E)

In three cases dietitians followed partners to a rural area or were willing to go because their partner would also be able to find work there. In one case this included a male dietitian who's partner found a permanent position in a rural area and he was able to obtain a locum position in the same site until a permanent position became available.

> *My partner or my fiancé at the time was from the country as well, so she could get a job in Site E, so that also made a difference to me…so in actual fact her getting the job, I guess helped to make up my mind…there was an offer of a position at Site E and I accepted that offer as a locum backfill here so that we could co-locate.* (dietitian, currently employed, 30FE)

When asked if they would consider leaving their current rural location, family considerations were an important factor, especially if the dietitian was 'happy in the position' and/or their partner had work locally. *'It would just depend on my family life really, that would be the only thing. I mean I am happy in the position'* (dietitian, currently employed, 13E). A lack of stable work for a partner might be a major influence on future decisions to move:

> *I guess if there was a need to move...my husband doesn't really have a stable job…so I mean there could be a chance in the future that we might have to move again.* (dietitian, currently employed, 3B)

In some cases dietitians considered their partner's career to be more important, possibly because they had children and were working part-time or they were intending to have children in the future and would rely on their partner's income during this time. *'We are hopefully having children soon…so you know, I guess his career is a bit more important at the moment…'* (dietitian, currently employed, 4CAE).

A number of dietitians expressed the importance of being closer to family:

> *One of the hardest things, I guess is family…I do really miss them. So I think that is one factor which will probably eventually come into play when I am thinking about what I might want to do, stay or move somewhere else...* (dietitian, currently employed, 33E)

Some moved back to their families in an urban area:

> *I left the position probably some of it was personal. My life had changed and I'd got married and my family was in [urban location]*

and so I really did want to come back and be closer to home. (dietitian, past, 23D)

Others moved back to a rural area to be close to family:

It was where my family was and I had been living away from them for ten years and we have a family property and I wanted to go home and spend some time with them…the job came up so I thought it was a good opportunity. (dietitian, currently employed, 26F)

Positive practicum experience at site within the study area

Having a positive experience while on placement in a rural area and familiarity with the local environment and staff were reasons given for applying for local rural positions. An enjoyable and/or rewarding placement experience can influence a student's decision to apply for a position in a site in the future. Knowing the staff working in the area can make the new graduate 'feel more comfortable' when applying for a job. The positive reputation of a site within the dietetic student cohort also worked as a supporting factor in students applying for jobs in rural areas.

I was definitely influenced by the fact that I did a rural placement here in 2005, that definitely played a big part in it 'cause I actually had an enjoyable time here and got a lot out of the experience. (dietitian, currently employed, 18E)

...I have done a lot of my placements here in Site E and having known staff from those pracs [professional practice placements] made me feel more comfortable to apply for a job here. (dietitian, currently employed, 14E)

In some cases students were approached by their previous placement supervisors regarding offers of short term locum positions or to be advised and encouraged to apply for advertised positions.

I had done a prac there and [the dietitian-in-charge] actually contacted me and asked me if I wanted to go back as a locum, which I did in the September until December and then in December the

community dietitian put in her resignation so I applied for her job... (dietitian, past, 1E)

I previously had a community placement in Site E and [name] who was my mentor approached me about my interest in going to Site C, to fill in the position. (dietitian, currently employed, 15CE)

Students were also aware of the type of work they would be doing in a rural site and for some the wide variety of work was appealing.

I think also because Site E has such a good reputation throughout Uni with what they offered and the services they offered and the wide range of experience that the rural area provided. (dietitian, currently employed, 15CE)

Comes from a rural area or rural upbringing

Having a rural upbringing was a motivating factor for dietitians to work in a rural area after graduation. Nine interviewed dietitians were from a rural area originally, but employed in a different rural area.

I grew up in the country, went to school in the country and I wanted to come back and work out here, so obviously it was in the country that was one reason I took it. (dietitian, currently employed, 35E)

After graduation some dietitians moved back to their home town and looked for work and if opportunities arose they took them.

I had moved back to my country town and home and there wasn't a position when I moved back but…applied for a grant to do project work. I would have pursued other jobs elsewhere had that not happened. (dietitian, currently employed, 28C)

Some dietitians moved back to their local rural area for a period of time and then ended up leaving again. One dietitian commented that she wanted to get away and do 'something different'. Of the 11 dietitians who moved back to their local rural area to work within the study site, four had left after a period of time to experience work elsewhere. Reasons for leaving included:

to work overseas, to find permanent or different work or to follow a partner to another location. *'I was interested in getting away and doing something different in [urban location]…I would have probably stayed around for a longer term contract and full-time.'* (dietitian, past, 36E)

> *Basically because I have family in Site E…I would like to work a bit longer as a dietitian here, just to get the experience up… and then kind of move when I'm confident enough and I have enough experience behind me to take on something else.* (dietitian, currently employed, 19E)

Freedom in personal life or no ties

Despite not having a rural upbringing, some urban based dietitians who did not have any personal ties to an urban area and/or a sense of adventure were willing to consider trying a rural job. As one dietitian explained *'I didn't have any hesitation about going anywhere different'* (dietitian, currently employed, 15CE referring to Site C). In some cases the dietitians were in need of a job and they accepted the first position that came up or as a locum to gain some experience.

> *I applied for the position because it was rural, but it was still relatively close to [urban location] and at the time I had no real strong links with [urban location], except my parents so I wanted to be close enough to visit, but happy to be moving out of [urban location].* (dietitian, past, 23D)

> *…a locum position came up at [rural site]. I thought…it could be interesting, it's not probably where I want to stay long-term, but as a locum…I'm prepared to do that for a period of time.'* (dietitian, currently employed, 33E)

Urban upbringing and returned as soon as possible

Dietitians with an urban upbringing often lacked the motivation to stay in a rural area due to a lack of ties in the local area, unless they met a partner locally and decided to stay.

> *I don't know if I would have stayed much longer than about two years really, but then I think that's the nature of somebody that's a city based person coming to work in the country.* (dietitian, past, 7E)

Of the nine dietitians from an urban background that were interviewed, only two were no longer working in a rural area at the time of the study, however another three expressed intentions to leave in the future. A dietitian originally from Melbourne stated: '*it's not probably where I want to stay long term, but as a locum I'm prepared to get [experience] by doing that for a period of time'* (dietitian, currently employed, 33E).

Moving out of dietetics as a career

Some dietitians mentioned a desire to leave the profession due to a lack of opportunities or a need for change, but none had followed through with this at the time of the study.

> *I was actually at the stage thinking that I wanted to do something else outside of dietetics. I went to look for jobs…and there wasn't anything or I kept getting told I was over qualified for everything (laughs).* (dietitian, currently employed, 4CAE)

> *Probably either leaving the profession to do another side thing…sometimes you just need a change for awhile so that's probably all. I just need a change at the moment. (dietitian, currently employed, 26F)*

Those who had left to work outside the profession were reported to have taken up teaching or other work overseas, as revealed in interviews with their colleagues.

Characteristics of a rural role

The 'characteristics of a rural role' refers to the characteristics that define the work of dietitians in the rural area under study. These include the diversity and autonomy of the workload, professional isolation, high workload and burnout and a lack of career progression.

Diversity and autonomy of workload

The characteristics of a rural dietetic position that were appealing to dietitians included: the diversity of the workload and a sense of autonomy in the workplace.

> *The positive aspects are I guess I have my own time and I choose what I want to do and need to do in my own time, so it's flexible in that way. I basically manage my own time.* (dietitian, currently employed, 14E)

Another dietitian described the sense of control and influence in a rural position.

> *…I think sometimes you feel you can make a difference in a smaller place… you have got a group that you almost contain, that you can do some good. Sometimes in the city, I think you feel like you're not really getting anywhere whereas in a small community, you almost feel you can get somewhere with it…* (dietitian, currently employed, 33E)

The diversity of the workload was seen to be a positive for dietitians who did not want to work in a limited area of dietetics, which may be the case in a metropolitan position. As one dietitian explained *'You get to do a lot of different things, I don't think I just want to be on one ward doing one thing'* (dietitian, currently employed, 2EA). Dietitians also mentioned the job satisfaction and career opportunities that the varied work provided them. *'The variety is a definite plus and the exposure to a varied case load is fantastic and it's a great career opportunity'* (dietitian, currently employed, 5E). One dietitian commented that her diverse experience gave her an advantage when applying for other positions.

> *It was just really good experience and when I applied for other jobs they said that's why, even though I was a lot younger than some of the other applicants, that's why I often got interviews is because you had so much more diverse experience, as opposed to someone that*

had worked in…a larger department and only done there one little area. (dietitian, currently employed, 4CAE)

High profile in the community

The development of a high profile in the local community was acknowledged as both a positive and a negative factor associated with a rural based position. *'One thing I really did love is that in a rural setting you become known as the dietitian'* (dietitian, past, 1E). However, one dietitian reported on needing to be conscious of the importance of being a role model.

I think also being in a smaller town you sort of get 'you're the dietitian', so there's sort of that, almost like a doctor sort of image that people know you in town…The negative side is that you are the dietitian in town and that you can't go shopping…because everyone wants to know what's in your trolley and when you go out for dinner, everyone wants to know what you eat so you sort of feel almost watchful of what you do in a town because you are the dietitian. (dietitian, currently employed, 11C)

High workload and burnout

Issues of high workloads and burnout were reported in a number of sites (particularly Sites A, D and F) and linked to the high staff turnover reported in some positions. Some dietitians felt unable to meet to the high demands of their job and manage their time. *'The current workload and the demands on the position are just huge'* (dietitian manager, currently employed, 26F).

Basically I find it very hard to manage my time and provide a high level of service because I am servicing such a large area and having to drive to some of the other sites. (dietitian, currently employed, 27D)

I think one of the reasons that the position didn't keep people in it for very long was because the job was just enormous and it was really difficult to manage it…when I spoke with [previous dietitian in Site D] she was very burnt out from the position and felt that it was a real

struggle to achieve everything it was set up to achieve' (dietitian, past, 23D)

A dietitian at Site A commented on the struggle to keep up with referrals and deal with long waiting lists.

> *…at one point had one of the dietitians from Site E would come over and do a day a fortnight to help me with the waiting list, so it could give me admin time…It was not uncommon for me to go to [the local hospital] for those two half days and find 15 or 17 referrals sitting waiting for me and you spend the first half hour just putting them in priority and just going through the list as best you could.* (dietitian, past, 9A)

The diabetes dietitian at Site E commented on increased referrals:

> *…there is only one [dietitian] where there are three [diabetes educators]. There is less of a waiting time for the educators and when someone sees an educator, often they'll get referred to the dietitian as well, so my workload has certainly increased in the last two or three years.* (dietitian, currently employed, 14E)

Lack of career progression or no new work challenges

A lack of career progression in terms of specialised positions or the inability to access higher graded positions with increased pay scales were reasons why some dietitians sought or were considering work elsewhere. Some staff from sites A, C, D, E and F mentioned issues of a lack of career progression or a need for a more varied or specialist caseload. The only exception was the part-time sole practitioner in Site B, who had only been in the position for 12 months.

> *I just want to try something new I guess. I just don't want to be here doing the same stuff over and over again…I can't see myself being here forever.* (dietitian, currently employed, 2EA)

> *At that stage I don't know if anything would have [kept me in the position]…I think I was just ready for a change and to do something*

new…the fact that you couldn't go any further in the position too. (dietitian, currently employed, 4CAE referring to previous position in Site A)

Part of the lack of a career progression was the inability to move to a higher graded position that also offered a higher rate of pay. Base grade positions only have pay increases for seven years until the highest pay scale is reached[xxi].

...one of the main things for me if I was very career focused is that I have hit the glass ceiling[xxii], being at [year 7 base grade pay] and there aren't many opportunities to go up to a grade 1. (dietitian, currently employed, 13E)

Many dietitians were looking for new challenges after working in a position for a number of years. While the varied caseload was appealing, some dietitians wanted to move on to work in a larger hospital in a more specialised area or simply to try 'something new'. In some cases finding a different position locally was an option, but others were seeking specialised work in a metropolitan area.

If something else came up in the area or locally that was a new challenge I would probably jump at it because I am at that stage that I might need to do something new. (dietitian, currently employed, 4CAE)

I was quite enjoying the job, but I had probably reached a point where I was looking to do a little more, it was a little bit too general I guess by that time. (dietitian, past, 1E)

Professional isolation

Dietitians working in sole rural positions raised issues of professional isolation, particularly in relation to being unable to discuss things face to face with colleagues.

[xxi] In October 2007 the dietitian base grade salary scale in New South Wales ranged from 1st year $47 663 to 7th year $66 544 DAA. (2007b). "Dietitian Salary Scales." Dietitians Association of Australia Annual Report 2007.

[xxii] The term 'glass ceiling' has been used incorrectly here as the limitation on advancement is not due to a form of discrimination, but rather a lack of graded positions in that site.

> *I find it a little bit difficult…being here on my own and having no other dietitians working with me is hard…there are dietitians I can contact and talk to…but I think it is different when you have got someone there that you can talk to straight away...* (dietitian, currently employed, 3B)

Professional isolation was an issue not just for those in sole positions, but also for those based in a different location or having a different management team (for example, community health management rather than hospital-based management).

> *Being fairly isolated, actually away from the department not with other dietitians…I feel that it probably would have been easier if the community [position] is with the clinical staff…so if you've got any questions… there's a number of dietitians there that you can actually consult with if you have any questions like in regard to anything.* (dietitian, currently employed, 18E)

Professional isolation was even identified in one site, despite co-location with another dietitian. A lack of regular contact and collegial support, led to isolation even in a 'team' environment.

> *…you're sort of here in this position by yourself…there's no one else close by that can provide that support…I came from a job previously where we'd meet every month as a group of dietitians so I find it isolating. Even though there's other people really close by I find it really isolating here, which is really funny 'cause I came from a sole position.* (dietitian, currently employed, 26F)

Some dietitians did not find the isolation was an issue for them, even in a sole position. These dietitians were generally older, more experienced and liked 'working on their own'.

> *I needed a change and I liked sole positions, I'd worked in one before…my first job had actually been a sole position…so I knew I liked working on my own, I didn't mind that.* (dietitian, currently employed, 21A)

Access to continuing education and resources

Access to continuing education and resources was only identified as inadequate in Site A. In terms of facilities and resources: '*I had a tiny box of an office upstairs after a bit of wrangling, but no nowhere to store anything and no means to buy any resources...'* (dietitian, past, 21A)

> '*The only conference that we've been allowed to attend is the [paediatric conference] and that's because we've sponsored to go by a drug company and even that we had to apply for. We were allowed four hours to drive to [urban area] in work time, so if it takes you longer you just have to take annual leave to drive down. I went to a DAA Conference this year, but…I had to travel in annual leave.* (dietitian, currently employed, 20A).

However, in some cases despite supportive management, professional development could not always be accessed due to a lack of backfill for time away.

> *Management here are really good, very supportive, which I haven't found before and that's something that keeps me here is that they do approve you to go to courses and they do let you go and they do pay for it…It's trying to get time off to go. Just because it is so busy here and we don't have any one who could come in and replace at the moment.* (dietitian, currently employed, 26F)

Some dietitians considered themselves to be well resourced: *'I've got probably a lot more resources than most of the other dietitians, I've got my own office and computer…'* (dietitian, currently employed, 14E) and to have good education opportunities: '*…at the moment I'm getting pretty good education opportunities, which I know other dietitians in rural areas don't get. So I'm quite happy to be able to get those.'* (dietitian, currently employed, 28C). One dietitian mentioned the benefits of the close proximity of the University Department of Rural Health (UDRH) Northern NSW and the subsequent increased access to CPD.

> *…it is good meeting each week and just discussing different things and having that contact. It is good having the once a month CPD as well and the facilities of the UDRH are good.* (dietitian, currently employed, 2EA)

Travelling times to outreach sites

Travelling times to outreach sites were raised as an issue by some participants, particularly those in Sites C and D, due to the longer distances they were required to travel. In one case a dietitian from Site C reduced her work hours due to the large amount of travel required in the job. *'I got really burnt out and it was mainly due to me feeling pretty tired from all the travel'* (dietitian, past, 8EC).

Managers also indicated that large amounts of travel could lead to burnout, especially when staffing levels were considered to be low.

> *Covering the area that she does…that's quite a large area to cover for one person. I really do think that there should be two to cover that area, to do it satisfactorily because burnout is huge with all that travel.* (manager, currently employed, 10C)

Management in a rural site

The theme of 'management in a rural site' encompasses issues of management support, different management teams and the support provided for new graduates.

Different management teams

Dietitians in rural sites mostly had managers with no background in dietetics or allied health. In sites E and F, where there were dietitian managers, some dietitians were still managed by a non-dietitian in another work location (such as hospital, diabetes centre or community health).

> *…the downside for the support could be that not all the dietitians are under one team. They are all under different teams, so maybe that*

support isn't as supportive as it could be, if it was under one team... (dietitian manager, currently employed, 16F)

Dietitians who were managed by non-dietitians reported that their direct line manager did not understand what they did and what their needs were.

I was managed by nurses who had no idea what a dietitian did, didn't understand the responsibilities or the stress that came with the workload I was doing. (dietitian, past, 9A)

Having managers with little or no management skill was also identified as an issue due to their lack of training.

...lack of good managers, who understand the role and responsibilities of a dietitian. Lack of management skill, people that are put into management, no training, no managerial skills at all, usually ex-nurses or ex-social workers. (dietitian, currently employed, 21A)

Staff from a range of sites expressed the lack of understanding that their managers had for their role and in some cases, a lack of respect as well. One dietitian previously employed at Site A reported on her manager's comments about the dietetics profession.

I can still remember my Community Health manager telling me 'I don't understand why you think dietetics has such a role all you do is see fat, females over 40' and that's a quote and it always stuck in my mind. (dietitian, past, 9A)

However, not all those dietitians managed by nurses or other allied health professionals (such as social workers, OT's) were dissatisfied with their managers: '*It was just a nice working environment so you always felt supported.'* (dietitian, currently employed, 13E)

In sites where there was a higher turnover of management, this led to a lack of corporate knowledge of dietetic positions and lack of support to retain positions that may not be filled for extended periods of time. Non-

dietitian managers failed to 'fight' for the timely recruitment to positions, particularly those that were difficult to recruit and retain.

> *Where positions have been vacant for a lot of years, management has changed a number of times and nobody actually knows what that position then does, nobody knows where it came from, so nobody actually fights to have it re-instated or make sure it is filled....if you haven't got a consistent manager then it's quite hard to actually have somebody who knows the history of everything and to actually fight for it.* (dietitian manager, currently employed, 6E)

Support by management

Non-dietitian managers regarded dietetics as a valuable profession and acknowledged the importance of supporting staff and providing access to continuing education.

> *Professional support is very important to newer practitioners…we were generally employing dietitians pretty fresh out of university and they find it particularly difficult being a sole practitioner, new to the game, without support.* (manager, currently employed, 38F)

The support provided by management was an important factor in retention of staff. Some sites (Site A and F) reported dissatisfaction with management, other sites (Site B, C, D and E) were generally more positive about the way they were managed by their direct supervisors.

> *The managerial support was negligible, absolutely negligible…and other dietitians would say the same thing, run down from a lack of support - financial, secretarial, just the whole lot.* (dietitian, currently employed, 21A)

> *I guess the only thing that gets me a little bit down about this job is management…I think they could just be a little bit more supportive in what we do…I find the person in charge a bit dominant and intimidating so it is hard to go to them if maybe I have any problems.* (dietitian, currently employed, 2EA)

Some dietitians with non-dietetic managers were happy with the way they were managed. They appreciated the freedom they were given.

> *I guess I like the way I am managed…they actually let me be independent in my work and do what I feel needs to be done. I don't have anybody looking at all the detail of what I do...I like that environment when I work.* (dietitian, currently employed, 3B)

Support for new graduates

New graduates expressed varying levels of satisfaction with the supervision and support that was provided to them in their first year of working in a rural area, even within the same site. Site E was generally regarded as having good support *'It was a really good close knit team so there was a lot of support for a new grad'* (dietitian, currently employed, 14E). One new graduate based in Site C reported having a good support network despite being based in a more remote location. In this case the dietitian, who was employed by the Division of GP, was provided with external supervision from a dietitian in another location.

> *I did have quite a good support network within the area as well, so everyone was only a phone call away and were really good when I had questions, being a new grad…* (dietitian, currently employed, 15CE)

One new graduate, based at Site E with a number of dietitians, expressed her feelings of isolation when conducting outpatient clinics to outreach sites as the visiting dietitian once a month, which she found daunting.

> *…you would just sort of turn up at these health centres and nobody really knew who you were, what you were doing there, you just got stuck in a room and patients came in all day and then you got sent home…I felt very isolated on those days and as a new graduate that was quite daunting to be…expected just to know the answers to all these questions and feel like you were solo and nobody really cared if you were there or not…* (dietitian, past, 1E)

Two of the new graduates based at Site F talked about the limited support they received, resulting in two divergent experiences. One new graduate[xxiii] talked about having to be 'in charge' of every patient in the hospital and to be 'very self-directed' in their work, due to limited support from a manager, who was off-site a few days per week. This new graduate found the self-directed nature of the work a positive experience.

> *So what it essentially meant for me as a new grad is I was in charge of every inpatient of the hospital…it meant for me that I would be very self- directed and I saw a lot of good case mixes, so I found that very positive.* Researcher: *Was it daunting as a new graduate to do that?*
>
> *I would have to say it was, but probably at that time I was so enthusiastic I didn't perceive it as daunting. I just roped in every opportunity I could. I really liked it.* (dietitian, currently employed, 30FE, referring to position at Site F)

The other new graduate did not feel supported in this same site. At this point in time the dietetics manager was seconded to a position elsewhere and an acting dietetics manager, with limited experience, filled the position. According to the new graduate this dietitian did not have 'any management experience'.

> *If I asked a question I felt like it was a trouble for them to help me out. I don't think they really wanted to be in the managerial position…I didn't feel greatly supported as a new grad. I wasn't supported in terms of professional development or regular meetings or anything like that. I just turned up, went to the wards and just had to muddle my own way through.* (dietitian, currently employed, 32FD)

Establishing and maintaining rural staff

The theme of 'establishing and maintaining rural staff' refers to the range of factors that affect the establishment of staff in rural areas and maintaining

[xxiii] Mature-aged new graduate.

them there. This includes issues of high staff turnover, new graduates taking positions and an inability to recruit to positions.

Inability to recruit

Difficulties with recruitment were particularly evident in discussions about recruiting to positions in the 1980's and early 1990's. All sites with positions at this time (these included Sites A, C, E and F) experienced difficulties with recruitment, however some sites (such as Sites A and C) reported long-term vacancies, as well. *'It was always really hard to attract people, we advertised and we advertised, either nobody applied or people applied and pulled out'* (dietitian, currently employed, 21A). It was common for sites to have only a few applicants for advertised positions or for applicants to pull out if they were offered a job in a different locality[xxiv]. '*I had one experienced person apply and she turned down the job at the last minute because she picked up something in [urban location] a bigger area'* (dietitian, currently employed, 5E). In one position in Site C, the inability to attract applicants to apply for the position led to it remaining vacant and not actively recruited to for many years.

> *When she left the position it was vacant and wasn't recruited for about seven years and then it was recruited with a new grad as a full-time position and then it had a succession of new grads in that position for a few years…the FTE was always there, they just didn't actively recruit to it.* (dietitian manager, currently employed, 6E referring to Site C)

Recent difficulties with recruitment were in relation to difficulties filling part-time positions and short-term locums in rural areas. Dietitians reported that part-time positions were unlikely to attract dietitians to a rural area and they were usually only filled if there was someone living locally who was looking for part-time work. Unlike metropolitan areas it isn't possible for someone to travel to a rural area for part-time work, unless that rural area is close by.

[xxiv] Usually a metropolitan area.

> *…there's not a lot of dietitians floating around who want part-time work, most people come for a [full-time] position and some people may go on to do part-time work, like I have, but that's quite a few years down the track with quite a bit of experience. So those sorts of roles in smaller communities aren't exactly easy to fill so we had a huge turnover in that 0.5.'* (dietitian, currently employed, 6E, referring to Site A)

> *Even though we have funding for one day, we can't recruit…it is not like we're a metropolitan area where someone will come from another suburb for half a day per week, they won't.* (dietitian manager, currently employed, 16F)

Sites A and E and F (395km, 285km and 170km respectively from a metropolitan area) reported an inability to recruit to part-time positions, but Site D (130km from a metropolitan area) was more successful recruiting to part-time and locum positions. In the case of Site B, the part-time sole position was filled by an unemployed dietitian that had moved to the area for personal reasons and was looking for work. Her personal situation meant that she preferred part-time work, however she was still looking for more hours.

> *This position is just 20 hours a week, so I would like…a few more hours of work…it depends, but at the moment circumstances are that I am happy to stay here and it is actually working out fine at the moment.* (dietitian, currently employed, 3B)

High staff turnover and vacancies

A high turnover of staff was a common problem reported across all of the established sites (Site A, C, D, E and F). Dietetic managers reported improvements in recruiting staff in recent years, but not with the retention of staff. *'The biggest problem is we recruit staff really well, but retention is an issue'* (dietitian manager, currently employed, 6E). When compared to the quantitative data, high staff turnover was most evident in Sites A, D and F. *'Previous to us there was a high turnover and they were only*

generally here for about six months or so and then they would move on' (dietitian, currently employed, 2EA, referring to Site A).

> *I think it was two years where they had…six staff in two years. I'm not sure of the exact statistics, but I know there were people on and off for a period of time.* (dietitian, past, 13E, referring to Site E)

Long term vacancies were a problem particularly in the early 1990's.

> *…they hadn't filled it for seven years…they advertised it a few times before and at that stage dietetics was nowhere near the population that it is now…there just weren't as many [new graduates].'* (dietitian manager, currently employed, 6E referring to Site D position)

Delays in the recruitment process added to the problem of position vacancies.

> *They actually didn't advertise until I left…I think it took two or three months before they had someone again, so it was just the fact that nothing was done until I was gone rather than advertising while I was still there.* (dietitian, currently employed, 4CAE referring to Site C)

New graduates taking positions

New graduates were typically employed in locum positions (such as maternity locums and backfill positions) that often did not eventuate into a permanent work. High staff turnover was thought, in part, to be due to a lot of positions being filled by new graduates wanting to gain experience before moving back to a metropolitan area.

> *It was basically new grads looking for a job, would come and get a bit of experience, find a full time job and leave and that's basically what was happening.* (dietitian, currently employed, 6E)

New graduates sought rural positions due to the 'diversity of the work' or because it was the first job they were offered. *'…it was really the first job I got offered (laughs). So that was one of the reasons, probably the main reason…but I must say I did like it.'* (dietitian, past, 7E).

I really enjoyed the rural health sort of thing and the diversity of the work and I thought it would be a really good new graduate position because it was very general and I didn't want to specialise in my first year out… (dietitian, past, 1E)

Table 26 provides a summary of the main themes related to recruitment and retention issues linked to the sites. The themes are recorded as 'present' or 'absent' and the table is colour-coded to indicate the ratings.

Table 26: Matrix database of qualitative themes by site

Site	High workload	Lack of career progression	Professional isolation	Access to CPD	Dietetic management	Management support	New graduate support
Site A	Present	Present	Present	Absent	Absent	Absent	Absent
Site B	Present	Absent	Present	Present	Absent	Present	*
Site C	Present	Absent	Present	Present	Absent	Present	Present
Site D	Present	Present	Present	Present	Absent	Present	*
Site E	Absent	Present	Absent (Present for off-site staff)	Present	Present (Absent for off-site staff)	Present	Present
Site F	Present	Present	Present	Present	Present (Absent for off-site staff)	Present	Absent

Key: Negative theme; Positive theme; Neutral theme; * no comments were made about this theme

Convergent validation of themes

Staffing levels

Qualitative themes have been linked with quantitative workforce data to show convergent validation of themes. In Table 27 staffing levels[xxv] have been linked with quotes about high workloads and professional isolation. Dietitians working in sites with a lower ratio of dietitians per head of population talked about being 'overloaded most of the time' and having 'huge' workloads that lead to them feeling 'burnt out'. Professional isolation was evident even in sites with more than one dietitian. Those who were not co-located with other dietitians still reported feeling isolated, due to their separate locations.

Dietetic management

The type of management has been linked with quotes about management support and different management teams in Table 28. Those sites with direct management by a dietitian reported good management support from hospital managers. Only site A had consistent comments about difficulties with management.

[xxv] Expressed as dietitians per 100 000 population.

Table 27: Linking staffing levels and quotes for convergent validation

Number of dietitians per 10^6population	Site	Quotes about high workloads	Quotes about professional isolation
21.5 (only 15.6 permanent)	E	'I was very busy just keeping things going rather than actually developing anything and making them work better.' (dietitian, past, 1E)	'Being fairly isolated, actually away from the department not with other dietitians.' (dietitian, currently employed, 18E, referring to community position)
17	C	'I am stretched so I don't overwork myself, I just do the things I need to do' (dietitian, currently employed, 11C)	'The fact that you are all alone, you have no one to talk to, to discuss things with.' (dietitian, currently employed, 11C)
12.3	A	'…the other dietitian left and that was the way it stayed…I basically burnt out in a nutshell' (dietitian, past, 9A)	'I guess sometimes you can feel isolated from the Site E dietitians, you feel kind of out of the loop sometimes.' (dietitian, currently employed, 20A)
12.2	F	'…the current workload and demands on the position are just huge.' (dietitian, currently employed, 26F)	'Even though there's other people really close by I find it really isolating here, which is really funny 'cause I came from a sole position.' (dietitian, currently employed, 26F)
11.5	B	' I feel overloaded most of the time…I have had to turn things down because I am just too busy' (dietitian, currently employed, 3B)	'I find it a little bit difficult being here on my own and having no other dietitians working with me is hard…' (dietitian, currently employed, 3B)
10.8	D	'I think I was getting burnt out from the job….you were stretched all the time.' (dietitian, past, 23D)	'I am used to working with a team…so it's hard being a sole dietitian sometimes.' (dietitian, currently employed, 27D)

Table 28: Linking dietetic management and quotes for convergent validation

Manager	Site	Quotes about management support	Quotes about different management teams
Dietitian	E	'Site E hospital's actual management are quite supportive of allied health in general' (dietitian manager, currently employed, 6E)	Nil quotes
Dietitian	F	'I can only recall one manager who wasn't as amenable as all the others have been, however, it wasn't to the extent where you'd contemplate leaving.' (dietitian manager, currently employed, 16F)	'...the down side for the support could be that not all the dietitians are under one team. They are all under different teams so maybe that support isn't as supportive as it could be if it was under one team.' (dietitian manager, currently employed, 16F)
Nurse	B	'Site B [management] was one that didn't take you seriously, so that was quite difficult and got quite frustrating.' (dietitian manager, currently employed, 6E, referring to Site B)	'I find in some of those smaller centres…they are managed by nurses and they are very nursing orientated, so that is very difficult as an allied health professional' (dietitian manager, currently employed, 6E, referring to Sites A, B & C)
Nurse	C	'…the [management] was very supportive I suppose in the sense they were good people to work with and the fact that I had issues in terms of being tired and the impact I suppose the travel had on me they were appreciative that I wanted to back off from the amount of days I worked.' (dietitian, past, 8EC)	see above quote which also referred to this site
Social Worker	D	'I felt very, very supported, very wanted, because obviously I was (laughs)…Definitely, I am a lot more supported (laughs) and just felt more valued to be honest. (dietitian, currently employed, 32FD, referring to Site D)	'I would rather that they actually both be together because they provide support and it's a much better environment than having one in one place and one in the other. I think it divides the service.' (manager, currently employed, 10D)
Nurse	A	'…it is no great secret that part of that burnout reason was the lack of support from management.' (dietitian, past, 9A)	'I find the person in charge a bit dominant and intimidating so it is hard to go to them if…I have any problems.' (dietitian, currently employed, 2EA, re: Site A)

Career progression

The number of graded or specialist positions has been linked with quotes about lack of career progression and moving out of dietetics in Table 29. Dietitians who worked in sites with a number of graded or specialist positions still indicated a concern for a lack of career progression due to the limited number of positions and tendency for people already in those jobs to stay in them.

Table 29: Linking graded positions and quotes for convergent validation

Number of graded positions	Site	Quotes about career progression	Quotes about moving out of dietetics as a career
3	E	'I had probably reached a point where I was looking to do a little more, it was a little bit too general I guess by that time.' (dietitian, past, 1E)	'I was actually thinking 'do I want to have a change' or 'do I want to…go down a different career path' (dietitian, currently employed, 4CAE)
2	F	'I have sort of been doing that general clinical stuff now for 2½ years…I'm wanting to get into a more specialised area.' (dietitian, currently working, 26F)	'Probably either leaving the profession to do another side thing… I've been doing another degree, which is basically my first passion.' (dietitian, currently working, 26F)
1	D	'It was a grade 1 [position] and I was very interested in doing a graded position.' (dietitian, currently working, 23D	Nil quotes
Nil	A	'…in this position I almost get the feeling that's all I can ever do… so far as a career minded person I might leave.' (dietitian, currently working, 20A)	'I've just finished a Grad Dip Ed, so I don't know whether I'll teach…it depends on whether that was available.' (dietitian, currently working, 20A)
Nil	B	Nil – only in the position for 12 months	Nil quotes
Nil	C	'I might get sick of working in a sole practice position and want to…go up the ladder and have more responsibility.' (dietitian, currently working, 11C)	Nil quotes

Predictors for length of service

Spearman's rank correlation co-efficient and UANOVA were used to determine the correlation between the length of service (LOS) of dietitians and key variables, such as lack of career, high workload, non-dietitian manager, lack of management support, professional isolation, rural background and personal issues. Negative predictors for a long LOS included professional isolation, lack of career, having a non-dietitian manager ($r = 0.87$, $p = 0.042$) and a lack of management support ($r = 0.78$, not significant). Positive predictors included a high workload (weak correlation, not significant) and rural background ($r = 0.52$, not significant).

4.3 Discussion

This study found that career pathways, professional networks and support from management are key factors for recruitment and retention of dietitians in rural areas. This study suggests that the specific recruitment and retention issues do vary from site to site and over time. While the recruitment of dietitians to the rural areas in this study has generally improved over the past 15 years, due to a nearby university providing increased numbers of students for rural placements and increased numbers of graduates, the problem of retaining staff remains. Dietetic staffing was unevenly distributed across the six sites and the average staffing level across the sites was below the 14 per 100 000 recommended by the Better Health Commission over two decades ago (Better Health Commission 1986). This estimated target figure is now outdated given the increasing rates of obesity and diabetes that would increase dietetic service requirements (AIHW 2008a) indicating that the dietetic staffing levels in these rural sites are well below the levels required. These figures also fail to consider the increased travel time required for service delivery in rural areas. Despite this, the average number of dietitians per 100 000 for the study sites was similar to the average figure for Australia in 2006 of 12.5 dietitians per 100 000 (based on 2 588 dietitians for a population of 20.7 million as of June 2006) (Australian Department of Health and Ageing 2008).

Recruitment

Recruitment to the rural sites under study was more difficult in the 1980's and the early 1990's with reports of positions being unfilled for extended periods of time and high turnover in some positions, particularly part-time positions. In recent years some sites have found recruitment easier with increased numbers of applicants and fewer delays in recruiting attributed in part to increased student placements[xxvi] across the area (Brown, Harris et al. 2008). Possible reasons for the improvements in recruitment could be the increasing supply of graduating dietitians from the larger number of dietetic programs available across the state. Since 1991, three additional dietetic undergraduate programs have commenced in NSW and one in the Australian Capital Territory (ACT), compared to only one university program prior to 1991. With increasing numbers of new graduates and the resulting increase in competition for jobs, this may be a factor in the improved recruitment to rural areas.

The potential for increased numbers of new graduates with a rural upbringing and/or increased exposure to a rural based placement during their professional practice placements may also be an important factor. This is reinforced by the fact that the majority of the employees in the area under study were graduates of the University in the closest metropolitan area and many had previously completed a placement in the study area. The number of student placements in Site E has increased from two students in 2002 to 27 students in 2008 with the commencement of a University Department of Rural Health (UDRH) in the local area (Brown, Harris et al. 2008). Previous research has shown that new graduates are more willing to travel to rural areas for work in the initial years after graduation, especially if work is available there (Heaney, Tolhurst et al. 2004) and if they have had a rural upbringing or exposure to a rural undergraduate placement (Playford, Larson et al. 2006).

This study suggests that the sites experiencing ongoing issues with recruitment appear to be those sites with a lack of general appeal or areas

[xxvi] The University of Newcastle commenced an undergraduate Nutrition and Dietetics program in 1991, with the first cohort of graduates commencing work in 1996. A focus on rural placements began in 2003 with the establishment of an academic position at Site E.

where there are part-time positions in locations distant to a metropolitan centre. Part-time positions were difficult to fill in a rural area, unless the site was within close proximity to a metropolitan centre where commuting to work may be an option. This important finding differs from other allied health research that has found part-time positions to pre-dominate in rural areas, with 75% of rural physiotherapists working part-time in one study (Williams 2007), which may be due to the lower average age in the dietetics profession or the higher levels of private practice in other allied health professions, such as physiotherapy.

Retention

More than half the dietitians reported leaving their position for personal reasons or due to finding full-time or permanent work for career advancement. New graduates were often taking on positions and then leaving soon after gaining some experience. This was supported by the qualitative data, with key retention factors including: improved career pathways, professional and social networks, management support and support for new graduates. The findings of this study concur with the organisational behavior theory of Herzberg (Herzberg 1966). The common determinants of dissatisfaction are considered to include: personal relationships in the workplace, working conditions, salary, management, supervision, status and job security. Determinants of job satisfaction include: job complexity, sense of achievement, recognition, degree of responsibility, promotional opportunity and personal growth (Herzberg 1976).

Studies suggest that those with a rural upbringing are more likely to work in a rural area after graduation (Hays, Nichols et al. 1995), and this study confirms that finding. This study also indicates that partner location plays a key role for this female dominant profession and some from non-rural backgrounds end up staying because they meet a partner from the local rural area or they move to the rural location with their partner. Conversely those with a rural upbringing who come back to work in their local rural area do not always stay, opting to leave for new experiences and work elsewhere.

Management of dietitians by dietitians and by others

A range of organisational management structures have been used for allied health professions in the Australian public health system. Unit dispersement models, where allied health staff are managed under medical or community teams, has been shown to result in a loss of professional autonomy and responsibility resulting in limited support for service development, student training and professional development (Boyce 2001). In this study, a lack of support from management, particularly non-dietitians as direct line managers, was a key factor in staff satisfaction and linked to problems with staff retention. Given that there are few dietitian managers in rural locations due to small staff numbers and health service management structures, this has key implications for management development.

The importance of providing adequate support for new graduates in rural areas has been highlighted by this study with new graduates experiencing a range of levels of support across the six sites. Other allied health professions have reported similar issues. A study of new graduate occupational therapists in rural NSW found that a lack of support led to decreased confidence and subsequent decreased job satisfaction (Steenbergen and Mackenzie 2004). A consistent approach to the support of new graduates in rural areas is required. The establishment of senior positions in rural areas would help to ensure professional supervision for new graduates, especially those in sole practice positions and those with non-dietitian managers.

Continuing professional development

The lack of access to continuing professional development (CPD) in rural areas is well reported in the literature (Hill and Alexander 1996). Barriers to accessing CPD include: geographical isolation, a lack of technological and telecommunications infrastructure and financial factors (such as, funding for travel and cost of attendance). A lack of staff coverage or locum support and financial support from employers have also been identified (Hill and Alexander 1996; Glynn 2003; Curran, Fleet et al. 2006). Rural health professionals also have the additional costs of travel and accommodation

when accessing CPD in other locations (Stagnitti, Schoo et al. 2005a). While access to ICT allows for alternative methods of CPD delivery in rural areas, a number of studies have found that the preferred method of delivery is face-to-face, as it has the additional benefit of allowing for networking opportunities (Sheppard and Mackintosh 1998; Aoun and Johnson 2002). In this study, access to CPD was limited due to a lack of management support, particularly in Site A. While dietitians in other sites generally felt supported to attend CPD activities, they were not always able to due to a lack of backfill for time away and due to the time required to travel to attend some CPD activities in metropolitan areas. The desire of many rural based dietitians to work in specialist areas of practice is also hindered by their limited access to CPD.

Dietetic services

Allied health services in rural areas are generally described as generalist in nature (Grimmer and Bowman 1998). This was true for the smaller sites in this study, but the dietitians working in larger rural sites described a shift in the caseload of rural dietitians towards an increasing specialist workload. This has the potential to provide rural dietitians with a more varied generalist caseload. The complexity of providing generalist skills across a wide range of cases, with an ability to deal with a range of complex cases on an infrequent basis poses a challenge. In some rural areas this has led to the development of specialist positions such as renal and oncology, in line with service plans for the area health service (Hunter New England Health 2006). Since this study was conducted there has been an additional 0.9 FTE in renal positions established and filled in the study area (Harris 2009).

The dietitians in this study provided outreach clinics to sites located an average distance of 77km from their base site. This is similar to findings in another study in which dietitians reported the highest mean hours of travel per week of approximately 4 hours compared to other allied health professions (such as occupational therapists and physiotherapists) in the same rural locations (Smith, Cooper et al. 2008). A study in South Australia reported a higher average distance travelled by allied health professionals to provide outreach services (175km) (Boshoff and Hartshorne 2008),

however this study included allied health professionals in remote sites as well.

Data on dietetic occasions of service per FTE has not previously been reported in the literature, although other workload measures have been (Sumers and Mulroney 1983; Towers, Coskumer et al. 1987). Sumers and Mulroney (Sumers and Mulroney 1983) reported that approximately 40% of a dietitians time was spent on direct patient care and an additional 20% on indirect activities. The lower OOS figures for the larger sites could be explained by the higher administrative load required of some positions (such as management and food service positions). It has been suggested that for every six FTE dietitians, one additional FTE is required for administrative duties (State Public Services Federation 1994). Previously Grimmer and Bowman (Grimmer and Bowman 1998) found that allied health professionals in rural areas are more likely to provide multiple occasions of service per completed episode of care (Grimmer and Bowman 1998). The data from this research does not provide this level of detail for comparison.

Implications

It would appear that in order to improve the retention of dietitians in rural areas efforts should be directed at increased career options and improvements in professional networks for the support of new graduates and to prevent professional isolation. Improved career options can be created through developing higher graded positions in rural areas that provide professional supervision and acknowledging the specialised roles of rural dietitians, as suggested by the physiotherapy profession (Sheppard 2005). The lack of support provided by direct line managers may be difficult to resolve, however the establishment of senior dietetic or allied health positions in rural areas would assist with improved management at a local level.

The recruitment of staff to part-time positions appears to be problematic in outer regional areas, unless there are local individuals who are looking for part-time work. Solutions for difficulties in recruiting to part-time positions

may include combining unfilled part-time FTE across an area to provide an area based service, lobbying for full-time positions and/or looking at alternative sources of funding to make up the hours to full time (such as private practice work, Division of GP funding[xxvii] and other alternative models).

The specific recruitment and retention issues varied from site to site and over time. In general, the recruitment of dietitians to the rural areas under study has improved over the past 15 years. However, issues of poor staff retention remain, especially in some rural sites where issues such as a lack of management support, the lack of a career pathway, limited professional and social networks and limited access to professional development may be factors contributing to a higher turnover. Since this study was undertaken a number of new workforce initiatives have been undertaken by Hunter New England Health including two rural based locum positions that provide backfill for annual and other types of leave across the rural sites in the southern and northern sectors (Hunter New England Area Health Service 2008a). A Dietetic Area Profession Director position has been created, as a leadership role across the area health service (Hunter New England Area Health Service 2008b), however this position was created at the expense of the previous area advisor roles in both the northern and southern sectors. Additional part-time hours have also been funded through the University Department of Rural Health Northern NSW to supplement existing part-time health service hours in Site E.

Limitations

The principal researcher lives and works in the study area and as a result many of the study participants were known to the researcher, prior to the study. This familiarity with the subjects is unavoidable in a rural setting with small workforce numbers. In order to ensure rigour, the qualitative data was also reviewed by a non-rural based researcher. It is acknowledged that the rural sites chosen for this study may not be representative of rural sites in other areas, however the sites were chosen to provide a broad range of rural dietetic service delivery and staffing models.

[xxvii] such as More Allied Health Services (MAHS) funding.

The data searches conducted in each study site were limited due to a lack of stored workforce data. Data was limited to information available from the Workforce program, which was only introduced in 1998 or paper-based documents prior to this. Access to documents was controlled by health service staff and therefore it was not possible for researchers to know if any documents had been overlooked. Documentation of employment details were limited and no exit interviews were reported to have occurred. Occasions of service data was collected in different ways over the 15 year period and using different computerised systems (such as DOHRS, CHIS and CHIME). Data from different time periods was difficult to compare due to the different processes used for recording the data and inconsistent recording methods used in each site. The OOS data was only analysed for 2006 and only four of the six sites recorded direct and indirect patient OOS.

4.4 Conclusions

Recruitment and retention issues for rural dietitians are similar to those reported in the literature for rural allied health professionals with a few key differences. Recruitment and retention issues varied from site to site and over time. While the recruitment of dietitians to the rural areas under study have improved over the past 15 years with an increased workforce with rural experience, the problem of retaining staff remains. This is particularly evident in rural sites where issues such as a lack of management support, limited career pathways, professional isolation and non-dietetic management. The services provided by dietitians in rural areas are changing with increases in complex cases in larger rural centres and increasing service demands. The outreach services provided by dietitians are an important component of the service in order to provide an accessible service, however the demands of work related travel may affect staff retention in situations where the amount of travel is high.

4.5 Summary

Chapter Four has provided an overview of the characteristics and history of dietetic staffing in six rural case study sites. This has included data on recruitment and retention issues a key consideration in the dietetic workforce staffing and future planning.

Chapter Five Study Two: Results - barriers and drivers

5.0 Introduction

Chapter Four mapped the history of the development of dietetic services in six rural sites. The purpose of this chapter is to explore the barriers and drivers for the development of dietetic staffing in six rural sites. Rural and remote communities are typically underserved by allied health professionals and dietetics is no exception. Workforce development in rural Australia has been reported to occur in an *ad hoc* way, often without sufficient planning to meet the needs of local communities (Bishop 1998). According to Bishop the growth of allied health services in rural Australia has occurred due to five main categories of funding: specific Commonwealth or State funding, allocations based on population ratios, qualitative demand from stakeholders, utilisation data and needs-based methods using population and health outcomes (Bishop 1998).

The key factors that lead to the development of dietetic positions in rural areas are unknown. Anecdotally it is reported that some rural areas are better staffed than others and that there is an uneven growth in staffing levels. In the geographical area under investigation, a survey of allied health staff found that the average number of dietitians per 100 000 population was 8.4, slightly better than the average for all regional areas in Australia of 7.7 per 100 000 (Smith, Cooper et al. 2008). This study aimed to explore the drivers and barriers to the development of dietetics staffing in rural areas.

5.1 Document analysis data

Development of positions

The dietetic workforce increased by 23.5 FTE across the six sites over the 15 years, with a net gain of 22.6 FTE. A loss of staffing occurred with the loss of some temporary FTE. Increases in dietetic staffing for the six sites separated into five year periods of the study period (1991-2006) are shown

in Figure 17 below. In the cases of sites D, E and F the largest increase in dietetic positions has occurred in the last five years.

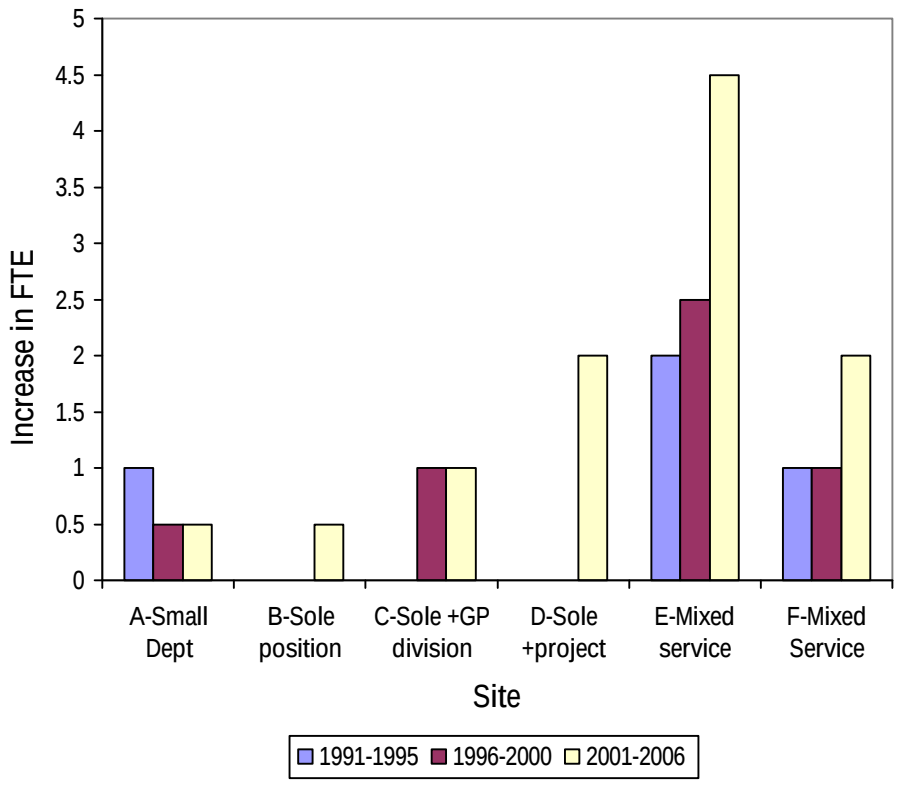


Figure 17: Increase in dietetic staffing across the six sites for health service and Division of GP services

Table 30 provides a summary of the dietetic service delivery model for each site and data about staffing development.

Table 30: Dietetic service and staffing levels at six rural sites

Site Dietitians per 10^6 population	Dietetic service description	Staffing level (FTE) in 2006	Staffing Issues
A 12.3	Small public community/hospital service, providing outreach services Private practitioner, contract services with Division of GP funding	3 public 1 private	Stable staffing until early 1990's, vacancies and high turnover mostly of new graduates since Recruitment for positions often not conducted for extended periods of time Difficulties retaining staff
B 11.5	Sole position with community health focus and minimal outreach services	0.5 FTE public	New service, stable staffing with dietitian who moved to the area with partner for his work
C 17.0	Sole position with community health focus and extensive outreach services with Division of GP funded position with outreach services	1 public 1 private	Long-term vacancy prior to 1997. Consistent turnover of staff, stable staffing in public position since 2002
D 10.8	Sole position with community health focus and outreach services Temporary project position with outreach services	2 public	Relatively new service, staffing fairly stable
E 21.5	Public hospital based department (4 FTE) with additional community based positions (2 FTE) University based position (1.2 FTE). Minimal private services (0.3 FTE)	10.5 3 temporary population health positions	Some stable staffing, particularly dietitian managers High turnover of locums/some positions, mostly new graduates
F 12.2	Public hospital based service (2 FTE) with community based positions (2 FTE) Services provided in two localities. Private practice services	4.0 1.4 private practice	Some stable positions, particularly dietitian manager. High turnover of locums, mostly new graduates

5.2 Individual interview data

The key activities and events that have influenced the development of positions in each of the six sites over the 15 year timeframe are summarised below. The actions of champions, local issues and staffing changes have been described. A timeline representation of positions and key events in the six sites over the 15 year time period are presented in Figures 11 -16 of Chapter Four.

In **Site A** there have been ongoing difficulties recruiting and retaining dietitians in the 1-2 FTE positions that have existed over the past 20 years. In the early 1990's the staffing was stable with two long-term staff in the positions for approximately 9-10 years each, but eventually the full–time person resigned and the part-time (0.25 FTE) person moved to full-time private practice.

> *I was only being paid for ten hours…..at New England Health and I really wanted to be working a bit more than that and so I decided well if they wouldn't give me more hours I needed to do some private practice.* (dietitian, currently employed, 21A)

The 0.25 FTE position was not recruited to, but eventually it was increased to 0.5 FTE in an attempt to recruit. Despite the increase in FTE, the part-time position experienced periods of vacancy and high turnover. *'Those sorts of roles in smaller communities aren't exactly easy to fill so we had a huge turnover in that 0.5.'* (dietitian manager, currently employed, 6E, referring to Site A). Around this time the local Division of GP identified dietetics as an area of need for additional funding. The Division provided funding through the More Allied Health Services[xxviii] (MAHS) program for an additional 0.5 FTE, so that a full-time dietitian could be recruited to the area.

> *That initial 2000 needs assessment identified dietetics as being one of the issues across the area…they all identified dietetics and we were able to then resource positions…we supported the Site A dietetics position to 0.5.* (manager, currently employed, 22A)

[xxviii] Refer to Appendix 1.2 for information about MAHS program funding.

Eventually this funding was withdrawn from the Division of GP reportedly due to difficulties recruiting to the position. 'We couldn't recruit and then we actually opted to take the position back into the Division' (manager currently employed 20A). The MAHS funding was then provided to the local private practice dietitian. A period of instability followed with a succession of short-term employees and delays in recruitment by management to the 0.5 FTE hospital position. Between February 2002 and October 2004, the 1.0 FTE and 0.5 FTE positions, were filled by new graduates in short term locums, with some extended periods of position vacancy in between.

The Area Advisor intervened in 2005 in order to establish an extra 0.5 FTE with the local hospital, which was receiving dietetic services from the dietitians employed through community health, without paying for the service.

> *…so I stuck my Advisor hat on to stick my two cents in, in Site A and got them to actually verbally agree that they would pay 0.5 because in their budget there was a little bit of leeway and they were meant to be providing some allied health services and of course they weren't paying for it…* (dietitian manager, currently employed, 6E)

This brought both positions to 2.0 FTE, and the existing 1.0 FTE dietitian commented on the benefit of having another full time position based at Site A.

> *…since it's been upgraded to one, a full position…it feels more stable to me because I think a 0.5 position how long does someone stick around and so that's why it was really important to get it up to a whole position.* (dietitian, currently employed, 20A)

The position in **Site B** is relatively new having only been created as a 0.5 FTE in late 2005. Prior to this, outreach services were provided on a fortnightly basis by the dietitians at Site E. In more recent years (2004-2006) dietitians based at Site C, who were funded as part of the MAHS program to provide services to underserviced areas, also provided an

outreach service to Site B[xxix] as a co-ordinated service plan. The dietetics position in Site B was established after many years of lobbying from the dietetic manager/area advisor dietitian located at Site E. The management at Site B were not supportive of funding a position in their local area as they already received outreach services, as described by the Area Advisor.

> *…it took me ten years to get the Site B position. I initially started lobbying with management ten years ago…at that stage Site B management were not supportive at all. They were quite happy with their free travelling service that they were getting and it was free at that stage…Division of General Practice had actually done some services in Site B…but MAHS funding was starting to run out and they were looking at pulling out…and so basically Site B was reaching crisis point…* (dietitian manager, currently employed, 6E)

It took a 'crisis' situation in Site B to provide an opportunity for the local Area Advisor to 'push' for dietetics staffing in Site B. Complaints from GP's and community members about long waiting lists for services were reported.

> *Site B is a reasonable size population, it's around about 10,000 people and they have quite chronic health problems and quite a high Aboriginal population in Site B, so the demand for our [dietetic] services was quite high. There's also a few GPs in Site B so referrals were quite high. Our waiting lists in Site B blew out to six months. We actually had a number of complaints from GPs and also from community members about the lack of service…it was purely a band-aid type [service].* (dietitian manager, currently employed, 6E)

This crisis point for the service provided the impetus for the local Area Advisor to lobby management once more to create a position at Site B. The local health service cluster did not have any funds available within their budget to be able to consider funding the position themselves, so higher level management was approached about the possibility of funding a dietetic position.

[xxix] Site B is located 199 km or a 3hr 30min drive from Site C.

> *Site B itself didn't have any budget. They were over budget so there was no way that they were going to come up with funds themselves to actually recruit…we ended up putting in a business case to area management about enhancing the funding for Site B, so that they could recruit. So it was purely from the very highest level of the area in terms of Community Health management that we went so it wasn't a Site B instigated, we went above that.* (dietitian manager, currently employed, 6E re: Site B)

In **Site C** the dietetic position in the health service was a position that was vacant for many years in the 1980's and early 1990's. It wasn't until a new graduate from a nearby rural area was interested in finding work in the area that the position was recruited to again, after many years of no attempts to recruit to the position.

> *We had a student who was from out here who was quite keen to stay in the area. Basically was quite keen to take any job that was going…the only position at the time that was vacant was Site C, but it wasn't filled and they hadn't had it filled for seven years.* (dietitian manager, currently employed, 6E re: Site C)

To re-establish the position, local dietitians lobbied management to encourage them to re-instate the position, initially, as a part-time appointment, eventually increasing to a full-time appointment. The position has been consistently recruited to since then with a series of new graduates who each worked in the position for a few years.

> *…between the dietitian at [another rural site] and myself we did a fair bit of lobbying with management out there in terms of the need to create something.* (dietitian manager, currently employed, 6E)

In 2000 a dietetic position was funded through the local Division of GP using MAHS funding to meet the identified gaps in the public service. In May 2004 the Division of GP had additional MAHS funding to spend and decided to use that money to fund another full-time dietitian, bringing it to 2.0 FTE.

> *…six years ago, we received funding under the More Allied Health Services Program…we did a major needs assessment of our area to see what services…there were gaps in and what services doctors felt were lacking…dietetic services were prioritised by our doctors. We employed one dietitian and the service was particularly successful so there seemed to still be quite a need for it…it was identified that there was the need and the work for two dietitians.* (manager, currently employed, 12C)

Following the resignation of one dietitian in June 2005, the additional dietetics position was no longer funded through the Division of GP.

> *…whenever we get a resignation in our Division, whether it be allied health services or any other person, it's an opportunity to sit down and have a look at what we're providing, who's doing what…the needs assessment had been done and indicated that dietetics wasn't quite so in demand.* (manager, currently employed, 12C)

In **Site D** there was no dietitian position until 2002 and prior to that there were only part-time private practitioners providing outreach services to the area. The Community Health manager of the site put forward a number of submissions, between 2000 and 2002, for a dietitian position. These attempts eventually resulted in a position being funded in 2002.

> *…it was obvious that there were no [dietetic] service provision and that was a strong submission, so there was nothing to argue against it, it was very obvious that we needed a dietitian.* (manager, currently employed, 31D)

With hindsight, the manager became aware that funding only one dietetic position in the area was not enough. *'My only regret is that I didn't apply for two'* (manager, currently employed, 31D). Once the sole position had been established it became apparent that the staffing was no longer adequate for the position description and the demands for the service and submissions were made for an additional position.

> *I'd probably put in about three enhancement proposal forms over those three years and had been given very positive comments about the need, about the commitment to follow through with the need on every occasion and nothing actually changed. There was nothing, there was no money to create a position and that was just the problem over and over again.* (dietitian, past, 23D)

The lack of funding within the local health service cluster was identified as a barrier to the development of any further dietetic positions despite the identified need.

> *…the reason that they couldn't employ any more dietitians was because there was no money, the cluster had no money and they were in the red and that there is no way that they could create a permanent position.* (dietitian, past, 23D)

The sole dietitian at the time was advised by management that in order to fund another position the money would have to come from an alternative funding source. This was achieved through Regional Health Services (RHS) Program funding in February 2005, initially for three months, but the position was extended a number of times and was extended until June 2008.

> *It was through the Regional Health Services program…they had funding for a podiatrist, but they had trouble recruiting a podiatrist up here so they had money….I guess they realised how short staffed the Nutrition Department is.* (dietitian, currently employed, 32FD)

One dietitian commented on the uncertain nature of temporary positions such as the one funded through the RHS program.

> *Who gets employed under that program is then decided by the Program Coordinator and whether it's a dietitian or not depends on what's happening at the time. So that might get out-prioritised, so it's quite vulnerable.* (dietitian, past, 23D)

In **Site E** there has been a continual growth in positions over the 15 year period, with most of the growth experienced in the last five year period. A

total of seven positions have been gained over the 15 years, with another three temporary positions that were eventually discontinued. Given the large number of positions involved, only a brief summary will be provided.

The second clinical hospital position was created in 2004 though vacant part-time hours and lobbying management for additional funding to increase it to a full-time position.

> *Purely to start with it was to backfill bits and pieces. We had three staff members go part-time and we had 0.2 from bits of people…so we actually put that together to create 0.6 of a position and then I lobbied management to get the extra 0.4 to make it a full-time position so we could recruit.* (dietetics manager, currently employed, 6E)

The food service position was created through a short-term locum position initially, which became permanent with a business case that supported it to continue.

> *…it started as a full-time position, but purely as a locum to start with as a trial for about six months to see how it went…we evaluated that after six months and that was all going well and it was actually achieving something so we did a business case to make that a permanent position…funded partly by Site E Base and partly by the Area Corporate Services…* (dietitian manager, currently employed, 6E)

The renal position was created in February 2002 when the funds from a community position were re-directed by the dietetics manager in order to create a specialised renal position to meet the increasing demand.

> *…we did sort of a bit of a service plan and looked at our areas of need and at that stage renal was growing rapidly here and we just couldn't keep up with the demand clinically.* (dietitian manager, currently employed, 6E)

The diabetes position started as a 0.5 FTE position in 1996 funded as part of the diabetes centre that was established at Site E. The position was increased to 1 FTE in 2004 following a submission for additional staffing.

> *…when the Diabetes Centre itself was built and instigated and it was staffed with an educator, a part-time dietitian…with the increased waiting list and the Diabetes Centre employed an extra educator, which then increased the need for the dietetic services. From that we got quite a lot of physician support particularly for that business case to actually get that made full-time and Community Health had a number of vacant positions at the time so we basically stole some other people's money (laughs).* (dietitian manager, currently employed, 6E)

In **Site F** there have been small increases in staffing over the past 15 years.

At the beginning of the period there was 1.0 FTE hospital dietitians. The establishment of the community position was unclear from the interview transcripts as the manager at the time was on maternity leave when the community position was created in 1996. '*When I returned from maternity leave a community position was established and I don't think that I had any input into the creation of it.'* (dietitian manager, currently employed, 16F)

In response to unmanageable workloads, the hospital dietitian closed outpatient clinics, which were not considered to be a key part of the role. This, in addition to submission for funding for a diabetes dietitian position, resulted in increases in FTE in 1998/99.

> *We actually closed the outpatient clinic so there was no service to outpatients or diabetic services or anything…that created a huge outcry in the community, which was really like catastrophic and…what it did was it caused a great stir and we were successful...enhancement funding became available and we secured two diabetes educators, half a dietitian to Site F Hospital and also a diabetes dietitian position.* (dietitian manager, currently employed, 16F)

Despite the disruption to services and the community 'outcry' the dietitian reported that she felt the community pressure helped to contribute to the successful funding of additional positions. *'So it was well worth the push and the submission writing and also I think probably it was withdrawing the service altogether and creating an outcry.'* (dietitian manager, currently employed, 16F)

An additional 0.5 FTE was successfully obtained through submissions in 1998, to increase hospital staffing to 1.5 FTE. Minimal increments in FTE have occurred in Site F since then.

> *'We did get another 0.2 [FTE] back in 2002…that was renal funded and at that time we were able to see the renal patients within our general clinic, but it became very evident in the last two to three years that we really need that 0.2…'* (dietitian manager, currently employed, 16F)

Qualitative thematic analysis

The main themes arising from the interviews in relation to the development of positions and the barriers and drivers for a best practice dietetic service are summarised in Table 31 below.

Table 31: Summary of themes for the development of positions

Main Themes	Categories
Funding coming into dietetics	Gradual increase in funding and resources
	Ad hoc and opportunistic funding
	Champion for strategic increases in funding
	Funding provided without dietitian involvement
Funding not available or withdrawn from dietetics	General lack of funds and competing priorities for funding
	Reduced funding or role changes leading to reduced services
	Deliberately denying a service due to a lack of staffing

Each of these themes will be discussed and supported by quotes from the participants.

Funding coming into dietetics

The theme 'funding coming into dietetics' refers to the range of ways that additional funding for dietetic positions has been achieved in the study sites. Funding has been achieved through gradual increases, opportunistic situations or *ad hoc* funding or through strategic lobbying by champions.

Gradual increase in funding and resources

A gradual increase in public sector funding over time has led to incremental increases in dietetic staffing in some sites.

> *When I started I was only doing two days per week…then they got it to three days a week…they would try to make it full-time as soon as they could.* (dietitian, currently employed, 4CAE)

In some cases an under-spend in one department created opportunities to creatively develop extra positions. One site that was funded for higher grade positions, but staffed largely with new graduates, was able to increase it's FTE with the resulting budget savings.

> *Basically the majority of it came from within the [dietetics] department. We had funding for slightly more senior staff, which we couldn't fill and we used the extra funds from the other FTE's to top up…Our FTE budget it might be a Year 5/Year 7 something like that and we recruit with a new grad [Year 1]. So within my actual budget I have enough extra funds that I can then direct that into another position.* (dietitian manager, currently employed, 6E)

Ad hoc and opportunistic funding

Unfilled positions in other allied health professions can result in funds being made available for other professions that don't have recruitment problems. In a number of cases, dietitians reported using the funding for long-term unfilled allied health positions to create new dietetic positions. *'I think the*

funding came from…there was a little bit or surplus from an empty position [other allied health position] that couldn't be filled' (dietitian, currently employed, 5E). Opportunities were also created through applying for project funding that led to funding for a full-time position.

> *Initially it was a grant we won…to do an Aboriginal health project and that was…incorporated into my budget as one of my FTEs and I was given funding from North-West Health, as recurrent funding in my budget to actually continue that position.* (dietitian manager, currently employed, 6E)

The availability of an unemployed or under-employed dietitian provided an incentive to try to create a position when funding was accessible. Typically these dietitians moved to the area due to their partners work or were new graduates returning to their local home town looking for work after graduation.

> *The position was roughly created for me I think as an opportunistic role. I had moved back to my country town and home and there wasn't a position when I moved back but…the dietitian at Community Health, wanted to do some project work, but didn't have the time herself, so applied for a grant to do project work with a specific group…I knew that she was doing the proposal for the job and for the grant well in advance and so I obviously was going to apply for the job.* (dietitian, currently employed, 28C)

Champions for strategic increases in funding

Champions for increased dietetic positions were identified in the interview transcripts. These champions included dietetic managers (Site E), Division of GP managers (Site C), health service managers (Site D) or dietitians in area advisor roles[xxx] (for Sites A, B, C and E). Sites where a champion was identified were generally successful in obtaining funding for increased positions through lobbying and repeated submissions for additional funding.

[xxx] Area advisor roles for the southern and northern sectors of the Hunter New England Area Health (HNEH) service were originally established as part-time hours within existing positions. These positions commenced in 1995, but remuneration was not provided until 2000.

> *I stuck my hand up and so some of that funding was directed into my budget too and once it's there, often you find once you get it there, it becomes recurrent…Without management on side, you don't get anywhere. You can agitate all you like and it doesn't get you anywhere so really the first job of the dietitians is to then convince management… that the need is there and show that demand and go from there in terms of business cases and funding proposals…that all comes from within the profession.* (dietetics manager, currently employed, 6E)

Champions were often unable to secure additional funding, despite identified service needs. This was usually due to a lack of funding or support at a local level or due to higher funding priorities being identified. Champions who could obtain the support of local management were able to make progress with submissions for funding.

> *I bided my time until management changed and once it changed I started again and then….the community health manager at Site B a couple of years ago was very supportive and actually recognised the fact that the demand was just getting out of control.* (dietitian manager, currently employed, 6E)

Crisis situations in terms of service demands were a useful time to lobby management. A crisis situation provided impetus for change, even when there had been previous difficulties in obtaining funds.

> *Site B was reaching crisis point so something really, really had to be done which was actually a prime time to go to senior management and argue that case with them.* (dietitian manager, currently employed, 6E)

In some cases a crisis situation provided an opportunity to approach management for extra funding. '*I think when it reaches crisis and services are cut and then they will respond so it's almost like, rather than proactive it's a reactive measure'* (dietitian, past, 16A).

Persistence and continuity were key factors in obtaining funding for additional positions. *'I had to do a lot of fighting for every position that we got….'* (dietitian manager, past, 17E). Champions who remained employed in one area for an extended period of time were best placed to be aware of the needs of the community, the management structure and processes as well as having close working relationships with management.

> *[I] went to all levels of management that I possibly could, I eventually got the Executive Officer of the hospital onside, who between her and I, after lobbying management for six months, we got a 0.5 position created.* (dietitian, past, 9A)

Developing good working relationships with managers at various levels and having a high profile was an advantage in the lobbying process for development of positions.

> *…being around for a long time is actually quite an advantage, having been here with a lot of the managers for a long time has actually helped me a lot…they know me as a clinician as well and so they know that I am actually quite passionate about the service and that I have the clients' best interests at heart. I am not just trying to empire build and build a bigger service, so I guess that's an advantage…* (dietitian manager, currently employed, 6E)

Being able to demonstrate a demand for services was a key factor in submissions made to management in order to justify the need for additional positions.

> *…it was the demand for the services that you needed to establish before you got those positions and talking to the right people and getting other people to ask for your services…* (dietitian, past, 7E)

In the case of the diabetes position at Site E, having statistics to justify the need was a key way to justify the position.

> *…it took a lot of arguing and a lot of justification. The [diabetes position] was agreed to as a trial…the need is there and the stats well and truly show it, it has actually doubled significantly and the waiting*

list that's actually showing that the position is now even being outgrown by demand. (dietitian manager, currently employed, 6E)

One way champions were able to obtain funding was to ensure that the users[xxxi] of dietetic services were paying for the services they were receiving. This required a knowledge of the funding sources, health service management roles and lobbying skills. New graduates in rural positions are not always well equipped to deal with these management issues. In sites with a high turnover of new graduates and no long-term experienced staff, little was being done to progress the situation or change funding sources.

It was a matter of looking at the funding and where it was all coming from and from that we reinstated the second position by looking at user services and who pays…we got them to actually verbally agree that they would pay 0.5 because in their budget there was a little bit of leeway and they were meant to be providing some allied health services and of course they weren't paying for it... The manager of Site A hospital was quite realistic about the fact that they desperately needed a service and that if they didn't pay for it then they really couldn't expect a service. (dietitian manager, currently employed, 6E, speaking in an area advisor role)

Another useful strategy employed by champions was to enlist the support of others to lobby for increased dietetic services. This included: specialist doctors, community members, local support groups (such as Diabetes Australia Support Group) and other health professionals (for example diabetes educators).

Diabetes services has been really good….quite proactive and actually getting positions established and using their medical clout to help with the establishment of positions…we got quite a lot of physician support particularly for that business case to actually get that made full-time. (dietitian manager, currently employed, 6E)

[xxxi] 'Users of dietetic services' refers to the health service users, such as hospital-based services, as dietitians were actually funded through community health service funds.

Having the support of others was seen by dietitians to have more influence than dietitians pushing for more positions by themselves.

> *…sitting there saying 'I need this' isn't going to get you anywhere. You need people actually saying I need this person's service and that was the way I saw jobs being created, that's how jobs became created in Site E after I'd left.* (dietitian, past, 7E)

The dietitian in the Dietetic Area Advisor position[xxxii] for the northern sector was identified as a key person to advocate for increased dietetic staffing in areas of need across the sites the position was responsible for (Sites A, B, C, and E). In Site D, the Dietetic Area Advisor for the southern sector was able to influence management in Site D to increase the grading of the sole position in order to help attract and retain an experienced dietitian to a newly created part-time in the position.

> *The [Area Advisor] had advised the community health team that in order to keep someone in the position and to get someone with experience…that they needed to increase the grading, which they did.* (dietitian, past, 23D)

The Area Advisors were seen to have some power and influence with health service managers. Without a champion at a higher level it was perceived as would be very difficult for local dietitians to advocate for additional staffing.

> *There are no other dietitians in northern [sector] who have a management role….so in terms of that role [area advisor], I have a bit of I guess clout in terms of putting dietetics opinions forward and trying to actually be a voice for dietetics….you have a job description that actually says that part of your role is to advocate for dietitians wherever they may be…I personally think the Advisor role is essential and without it, we would be up the creek like we wouldn't have half the positions….it is with that Advisor's hat that I actually get a lot of the stuff done and fight for stuff, so it is, it's really important.* (dietitian manager, currently employed, 6E)

[xxxii] The Area Advisor position was based originally in the New England Area Health Service, this changed to the northern sector of HNEH following the health service merger in January 2005.

Funding provided without dietitian involvement

In some cases funding was provided without any specific input from dietitians. This may have been through allocated funding from an area health service level or through a planning process that identified dietetics as a priority service for funding.

> *I'm not sure how the funding came about…when I returned from maternity leave a community position was established and I don't think that I had any input into the creation of it.* (dietitian manager, currently employed, 16F)

Needs assessments and community consultations by other organisations also provided opportunities for funding.

> *The priority areas were determined by a consultant who set the program up, so they drew on past consultations and further community consultation, put together a service delivery plan and then the Commonwealth [Department of Health] funded it.* (manager, currently employed, 37D)

Funding unavailable or withdrawn from dietetics

In some situations funding was unavailable or withdrawn from dietetics due to a general lack of funds and competing priorities. This theme also explores the resulting impact of reduced funding on dietetic service delivery.

General lack of funds and competing priorities for funding

A general lack of public funds was identified as the main barrier to the ability to attract additional funds or reallocate funds to dietetics staffing in rural areas.

> *Well I think funding has been the largest barrier…the funding base is at a marginal level and so the full cost of running those services has been greater then the funding provided. I think the other barrier is probably more around the inability to shift resources internally within*

an area of service with great ease. (manager, currently employed, 40A-F)

The long-term nature of dietetic interventions and patient outcomes were perceived to be an issue, especially given the focus on acute hospital services for much of the enhancement funding (Hunter New England Health 2006). *'A lot of our outcomes are long-term, so trying to justify that to management is quite difficult at times'* (dietitian manager, currently employed, 6E). Dietetics, along with other allied health professions, was considered to be a 'luxury'. It was seen as an extra, optional service, rather than something that was essential to acute hospital care. Dietitians agreed that this is how the profession was often viewed by others.

> *[Dietetics] it's not seen as an emergency service… I think we're seen more as a life enhancing service rather than an actual crisis management service, not I need '10mls of Sustagen stat'.* (manager, currently employed, 37D, previously worked as a dietitian)

Competing priorities for the funding dollar was a common reason given for extra dietetic positions not being funded. Dietetics was seen by managers as not being a 'needy area' and not being a high enough priority to attract it's own funding.

> *There haven't been a lot of specific opportunities for dietetic services to push their case over the last five to ten years…dietetic services hasn't necessarily been one of the sub-groups that have been able to lobby and advocate for money...* (manager, currently employed, 38F)

Dietitians also acknowledged this:

> *The biggest problem is often allied health is seen as a little bit of a luxury and it is much easier to justify nursing or medical extra positions* (dietitian manager, currently employed, 6E)

Current health issues that were attracting health funding (such as obesity) were seen to provide potential future funding for dietetics.

> *Competing priorities is one of the biggest things and getting dietetics high enough on the agenda to rate allocation of funding in it's own right. Maybe with obesity being identified as a major health issue, that will start to turn around a little bit.* (manager, currently employed, 38F)

The process of health service funding allocation requires that if there are no funds at a cluster[xxxiii] level, funding would have to come from Area Health Service level. A service that required funding would have to be prioritised at a local cluster level before it could even be considered at area level and then it would have to compete with a range of other funding submissions. Even when a dietetics position was seen as the highest priority at a local cluster level it couldn't always attract funding from the area level.

> *Number one it has got to be prioritised within the cluster, then it goes to the Area where it is then prioritised, so it just wasn't prioritised at that time.* (manager, past, 31D)

Managers often realised and agreed there was a need for additional dietetic services however they were faced with the reality of there being no additional funding available and no other services that could be reduced.

> *… if you go to take money from somewhere you've actually got to take it from someone else…so you have to say well what service are we going to decrease to increase your service and really the answer is, none, because we can't afford to do that.* (manager, currently employed, 24A)

In local health service clusters where budgets were tight, allied health positions were seen to be the type of services that would be the first to get cut and the least likely to attract additional funding for new positions. The more established professions, such as nursing and medicine, were thought to be more likely to attract funding due to their 'entrenched roles' in the health service. Even other allied health professions were seen to be more established.

[xxxiii] A cluster is a geographical area within HNEH that provides management and administration for the defined area (refer to Appendix 1.2 for more information).

I'd say priorities, definitely priorities of the management, especially if they're more centered around an acute basis and…also how their budgets are actually running, so often allied health would be the first to either get cut or not be an area of growth…I think too, as a profession we are relatively new, we're not as well entrenched into the systems like doctors, nurses, OT's they are very much a part of that system. (manager, currently employed 37D, previously worked as a dietitian)

The way funding priorities were determined were not always transparent, with large variations in staffing between similar professions.

…at the time when the dietitian position was funded there was also…another 1.5 speech positions that were funded at the same time which enhanced Speech Pathology Department[xxxiv] *to four and a half FTEs and one FTE dietitian was thought to be enough…well that's a very interesting priority.* (dietitian, past, 23D)

…diabetes was growing and growing and so we formed a working party…and that the function of that was to try and get some submissions going for positions and we were very successful…enhancement funding became available and we secured two [FTE] diabetes educators and also a [1 FTE] diabetes dietitian position (dietitian manager, currently employed, 16F)

The diabetes dietitian in Site F commented on the issue of lower dietetic staffing compared to the number of diabetes educators.

...because I am the sole diabetes dietitian, across that cluster there's two [diabetes] educators, I think that's something that needs to be addressed. Looking at different formulas of dietetic services, they did one a few years ago and there should be three diabetes dietitians[xxxv] *for this area for the number of people that we are seeing.* (dietitian, currently employed, 39F)

[xxxiv] Most services employ fewer speech pathologists than dietitians.
[xxxv] No evidence was provided for this claim.

A general lack of funds for all services was an issue for each of the clusters at various times throughout the 15 year period. Whenever a local health cluster was short of finance there was no ability for them to create new positions.

> *I was told quite a few times the reason that they couldn't employ any more dietitians was because there was no money, the cluster had no money and they were in the red and that there is no way that they could create a permanent position…that seemed to be the answer time and time again and that if we were going to get another position…we were going to have to look at alternate funding to create that and I never heard any different from that.* (dietitian, past, 23D)

Some dietetic services experienced a failure to fund additional dietetic staffing while the health service expanded.

> *We were never enhanced to go along with the expansion of the hospital services. We just always stayed the same…and it was always seen as… they were never going to enhance the hours for [the position].* (dietitian, past, 9A)

Reduced funding or role changes leading to reduced services

Reductions in dietetic staffing have occurred in Sites A, C and E at various times over the past 15 years. Positions have been lost due to an inability to fill them over a period of time or due to fund-holders withdrawing funds for temporary or project positions. Dietitians reduced the services they provided in order to cope with the increased workload. In the early 1990's a position was lost in Site E when a staff member took redundancy, with implications for service delivery and the remaining staff workload.

> *Straight away the travelling services stopped…everything that that senior position had been doing apart from the acute things, really it stopped...the services I stopped were the non-essential services* (dietitian, past, 7E)

In Site C the loss of a dietitian position in the Division of GP service led to reduced services. Outreach services and project development were reduced as a result of the decrease in staffing.

> *…previously with two dietitians we did cover more towns, we had to reduce that down to make it possible for me to now cover four towns. Being by myself means I have to do all the programs…project development and trying to expand our services [has] probably been reduced. I've got to limit some of those other activities, to just cover the clinical and program load.* (dietitian, currently employed, 28C)

Deliberately denying a service due to a lack of staffing

In some cases, dietitians responded to unreasonable workloads by deliberately reducing some patient services. Others were reluctant to discontinue services, but did reduce activities, such as, outreach clinics to outlying areas. This was, in part, to alert management to the pressure they were facing in providing services to an ever increasing client base.

> *…we withdrew services from the Diabetes Centre and that really got the attention of the CEO…it was an outpatient service…the job that I had been employed to do was an inpatient based role, so inpatients were the priority.* (dietitian, past, 7E)

Sometimes this strategy was successful in raising awareness amongst management and allowed for a review of the staffing situation particularly after complaints from other health professionals and/or clients.

> *I recall that the hospital dietitian did cut back some services to show how great the need was…I think this is partly where the enhancement funding came from for….a diabetes dietitian.* (dietitian, past, 25F)

Convergent validation of themes

Qualitative themes have been linked with quantitative workforce data to show convergent validation of themes. Increases in staffing FTEs have been linked with quotes by managers about the role of a dietitian in Table 32.

Table 32: Linking staffing increases with management attitudes for convergent validation of themes

Increase in staffing 2001-2006 FTE	Site	Quotes about importance of the dietitians role	Quotes about type of dietetic roles
4.5	E	No non-dietitian manager interviewed	
2.0	F	'…very high priority for the hospital and for the health service generally. It's an important allied health position that supports the recovery of patients' (manager, currently employed, 38F)	'...focus mainly on our inpatient workload... advising them on their diet in hospital…following up after discharge with those patients to see if they can provide further support.' (manager, currently employed, 38F)
2.0	D	'...it can't be underestimated and we certainly realised that when we didn't have any dietetic services. Dietetics is a pivotal part…, a huge part of our allied health team.' (manager, past, 31D)	'The value is in the primary health care area…also in malnutrition information…aged care areas, but also just the general wellbeing for our inpatients in our hospital as well.' (manager, past, 31D)
1.0	C	'it's really important in….keeping people out of hospital…to make sure that they have a proper [diet].' (manager, currently employed, 10C)	'…particularly with the increasing level of obesity and the impact of that on the level of chronic disease…. I think they probably are going to play an even more significant role in the future.' (manager, currently employed, 12C)
0.5	B	No non-dietitian manager interviewed	
0.5	A	'…especially since we have a community now who are probably on the bigger size than they have ever been before so I see that their role is very, very important.' (manager, currently employed, 24A)	'…provide support to a different range of acute and chronic patients. So they may be diabetics, they may have heart disease… they may be obese, they may have high cholesterol.' (manager, currently employed, 24A)

5.3 Discussion

The findings from this study indicate that dietetic staffing in rural areas develops largely in an *ad hoc* and opportunistic way with some areas developing higher staffing ratios than others. Increases are not based on a population or other possible benchmarks such as hospital bed numbers. The average dietetic staffing level across the six sites was 12.3 per 100 000, which is more than the 8.4 per 100 000 found in an allied health study (Smith, Cooper et al. 2008) conducted in the same geographical area in 2005. This difference is likely to be due to the poor response rate (50%) of the 2005 study compared with 71% of this study. Reasons for the increased staffing in some sites compared to others may be attributed to the drivers: champions for the development of positions and management support. Sites with consistent increases in staffing levels used a multi-faceted approach to seek additional funding. The Area Advisor located in Site E played a key role in the development of many positions for Site E, as well as other sites under their area of influence (such as Sites A and B). Major barriers included: competing priorities, a general lack of funds and reduced funding or role changes leading to reduced services.

In a recent systematic review of the literature on primary health care services in rural and remote areas (Humphreys, Wakerman et al. 2008) the importance of adequate funding and champions to support these services was identified in order to insure sustainable rural primary health care services. Despite the importance of preventative and primary health care to address the chronic disease burden experienced in rural Australia, the funding for non-acute services is limited and generally appears to have a lower priority than acute and emergency services. Funding is a major barrier to the development of adequate dietetic staffing in rural areas and in some cases, despite the existence of a champion, an identified need for increased services and support from management, some positions remained unfunded for many years. The lower profile and non-acute nature of dietetic services was identified as a limiting factor in accessing health funding. While it is not ideal to deny or restrict services, it may be that a rationalisation of

services is required when staffing levels are reduced or not increased with other health service enhancements.

Staff are unable to provide increased levels of service in response to increased demand when their staffing levels remain unchanged. Previous research has identified the impact that understaffing and high workloads have on rural based health service staff (Lindsay, Hanson et al. 2008). The results from this study indicate where there is a severe level of understaffing sites experience higher rates of staff turnover and difficulties recruiting, exacerbating the problem even further. Understaffing in one site, leads to lengthy waiting lists and increased demands on outreach services from other sites.

The staffing levels for dietitians were suggested to be inadequate for current workloads and compared to other health profession staffing levels. The ratio of dietitians to diabetes educators in this study was similar to levels suggested in the literature of one dietitian to two diabetes educators (British Diabetic Association 1999). This study indicated that this ratio created a high workload for the diabetes dietitian. Current staffing levels require review, especially if the ratio (diabetes educator: dietitian) is greater than two to one. The levels of staffing for diabetes educators may also been inadequate suggesting that services and staffing for diabetes management in rural areas should be reviewed.

The attitude of managers to the services provided by dietitians and their perception of the importance of the dietetics role may influence their decision to fund additional positions. A study in the USA (Balch 1996) found that employers generally do not appreciate the links between health and food intakes and lack an understanding of a dietitian's role. Part of the reason for this is a lack of data to prove outcomes such as improved patient health outcomes, improved quality of life and patient satisfaction. To do this Balch suggests that dietitians need to become more visible, portray a strong and favourable image and measure and report on their service outcomes (Balch 1996). This doctoral research found that dietetic champions were involved in writing submissions for increased staffing and providing patient outcome data to support funding submissions. Developing a high profile

with local management was also a factor that assisted in negotiations for additional funding.

Implications

Given that the identified inhibitors to the growth of rural dietetic positions are a lack of funds and competing priorities, it is important that submissions for additional staff funding are timely and linked to health service priorities. Dietitians are competing with other health professions for limited funds and those who are proactive and committed to pursuing funds for their profession are likely to be more successful in a system where funding is often *ad hoc*. Developing a good long term relationship with management is an important factor for the potential development of positions.

In order to ensure more equitable access to dietetic services in Australia, a range of strategies are required to support the growth of dietetic positions. Key drivers for growth in positions include having a champion to advocate for increased funding and accessing funding opportunities that arise. The DAA could take a lead role in providing training and advice for rural dietitians on the successful approaches and strategies for increasing dietetic resources and services in rural areas. Further research is required to determine if these factors are similar in other rural and remote areas and for other allied health professions.

Limitations of this study

The information provided by managers may have been influenced by the fact that the interviewer was a dietitian by profession. The principal researcher works as a dietitian in the study area, however is not employed within the public health system and was not previously known to the health service managers interviewed for this study. The accuracy of the information provided in this study may have been affected by the honesty and perceptions of those being interviewed. To overcome this potential limitation, multiple sources of information were utlilised and information compared across the interview transcripts to obtain valid data. Some further limitations are mentioned in Chapters Four and Six.

5.4 Conclusions

This research demonstrates an inconsistent approach to the development of dietetic positions in rural areas. There should be a more systematic, planned approach to the development of dietetic positions in rural areas, as these areas are already underserviced. The development of positions is limited by competing priorities and a lack of funds. Champions for the development of positions can be effective in increasing positions, particularly when they have management support.

5.5 Summary

This chapter demonstrates the importance of a multi-faceted approach to the development of dietetic staffing in rural areas and that having a local champion for dietetic staffing is a key factor in the development of increased dietetic staffing.

Chapter Six Study Two: Results - gaps and opportunities

6.0 Introduction

This chapter provides an overview of the extent of private practice dietetic services in rural areas and the factors that drive or inhibit the development of private practice in rural areas. This follows on from Chapters Four and Five which predominantly discussed the issues for public dietetic services in rural areas. Dietetic services in rural areas of NSW are typically based in the public sector health service, with limited private practice services available (Brown, Capra et al. 2006). The under staffing of the rural public sector provides an opportunity for the growth of private practice in rural areas. In 2001 37% of dietitians in rural and remote areas were employed in the private sector compared to 46% in urban areas (NRRAHAS 2004a). This is lower than the average private sector figures for allied health professions of 55% and physiotherapy at 68% (NRRAHAS 2004a). The percentage of DAA members working in private practice has increased by 7% over the 15 year timeframe of this study (refer to Table 14, Chapter Two), the growth of private practice in rural areas is unclear.

Private practitioners largely provided services to those who have private health insurance and are able to claim rebates for dietetic services. Since 2004 dietitians in private practice in Australia have been able to provide services under Medicare for patients with chronic conditions and complex care needs who are managed by their general practitioner under an Enhanced Primary Care (EPC) plan. Under Medicare patients are eligible for five allied health services per year[xxxvi] (Australian Government Department of Health and Ageing 2009) and additional group services for those with type 2 diabetes (Australian Government Department of Health and Ageing 2008a).

As shown in Chapter Five, public health based services are increasingly being expected to do more without increases in staffing and this is putting

[xxxvi] A Medicare rebate of $48.95 per service is provided to patients who have a consultation from an allied health private practitioner.

pressure on public services, which could be relieved by an increase in private sector services (Balch 1996). The previous two chapters have reported on the small proportion of private practice dietitians in rural areas in relation to the public sector staffing. This chapter provides a more indepth exploration of private practice in rural areas. The aim of this study was to determine the drivers and barriers for the development of private practice positions in rural areas.

6.1 Individual interview data

From the 40 interviews, a subset of 15 included discussion or comments about private practice in rural areas. The interviewees consisted of four managers, three dietitians working for the health service and in private practice part time, one full time private practice dietitian and seven dietitians not currently working in private practice[xxxvii].

Quantitative data

Private practice outreach services to Sites C and D were provided before there were public health services in these towns. These private services were ceased once a public service was established in Sites C and D. Conversely in Sites A (0.8 public dietitians per 10 000) and F (0.9 public dietitians per 10 000) where the public staffing remains relatively low there has been an increase in the number of private practice dietitians over the past few years. Sites B, C and D do not have any current private practice services and they may not have a large enough population base to support a private practitioner (8 600, 11 700 and 18 500 respectively) given current public sector staffing in these localities.

Table 33 summarises the public and private sector staffing across the six sites in 2006 in terms of FTE and the number of dietitians per 10 000 population. Site E has a comparatively high level of dietetic service (2.2 public dietitians per 10 000) compared with other sites, however three of the Site E positions at the time of the study were temporarily funded and later withdrawn. When temporary funding is not considered, Sites C (0.85

[xxxvii] Dietitians not working in private practice included: two contemplating, four not contemplating and one previously working in private practice.

dietitians per 10 000), D (0.5 dietitians per 10 000) and E (1.6 dietitians per 10 000) are less well serviced, particularly Site E given it's larger population base. MAHS funded dietetic positions across the six sites ranged from 1 - 2.5 FTE funding, over the eight year period between 1999-2006.

Table 33: Summary of public and private sector staffing in six sites in 2006

Site	SED NSW rank	Public FTE	Private FTE	MAHS funded	Total FTE	Temporary funded FTE	Population	Total dietitians per 10 000 population	Public dietitians per 10 000 population
A	109	2	1	*	3	0	24 302	1.23	0.82
B	22	0.5	0	0	0.5	0	8 674	1.15	1.15
C	54	1	0	1	2	1	11 700	1.7	0.85
D	76	2	0	0	2	1	18 508	1.08	1.08
E	77	10.3	0.2	0	10.5	3	48 000	2.18	2.15
F	41	4	1.4	0	5.4	0	43 984	1.22	0.9

*Private practice position has some MAHS funding, however was full-time private practice prior to this funding

SED – Socioeconomic Disadvantage, NSW – New South Wales

Private practice Enhanced Primary Care consultations

The Enhanced Primary Care (EPC) consultations for each Division of GP are summarised with private practice data for the six sites in Table 34. The high level of EPC consultations for Division of GP 218 could be attributed to additional private practitioners who may work outside Division of GP and another large rural site in the same region.

Table 34: EPC consultation figures for private practice dietitians (2004-2007) in Divisions of GP and corresponding to study sites

				Dietitian EPC consultations†		
Site	Division of GP number	Private practice FTE identified in this study 2006	Private practice FTE in Division of GP area 2006†	2004/5	2005/6	2006/7
A	227	1.0	0.38	72	176	136
B and C	231	1.0*	0	0	0	27
D and F	218	1.4	2.28	932	1 469	2 273
E	236	0.2	0	6	32	74
NSW Average	-	-	0.67	253	419	628
Rural Average	-	-	0.66	124	224	336

* MAHS funded position at Site C may account for EPC data in Sites B and C, as no private practice full-time equivalent (FTE) was indicated in this study.

Source: †Adapted from data in unpublished paper written in collaboration with L Mitchell and colleagues refer to Appendix 4.4 for Statement of Collaboration

Qualitative thematic analysis

Thematic analysis of the 15 individual interviews conducted across five rural NSW sites identified the following common themes: financial factors, job satisfaction, opportunities for private practice and establishing private practice.

Financial factors

Financial factors were seen to be both drivers and barriers to working in private practice. Private practice work was seen to have the potential for higher remuneration compared to the public health service.

> *Private work appeals to me for a number of reasons…the rate of pay on an hourly basis is obviously better, so I find private practice I think quite rewarding.* (dietitian currently employed, part-time private practice, 30FE)

However, the income from private practice was seen to be inconsistent and to involve additional unpaid hours of work. It was difficult for a dietitian employed full-time in the public service, with a consistent income, to consider private practice work.

> *I've looked into it and at the moment I think compared to my job that I'm in now, it seems too hard to set up to private practice and you don't know whether you're going to get that income coming in every week.* (dietitian past, not in private practice, 35E)

One dietitian described a gradual transition from the public sector to private practice work. Her part-time position in the public sector did not provide her with sufficient hours and part-time private practice work provided an opportunity to supplement her income. She gradually made a transition from part-time private practice work into full-time private practice work.

> *I really wanted to be working a bit more than that…if they wouldn't give me more hours I needed to do some private practice. So I did a bit of part-time then…just very small amounts, but when I transferred over completely at the very end of '99…I resigned from the health service.* (dietitian currently employed, full-time private practice, 21A)

Job satisfaction

Private practice work was reported by many to provide increased job satisfaction, as it allowed for more autonomy and greater case variety.

> *Private work appeals to me for a number of reasons, a lot less bureaucracy than health. I feel that those days tend to be some of my most productive days in terms of patient care.* (dietitian currently employed, part-time private practice, 30FE)

> *I just felt I felt a bit restricted within the health service, I felt that there were things I wanted to be doing that I couldn't…I just felt I needed to run my own ship for a change.* (dietitian, currently employed, full-time private practice, 21A)

However private practice was seen to be isolating and that it was more difficult to keep up-to-date as a private practitioner.

> *I was in private practice in the area for several years and I felt as though I was losing touch with work colleagues and keeping up to date with information.* (dietitian currently employed, part-time private practice 25F)

While some dietitians were moving into private practice others were reducing their private practice from full-time to part-time and taking on work in the public sector.

> *I was also looking for something that was going to be more family friendly as I was at that stage of my life where I was looking towards having a family...it works well for people to have a bit of health service work and a bit of private work it seems to be a good balance or be it something else.* (dietitian currently employed, part-time private practice, 25F)

Opportunities for private practice

The tendency for private practitioners to work part-time in rural areas was seen as a deterrent for those seeking full-time employment. Conversely the part-time nature of the work was reported as a reason for moving into private practice, as it provided additional work for dietitians who were under-employed. Reasons for going into private practice included: wanting part time work or extra hours, a lack or no public service in the area and opportunities arising to support the transition into private practice (for

example offers of work, a local profile and secure supplementary funding sources, such as MAHS and Nursing Homes). Developing a profile in the local community was seen as an opportunity to create a demand for private work and to assist in the transition into full-time private practice.

> *…people were getting more aware of dietetic service and the need for them perhaps partly because of the accreditation in lots of institutions and also I think public awareness maybe was starting to get around…I suppose I drummed up some sort of a name for myself in that 20 years 'cause I'd done a lot of work. I'd been writing in the paper for nine years in a column and took on the radio weekly and all that sort of stuff so people knew who I was and what a dietitian was about…* (dietitian currently employed, full-time private practice, 21A)

Three dietitians commented on how an increase in private practice dietitians in their local area could or does help to augment the limited public service. Private practitioners were also able to provide services that were not available through the public system due to time constraints or lack of specialisation.

> *…it would be better to get some private practice dietitians to cover the area and then you know it wouldn't be such a, you know, push on the health service. Like in our area anyway that's the only way to get other dietitians on the ground is to try and promote private practice'* (dietitian past, not in private practice, 35E referring to current rural site)

> *I guess the other thing in [Site A] we're lucky, is the private practice [dietitian] tends to do a lot of that stuff [allergies, community talks] as well, so…if people were desperate for you to do a talk they could always contact [her] and she did a lot of that…she did a lot of work at the private hospital…so that took off a bit of pressure as well having that option.* (dietitian currently employed, not in private practice, 20A)

One health service manager reflecting on the time without a public sector dietitian commented on the difficulties getting private practitioners to travel to the area[xxxviii] to provide services.

> *There was a shortage of dietitians at that time. It has always been challenging in a rural areas to get clinicians of any description to come, to travel. They [private practitioners] definitely see the advantage of it when they come, but it's actually getting them here.* (manager, public sector, 31D)

Establishing private practice

The perceived difficulty of establishing a private practice was also identified as a barrier to providing services privately. The requirements for setting up a private practice, such as, registering for Medicare and private health insurance rebates and the work involved in finding a location, setting up an office and establishing a referral base was seen to be 'too hard'.

> *I thought about maybe starting up a private practice, but…you have to first of all know who you are going to target, know the system, like know about the Medicare rebates and things like that…know about your insurance….trying to get in with general practitioners and try and get them to refer to you. I have talked to other dietitians…that started off in private practice and then now they've gone into the hospital system because all the paperwork involved and just the rent of having your own building and things like that. There's a lot of extra hours work that you don't really think about and they said as soon as they got into the health system they wanted to stay there. So I can sort of see where they are coming from.* (dietitian past, not in private practice, 35E)

[xxxviii] Site D is located 130km (1hr 40 mins) away from the nearest urban area.

Convergent validation of themes

Private practice FTE and SED ranking have been linked with quotes about the under-employment of dietitians in the public sector and the level of public services in Table 35 below. Sites E and F with SED ranks below the state average[xxxix], but populations greater than 20 000 were still able to support private practice.

[xxxix] Average SED rank for NSW was 76 in 2006 (refer to Table 22 in Chapter 4).

Table 35: Linking private practice numbers with quotes for convergent validation

Private Practice FTE in 2006	SED rank*	Site	Quotes about under-employment of public sector dietitians	Quotes about private practice services when public positions are created or services reduced
1.4	41	F	'I was 0.5 [FTE] for twelve months. During that time I started up a bit of private practice at a GP centre seeing people under the Medicare referral system.' (dietitian, currently employed, part-time private practice in past, 39F)	Dietitian ceased private practice when commencing full-time public position. Researcher: So, how long did you do that private practice for? Interviewee: 'That was probably about six months.' (dietitian, currently employed, part-time private practice in past, 39F)
1.0	109	A	'I was only being paid for ten hours…at New England Health and I really wanted to be working a bit more than that and so I decided well if they wouldn't give me more hours I needed to do some private practice.' (dietitian, currently employed, full-time private practice, 21A)	'…they [Division of GP] paid her salary for half a week and the health service put their hours up half time, 20 hours a week…she moved on and the division approached me to do [MAHS funded work]…they knew I was out in private practice just sort of working part-time.' (dietitian, currently employed, full-time private practice, 21A)
0.2	77	E	'I reduced my hours down to 0.8FTE, because throughout 2004 I had commenced doing some private work with the Division of General Practice under their MAHS program (dietitian, currently employed, part-time private practice, 30FE)	Nil quote
0	54	C	Nil quote – full-time positions	'She had a private practice [in another town] and she used to come down for a day and a half. I think she did it fortnightly…that lasted for some years until [name of public hospital dietitian] started.' (manager, past, 29C)

Private Practice FTE in 2006	SED rank*	Site	Quotes about under-employment of public sector dietitians	Quotes about private practice services when public positions are created or services reduced
0	76	D	Nil quote – full-time positions	Private practice services ceased when the public positions was created. '…there was a part-time private dietitian working in [Site D]…that was only two days per week…and a private dietitian would come up and do clinics with [a diabetes educator] every two months.' (manager, past, 31D)
0	22	B	'I guess it would be more attractive to me if there was a few more hours…maybe an extra day or something like that would be more attractive I guess would be nice.' (dietitian, currently employed, 3B)	Nil quote

* A lower SED score is indicative of greater socioeconomic disadvantage

FTE – full-time equivalent, SED – Socioeconomic disadvantage.

6.2 Discussion

The themes identified in this study provide insight as to the barriers and drivers for commencing private practice work in rural areas. The results are similar to findings from other studies investigating allied health private practice. In this study dietitians reported taking on private practice due to under-employment in the public sector or due to opportunities that arose and made the transition to private practice possible or easier. Other allied health studies have also found that a reason why practitioners move into the private sector is that some "opportunity" presents itself (Bridle and Hawkes 1990). Limited public funding and under-employment may also encourage health professionals to move into private practice work due to a lack of job opportunities (Bridle and Hawkes 1990). The perceived advantages of private practice were also a motivating factor to consider private practice, although sometimes the perceived barriers (such as difficulties of setting up, paperwork, inconsistent income, professional isolation) outweighed the potential gains (such as financial rewards, autonomy, job variety).

The Medicare Chronic Disease Management (CDM) items were introduced in 2004, they allow rebates to be paid to individuals for up to five allied health professionals visits per year (Medicare Australia 2006). Rebates allow for clients to pay a minimal fee for their service, as part of an Enhanced Primary Care (EPC) plan or a Team Care Arrangement (TCA) co-ordinated by the patient's general practitioner. These rebates provide an opportunity for private practitioners to increase their client base and provide services to those who might otherwise be unable to afford it. The limited number of funded hours may affect clinical outcomes, as funded treatments are often less than current standards of practice recommend. This may lead to an inequity of outcomes depending on a patient's ability to pay once the funded treatments cease (Foster, Mitchell et al. 2008). Private practice dietitians in metropolitan areas have expressed frustration with the limitations to their practice, due to the limit on the number of consultations (Cant and Aroni 2007). In this current study the Medicare rebates were identified as another barrier to establishing a private practice, due to the

paperwork involved. However, no private practice dietitians mentioned the limits on the number of consultations.

In rural areas additional funding is available for allied health professionals to conduct work privately or under contract with Divisions of General Practice through the More Allied Health Services (MAHS) Program (Commonwealth of Australia 2004). In Australia in 2003/04 24.1 FTEs or 11.4% of MAHS funded positions were dietitians (Australian Government Department of Health and Ageing 2007). This study identified the difficulties associated with the temporary nature of MAHS funded dietetic positions, with variable levels of staffing. Staffing was reliant on the retention of full-time dietitians in Division of GP or the recruitment of underemployed or private practice dietitians to fill part-time hours.

Implications

Inadequate services in the public sector can represent an opportunity for dietitians interested in working in private practice and this has the potential to ease some burden on the public sector (Struber 2004) and improve access to health care for people with chronic disease (Peel Health Care Ltd 2007). The establishment of private practice in rural areas has the potential to ensure equitable health service in rural areas, by allowing patients who are able to pay for services to opt out of using free public services or for those who are eligible for government Medicare rebates (Medicare Australia 2006) to access private dietetic services. Private practitioners may also be able to offer services not offered by the public services such as, home visits and consultations after hours and on weekends.

Few dietitians in this study were utilising MAHS funding in their private practice work, however a number of temporary positions were funded through Divisions of GP in Sites A and C. The decision of what type of allied health service to fund under MAHS is usually based on identified community needs, and practical considerations such as the ease of recruitment of a practitioner and ease of access to services by patients (Commonwealth of Australia 2004). This type of funding may provide some opportunities for private work in rural areas. The limitations are that this funding is inconsistent, not ongoing and variable according to perceived needs of

individual communities, which makes this type of private practice work more insecure.

One way for dietitians to enter into private practice with less personal financial risk is to work in an established or managed private practice where other health practitioners are located and where there may be opportunities for salaried or contract private practice work (Peel Health Care Ltd 2007). A number of rural and remote private practice models have been reported on in the literature and they have been successful in providing sustainable private practice services in rural and remote locations (Amos 2006; Peel Health Care Ltd 2007).

Dietetic private practice is a relatively untapped market in rural areas, despite it's overall growth in Australia. Limited increases have been identified in the rural sites of this study. Further education and ongoing professional development in private practice skills could help to increase the uptake of private practice work by dietitians. Rural areas that are underserviced by the public system, with an adequate population base, would provide an appropriate base for a private dietitian. In this study the site with the lowest population where a full-time private practice dietitian was based was Site A with a population of 21 000.

Limitations

Full-time private practitioners or those who did not work in the public sector were difficult to recruit to this study and as a result their numbers are small. This was in part due to a reliance on a snowballing recruitment technique where current interviewees were asked to provide potential participants with details about the study and the third party (potential interviewee) was required to contact the researcher regarding participation in the study. No additional private practitioners were recruited using this method. Approximately 50 per cent of the known 'currently working' and 'past' private practitioners were interviewed from the six sites, based on historical reports from the individual interviews.

6.3 Conclusions

As the public sector in rural areas is underserviced there is an opportunity for growth of private practice in these areas. To date the perceived barriers to establishing a private practice have inhibited the growth potential, particularly in rural areas where there are few underemployed dietitians. Further education and ongoing professional development could assist in the uptake of private practice.

6.4 Summary

This chapter demonstrates the potential for the future growth of private practice in rural areas, however there continues to be barriers to establishing and maintaining private services.

Chapter Seven Study Three: Best practice dietetic services in a rural area - oncology case study

7.0 Introduction

The purpose of this chapter is to evaluate the implementation of a theoretical best practice dietetic service delivery model in a specific area of clinical dietetic practice in a rural setting. This dietetic service delivery model focused on oncology patients undergoing chemotherapy treatment at the Tamworth Rural Referral Hospital (TRRH). The research study reported in this chapter was published in the journal *Nutrition and Dietetics* in 2008. A copy of this paper is provided in Appendix 4.3.

7.1 Background

Cancer was responsible for 23 to 29% of the 'excess deaths' in inner regional and outer regional areas of Australia respectively in 2002-04. In 2002-03 the incidence of cancer was 4% higher in regional areas compared to major cities of Australia, with significantly higher incidence rates for preventable cancers such as melanoma, lung, head and neck, lip and cervical cancer (Australian Institute of Health and Welfare 2008). The former New England Area Health Service, where this study was conducted, has a 7% higher mortality from all causes of cancer than the NSW average (New England Area Health Service 2003) and the local oncology service provided chemotherapy treatment for approximately 3 000 patients per year (2004-2005) (Freeman 2006).

Rural patients have poorer outcomes from cancer than their urban counterparts and this has been attributed, in part, to reduced levels of cancer screening and differences in cancer management in developed countries (Hill, White et al. 1994; Bain and Campbell 2000; Bain, Campbell et al. 2002; Cooney and Baade 2005). Cancer management may differ with understaffing and a lack of material resources (McCarthy, Hegney et al. 2003).

Oncology patients undergoing chemotherapy can experience a range of nutrition related symptoms and consequences due to cancer itself and due

to cancer treatment. Symptoms may include nausea, vomiting, diarrhoea, constipation, dry mouth, mouth sores, swallowing problems and changes in taste and smell (Capra, Ferguson et al. 2001). These symptoms can result in poor appetite, weight loss, fatigue and malnutrition (Capra, Ferguson et al. 2001). Patients with cancer have been reported to have rates of malnutrition ranging from 40 to 80% (Ollenschlager, Viell et al. 1991; Kern and Norton 1998). Dietetic interventions have the potential to minimise the side effects of the chemotherapy treatment, aid in a more rapid recovery and improved functional status and, as a result, improve quality of life (Ottery 1994).

Service provision to oncology patients in rural areas has specific challenges due to inadequate resources (such as staffing and facilities) and the distances patients need to travel for treatment (New South Wales Department of Health 2003). Models of service delivery need to be developed to suit the rural context (Australian Health Ministers' Advisory Council's National Rural Health Policy Sub-Committee 2002; McCarthy, Hegney et al. 2003). At the time of this study there was no consistent, planned dietetic service provided to oncology patients at TRRH, making it an ideal site in which to test a best practice model against a usual *ad hoc* service. The components of this service delivery model may also be applied to other areas of dietetic practice in rural settings.

7.2 Literature Review: Dietetic outpatient services for oncology patients

According to Ottery and colleagues (Ottery 1994) the elements of a best practice model for dietetic services for patients undergoing cancer treatment include: a screening process to ensure access, appropriate assessment, individualised intervention and timely and adequate follow up. They also recommend a proactive rather than a reactive approach, by intervening early to prevent or minimise nutritional problems (Ottery, Bender et al. 2002). Most research involving nutrition interventions and services for oncology patients has been conducted in metropolitan areas.

A recent allied health study investigated the health services needs of oncology outpatients, in an urban setting (Brisbane, Australia) (McGrath, Corcoran et al. 2000). McGrath and colleagues found that most patients preferred to be introduced to allied health services at the beginning of their cancer treatment, although one third of patients' preferred services 'only when a problem occurs' (McGrath, Corcoran et al. 2000). Over one third indicated they needed help with nutritional problems (McGrath, Corcoran et al. 2000). Like most of the literature, this study was based in an urban centre, however, it provides some indication of the service preferences of oncology patients in an outpatient setting. Dietetic interventions with oncology patients undergoing chemotherapy and/or radiotherapy have been studied by a number of researchers. These recent Australian studies indicate the high rates of malnutrition, the importance of nutrition screening and the potential benefits of intensive nutrition interventions. A summary of all Australian research is provided in Table 36 below, highlighting the nutrition interventions and outcomes for oncology patients.

Table 36: Dietetic interventions with oncology patients

(Authors, year) Publication source	Sample Location	Method	Results	Limitations Conclusions
(McGrath, Corcoran et al. 2000) Australian Health Review	N= 62 RR = 97% Consecutive patients attending oncology day care ward Mater Hospital Brisbane, Australia	Questionnaire	24% had used dietetic services 26% familiar with role of a dietitian 60% reported nutritional problems 39% indicated that they needed assistance with nutritional problems Preferred intervention: 47% information booklets 31% telephone contact 27% counselling 27% individual follow-up	Broad survey on allied health services Preferred sources of intervention included information booklets, telephone contact, counselling and individual follow-up. Group support and educational programs were the least preferred.
(Isenring, Capra et al. 2003) Acta Diabetologica	N = 36 RR not reported Oncology outpatients undergoing radiotherapy to the head and neck area Radiotherapy clinic Gold Coast, Australia	Randomised controlled trial Body composition measured by foot-to-foot BIA in patients receiving usual care (UC) and intensive nutritional intervention (NI) Measures at commencement and after 3 months.	The UC group lost significantly more weight than the NI group; mean decrease 4.3 kg vs 1.1 kg (p=0.019) Fat free mass loss was significantly higher in the UC group; 2.2 kg vs 0.3 kg in the NI group (p=0.029)	RR unknown Intensive NI provides beneficial outcomes in terms of minimising weight loss and preserving fat free mass compared to the UC group.

(Authors, year) Publication source	Sample Location	Method	Results	Limitations Conclusions
(Isenring, Bauer et al. 2003) European Journal of Clinical Nutrition	N = 60 RR = 77% Ambulatory oncology patients receiving radiotherapy to the head, neck, abdominal or rectal area. The Wesley Hospital, Brisbane, Australia	Prospective 4 week study PG-SGA assessment Quality of Life (QoL) measure (EORTC QLQ-C30)	According to SGA, 65% well nourished 28.3% moderately malnourished 6.7% severely malnourished There was a correlation between change in PG-SGA score and change in QoL (r = - 0.66, P <0.001), 26% of the variation in the change in QoL was due to change in PG-SGA.	The exclusion of subjects who were unable to complete the PG-SGA assessment. PG-SGA is suitable for use as an outcome measure for nutrition interventions PG-SGA is associated with QoL in ambulatory patients receiving radiotherapy.
(Isenring, Capra et al. 2004) Journal of Human Nutrition and Dietetics	Randomised controlled trial N = 54 RR not reported Ambulatory oncology patients undergoing radiotherapy to the head and neck area The Wesley Hospital, Brisbane, Australia	Patient satisfaction with nutrition services	Patients receiving nutrition intervention rated higher satisfaction overall compared to those receiving usual care.	Positive bias from patients wishing to please the investigator Patients receiving nutrition intervention perceive it to be beneficial
(Isenring, Bauer et al. 2004) Nutrition and Dietetics	N = 16 RR not reported Convenience sample of hospitalised cancer patients undergoing chemotherapy The Wesley Hospital, Brisbane, Australia	Observational study of routine clinical practice PG-SGA assessment	Found no significant linear trend between direct patient care by a dietitian (time spent) and nutritional status (SGA).	Small sample size. Possible selection bias due to convenience sample. No control group. No follow up after discharge. Demonstrated usefulness of the scored PG-SGA in practice

(Authors, year) Publication source	Sample Location	Method	Results	Limitations Conclusions
(Read, Choy et al. 2006) Asia-Pacific Journal of Clinical Oncology	N = 141 RR not reported Consecutive patients attending an Outpatient Cancer Clinic Concord or Royal Prince Alfred Hospitals, Sydney Australia	Prospective study of the prevalence of malnutrition PG-SGA assessment BMI and Albumin measures	34% were well nourished SGA-A 56% were at risk of malnutrition SGA-B 10% were malnourished SGA-C Types of cancer - % risk of malnutrition or malnourished 100% of gastric, oesophageal and pancreatic cancer patients 69% lung 57% colorectal 45% of head and neck patients	RR unknown Majority of patients with cancer are at risk of malnutrition or malnourished. Better screening and adequate nutrition intervention is required.
(Isenring, Cross et al. 2008) Nutrition and Dietetics	N = 61 RR = 91% Consecutive patients attending an outpatient chemotherapy unit Australian public hospital Flinders Medical Centre, Adelaide, Australia	Observational cross-sectional study	One third were at nutritional risk, with seven at high risk receiving dietetic consultation and 13 at moderate risk were given handouts. Eighteen (out of 20 nutritionally at risk patients) filled out satisfaction questionnaire- nutrition advice was rated as helpful (n=15) and meeting expectations (n = 16).	Relatively small sample size and cross sectional design Clinically higher satisfaction with dietetic consult compared to those receiving handouts

BIA – Bioelectrical Impedance Analysis, BMI – Body mass index, FTE – full-time equivalent, NI – Nutritional intervention, PG-SGA – patient-generated subjective global assessment, QoL – quality of life, RR – response rate, UC – usual care

7.3 Aims

The aim of this study was to test a predetermined model of best practice for rural patients with cancer undergoing chemotherapy treatment by assessing patient satisfaction and outcomes. The purpose of this study was to compare the organisation and process of service delivery, rather than the content of the advice given.

7.4 Method

Participants

Patients attending initial chemotherapy treatment at the Tamworth Rural Referral Hospital Oncology Clinic between July 2004 and October 2005 were eligible for inclusion in this study. Exclusion criteria included: being under 18 years of age, undergoing radiotherapy treatment and/or physical, cognitive, language or emotional problems that would prevent them from completing the requirements of the study.

Procedure

Ethical approval for the study was granted by the New England Ethics Committee (Reference No: DB171) and the University of Newcastle Human Research Ethics Committee (Reference No: H-773-0304), as outlined in Appendix 2.6. Patients were invited to participate in the study by clinic staff (such as nursing or administrative staff) and were required to give their informed consent to participate. Copies of these forms are provided (see Appendices 2.7 and 2.8). Participants were alternately randomised, by the main researcher, to receive a usual care service (usual care/control group) or a best practice service (intervention group). This study used a validated system for identifying patients at nutritional risk and a standardised nutritional assessment procedure (Ottery 1994).

Intervention descriptions

This pilot pseudo-randomised controlled trial, compared a predetermined best practice protocol with usual service delivery, as provided by the local hospital. Participants in the control group received usual care dietetic

services, as provided by the local hospital. Usual care involved a service provided on set clinic days, at set times when the dietitian was available. Consultations outside this time were dependent on the limited availability of the dietitian. The service was provided in an *ad hoc* way with patients referred by nursing or medical staff without the use of a validated screening system for identifying patients at risk. Participants in the usual care group were provided with face-to-face dietetic services that were of 45-60 minutes duration at monthly intervals or once only, with follow up until the end of their chemotherapy treatment at the clinic. The features of the best practice intervention service were modelled on findings from other researchers that early and intensive nutrition support lead to improved patient outcomes and satisfaction (Isenring, Capra et al. 2003; Isenring, Capra et al. 2004; Isenring, Cross et al. 2008). Multi-modal service delivery methods were used for the intervention group to facilitate frequent consultations in a rural setting.

Nutrition interventions and advice was standardised for both groups by using evidenced-based practice guidelines (DAA 2005b), only the organisation and process of service delivery varied. Participants in the intervention group received services that were more frequent (weekly or fortnightly) and of shorter duration (15-30 minutes) in addition to multi-modal service delivery, for as long as the participant chose to have dietetic follow up. Multi-modal dietetic services refers to face-to-face and telephone contact as well as written information provided by mail, as required. Participants in the intervention group were provided with weekly or fortnightly reviews by telephone. Attempts were also made to utilise newer technologies to deliver components of the service, such as videoconferencing and email. Table 37 outlines the features of a best practice dietetic service model in comparison to the usual care service.

Table 37: Features of a best practice dietetic service model and usual care service

Criteria	Best Practice Model (Intervention)	Usual Care Service (Control)
Service delivery	face to face and multi-modal	face-to-face only
Consultation length	consultation length 15-30 mins	consultation length 45-60 mins
Consultation frequency	weekly or fortnightly	monthly or once only
Consultation timing	at the time of treatment or via telephone	set dietetic clinic times

Outcome measures

The Patient-generated Subjective Global Assessment (PG-SGA) tool (Ottery 1994) was adapted from the original SGA tool for use in patients with cancer. The PG-SGA tool allows for the quick identification and prioritisation of malnutrition in oncology patients (Bauer, Capra et al. 2002). Patients are classified as well-nourished (SGA-A), moderately or suspected of being malnourished (SGA-B) or severely malnourished (SGA-C). This tool (refer to Appendix 3.7) was used to assess the nutritional status of all participants and determine the need for a dietetic consultation at two time points:

(i) entry to the study and

(ii) eight weeks after the initial dietetic consult.

The European Organisation for Research and Treatment of Cancer (EORTC) global quality of life (QoL) questionnaire QLQ-C30 Version 3 (Aaronson, Ahmedzai et al. 1993) was used to determine quality of life scores for participants at the same study points. This tool consists of 30 items relating to five functional scales (physical, role, cognitive, emotional and social), three symptoms scales (fatigue, pain and nausea/vomiting), global health status and quality of life scales (refer to Appendix 3.8). The QoL scores were calculated according to the scoring manual (Fayers, Aaronson et al. 1999) with results converted to a score out of 100. A higher score is associated with a higher quality of life.

The Constipation Assessment Scale (CAS) is a valid and reliable constipation tool developed by McMillan and McWilliams (McMillan and McWilliams 1989). A modified version, the Modified Constipation Assessment Scale (MCAS) was developed by Isenring and colleagues and validated in oncology patients receiving radiotherapy (Isenring, Bauer et al. 2005). The MCAS was used to assess bowel function at entry and eight weeks (refer to Appendix 3.9). The MCAS ranges from zero, indicating good bowel function to 18, indicating poor bowel function.

A participant satisfaction questionnaire was adapted from an instrument developed by Hauchecorne and colleagues, previously used with ambulatory oncology patients (Hauchecorne, Barr et al. 1994). This instrument contains questions about patient perceptions of nutrition counselling which requires 'yes' or 'no' responses and Likert scales. It was adapted slightly to add a question regarding participants 'seeking advice about nutritional supplements'. The patient satisfaction survey was distributed to participants one month after their final treatment or dietetic consultation (refer to Appendix 3.10). Participants were surveyed regarding their preferred methods of follow-up and service delivery. A patient feedback questionnaire was developed and distributed to participants one month after their final treatment (refer to Appendix 3.11).

Analysis

Statistical analyses were carried out using Intercooled STATA 8.0 (STATA Corporation 2003). Independent t tests were used for normally distributed data, Mann Whitney test for data not normally distributed and chi square for categorical data. Intervention and control (usual care) groups were compared for age, gender, BMI and type of cancer.

Sample size calculation

The following equation was used to calculate sample sizes, based on the need to compare two means with unpaired t-tests.

$$N \text{ per group} = \frac{2\,S^2\,(Z_\alpha + Z_\beta)^2}{[\text{mean}_1 - \text{mean}_2]^2}$$

S = the pooled standard deviation of change over 8 weeks across the two groups

Z_α = 1.96 and Z_β = 1.28 (type I error 5% and type II error 10%)

mean_1 = mean change over 8 weeks in the intervention group

mean_2 = mean change over 8 weeks in the usual care group

The expected mean change in PG-SGA scores over a one month period was 12.7 units with a standard deviation of 4.6 units (Bauer and Capra 2005). It has been assumed that a difference of 5 units or more is required between the two groups to provide a clinically significant difference. Therefore 18 subjects for each group were required to detect this difference, with 90% power at the 95% significance level. In order to allow for an attrition rate of 10% and 15% for contingency, the sample size required for subject recruitment was 23 per group.

7.5 Results

Participant characteristics

Twenty four patients were recruited to the study (out of 42 eligible participants, 57%). Four further participants became ineligible, as they were to also undergo radiotherapy treatment in a metropolitan area and two participants died prior to the completion of the study. The final number of participants in the study sample was 18 with complete data sets for patient outcomes, with eight in the intervention group and 10 in the usual care group. Patient satisfaction and feedback was provided by 12 of the 18 (67%) participants. Recruitment ceased before reaching the desired number

of participants, as the recruitment phase had exceeded 12 months. Reasons for patients declining participation in the study included: a lack of time for participation, lack of interest and patient's reporting to not require a dietetic consultation.

The median age of participants was 60 years (range 41-74), with equal numbers of male and female participants. Participants were being treated for a range of different types of cancer, the most common types were Non-Hodgkin's lymphoma 28% (n=5), breast 22% (n=4), lung 17% (n=3) and colon cancer 11% (n=2). The baseline characteristics of the study participants are outlined in Table 38. There were differences at baseline between the two groups for gender, age and type of cancer, but not for BMI.

Table 38: Baseline characteristics for 18 rural oncology patients undergoing chemotherapy

Characteristic	Control group (n=10)	Intervention group (n=8)
Gender count (%)		
Male	3 (30)	6 (75)
Female	7 (70)	2 (25)
Age (years) median (range)	58 (41-74)	63 (48-71)
BMI (kg/m2) median (range)	25.5 (23-29)	24 (21-30)
PG-SGA score at baseline median (range)	3.5 (2-10)	2 (1-22)
Malnourished by PG-SGA		
- rating B (%)	3 (30)	1 (12.5)
- rating C (%)	0	1 (12.5)
Cancer type		
- breast	3	1
- colon/rectal	3	0
- NHL	1	4
- lung	0	3
- other	1	2

BMI – Body mass index, PG SGA – Patient Generated Subjective Global Assessment

At initial assessment, five of the 18 (28%), were classified as malnourished using the PG-SGA, with an SGA rating of B (suspected or moderately malnourished) or C (severely malnourished). Using the PG-SGA triage score, eight of the 18 (44%) participants scored four or greater indicating they required nutrition intervention. The Modified Constipation Assessment Scale (MCAS) with a possible maximum score of 18, indicated that only one participant experienced severe problems with their bowel function at baseline. Global Quality of Life scores were different for the control and intervention groups at baseline with the control group starting with a higher QLQ-C30 score.

The majority of participants lived more than 20km from the hospital, with 33% (n=9) living further than 100km away. For the intervention group more than half of all the service delivery was outside the designated clinic times set for the usual care service. Dietetic services were provided on most days of the week and at various times of the day, as the set dietetic clinic hours did not allow for participants to be seen at the time of chemotherapy treatment. Participants allocated to the usual care group received fewer services in total due to the nature of the service and limited opportunities for face-to-face contact.

Results of the intervention

At completion of the study, four (22%) participants were classified with an SGA rating of B. Table 39 illustrates that only one person in the intervention group was classified as malnourished at the end of the study compared with four (17%) people in the usual care group. A negative value for change in PG-SGA score reflects an improvement in nutritional status/nutritional risk. The average PG-SGA triage score changed by +2 for the intervention group and +17 for the usual care group. This difference is clinically significant, but is not statistically significant, suggesting that the intervention group has an improved outcome with less of a deterioration in nutritional status.

Table 39: Comparison of intervention and control groups at baseline and after 8 weeks

	Baseline		8 weeks	
	Intervention	Control	Intervention	Control
Nutritional Status				
SGA-A (%)	6 (75)	7 (70)	7 (87.5)	6 (60)
SGA-B (%)	1 (12.5)	3 (30)	1 (12.5)	4 (40)
SGA-C (%)	1 (12.5)	0	0	0
Quality of Life Score				
QLQ-C30	71 (17-92)	83 (33-92)	71 (17-92)	67 (33-83)
Median (range)				
Constipation Score				
MCAS count				
0-4	6	8	6	9
5-9	1	2	2	1
10-14	1	0	0	0
15-18	0	0	0	0

SGA – Subjective Global Assessment (Bauer, Capra et al. 2002), QLQ-C30 –Quality of Life Questionnaire C30 (Aaronson, Ahmedzai et al. 1993), MCAS – Modified Constipation Assessment Score (McMillan and McWilliams 1989)

Quality of Life and Bowel Function

Participants in the intervention group had an average improvement in bowel function of 6.9 points using the MCAS, compared to an average improvement of only 0.8 points on the scale for the usual care group. There was no overall change in median MCAS score for the intervention group and a change of 0.5 for the control group. There was a decrease in the median QLQ-C30 score for the control group by sixteen points (not statistically significant) after eight weeks, compared to no change for the intervention group, as shown in Table 39. According to Osoba and colleagues, a change of 5-10 points in the QLQ-C30 score is equivalent to a small change in terms of clinical significance, but not statistically significant (Osoba, Rodrigues et al. 2003).

Patient Feedback

Twelve participants completed the patient feedback and satisfaction questionnaires (five from the intervention group and seven from the usual care group). Participants in both the intervention and usual care groups indicated that they were satisfied with the dietetic service provided by indicating 'agree strongly' or 'agree' to positive statements about the services provided (refer to Appendix 3.10 for copy of questionnaire). Half of the respondents (n=6) indicated they were prepared to travel 15-30 minutes to see a dietitian with only two respondents indicating that they were not prepared to travel to see a dietitian. Half of the respondents (n=6) indicated that they were not prepared to wait to see the dietitian or would wait up to 30 minutes on the day of their clinic visit. If appointments were not available on the day of their clinic appointment, participants were asked how long they were prepared to wait for a booked appointment with the dietitian. The majority of respondents (83%) were prepared to wait up to two weeks for a booked appointment to see a dietitian, but two respondents were not prepared to wait any length of time, preferring to see a dietitian when needed.

All respondents indicated that they had received sufficient dietetic input and none indicated that they found the service intrusive in any way. Ten out of

the 12 (83%) respondents found the length of the consultations were appropriate or 'just right', and this did not vary between the intervention and the usual care groups. Eight (67%) of the respondents indicated that their follow up contact with the dietitian was useful, five of whom were in the intervention group. Only two (17%) respondents indicated that they were prepared to pay for a dietetic service. The preferred method of review by respondents was by telephone or in person at the time of treatment. The options of review by email and videoconference were not feasible or not preferred by the participants in this study.

7.6 Discussion

This is the first known study of clinical dietetic best practice service delivery in a rural setting, with oncology services as the practice setting. The model of best practice dietetic service for rural oncology patients as described in this pilot study suggests improved outcomes for patients. Participants in the intervention group showed less deterioration in nutritional status and bowel function compared to those in the usual care group, however these improvements were not statistically significant possibly due to the limited numbers recruited. Quality of Life (QLQ-C30) scores showed a small decrease in the control group, however numbers were small and the results were not statistically significant.

This pilot study found a relatively low prevalence of malnutrition of 27.7% at the initial and final assessments according to the SGA rating. A higher prevalence of malnutrition (62.5%), was found in a group of hospitalised patients undergoing chemotherapy, in a recent study in Brisbane (Isenring, Bauer et al. 2004). In the Isenring study, 62.5% of patients were classified as malnourished on admission to hospital. Another study by Read and colleagues in Sydney found 10% of patients were malnourished and another 56% were rated as having suspected malnutrition (Read, Choy et al. 2006). The lower prevalence of malnutrition in this present study might be attributed to the different practice setting and the types of cancer of the participants. This study involved ambulatory patients having chemotherapy treatment, on an outpatient basis. A higher proportion of participants were being treated for breast cancer (22%) and other types of cancer (28%) that

generally require lower levels of nutrition intervention compared to cancers such as head, neck and gastrointestinal (Gosselin, Gilliard et al. 2008). This may have contributed to the lower levels of malnutrition in this study, with the majority of participants at low nutritional risk on enrolment to the study. The lack of statistically significant outcomes between the intervention and control groups could be attributed to the small sample size.

The Global Quality of Life (QLQ-C30) scores in this patient group were lower than those reported in a similar study conducted in Brisbane[16], perhaps suggesting a lower quality of life for rural patients, despite lower levels of malnutrition. The differences observed between this and other studies may be attributed, in part, to the range of practice settings and the types of cancer of the participants. Those patients with lower levels of quality of life and perhaps a greater need for dietetic intervention may not have been recruited into the study, with a possible bias in the recruiting process towards individuals with higher levels of functioning. Also patients who require radiotherapy and other services are required to travel out of the area for treatment resulting in a loss of potential participants for the study.

Patient feedback indicated that people in rural areas being treated with chemotherapy require timely and accessible dietetic services. Patients generally preferred to be seen by a dietitian on the day of their clinic visit after a limited period of waiting. Given the long distances travelled by many patients in order to receive chemotherapy, it is not surprising that minimal travel or short waiting times (for example, on the day of treatment/medical appointment) to see a dietitian are preferred.

The preferred method of review by participants was via telephone, or in person at the time of treatment. The use of email for review purposes was not preferred due to access issues and the potential use of videoconferencing facilities was limited by travel and access issues. Other investigators have piloted the use of videoconferencing to deliver health services (such as clinical psychology) to rural oncology patients with positive outcomes (Goldstein 2007), however these services were provided from a metropolitan area to a major rural centre where people were receiving chemotherapy treatment. In this current study providing a similar

service from a major rural centre to a smaller health service centre was difficult, due to minimal support for videoconferencing facilities and the additional travel that would be required.

Interestingly, patient satisfaction did not vary between the intervention and usual care groups, despite the increased consultations and contact with the intervention group. This may indicate that rural patients are satisfied with any level of service if they have not experienced anything else. It also indicates that we should not rely on patient satisfaction tools alone to evaluate a service given the fact that those in the intervention group tended to do better nutritionally. Since this research was completed, other researchers have published a paper on a validated patient satisfaction survey for outpatient dietetic services, which could have been a more appropriate tool to use for assessing patient satisfaction. This Queensland based study found that there were no differences between urban and rural respondents in regard to factor analysis or internal consistency (Vivanti, Ash et al. 2007).

The results of this study indicate that dietetic service delivery by telephone can deliver the same level of service and same outcomes, as attendance at a typical clinic. Other modes of service delivery (such as email and videoconference) were limited either due to the availability of the technology or the client's willingness or ability to use it. It seems that regular, shorter, review consultations with patients allows the dietitian to identify nutritional problems early and to contribute to the prevention and/or improvement of nutritional problems. The findings of this study are summarised as characteristics of a best practice service model for rural patients undergoing chemotherapy, outlined in Table 40 below.

Table 40: Characteristics of a model for a best practice dietetic service for rural patients with cancer undergoing chemotherapy

Organisational	Service Delivery
Well organised	Regular short consultations to suit the situation
Validated screening system	Flexible mode of delivery e.g. face-to-face, phone
Individualised intervention	Timely service delivery available at time of treatment
Follow-up	Review until end of treatment/end of service required

Limitations

The main limitations of this study include the small sample size, some missing data and the differences between the control and intervention groups at baseline. A low sample size was achieved due to the reliance on clinic staff, rather than the principal researcher, to recruit potential participants and the reluctance of patients to consent to the study. There were no statistically significant differences between intervention and control groups for patient outcomes or satisfaction, possibly due to the small sample size. To detect possible statistically significant findings, a sample size of 23 participants in each group would be required to achieve a final sample of 18 in each group. The low level of malnutrition in the sample group may indicate that the participants were not typical of cancer patients. It is also acknowledged that the MCAS tool has only been validated for patients receiving radiotherapy, not for those receiving chemotherapy.

Satisfaction rating scales alone can be problematic because respondents can report a greater satisfaction than dissatisfaction with health care (Cohen, Forbes et al. 1996) and give positive feedback to ‘protect’ their services (O'Neal 1999). Another recent study has indicated that rural and urban oncology patients are equally satisfied with their quality of care despite variations in what is provided. In this study rural patients indicated a desire for more information and better facilities (Hall, D'Arcy et al. 2008), suggesting that rural patients may report to be satisfied with a lower standard of care. Researchers have acknowledged that it is difficult to

assess client satisfaction with nutrition services (Isenring, Cross et al. 2008) and attempts to do so may be influenced by a range of factors including attitudes towards care and previous experiences and knowledge (DeLuco and Cremer 1990).

In this current study, a range of questions were used in the surveys including rating scales and open ended questions, in an attempt to prevent the biased responses that may be seen in surveys based on rating scales alone (Verbeek, van Dijk et al. 2001). To allow patients to provide anonymous feedback and minimise any attempt to prevent any bias to the results the patient feedback and satisfaction surveys were posted to participants in a reply paid envelope. Forms were sent back to an administrative assistant rather than directly back to the researcher. Since this study took place in 2005, a validated patient satisfaction survey for outpatient nutrition services has been developed that is applicable to the rural and urban setting (Vivanti, Ash et al. 2007), which should be used in future research.

Highly defined protocols for best practice may be unsuitable in the rural setting. Services designed for rural based patients need to be well organised and flexible in method of delivery, days of service provision and availability of the dietitian. These extra needs should be included in any staffing profiles. A dietetic service for oncology patients in rural areas should be included in a regular full-time position workload, as a part time service would not meet the variable service needs.

7.7 Conclusion

This pilot study indicates the need to further investigate the features of a best practice rural dietetic service for a range of nutrition related health problems. Further research investigating a best practice service for rural oncology patients undergoing chemotherapy should involve a randomised control trial with a larger number of participants in order to determine the statistical significance of any changes. Patient satisfaction and feedback indicate that a model for a best practice dietetic service needs to be well organised with a screening process and timely and flexible service delivery

options. There is a need to take into account the specific challenges for service delivery in a rural setting. Due to these challenges a best practice model in a rural area is likely to be different to an urban model, but may be relevant to smaller metropolitan hospitals with a generalist workload.

7.8 Summary

This chapter demonstrated the outcomes of the implementation of a model of best practice dietetic service delivery in a rural setting. The characteristics of this service may be applicable to other dietetic services provided in rural areas. It is important to acknowledge the specific community needs of rural patients and to ensure that rural services are adapted to better meet these needs.

Chapter Eight: Discussion and Conclusions

8.0 Introduction

This chapter provides a discussion of the findings from the preceding chapters (Chapters Two to Seven) and summarises the barriers to the development of best practice dietetic services in rural areas. The theoretical model proposed in Figure 2, Chapter One for a 'best practice dietetic service in rural areas' will be reviewed in light of outcomes of this research, and a revised theoretical model presented. The initial research questions have been answered through the systematic research process undertaken and the results obtained from a series of studies.

The three studies reported on in this thesis include: (i) profile of the dietetics workforce in Australia, (ii) rural dietetics workforce multiple case study and (iii) a pseudo-randomised controlled trial of a best practice service delivery model (oncology case study). The findings from each of these studies have been combined to address the research questions posed in Chapter One, section 1.9. This chapter will also make recommendations from the findings of this research and suggest potential areas for further research. An overview of the latest rural workforce developments that have impacted on the area under study is also provided.

8.1 Research questions and hypotheses addressed

What are the current levels of dietetic staffing in rural compared with urban Australia?

The current level of dietetic staffing in Australia confirms that the profession is unevenly distributed across the country and that rural areas are underserved compared to urban areas. The average number of dietitians in Australia and in rural areas per 100 000 population remains less than the suggested level of 14 per 100 000 for 1986 (Better Health Commission 1986).

What do dietetic services in rural areas look like?

Dietetic services in rural areas range from sole practice to larger departments. Dietitians in rural areas tend to provide generalist services to a client base with chronic conditions and provide outreach services from a hospital or community health base to small outlying towns. In larger rural hospitals there has also been a demand for some specialist dietetic positions and the caseload is becoming increasingly complex. The outreach services provided by dietitians are required in order to provide services to communities that don't have their own dietitian, however the resultant work related travel may affect staff retention.

What are the recruitment and retention issues for dietitians in rural Australia?

Recruitment and retention issues varied from site to site however, in general, the recruitment of dietitians in rural areas has improved over the past 15 years, particularly in the last five. The recruitment to part-time positions remains difficult in most rural sites, unless there are underemployed dietitians in the area. Retention remains an ongoing issue and this is particularly evident in rural sites where issues such as a lack of management support, limited career pathways, professional isolation and limited access to professional development may lead to a higher rate of staff turnover.

How do patient service levels vary with the number of dietitians in rural areas?

The level of patient services provided per FTE of dietetic staffing was not evenly distributed across the sites. It appears that sites with increased numbers of dietitians may have an increased need for administrative and other duties, which reduces the amount of patient services that can be provided per FTE. Larger centres also had management and specialist positions that were required to perform additional duties. There is a need for consistent data collection and reporting to ensure that dietetic service levels (as measured by OOS in study two, Chapter Four) are based on equivalent data sets.

What are the necessary actions or activities that support the development of a best practice dietetic service in rural areas?

The development of best practice dietetic services in rural areas relies on a multi-faceted range of direct influences (drivers) and contributing factors that contribute to the provision of an effective, accessible dietetic workforce. Key drivers include: the number of public and private dietetic positions, the timely recruitment and retention of staff, the range and level of dietetic services provided to meet the needs of the community and the need for a dietetic workforce who are up-to-date and adequately resourced.

Is there a sequence of events that can be identified that lead to the creation of dietetic positions in rural areas?

Key drivers for the creation of more dietetics positions in rural areas included the actions of champions for the development of positions and the support of management at various levels of the health service or in non-government organisations. The champions were shown to be effective in increasing dietetic positions, particularly supported by management. The main barriers to the creation of positions included a general lack of funds and competing priorities.

What are the features of a best practice dietetic service model for a rural area?

A best practice dietetic service model needs to take into account the specific challenges for service delivery in a rural setting. The features of a best practice rural dietetic service model include a well organised service with a screening process to identify patients most at risk or requiring nutritional intervention. The service should be timely with flexible modes of service delivery that provide individualised interventions of an appropriate duration.

What effect does the addition of dietetic resources have on service levels to the rural community?

Additional dietetic resources allowed for the provision of more outreach services, community project work and specialised clinical dietetic services. Conversely these services were often decreased or ceased with reductions

in staffing. Additional public positions and private practice services allowed for a broader range of services to be provided in more rural sites. The more a dietetic service increased in size and developed a higher profile, the more it's services were sought and utilised, creating more demand.

What are the barriers and drivers for the development of private practice dietetic services in rural areas?

The scarcity of private practitioners in rural areas, despite the gap in public services and higher levels of private practice in urban areas, indicates that barriers exist to setting up private practice particularly in rural areas. The barriers were identified as: inconsistent income, excess paperwork and difficulties of setting up a private practice. Drivers included: work opportunities, financial rewards, autonomy, job variety and less bureaucracy. To date the uptake of EPC consultations by private practice dietitians has been lower in rural areas compared to urban areas. The gaps in rural based public dietetic services provide an opportunity for the growth of private services if these barriers can be addressed.

The hypotheses for this research were outlined in Chapter One, section 1.9. The results from this research have provided evidence for the research hypotheses as outlined below.

- This research has shown that the proposed theoretical model has identified the key barriers and drivers for the development of a best practice dietetic service in rural areas. The theoretical model has been revised to indicate the key findings from this research. This research has provided evidence for the contributing factors indicated in blue font on the theoretical model, Figure 18.
- Two of the key drivers for the development of dietetic positions in rural areas were identified to be the attitude of management towards dietetic services and the role of a champion to advocate for increased services. The rural sites of dietetic service delivery that possessed these key drivers generally experienced greater workforce growth and stability, however competing priorities and a lack of funds at a local level hindered the efforts of the dietetic champions at times.

- The pre-determined best practice dietetic service model as demonstrated in the oncology case study (Study Three) showed improved patient satisfaction, however improved patient outcomes and statistical significance could not be demonstrated due in part to the small sample size.

Transferability of Research Findings

This thesis has focused on dietetic services in rural areas and it is acknowledged the findings from this research are not necessarily transferable to remote areas. Remote areas differ due to several factors including: higher Indigenous populations, vast distances, lack of resources and professional isolation (Bent 1999). The data from this research should be transferrable to other rural areas, as a range of dietetic service models were examined, however some issues may be specific to the NSW state health service. The theoretical model with key findings from this research is provided in Figure 18. Evidence from this doctoral research has been obtained for the contributing factors in blue font, as summarised in Table 42 in Appendix 1.4.

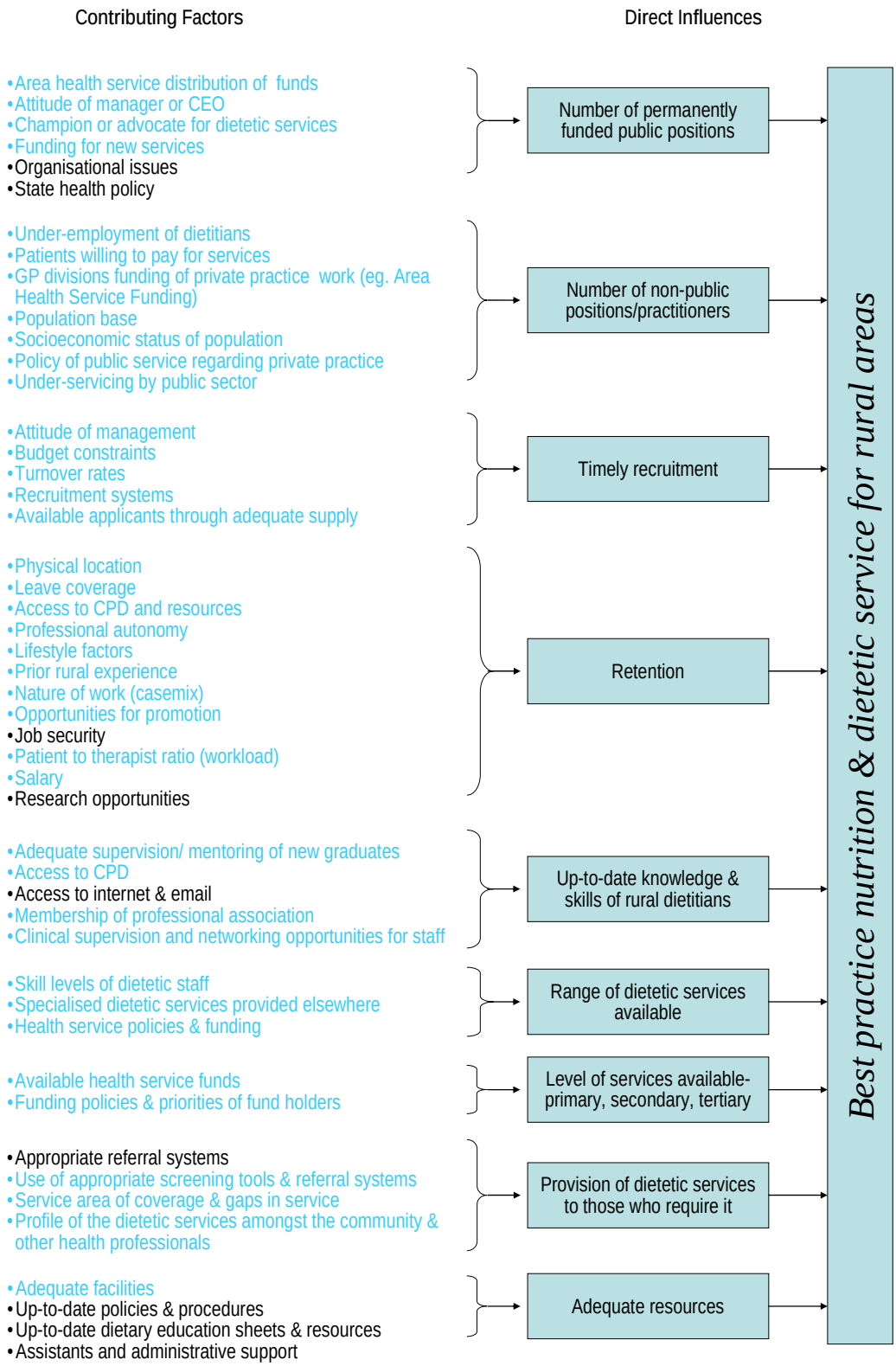


Figure 18: Theoretical model with evidence supported by findings

8.2 Post Script: Recent workforce changes

Since the period between 2004 and 2006, when this research took place, there has been some progress in a number of areas for dietetic staffing in rural areas. In 2007 a new employment award[xl] was agreed to by NSW Health (Industrial Relations Commission of NSW 2007) which has led to changes in the grading system for allied health staff. In rural areas there is now a wider range of grading levels (Health Services Union 2007), however this has not necessarily resulted in increases in remuneration for some staff. There have also been a number of additional positions created across the area of study including:

a) The creation of two FTE permanent reliever positions for the upper and lower sector areas of the Hunter New England Health Service area to provide backfill for staff leave (Hunter New England Area Health Service 2008a)

b) An increase in graded positions above base grade from three graded positions across all sites to 13, to date, with six in Site E, and two in Sites F and D (Harris 2009)

c) An increase in specialised positions of 0.4 FTE in Site F and 0.5 FTE in renal in Site A.

d) Increased private practice dietetic services at Site E by 0.8 FTE in late 2008

e) Additional part-time academic appointments at Sites A and F in 2008.

This has resulted in an increase of 4.6 FTE across the six sites over a two year period. While these improvements have occurred, there have also been some other changes that have reduced dietetic staffing, these including:

[xl] This award provided new grading levels (Levels 1-8) and a revised pay scale (commencing at Level 1, year 1 $46 089 up to Level 8, Grade 4 $118 093). Highest grading level achieved in this study area: Level 5 $83 877 - 85 974 per year.

a) The loss of the northern sector dietetic advisor role within the Hunter New England Area Health Service

b) The loss of temporary 3.0 FTE 'dietetic' population health positions, due to dietitian resignations

c) The loss of 1.0 FTE in the Division of GP at Site C after resignation of dietitian in 2008. Leaving no dietitians in the Division of GP and 1.0 FTE in public health.

A new Area Profession Director for Dietetics role was funded under the workforce development division of the Hunter New England Area Health service as a 0.6 FTE position in 2008 (Hunter New England Area Health Service 2008b). The purpose of this position is to provide leadership and strategic direction for the profession across the entire health service area. However this position is based in a metropolitan area and covers an area of 130 000 square km, with a six hour drive to the furthest rurally based dietitian. This position replaces the former southern and northern sector Area Advisor roles, previously staffed by two separate individuals, which provided local support and contributed to the growth of dietetic positions in some locations. The position in the northern sector acted as a key champion, as identified in the results of this research. In February 2009 a part-time Dietetic Professional Senior role was appointed at Site E to provide leadership to dietitians in the northern sector (Harris 2009).

8.3 Implications of recent developments in the NSW allied health workforce

Several subsequent reports have provided additional information on current issues and developments in the public allied health workforce. In 2008, Hunter New England Health reported on an allied health survey regarding key workforce trends and issues (Caine 2008). From this report, priority needs and service gaps were identified and recommendations made regarding service redesign and professional development. Key recommendations included: skills training for allied health managers, improved use of screening assessments, formalised clinical supervision with an updated policy, development of a resource directory and annual

professional development days for each profession (Caine 2008). Recent recommendations arising from the Special Commission of Inquiry into Acute Care Services in NSW Public Hospitals have included recommendations for allied health and rural based staff. Recommendations include:

i. the development of policies to mandate timely recruitment to allied health professional vacancies,

ii. to arrange coverage for allied health professional leave of more than five days,

iii. to ensure allied health services are available seven days per week by rostering staff,

iv. to ensure adequate ongoing continuing education especially for rural based staff and

v. development of employment packages to attract and retain staff

(Garling 2008).

The recommendations from these reports suggest that there is potential for further improvements in the level of staffing and support for dietitians in the rural public sector workforce. However, the recent NSW Health budget net cost overrun of $320 million (State of NSW 2008) will make the implementation of these recommendations unlikely in the short term. Towards the end of 2008 NSW Health instituted an indefinite freeze on recruitment to positions that were not considered to be frontline health service positions across all area health services. At the time of finalising this thesis, allied health positions, including dietetics, were considered to be in this category (Harris 2009). As identified in this study, the level of priority for dietetics funding in the health sector is comparatively low, despite the identified health benefits from nutrition interventions in the prevention and treatment of health problems. The current increased focus on chronic health care management and a strong focus on primary health care (National Health Priority Action Council 2006; Australian Government Department of Health and Ageing 2008b) may well provide the focus for future health spending and opportunities for growth of the dietetic profession.

Given the current financial difficulties of the public health sector there should be more emphasis on the development of the private sector to meet the service needs of rural communities. The current Allied Health Advisor for NSW Health has reported on the progress, at a state level, to improve the reporting systems for the allied health workforce. The aim is to develop a better picture of the available services and workforce issues by geographic location and facility, allowing for the development of projected staffing requirements based on the anticipated demands (McLeod 2006).

8.4 Recommendations

The findings of this research suggest several recommendations to establish best practice dietetic services in rural areas. These recommendations should be implemented at government, profession and individual levels. The recommendations below are listed under these headings.

Government/State or Area health service level

i. Dietetics needs to be represented at higher levels of state and area health services and national health forums to ensure optimal funding from a State or Area Health service level.

ii. There should be a more systematic, planned approach to the development of dietetic positions in rural areas, as these areas are already underserviced.

iii. Private practice in rural areas needs to be facilitated and supported to ensure a balance of public and private services where the population base is adequate to support private practice. This may be supported by the utilisation of Federal health funds when State health funds are scarce.

iv. Consider the co-location of dietetic services in larger sites that provide outreach services to outlying areas with appropriate levels of travel (as per the current model of Site E).

v. There should be a systematic process of mapping current dietetic services and identification of service gaps to allow for a planned

approach to increased staffing that best meets community needs and ensures equity.

Professional level

vi. Ongoing initiatives need to address issues of improved career pathways, professional support networks, consistent access to CPD and adequate support for new graduate dietitians.

vii. Senior dietetic positions should be developed in rural areas to provide support to dietitians over a defined area to allow for adequate supervision and support for sole practitioners and new graduates in particular.

viii. Dietetics services should be developed to provide flexible arrangements and methods for service delivery with appropriate screening and referral processes to best meet the needs of rural communities.

ix. Consolidation of any part-time unfilled dietetics funded positions to provide area/sector wide positions that can be recruited to and utilised for the provision of services.

x. Increased support from the profession to support the growth of the private practice sector through the development of business skills in undergraduate and postgraduate coursework and increased CPD opportunities.

xi. Increased opportunities for undergraduate and postgraduate rural based professional practice placements to increase student exposure to rural practice.

xii. Development of benchmarks for dietetic staffing levels that are based on best practice service delivery in rural areas, which might differ from those developed for urban and remote areas.

Individual level

xiii. Dietitians need to play an active role in informing health service managers about the importance of the dietetics role by developing a high profile within their health service and measuring and reporting on patient and service outcomes.

xiv. Dietitians need to advocate for their profession and lobby for increased staffing in order to maximise the funding at a local cluster or hospital level.

xv. Evaluate the outcomes of current methods of rural service delivery and review services to ensure they are best practice.

8.5 Suggestions for further research

Further research is needed to identify the remaining gaps in the data for the influence diagram of a best practice dietetic service model. Gaps include: an assessment of the skill levels of current rural staff, investigation of current screening and referral processes and policies and procedures used in rural areas. This research forms the basis for the development of appropriate benchmarks for dietetics staffing in rural areas as a best practice dietetic service needs to be identified in order for benchmark levels of staffing to be established.

In order to clearly establish the components of a best practice dietetic service model, a larger study with increased numbers of patients is required to show statistical differences between usual care and a best practice dietetic service delivery model. The model used in this research showed increased patient satisfaction, however patient outcomes were not shown to be statistically significant due to the small sample size. It may also be warranted to replicate this research in other areas of dietetic practice, such as diabetes and weight loss services. A comparison of the rural workforce and service delivery findings with urban based dietetic services would help to elucidate the issues that are unique to the rural based members of the dietetics profession. Research is also required into remote areas, given the specific issues for remote based health professionals.

8.6 Summary

This chapter has provided an overview of the research findings in the context of current developments in the public health service sector. A revised theoretical model for a best practice dietetic service in rural areas has been presented based on the research findings. Achieving a best practice dietetic service in a rural area requires adequate, stable staffing by up-to-date, well resourced and appropriately managed dietitians. Benchmarks for dietetic staffing levels in rural areas, have not yet been determined. Ongoing research in this area is needed to provide evidence for benchmarking building on methods used in this research. Current levels of staffing are still not meeting the needs of the community due to gaps in services, unstable staffing and inadequate support for current staff.

References

Aaronson, N., S. Ahmedzai, et al. (1993). "The European Organisation for Research and Treatment of Cancer QLQ-C30: A Quality-of-Life Instrument for use in International Clinical Trials in Oncology." Journal of the National Cancer Institute **85**(5): 365-376.

ABS (1997). Average Weekly Earnings Australia. Canberra, Australian Bureau of Statistics.

ABS (2000). Australian Standard Classification of Occupations. Canberra, Australian Bureau of Statistics.

ABS (2001a). Australian Population. Canberra, Australian Bureau of Statistics.

ABS (2001b). Average Weekly Earnings Australia. Canberra, Australian Bureau of Statistics.

ABS (2003). ASGC Remoteness Classification: Purpose and Use. Canberra, Australian Bureau of Statistics.

ABS. (2008a). "2006 Census Data by Location." AusStats. Retrieved 24th February 2009, from http://www.censusdata.abs.gov.au/ABSNavigation/prenav/PopularAreas?&collection=Census&period=2006&&navmapdisplayed=true&javascript=true&textversion=false.

ABS. (2008b). "Census of Population and Housing: Socio-Economic Indexes for Areas (SEIFA), Australia 2006." AusStats. Retrieved 15th December 2008, from http://www.abs.gov.au/ausstats/abs@.nsf/mf/2033.0.55.001/.

ABS. (2008c). "Geographic Distribution of the Population." Year Book Australia AusStats. Retrieved 22 January 2009, from http://www.abs.gov.au/Ausstats/abs@.nsf/bb8db737e2af84b8ca2571780015701e/5A717784C2562A99CA2573D20010FF17?opendocument.

Adams, R. (1997). Distribution and Utilisation of Physiotherapy Services in Rural and Remote NSW - Preliminary Findings. 4th National Rural Health Alliance Conference, Perth, National Rural Health Alliance.

AIHW (1996). Health and Community Services Labour Force, 1996. National Labour Force Series no.19. Canberra, Australian Institute of Health and Welfare.

AIHW (1998). Health in Rural and Remote Australia. Canberra, Australian Institute of Health and Welfare.

AIHW (2000). Profile of Dietitian Labor Force Australia, 1996. Canberra, Australian Institute of Health and Welfare.

AIHW (2001). Health and Community Services Labour Force, 2001. National Labour Force Series no. 19. Canberra, Australian Institute of Health and Welfare.

AIHW (2003). Dietetics Workforce Data 2001. Canberra, Australian Institute of Health and Welfare.

AIHW (2005). Rural, regional and remote health: Indicators of health. Canberra, Australian Institute of Health and Welfare.

AIHW (2006a). Australia's Health 2006. Canberra, Australian Institute of Health and Welfare.

AIHW (2006b). Rural, regional and remote health: mortality trends 1992-2003. Rural Health Services No 7. Canberra, Australian Institute of Health and Welfare.

AIHW (2007). Rural, regional and remote health: a study on mortality (2nd edition). Rural Health Series. Canberra, Australian Institute of Health and Welfare.

AIHW (2008a). Australia's Health 2008. Canberra, Australian Institute of Health and Welfare.

AIHW (2008b). Dietetics workforce data 2006 Census. Canberra, Australian Institutue of Health and Welfare.

Allied Health in Rehabilitation Consultative Committee (2004). Guidelines for Allied Health: Resources for the provision of quality rehabilitation services. Melbourne, Allied Health in Rehabilitation Consultative Committee.

Amos, J. (2006). Allied health service delivery models - Can a private model work in a remote area? The National SARRAH Conference, Albury, SARRAH.

Anthony, P. (2008). "Nutrition screening tools for hospitalised patients." Nutrition in Clinical Practice **23**(4): 373-82.

Aoun, S. and L. Johnson (2002). "Capacity building in rural mental health in Western Australia." Australian Journal of Rural Health **10**(1): 39-44.

Australian Bureau of Statistics (2003). ASGC Remoteness Classification: Purpose and Use. Canberra, Australian Bureau of Statistics.

Australian Bureau of Statistics and Statistics New Zealand (2006). Australian and New Zealand Standard Classification of Occupations. Commonwealth of Australia. Canberra, Australian Bureau of Statistics and Statistics New Zealand.

Australian Department of Health and Ageing (2003). Accessibility of services for rural Australia. Policy, Reviews and Research. Canberra, Australian Department of Health and Ageing.

Australian Department of Health and Ageing (2008). Report on the Audit of Health Workforce in Rural and Regional Australia. Canberra, Commonwealth of Australia.

Australian General Practice Network. (2009). "Australian General Practice Network Profile." from http://www.agpn.com.au/site/index/cfm?display=293.

Australian Government Department of Health and Ageing (2007). More Allied Health Services Program.

Australian Government Department of Health and Ageing. (2008a). "Allied health group services under Medicare." Retrieved 2 March 2009, from

http://www.health.gov.au/internet/main/publishing.nsf/Content/82FF3E703CFE8A88CA2573A0007F5C13/$File/Group%20Services%20Fact%20Sheet%20for%20AHPs%20-%20Jan%2009.pdf.

Australian Government Department of Health and Ageing. (2008b). "Primary health strategy." Retrieved 2 March 2009, from http://www.health.gov.au/internet/main/publishing.nsf/Content/Primary+Health+Strategy-1.

Australian Government Department of Health and Ageing. (2009). "Allied health services under Medicare." Retrieved 2nd March 2009, from http://www.health.gov.au/internet/main/publishing.nsf/Content/79299CE412BC11F4CA256F19003CB46A/$File/Chronic%20and%20Complex%20Fact%20Sheet%20-%20Jan%2009.pdf.

Australian Health Ministers' Advisory Council's National Rural Health Policy Sub-Committee (2002). Healthy Horizons: a Framework for Improving the Health of Rural, Regional and Remote Australians. Outlook 2003-2007. Canberra, Commonwealth of Australia.

Australian Health Workforce Advisory Committee (2006). The Australian Allied Health Workforce - An Overview of Workforce Planning Issues. North Sydney, Australian Health Workforce Advisory Committee.

Australian Institute of Health and Welfare (1998). Health in Rural and Remote Australia. Canberra, Australian Institute of Health and Welfare.

Australian Institute of Health and Welfare (2008). Rural, regional and remote health. Indicators of health status and determinants of health. Rural Health Series. Canberra, Australian Institute of Health and Welfare.

Bain, N. and N. Campbell (2000). "Treating patients with colorectal cancer in rural and urban areas: a qualitative study of the patient's perspective." Family Practice **17**(6): 475-479.

Bain, N., N. Campbell, et al. (2002). "Striking the right balance in colorectal cancer care - a qualitative study of rural and urban patients." Family Practice **19**(4): 369-374.

Balch, G. (1996). "Employers' perceptions of the roles of dietetics practitioners: Challenges to survive and opportunities to thrive." Journal of the American Dietetic Association **96**(12): 1301-1308.

Bauer, J., S. Capra, et al. (2002). "Use of the Scored Patient-Generated Subjective Global Assessment (PG-SGA) as a nutrition assessment tool in patients with cancer." European Journal of Clinical Nutrition **56**(8): 779-785.

Bauer, J. D. and S. Capra (2005). "Nutrition intervention improves outcomes in patients with cancer cachexia receiving chemotherapy - a pilot study." Support Cancer Care **13**: 270-274.

Belcher, S., J. Kealey, et al. (2005). The VURHC Rural Allied Health Professionals Recruitment and Retention Study. Rowville, Victorian Universities Rural Health Consortium.

Bent, A. (1999). "Allied health in central Australia: Challenges and rewards in remote area practice." Australian Journal of Physiotherapy **45**(3): 203-212.

Best, J. (2000). Rural Health Stocktake Advisory Paper. Canberra, Commonwealth Department of Health and Aged Care.

Better Health Commission (1986). Looking Forward to Better Health, Volume 2. Canberra, Australian Government Publishing Service.

Biesemeier, C. K. (2004). Achieving Excellence: Clinical Staffing for Today and Tomorrow. Chicago, American Dietetic Association.

Bishop, M. (1996). Best Fit: A Critical Examination of Models of Allied Health Professional Service Delivery in Rural and Remote Areas of Australia. 3rd Biennial Australian Rural and Remote Health Scientific Conference Toowoomba, National Rural Health Alliance.

Bishop, M. (1998). How many? An analysis of some Allied Health Professional Service Planning Approaches in Rural Australia. 4th Biennial Australian Rural and Remote Health Scientific Conference. Toowoomba National Rural Health Alliance.

Boshoff, K. and S. Hartshorne (2008). "Profile of occupational therapy parctice in rural and remote South Australia." The Australian Journal of Rural Health **16**(5): 255-261.

Bourke, L. (2001). "Australian Rural Consumers' Perceptions of Health Issues." Australian Journal of Rural Health **9**(1): 1-6.

Boyce, R. (2001). "Organisational governance structures in allied health services: A decade of change." Australian Health Review **24**(1): 22-36.

Boyce, R. and P. Jackway (1985). "Dietetic Staffing in Australian General Hospitals." Australian Health Review **8**(3): 177-188.

Breitmayer, B., L. Ayers, et al. (1993). "Triangulation in qualitative research: evaluation of completeness and confirmation purposes." Journal of Nursing Scholarship **25**(3): 237-243.

Bridle, M. and B. Hawkes (1990). "A survey of Canadian occupational therpay private practice." Canadian Journal of Occupational Therapy **57**(3): 160-169.

British Diabetic Association (1999). Recommendations for the Structure of Specialist Diabetes Care Services. London, British Diabetic Association.

British Dietetic Association (1987). Norms and standards for dietetics. The British Dietetic Association Members' Newsletter. **22:** 2.

Brown, L., R. Cooper, et al. (2003). Developing rural allied health education, research and community partnerships. The Northern NSW University Department of Rural Health. NSW Rural Allied Health Professionals Conference. Sydney NSW Health.

Brown, L., D. Harris, et al. (2008). Growing the dietetics profession in a rural setting. NSW Rural Allied Health Conference, Coffs Harbour.

Brown, L. J., S. Capra, et al. (2006). "Profile of the Australian dietetic workforce 1991-2005." Nutrition and Dietetics **63**(3): 166-178.

Byas, I. (1986). Letter from Whipp N. Dietitians Association of Australia Workforce Committee.

Caine, M. (2008). Strengthening Rural Allied Health Project: Survey Results Report. New Lambton, Hunter New England Health

Cant, R. and R. Aroni (2007). "Melbourne dietitians' experience of Medicare policy on allied health services (strengthening Medicare; Enhanced Primary Care) in the first 12 months." Nutrition and Dietetics **64**(1): 43-49.

Capra, S., M. Ferguson, et al. (2001). "Cancer: Impact of Nutrition Intervention Outcome - Nutrition Issues for Patients." Nutrition **17**(9): 769-772.

Capra, S., B. Wright, et al. (1986). Report of the Dietitians Association of Australia Workforce Committee. Canberra, Dietitians Association of Australia.

Caracelli, V. and J. Greene (2008). Data Analysis Strategies for Mixed Method Evaluation Designs. The Mixed Methods Reader. V. Plano Clark and J. Creswell. Thousand Oaks, Sage.

Cohen, G., J. Forbes, et al. (1996). "Can different patient satisfaction survey methods yield consistent results? Comparison of three surveys." British Medical Journal **313**(7061): 841-844.

Commonwealth Department of Health (1980). Handbook on Health Manpower. Commonwealth Department of Health. Canberra, Australian Government Publishing Service.

Commonwealth Department of Health and Aged Care (2001). Measuring Remoteness: Accessibility/Remoteness Index of Australia (ARIA) Revised Edition. Occasional Papers: New Series Number 14. Canberra, Commonwealth of Australia.

Commonwealth of Australia (2004). Guidelines for the More Allied Health Services Program. Division of General Practice Program.

Cooney, M. and P. Baade (2005). "Urban-rural difference in prostate cancer mortality, radical prostatectomy and prostate antigen testing in Australia." Medical Journal of Australia **182**(3): 112-115.

Cooper, R. and L. Brown (2006). Client education issues in rural and remote settings. Client Education: A partnership approach for health practitioners. K. McKenna and L. Tooth. Sydney, UNSW Press.

Coubrough, H. and C. Logan (1987). "A survey of National Health Service dietetics in Scotland." Human Nutrition - Applied Nutrition **41**(6): 373-380.

Couper, I. (2003). "Rural hospital focus: defining rural." Rural and Remote Health **3**(205 (online)): 1-3.

Cresswell, J. W., V. L. Plano Clark, et al. (2008). Advanced Mixed Methods Research Designs. The Mixed Methods Reader. V. L. Plano Clark and J. W. Cresswell. Thousand Oaks, Sage.

Creswell, J. W. (2009). Research Design: Qualitative, Quantitative and Mixed Methods Approaches. Thousand Oaks, Sage.

Creswell, J. W. and V. Plano Clark (2007). Designing and conducting mixed methods research. Thousand Oaks, Sage.

Curran, V., L. Fleet, et al. (2006). "Factors influencing rural health care professionals' access to continuing professional education." Australian Journal of Rural Health **14**(2): 51-55.

Cuss, K. (2006). "Recruitment and retention strategy for allied health in the Central Hume Primary Care Partnership - a model development." The National SARRAH Conference.

DAA (1991). Dietitians Association of Australia Annual Report 1991. Canberra, Dietitians Association of Australia.

DAA (1996). Dietitians Association of Australia Annual Report 1996. Canberra, Dietitians Association of Australia.

DAA (2001). Dietitians Association of Australia Annual Report 2001. Canberra, Dietitians Association of Australia.

DAA (2003). Dietitians Association of Australia Annual Report 2003. Canberra, Dietitians Association of Australia.

DAA (2004a). Dietitians Association of Australia Annual Report 2004. Canberra, Dietitians Association of Australia.

DAA. (2004b). "Strengthening Medicare." Retrieved 17 December, 2004, from http://www.daa.asn.au/members/Medicare.asp.

DAA (2005a). Dietitians Association of Australia Annual Report 2005. Canberra, Dietitians Association of Australia.

DAA. (2005b). "Evidence Based Guidelines for Nutritional Management of Cancer Cachexia." from http://www.daa.asn.au/Files/DINER/2145837432_1.pdf.

DAA (2006). Dietitians Association of Australia Annual Report 2006. Canberra, Dietitians Association of Australia.

DAA. (2007a). "Accredited Nutritionist and Accredited Practising Dietitian trademarks." Retrieved 10th October, 2007.

DAA. (2007b). "Dietitian Salary Scales." Dietitians Association of Australia Annual Report 2007.

Daniels, Z. M., B. J. VanLeit, et al. (2007). "Factors in Recruiting and Retaining Health Professionals for Rural Practice." Journal of Rural Health **23**(1): 62-71.

Davies, S. (2006). An innovative model to attract and retain allied health professionals in rural areas. The National SARRAH Conference. Albury, SARRAH.

DeLise, D. and A. Leasure (2001). "Benchmarking: measuring the outcomes of evidence based practice." Outcomes Management for Nursing Practice **5**(2): 68-74.

DeLuco, D. and M. Cremer (1990). "Consumer's perceptions of hospital foods and dietary services." Journal of the American Dietetic Association **47**: 353-356.

Denzin, N. (1978). The Research Act. New York, McGraw-Hill.

Department of Health (2001). The Essence of Care: Patient Focused Benchmarking for Health Care Practitioners. London, Department of Health.

Department of Health and Ageing (2004). Guidelines for the More Allied Health Services Program. Canberra, Commonwealth of Australia.

Department of Health and Ageing. (2007). "More Allied Health Services (MAHS) Program." Retrieved 11th October, 2007a, from http://www.health.gov.au/internet/wcms/publishing.nsf/Content/health-pcd-programs-mahs.

Department of Health and Ageing. (2007b). "Rural Health Services." Retrieved 11th October, 2007, from http://www.health.gov.au/internet/wcms/publishing.nsf/Content/ruralhealth-services-rhsp.htm.

Devine, S. (2006). "Perceptions of occupational therapists practising in rural Australia: A graduate perspective." Australian Occupational Therapy Journal **53**(3): 205-210.

Dixon, J. and N. Welch (2000). "Researching the rural-metropolitan health differential using the 'social determinants of health'." Australian Journal of Rural Health **8**(5): 254-260.

Elliott-Schmidt, R. and J. Strong (1995). "Rural occupational therapy practice: a survey of rural practice and clinical supervision in rural Queensland and northern New South Wales." Australian Journal of Rural Health **3**(3): 122-131.

Ellis, J. (2002). "How benchmarking can improve patient nutrition." Nursing Times **98**(44): 30-31.

Faulkner, K. and L. McClelland (2002). "Using videoconferencing to deliver a health education program to women health consumers in rural and remote Queensland: An early attempt and future plans." Australian Journal of Rural Health **10**(1): 65-72.

Fayers, P., N. Aaronson, et al. (1999). EORTC QLQ-C30 Scoring Manual. Belgium, EORTC Data Centre.

Federal/Provincial Sub-committee on Productivity Improvement (1984). Dietetic Department Staffing Methodology. Ottawa, Health Services Directorate.

Fitzgerald, K., D. Hornsby, et al. (2000). A Study of Allied Health Professionals in Rural and Remote Australia. Canberra, Services for Australian Rural and Remote Allied Health.

FitzGerald, M., A. Pearson, et al. (2001). "Impact of rural living on the expereince of chronic illness." Australian Journal of Rural Health **9**(5): 235-240.

Foreman, F. (1995). Exploring benchmarking and best practice in publically funded dietetic positions in Australia. Brisbane, Queensland University of Technology. **Masters of Health Science thesis**.

Foster, M., G. Mitchell, et al. (2008). "Does Enhanced Primary Care enhance primary care? Policy-induced dilemmas for allied health professionals." Medical Journal of Australia **188**(1): 29-32.

Freeman, P. (2006). Personal Communication. L. Brown. Tamworth.

Garling, P. (2008). Final report of the Special Commission of Inquiry: Actue Care Services in NSW Public Hospitals Sydney, State of NSW.

Giere, R. (1997). Understanding Scientific Reasoning. Fort Worth, Harcourt Brace College Publishers.

Gillham, S. and E. Ristevski (2007). "Where do I go from here: We've got enough seniors?" Australian Journal of Rural Health **15**(5): 313-320.

Glynn, R. (2003). Continuing Education Needs of Allied Health Professionals in Central Australia. Alice Springs, Centre for Remote Health.

Goldstein, D. (2007). Pilot study of a clinical psychology service via videoconferencing for rural cancer patients in Australia. 9th National Rural Health Conference. Albury.

Gosselin, T., L. Gilliard, et al. (2008). "Assessing the need for a dietitian in radiation oncology." Clinical Journal of Oncology Nursing **12**(5): 781-787.

Grimmer, K. and P. Bowman (1998). "Difference between metropolitan and country public hospital allied heath services." Australian Journal of Rural Health **6**(4): 181-188.

Hall, S., C. D'Arcy, et al. (2008). "Lung cancer: An exploration of patient and general practitioner perspectives on the realities of care in rural Western Australia." Australian Journal of Rural Health **16**(6): 355-362.

Halton, J. (2005). "Improving the health of rural Australians." Rural and Remote Health **5**(487 (online)).

Harding, A., P. Whitehead, et al. (2006). "Factors affecting the recruitment and retention of pharmacists to practice sites in rural and remote areas of New South Wales: A qualitative study." Australian Journal of Rural Health **14**(5): 214-218.

Harris, D. (2009). Personal Communication. L. Brown. Tamworth.

Harris, R. (1992). Australian Rural Health: A National Survey of Education Needs. Canberra, ACT, Rural Health Services Education and Training.

Hauchecorne, C., S. Barr, et al. (1994). "Evaluation of nutrition counselling in clinical settings: do we make a difference?" Journal of the American Dietetic Association **94**(4): 437-440.

Hayes, R., A. Nichols, et al. (1995). "Choosing a career in rural practice in Queensland." Australian Journal of Rural Health **3**(4): 171-174.

Hays, R. (2002). Academic Rural Practice. The New Rural Health. D. Wilkinson and I. Blue. South Melbourne, Oxford University Press.

Hays, R., A. Nichols, et al. (1995). "Choosing a career in rural practice in Queensland." Australian Journal of Rural Health **3**(4): 171-174.

Health Department of Western Australia (2002). Western Australian Allied Health Taskforce on Workforce Issues. Initial Report. Health Department of Western Australia. Perth, Health Department of Western Australia.

Health Services Union (2007). NSW Health Service Health Professionals (State) Award. Response of the HSU to the Department of Health Offer, Health Services Union, Sydney.

Heaney, S. E., H. Tolhurst, et al. (2004). "Choosing to practice in rural dietetics: What factors influence that decision?" Australian Journal of Rural Health **12**(5): 192-196.

Hertz, R. (1997). Reflexivity and Voice. Thousand Oaks, Sage.

Herzberg, F. (1966). Work and the nature of man. Cleveland, World.

Herzberg, F. (1976). The managerial choice: to be efficient and to be human. Homewood, Dow Jones-Irwin.

Hill, D., V. White, et al. (1994). "Changes in the Investigation and Management of Primary Operable Breast Cancer in Victoria." Medical Journal of Australia **161**: 110-112.

Hill, P. and T. Alexander (1996). "Continuing Professional Education: A Challenge for Rural Health Practitioners." Australian Journal of Rural Health **4**(4): 275-279.

Hodgson, L. (1992). Provincial and rural Allied Health Professionals: Service Delivery, Competency and Training Issues. In Front Out Back Conference. Toowoomba, National Rural Health Alliance.

Hodgson, L. and A. Berry (1993). Rural Practice and Allied Health Professionals: Establishment of an Identity. Toowoomba, Qld, Darling Downs Regional Health Authority.

Hughes, R. (1996). "Nutrition Education in Rural Australia: Why, Who and How?" Australian Journal of Rural Health **4**(1): 131-136.

Hughes, R. (1998). "An omnibus survey of the Australian rural health dietetic workforce." Australian Journal of Nutrition and Dietetics **55**(4): 163-169.

Hughes, R. (2004). "Enumerating and profiling the designated public health nutrition workforce in Australia." Australian Journal of Nutrition and Dietetics **61**(3): 162-170.

Hugo, G. (2002). Australia's changing non-metropolitan population. The new rural health. D. Wilkinson and I. Blue. Melbourne, Oxford University Press**:** 12-43.

Humphreys, J. (1998). "Delimiting 'Rural':Implications of an agreed 'Rurality Index for Healthcare planning and resource allocation." Australian Journal of Rural Health **6**(4): 212-216.

Humphreys, J. (1999). "Rural Health Status: What do Statistics Show that we don't already know?" Australian Journal of Rural Health **7**(1): 60-63.

Humphreys, J., D. Lyle, et al. (2000). "Roles and Activities of the Commonwealth Government University Departments of Rural Health." Australian Journal of Rural Health **8**(2): 120-133.

Humphreys, J., J. Wakerman, et al. (2008). "Beyond workforce: a systematic solution for health service provision in small rural and remote communities." Medical Journal of Australia **188**(8): S77-S80.

Hunter New England Area Health Service (2006a). Allied Health Clinical Priorities for Inpatient Services:Lower Hunter New Lambton, Hunter New England Health.

Hunter New England Area Health Service (2006b). Area Healthcare Services Plan. Hunter New England Health Strategic Directions 2006-2010. New Lambton, Hunter New England Health.

Hunter New England Area Health Service (2006c). Strategic directions 2006-2010 Hunter New England Health: Introducing the area, the people, and the health services. New Lambton, Hunter New England Health.

Hunter New England Area Health Service (2008a). Allied Health Permanent Reliever/Locum Pool Arrangements. Newcastle, Hunter New England Area Health

Hunter New England Area Health Service (2008b). Position Description: Area Profession Director W. Development. New Lambton, Hunter New England Area Health Service.

Hunter New England Health (2006). Area Healthcare Services Plan. Hunter New England Health Strategic Directions 2006-2010. New Lambton, Hunter New England Health.

Industrial Relations Commission of NSW (2007). NSW Health Service Health Professionals (State) Award.

Isenring, E., J. Bauer, et al. (2003). "The scored Patient-generated Subjective Global Assessment (PG-SGA) and its association with quality of life in ambulatory patients receiving radiotherapy." European Journal of Clinical Nutrition **57**(2): 305-309.

Isenring, E., J. Bauer, et al. (2004). "The effect of intensive dietetic intervention on the nutritional status of hospitalised patients on chemotherapy." Nutrition and Dietetics **61**(1): 46-49.

Isenring, E., J. Bauer, et al. (2005). "Modified Constipation Assessment Scale is an effective tool to assess bowel function in patients receiving radiotherapy." Nutrition and Dietetics **62**(2-3): 95-101.

Isenring, E., S. Capra, et al. (2003). "The impact of nutrition support on body composition in cancer outpatients receiving radiotherapy." Acta Diabetologica **40**(S2): S162-S164.

Isenring, E., S. Capra, et al. (2004). "Patient satisfaction is rated higher by radiation oncology outpatients receiving nutrition intervention compared with usual care." Journal of Human Nutrition and Dietetics **17**(2): 145-152.

Isenring, E., G. Cross, et al. (2008). "Preliminary results of patient satisfaction with nutrition handouts versus dietetic consultation in

oncology outpatients receiving chemotherapy." Nutrition and Dietetics **65**(1): 10-15.

Jensen, G. and C. Royeen (2002). "Improved rural access to care: dimensions of best practice." Journal of Interprofessional Care **16**(2): 117-128.

Jick, T. (2008). Mixing qualitative and quantitative methods. Triangulation in action. The Mixed Methods Reader. V. L. Plano Clark and J. W. Cresswell. Thousand Oaks, Sage.

Kern, K. and J. Norton (1998). "Cancer Cachexia." Journal of Parenteral and Enteral Nutrition **12**: 286-298.

Kruizenga, H., M. Van Tulder, et al. (2005). "Effectiveness and cost-effectiveness of early screening and treatment of malnourished patients." American Journal of Clinical Nutrition **82**(5): 1082-9.

Larner, M., C. Nagy, et al. (1987). Inside the black box: Understanding home visiting programs. American Public Health Association Annual Meeting, New Orleans.

Larson, A. (2006). "Rural health's demographic destiny." Rural and Remote Health **6**(551 (online)): 1-8.

Lee, S. and L. Mackenzie (2003). "Starting out in rural New South Wales:the experiences of new graduate Occupational therapists." Australian Journal of Rural Health **11**(1): 36-43.

Lindsay, R., L. Hanson, et al. (2008). "Workplace stressors experienced by physiotherapists working in regional public hospitals." Australian Journal of Rural Health **16**(4): 194-200.

Lyle, D., J. Hobba, et al. (2008). "Mobilising a rural community to lose weight: Impact evaluation of the WellingTonne Challenge." Australian Journal of Rural Health **16**(2): 80-85.

MacEachern, M. (1935). Hospital Organisation and Management. Chicago, Physicians' Record Co.

MacRae, M., K. van Diepen, et al. (2007). "Use of clinical placements as a means of recruiting health care students to underserviced areas in Southeastern Ontario: Part 1 - Student perspectives." Australian Journal of Rural Health **15**(1): 21-28.

Marcason, W. (2006). "What is ADA's Staffing Ratio for Clinical Dietitians?" Journal of the American Dietetic Association **106**(11): 1916.

Marks, G., G. Pang, et al. (2002). Cancer costs in Australia - the potential impact of dietary change, unknown.

Mason, I. and C. Brady (2003). "Benchmarking and nutrition." Nursing Times **99**(3): 21-27.

Mathers, C., T. Vos, et al. (1999). The Burden of Disease and Injury in Australia. Canberra, Australian Institute of Health and Welfare.

Mathers, N. and Y. C. Huang (2004). Evaluating qualitative research. Research into Practice: Essential skills for reading and applying research in nursing and health care. P. Crookes and S. Davies. Edinburgh, Bailliere Tindall**:** 85-92.

McCarthy, A., D. Hegney, et al. (2003). "Characteristics of chemotherapy practice in rural and remote area health facilities in Queensland." Australian Journal of Rural Health **11**(3): 138-144.

McGrath, P., V. Corcoran, et al. (2000). "An assessment of the needs of oncology outpatients for the development of Allied Health Services." Australian Health Review **23**(2): 134-151.

McLeod, B. (2006). Allied health - planning for the future from a state perspective. The National SARRAH Conference. Albury, SARRAH.

McMillan, S. and M. McWilliams (1989). "Validity and reliability of the constipation assessment scale." Cancer Nursing **12**: 183-188.

Medicare Australia. (2006). "Medical Benefits Schedule."

Meyer, R., R. Gilroy, et al. (2002). "Dietitians in New South Wales: workforce trends 1984-2000." Australian Health Review **25**(3): 122-127.

Mills, A. and J. Millsteed (2002). "Retention: an unresolved workforce issue affecting rural occupational therapy services." Australian Occupational Therapy Journal **49**(4): 170-181.

Mitchell, R. (1996). "Perceived inhibitors to rural practice among physiotherapy students." Australian Physiotherapy **42**(1): 47-52.

Morris, L. and H. Palmer (1994). "Rural and urban differences in employment and vacancies in ten allied health professionals." Journal of Allied Health **23**(3): 143-153.

Moscovice, I. and R. Rosenblatt (2000). "Quality-of-care challenges for rural health." Journal of Rural Health **16**(2): 168-176.

National Health Priority Action Council (2006). National Chronic Disease Strategy. Canberra, Australian Government Department of Health and Ageing.

National Rural Health Alliance (1997). Best Practice for Rural and Remote Health Services. Rural Health Information Papers. Deakin West, National Rural Health Alliance.

National Rural Health Alliance (2007). Rural and Remote Health Papers 1991-2007. Canberra, National Rural Health Alliance.

New England Area Health Service (2003). Oncology Care Services Plan 2003-2005. Tamworth, New England Area Health Service.

New South Wales Department of Health (2003). A Clinical Service Framework for Optimising Cancer Care in NSW. Gladesville, NSW Department of Health.

New South Wales Health. (2008). "Services and facilities." Retrieved 28 November 2008, from www.hnehealth.nsw.gov.au/services_and_facilities.

Northern Territory Government (1999). Allied Health Workforce Data Collection Project. N. T. Government. Casuarina, Northern Territory Government,.

NRRAHAS (2003a). Workforce Report for New South Wales. Canberra, National Rural and Remote Allied Health Advisory Service.

NRRAHAS (2003b). Workforce Report for Queensland. Canberra, National Rural and Remote Allied Health Advisory Service.

NRRAHAS (2003c). Workforce Report for South Australia, National Rural and Remote Allied Health Advisory Service.

NRRAHAS (2004a). National Allied Health Workforce Report. Canberra, National Rural and Remote Allied Health Advisory Service.

NRRAHAS (2004b). Workforce Report for Northern Territory. Canberra, National Rural and Remote Allied Health Advisory Service.

NRRAHAS (2004c). Workforce Report for Tasmania. Canberra, National Rural and Remote Allied Health Advisory Service.

NRRAHAS (2004d). Workforce Report for Western Australia. Canberra, National Rural and Remote Allied Health Advisory Service.

NRRAHAS (2004e). Workforce Report for Victoria. Canberra, National Rural and Remote Allied Health Advisory Service.

NSW Department of Health (1997). NSW Health Annual Report 1996/97. Gladesville NSW Department of Health.

NSW Department of Health (2006). NSW Department of Health Annual Report 2005/06. Gladesville, NSW Department of Health.

NSW Department of Health (2007). State Health Plan: A new direction for NSW. North Sydney, NSW Department of Health.

NSW Health (2005). Right of Private Practice - Allied Health Professionals. Policy Directive. North Sydney, NSW Health.

NSW Health. (2008a). "Hunter New England Health. About Us: Facts and Figures." Retrieved 28 November 2008, from www.hnehealth.nsw.gov.au/about_us/facts_and_figures.

NSW Health Department (2002). The Report of the Rural Health Plan Implementation Co-ordination Group. NSW Government Action Plan for Health. Sydney, NSW Health Department.

NSW Health Department (2006). Fit for the future: Planning for the Future-NSW Health 2025. Sydney, NSW Health Department.

O'Kane, A. and R. Curry (2003). Unveiling the secrets of the allied health workforce. 7th National Rural Health Conference. Hobart, Tasmania, National Rural Health Alliance.

O'Neal, P. (1999). "Methodological problems associated with measuring consumer satisfaction in the mental health field." Australian Social Work **52**(3): 9-15.

Ollenschlager, G., B. Viell, et al. (1991). "Tumour anorexia: causes, assessment, treatment." Recent Results in Cancer Research **121**: 249-259.

Orloff, T. and B. Tynmann (1995). Rural health: an evolving system of accesible services. Washington, National Governors' Association.

Osoba, D., G. Rodrigues, et al. (2003). "Interpreting the significance of changes in the health-related quality of life scores." Journal of Clinical Oncology **16**: 139-144.

Ottery, F., F. Bender, et al. (2002). "The design and implementation of a model nutritional oncology clinic." Oncology Issues Supplement **17**: 3-8.

Ottery, F. D. (1994). "Rethinking nutritional support of the cancer patient: the new field of nutritional oncology " Seminars in Oncology **21**: 770-778.

Palermo, C., K. Walker, et al. (2008). "The cost of healthy food in rural Victoria." Rural and Remote Health **8**(1074).

Patton, M. (2002). Qualitative Research and Evaluation Methods. Thousand Oaks, Sage.

Payne-Palacio, J. and D. Canter (2006). The Profession of Dietetics: A Team Approach. Philadelphia, Lippincott, Williams and Wilkins.

Peel Health Care Ltd (2007). Allied Health by Design: Solutions for Rural Private Practice. Tamworth, North West Slopes (NSW) Division of General Practice,**:** 1-83.

Phillips, A. (2006). Regional and remote health and the quantification of the allied health workforce. The National SARRAH Conference. Albury, SARRAH.

Playford, D., A. Larson, et al. (2006). "Going country: Rural student placement factors associated with future rural employment in nursing and allied health." Australian Journal of Rural Health **14**(1): 14-19.

QSR International Pty Ltd (2006). NVivo 7. Doncaster, Vic, Australia, QSR International Pty Ltd.

Queensland Health (2001). Director General's Allied Health Recruitment and Retention Taskforce 1999-2000. Brisbane, Queensland Health.

Queensland Health (2005). Queensland Health Delivery of Nutrition and Dietetic services across the continuum of care: A framework for workforce planning within Queensland Health. Brisbane, Queensland Health.

Read, J. A., B. Choy, et al. (2006). "An evaluation of the prevalence of malnutrition in cancer patients attending the outpatient oncology clinic." Asia-Pacific Journal of Clinical Oncology **2**: 80-86.

Rowan, S. (1998). "Provider and consumer perceptions of allied health service needs." Australian Health Review **21**(1): 88-97.

Sax, S. (1975). Australian Health Manpower: Report of the Committee on Health Careers (Personnel and Training) Australian Government Publishing Services. Canberra.

Schiller, M., K. Miller-Kovach, et al. (1994). Total Quality Management for Hospital Nutrition Services, Aspen Publishers.

Schoo, A., K. Stagnitti, et al. (2005). "A conceptual model for recruitment and retention: Allied health workforce enhancement in Western Victoria, Australia." Rural and Remote Health **5**(477 (online)): 1-18.

Scott, J. (1990). Towards 2000 - Will we have the numbers to Meet the Challenge? Dietitians Association of Australia National Conference, Dietitians Association of Australia.

Scott, J. and C. Binns (1988). "A profile of dietetics in Australia: Part 1 - Demography and educational characteristics." Journal of Food and Nutrition **45**(3): 77-79.

Scott, J. and C. Binns (1989a). "A profile of dietetics in Australia." Australian Journal of Nutrition and Dietetics **46**(1): 14-17.

Scott, J. and C. Binns (1989b). "A profile of dietetics in Australia:part 3 - employment responsibilities and job satisfaction." Australian Journal of Nutrition and Dietetics **46**: 36-39.

Selby Smith, C. and S. Crowley (1995). "Labour force planning issues for allied health in Australia." Journal of Allied Health **24**(Fall): 249-265.

Services for Australian Rural and Remote Allied Health (2000). SARRAH: a study of allied health professionals in rural and remote Australia. Canberra, SARRAH.

Sheppard, L. (2001). "Work practices of rural and remote physiotherapists." Australian Journal of Rural Health **9**(2): 85-91.

Sheppard, L. (2005). "Rural and remote physiotherapy: Its own discipline." Australian Journal of Rural Health **13**(3): 135-136.

Sheppard, L. and S. Mackintosh (1998). "Technology in education: what is appropriate for rural and remote health professionals." Australian Journal of Rural Health **6**(4): 189-193.

Shirtcliff, J. and E. O'Neil (2006). Bush Nuts - maintaining our workforce to achieve a common outcome. The National SARRAH conference. Albury, SARRAH.

Smith, J. (2004). Australia's rural and remote health: A social justice perspective. Croydon, Tertiary Press.

Smith, K., J. Humphreys, et al. (2006). "Essential tips for measuring levels of consumer satisfaction with rural health service quality." Rural and Remote Health **6**(594 (online)): 1-8.

Smith, K., J. Humphreys, et al. (2008). "Addressing the health disadvantage of rural populations: How does epidemiological evidence inform rural health policies and research?" Australian Journal of Rural Health **16**(2): 56-66.

Smith, T., R. Cooper, et al. (2008). "Profile of the rural allied health workforce in Northern New South Wales and comparison with previous studies." Australian Journal of Rural Health **16**(3): 156-163.

Solomon, P., P. Salvatori, et al. (2001). "Perceptions of important recruitment and retention factors by therapists in northwestern Ontario." Journal of Rural Health **17**(3): 278-285.

SPSS Inc (2006). SPSS. Chicago, USA.

Stagnitti, K., A. Schoo, et al. (2006). "An exploration of Issues of Management and Intention to Stay: Allied Health Professionals in

South West Victoria, Australia." Journal of Allied Health **35**(4): 226-232.

Stagnitti, K., A. Schoo, et al. (2005a). "Access and attitude of rural allied health professionals to CPD and training." International Journal of Therapy and Rehabilitation **12**(8): 355-361.

Stagnitti, K., A. Schoo, et al. (2005b). "Retention of allied health professionals in the south-west of Victoria." Australian Journal of Rural Health **13**(5): 364-365.

STATA Corporation (2003). STATA 8.0. Texas, USA.

State of NSW (2008). Mini Budget 2008-2009. Sydney, State of NSW.

State Public Services Federation (1994). Position paper on minimum dietetic services. Sydney, NSW Government.

Steenbergen, K. and L. Mackenzie (2004). "Professional support in rural New South Wales: perceptions of new graduate occupational therapists." Australian Journal of Rural Health **12**(4): 160-65.

Stephens, L. and R. Strasser (1994). Dietitians working with general practitioners in the rural setting. 2nd Biennial Australian Rural and Remote Health Scientific Conference, Toowoomba, National Rural Health Alliance.

Struber, J. (2004). "Recruiting and retaining allied health professionals in rural Australia: Why is it so difficult?" Internet Journal of Allied Health Sciences and Practice **2**(2): 1-13.

Sumers, J. and R. Mulroney (1983). "Workload measurement study to develop staffing guidelines for the clinical inaptient dietitian." Journal of the Canadian Dietetic Association **44**(3): 246-250.

Summersett, G., G. Richards, et al. (2003). "Effectiveness of a rural paediatric diabetes management program." Paediatric Diabetes **4**(3): 137-142.

Symons, J. (2006). Is it a bird? Is it a plane? No... it's an allied health professional. The National SARRAH Conference. Albury, SARRAH.

Sypek, S., G. Clugston, et al. (2008). "Critical health infrastructure for refugee resettlement in rural Australia: Case Study of four rural towns." Australian Journal of Rural Health **16**(6): 349-354.

Tasmanian Department of Health and Human Services (2003). Allied Health Professional Workforce Planning Project - Dietetics Information. Hobart, Tasmanian Department of Health and Human Services.

Taylor, R. and H. Lee (2005). "Occupational therapists' perception of usage of information and communication technology (ICT) in Western Australia and the association of availability of ICT on recruitment and retention of therapists working in rural areas." Australian Occupational Therapy Journal **52**(1): 51-56.

Towers, D., H. Coskumer, et al. (1987). "A system of workload measurement for clincal dietitians." Journal of the Canadian Dietetic Association **48**(4): 243-246.

Verbeek, J., F. van Dijk, et al. (2001). "Consumer satisfaction with occupational health services: should it be measured?" Occupational and Environmental Medicine **58**: 272-278.

Vivanti, A., S. Ash, et al. (2007). "Validation of a satisfaction survey for rural and urban outpatient dietetic services." Journal of Human Nutrition and Dietetics **20**(1): 41-49.

Wakerman, J. (2004). "Defining remote health." Australian Journal of Rural Health **12**(5): 210-214.

Wakerman, J. and S. Lenthall (2002). Remote Health. The New Rural Health. D. Wilkinson and I. Blue. South Melbourne, Oxford University Press**:** 126-148.

Ward, A., J. Williams, et al. (2003). Developing innovative and flexible community nutrition service delivery in rural Tasmania. 7th National Rural Health Conference, Hobart, National Rural Health Alliance.

Western Australian Allied Health Taskforce on Workforce Issues (2002). Initial Report 2002. Health Department of Western Australia. Perth, Health Department of Western Australia.

Where is it. (2008). "Where is it." from www.whereis.com/#session=MjA=.

Williams, A. M. and M. P. Cutchin (2002). "The rural context of health care." Journal of Interprofessional Care **16**(2): 108-115.

Williams, E. (2007). "Physiotherapy in rural and regional Australia." Australian Journal of Rural Health **15**(6): 380-386.

Williams, P. (1993). "Trends in the New South Wales dietetic workforce 1984-1991." Australian Journal of Nutrition and Dietetics **50**(3): 116-119.

Witt, J., P. Brauer, et al. (2006). "Estimation of human resource needs and costs of adding registered dietitians to primary care networks." Canadian Journal of Dietetic Practice and Research **Fall**(Supplement): S30-37.

Wolfenden, K., P. Blanchard, et al. (1996). "Recruitment and retention: Perceptions of rural mental health workers." Australian Journal of Rural Health **4**(2): 89-95.

Yeatman, H. (1990). Training of dietitians for innovation and diversity. Dietitians Association of Australia National Conference. Canberra, Dietitians Association of Australia.

Yin, R. K. (2003). Case Study Research. Thousand Oaks, Sage.

Appendix 1: Definitions, classifications and structures

Appendix 1.1: Definitions and classifications of rural

Rural and remote communities are diverse both geographically and socially and they are difficult to classify and define (Humphreys 1998). Numerous terms have been used interchangeably with rural including regional, remote, isolated, non-urban and non-metropolitan (Hugo 2002). The term 'remote' is often used synonymously with 'rural', however 'remote' is a separate classification and as these communities have specific concerns related to geographic isolation, widely dispersed populations, less access to services and higher proportions of Indigenous peoples (Australian Institute of Health and Welfare 1998; Bent 1999; Smith 2004). Definitions of rural usually take into account factors such as population size, service provision, accessibility and degree of remoteness (Hugo 2002; Couper 2003). For the purpose of this research 'rural' is defined as any area outside a major metropolitan area or capital city that is not considered 'remote' or 'very remote'.

In Australia a number of classification systems have been used in order to classify 'rurality' and 'remoteness'. Classification systems have included Faulkner and French's index of remoteness, the Griffith Service Access Frame and the Rural and Remote Area classification (RARA), the Rural, Remote and Metropolitan Areas (RRAMA or RRMA) classification, the Accessibility/Remoteness Index of Australia (ARIA) and the Australian Standard Geographical Classification (ASGC) (Wakerman and Lenthall 2002). The Rural, Remote and Metropolitan Areas (RRAMA or RRMA) classification has typically been used in the medical and nursing literature as a way of classifying locations. This system classifies statistical local areas as rural, remote or metropolitan based on a straight-line distance to the nearest urban centre (Wakerman and Lenthall 2002). This system has being superceeded by the Australian Standard Geographical Classification (ASGC) for remoteness.

The ASCG remoteness classification scheme is an extension of the Accessibility/Remoteness Index of Australia Plus (ARIA+), which uses distances to population centres as the basis for quantifying service access and hence remoteness (Commonwealth Department of Health and Aged

Care 2001). ARIA improves on the RRAMA classification by using a continuous rather than discrete variable, road distance rather than straight line distance and providing a weighting for island communities (Wakerman 2004). It classifies areas based on a one kilometer grid that covers Australia; the score for each square grid is determined by measuring the 'remoteness' of that point to five categories of service centres or towns. These five scores are combined to give a final remoteness ARIA+ score with values ranging from 0-15. These scores are then classified into accessibility ratings of: highly accessible (HA), moderately accessible (MA), accessible (A), remote (R) and very remote (VR) (Hugo 2002).

ARIA+ scores are then grouped into the following five ASCG categories: Major Cities of Australia, Inner Regional, Outer Regional, Remote and Very Remote (Australian Bureau of Statistics 2003). ARIA+ scores can be determined from Australian Bureau of Statistics (ABS) Census Collection Districts, Postal Units, Statistical Division or Statistical Local Area (SLA). The Statistical Local Area (SLA) has been used to determine ARIA+ scores for this thesis as it is a general purpose spatial unit. The SLA is used to collect and disseminate statistics and it is the smallest unit defined in the ASGC (Australian Department of Health and Ageing 2003). This means that the ARIA+ score is provided for the smallest defined locality. At the time of writing this thesis the ARIA++ values were not available[xli].

For the purpose of this research the Australian Standard Geographical Classification (ASGC) classification system has been used to classify rural, with the categories of 'inner regional' and 'outer regional' being considered to identify areas as 'rural'. To determine the ASGC, the ARIA+ code was determined from the SLA and then translated to the ASGC classification. In addition to this classification of 'rurality' additional factors such as land use, population density, demographic structure, environmental characteristics and population characteristics may need to be considered (Williams and Cutchin 2002). Table 41 provides examples of locations and their ASGC category.

[xli] ARIA ++ is based on 6 service centres and the values range from 0-18

Table 41: Examples of locations by the Australian Standard Geographical Classification categories

ARIA+ Score ARIA+ Classification	ASGC Category	Locations
0 - 0.2 Highly Accessible	Major Cities of Australia	Adelaide, Brisbane, Canberra, Geelong, Melbourne, Newcastle, Perth, Sydney, Wollongong
0.2 - 2.4 Moderately Accessible	Inner Regional Australia	Ballarat, Bunbury, Hobart, Launceston, Queanbeyan, Tamworth, Toowoomba, Whyalla
2.4 - 5.92 Accessible	Outer Regional Australia	Darwin, Dubbo, Horsham, Kalgoorlie, Naracoorte, Queenstown
5.92 - 10.53 Remote	Remote	Alice Springs, Broken Hill, Dampier, Mt Isa, Port Lincoln
>10.53 Very Remote	Very Remote	Bourke, Broome, Coober Pedy, Tennant Creek and Weipa

Source: Derived from (ABS 2003) data

Appendix 1.2: Public health service funding and structures

State health funding and structures

The public health system in New South Wales (NSW) is comprised of a range of health service facilities including: Tertiary Referral Hospitals, Rural Referral Hospitals, District Health Services, Community Hospitals and Multi-purpose Services, Community Health Services and Mental Health Hospitals (NSW Department of Health 2006). These health service facilities are managed in groups defined by Area Health Services who are responsible for planning, delivering and co-ordinating services in their geographical area. The range of health service facilities varies across the state. In rural NSW there are no Tertiary Referral or Mental Health hospitals. In 2006 NSW Health comprised of 17 Area Health Services (AHS) across the state, with 24 public hospitals and 18 community hospitals or multi-purpose services (NSW Department of Health 2006). The research presented in this thesis has been carried out in rural localities in the Hunter New England Area Health service which is located in the north-west of the state of NSW. A map of the HNEH service is provided in Figure 10, Chapter Four.

There have been a number of restructuring changes to the public health system in NSW over the past 15 years. In 1991 there were 23 District Health Services in NSW. The north-west area of NSW was covered by the District Health Services of Barwon, New England and North-West. In 1996 the District Health Services were restructured into eight Rural Health Services across the state, in addition to the metropolitan services (NSW Department of Health 1997). At this time the health service areas in the north west of NSW consisted of the New England, Mid North Coast and Hunter Area Health Services.

The current HNEH service area was formed in January 2005 when the former New England and Hunter Area Health Services merged with part of the Mid North Coast Area Health Service. The total area of the health service covers 130 000 square kilometers and provides health services for an approximate population of 840 000 people spread over 32 local council

areas. The health service is staffed by approximately 14 500 staff (10 500 FTE), including 1 500 medical officers (NSW Health 2008a).

This merger led to changes in the service boundaries of dietitians working in the health service. A consequence of the merger was the centralisation of Area Health service management in Newcastle, with management in outlying rural sites restructured to provide local management only. Prior to this, the area health service management was located in the rural sites of Tamworth for the New England Area Health service and Coffs Harbour for the Mid North Coast Area Health service (Hunter New England Area Health Service 2006b). The current HNEH is divided into eight clusters and two sectors northern and southern. The eight clusters consist of seven rural clusters: Mehi, McIntyre, Tablelands, Peel, Upper Hunter, Upper Mid North Coast and Lower Hunter. These clusters are defined geographical areas that provide management and administration at a local health service level (Hunter New England Area Health Service 2006c).

Divisions of General Practice

Divisions of General Practice (GP) provide services and support to general practitioners at a local level. These Divisions provide key infrastructure for GPs to provide an integrated quality PHC service to achieve health outcomes for community members. There are 111 Divisions of GP across Australia with six of these located within the boarders of the Hunter New England Health service (Australian General Practice Network 2009). Two Divisions of GP located in case study sites, who employed dietitians, participated in Study Two of this research.

Commonwealth health funding

The More Allied Health Services program

The More Allied Health Services (MAHS) program funding is available to Divisions of General Practice who have at least five per cent of their population living in rural areas, with rural areas being defined as those areas with a RRMA 4-7 (Department of Health and Ageing 2004). The MAHS program can be used to provide funding for clinical care delivery by allied

health professionals in rural communities, where there is an identified gap in the state based health services to the area (Department of Health and Ageing 2007). In 2005-06, 19.4 full-time equivalent (FTE) dietitians (10.8% of the allied health FTE) were funded through the MAHS program across 30 Divisions of General Practice in Australia (Department of Health and Ageing 2007).

The Rural Health Services program

The Rural Health Services (RHS) program is a program designed to expand primary health care services in small rural communities with a population of approximately 5 000 people. The services that can be provided though the program include allied health, mental health, community nursing (Department of Health and Ageing 2007b). The program is funded by the Commonwealth through state based health services or other entities.

University Departments of Rural Health

There are 11 Commonwealth funded University Departments of Rural Health in Australia, three of these are located in NSW with one located within the area under study. These multidisciplinary academic units are based in rural or remote areas and are affiliated with one or more universities. They provide a mixture of clinical and academic services including: the co-ordination of local student placements, teaching and research relevant to the local health needs (Humphreys 1999; Humphreys, Lyle et al. 2000; Hays 2002). The allied health appointments in these departments have been involved in providing clinical services within the health sector in addition to academic, professional development, research and student support (Brown, Cooper et al. 2003).

Appendix 1.3: Search terms for literature review

Benchmarking and best practice

Benchmarking

Best practice

Quality services

Rural health services

Benchmarking dietetic staffing and services

Benchmarking

Dietetics or nutritionist

Diet* or nutrition*

Rural allied health workforce – recruitment and retention

Rural or remote

Allied health

Workforce or manpower

Recruitment or retention

Rural allied health staffing models

Rural or remote

Staffing models or workforce models

Allied Health

Appendix 1.4: Influences on the development of a best practice rural dietetic service

Table 42: Influences on the development of a best practice dietetic service in rural areas

Direct Influence (Dependent variables)	Contributing factors (Independent variables)	Evidence from this study
The number of permanently funded public positions		
	Area health service distribution of funds	Insight into the allocation of funding from an area level and the restraints on funds at a local cluster level. Dietetics and allied health often not funded in increased service delivery funds at a state, areas health service level.
	Attitude of manager or CEO	Attitudes of managers interviewed were positive re: the value of the dietitians role. However dietitians reported a lack of understanding from some mangers, especially those with a non-allied health background. Management in some sites was identified by dietitians as being consistently unsupportive.
	Champion or advocate for dietetic services	Key role for champion in increasing dietetic staffing and advocating for improved work conditions, and supports for recruitment and retention
	Funding for new services	Often no funds allocated for dietetics with new services
	State health policy	Policies not mentioned by interviewees
The number of non-public positions/practitioners		
	Under-employment of dietitians	Some under-employment of dietitians reported at times, dietitians also reduced the hours of full-time positions to part-time to suit their life situation.
	Patients willing to pay for services	Private practice staffing levels suggest it is reasonable for a population of 20 000 to support a full-time private practitioner.

Direct Influence (Dependent variables)	Contributing factors (Independent variables)	Evidence from this study
	Divisions of GP funding of private practice work (such as MAHS funding)	MAHS funding has been utilised to fund a range of dietetic staffing levels, depending on the perceived level of need in individual sites – competing priorities and non-standardised method for determining community needs. This type of funding is problematic due to it's unstable, temporary nature.
	Population base Unknown level of staffing required for population, suggested figures only (refer to Chapter One, 1.1)	Results suggest that a population base of 10 000 has enough work for at least two FTE
	Socioeconomic disadvantage (SED) of population	Even sites with the low SED levels were able to support private practice.
	Policy of public service re: private practice Available policy by NSW Health, allows right of private practice for AH professionals (NSW Health 2005)	Nil mention of this in data, however part-time private practice work is being undertaken by underemployed public service employed dietitians in some sites.
	Under-servicing by public sector Census data available for comparison (refer to Chapter Two). No research on levels of under-servicing.	Underservicing of the community was mentioned as an issue in all sites, even those with the highest FTE
Timely recruitment		
	Attitude of management	Some managers did not pursue recruitment in a timely manner, this was particularly the case in sites where recruitment and retention was an ongoing issue. Part-time positions were often left un-recruited to for extended periods of time.
	Budget constraints	Budget constraints were implicated in a lack of timely recruitment
	Turnover rates	High turnover rates in some sites, for some positions, especially part-time positions
	Recruitment systems	One interviewee mentioned a slow recruitment system processes

Direct Influence (Dependent variables)	Contributing factors (Independent variables)	Evidence from this study
	Available applicants through adequate supply	Available applicants for most sites and positions advertised in recent years, although previously a problem. Limited applicants for sites with recruitment issues (P/T jobs, more remote areas).
Retention		
	Physical location	Y
	Leave coverage	Y – in relation to not being able to access CPD
	Access to continuing professional development and resources	Y
	Professional autonomy	Y
	Lifestyle factors	Y
	Prior rural experience	Y
	Nature of work (casemix)	Y
	Opportunities for promotion	Y
	Job security	N – not specifically however may be a reason for not going into private practice due to the perceived problem of an inconsistent income.
	Patient to therapist ratio (workload)	Y
	Salary	Y
	Research opportunities	N – not mentioned
Up to date knowledge and skills of rural dietitians		
	Adequate supervision mentoring of new graduates	Inadequate in some sites, sole positions and positions away from main employee base.
	Access to continuing professional development	Inadequate in some sites due to a lack of management support

Direct Influence (Dependent variables)	Contributing factors (Independent variables)	Evidence from this study
	Access to internet and email	Nil reported in the data
	Membership of professional association	DAA membership database (refer to Chapter Two) for details
	Clinical supervision and networking opportunities for staff	Inadequate in some sites, particularly for sole positions. Networking in some sites is limited despite more than one dietitian being located there.
Range of dietetic services available		
	Skill levels of dietetic staff	Nil reported in data
	Specialised dietetic services provided elsewhere	Limited specialised service in rural areas, despite increased demand for these.
	Health service policies and funding Reports by NSW Health available (NSW Department of Health 2007)	Some funding processes mentioned. Characterised by a lack of planning, ad hoc and opportunistic in many cases.
Level of services available – primary, secondary and tertiary		
	Available health service funds	Variable availability, many local areas services have no leeway in budget
	Funding policies and priorities of fundholders	Funding priorities are predominated by acute service needs
Provision of dietetic services to those who require it		
	Use of appropriate screening tools and referral systems Some documentation of referral processes (Hunter New England Area Health Service 2006a)	Example of use of appropriate screening and referral tools in Chapter Seven Nil specific details reported in case study data
	Service area of coverage and gaps in service	Mapping of service coverage and gaps identified for study sites

Direct Influence (Dependent variables)	Contributing factors (Independent variables)	Evidence from this study
	Profile of the dietetic services amongst the community and other health professionals	High profile reported in the rural setting, positive for service use and development of positions
Adequate resources		
	Adequate facilities	Some comments on inadequate facilities and resources
	Up to date policies and procedures	Nil reported in the data
	Up to date dietary education sheets and resources	Nil reported in the data

AH – allied health, CEO – Chief executive officer, CPD – Continuing professional development, FTE – full-time equivalent, MAHS – More allied health services, NSW – New South Wales, P/T – part-time

Appendix 2: Ethics

Appendix 2.1: Ethics approval case study six sites

The UNIVERSITY of NEWCASTLE
AUSTRALIA

Form HE2:1/05

HUMAN RESEARCH ETHICS COMMITTEE

Certificate of Approval
for a research project involving humans

Applicant

Chief Investigator/Project Supervisor: (First named in application)	*Professor Sandra Capra*
Co-Investigators/Research Students:	*Ms Leanne Brown* *Dr Lauren Williams* *Ms Julia Greaves*
Project Title:	*Determining the factors that support the development of a best practice dietetic service in rural NSW*

In approving this project, 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 Research Involving Humans, 1999*, and the requirements within this University relating to human research.

Details of Approval

HREC Approval No:	*H-299-0906*	**Date of Approval:**	*20 September 2006*
Approval valid for:	*As determined by HNEHREC.*	**Progress reports due:**	*HNEHREC to monitor*

NOTE: Approval is granted subject to the requirements set out in the attached document *Approval to Conduct Human Research*, and any additional comments or conditions noted below:

Considered in consultation with the Hunter New England Health Human Research Ethics Committee (HNEHREC).
HNEHREC Reference No: 06/05/24/4.01

20 September 2006
Approved.
HNEHREC approval granted on 21 July 2006 noted.

Signed for the Committee: _____

Ms Susan O'Connor
Human Research Ethics Officer

HUNTER NEW ENGLAND
NSW HEALTH

21 July 2006

Professor S Capra
Discipline of Nutrition & Dietetics
School of Health Sciences
University of Newcastle

Dear Professor Capra,

Re: Determining the Factors that Support the Development of a Best Practice Dietetic Service in Rural NSW (06/05/24/4.01)

Thank you for submitting the above project which was first considered by the Hunter New England Human Research Ethics Committee at its meeting held on **24 May 2006.** 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 Research Involving Humans* and the *CPMP/ICH Note for Guidance on Good Clinical Practice.*

As part of the procedure for ethical approval of research involving humans in Hunter New England Health the above protocol was reviewed by the Rural Research Methods Support Group, an advisory Committee of the Hunter New England Human Research Ethics Committee.

I am pleased to advise that following receipt of the requested clarifications and revised information sheets by the Professional Officer, 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:

- The information statement 1 (version 2 dated 6 June 2006);
- The information statement 2 (version 2 dated 6 June 2006);
- The consent form 1 (version 1 dated 24 March 2006);
- The consent form 2 (version 1 dated 24 March 2006);
- Data sheets 1 and 2;
- The Semi structured interview: Protocol 1 – Management/People in Position of Influence;
- The Semi Structured interview: Protocol 2 – Dietitians in Management;
- The Semi Structured interview: Protocol 3 – Dietitians in positions (current); and
- The Semi Structured interview: Protocol 4 – Dietitians in positions (past).

For the protocol **: Determining the Factors that Support the Development of a Best Practice Dietetic Service in Rural NSW.**

Approval from the Hunter Area 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.

Hunter New England Human Research Ethics Committee

(Locked Bag No 1)
(New Lambton NSW 2305)
Telephone (02) 49214 950 Facsimile (02) 49214 818
Email: Nicole.gerrand@hnehealth.nsw.gov.au
Michelle.lane@hnehealth.nsw.gov.au
http://intranet.hne.health.nsw.gov.au/ethics/researchethics.html
http://www.hnehealth.nsw.gov.au/ethics/researchethics.html

Appendix 2.2: Information Statement One

Professor Sandra Capra
Professor of Nutrition and Dietetics
School of Health Sciences
Discipline of Nutrition and Dietetics
Box 38, Hunter Building
University of Newcastle
CALLAGHAN NSW 2308
TELEPHONE: 02 4921 5642
FACSIMILE: 02 4921 6984
Email:
Sandra.Capra@newcastle.edu.au

INFORMATION STATEMENT 1

Information Statement for the Research Project: Determining the factors that support the development of a best practice dietetic service in rural NSW (Part A: Document Searches)

Version 2: 6/6/06

The Research Team: Professor Sandra Capra (Phone: 02 4921 5642), Ms Leanne Brown (Phone: 02 6767 8467), Dr Lauren Williams (Phone: 02 49215649), Ms Julia Greaves (Phone: 02 6767 8540)

You are invited to take part in the research project identified above which is being conducted by Leanne Brown from the Discipline of Nutrition and Dietetics at the University of Newcastle. Leanne is conducting the research as part of her doctoral research (Nutrition and Dietetics) under the supervision of Professor Sandra Capra from the Discipline of Nutrition and Dietetics at the University of Newcastle.

Why is the research being conducted?

The purpose of the project is to:

- determine the factors that support the development of a best practice dietetic service in rural NSW and
- to determine the elements of a best practice model in each case study setting (Tamworth, Armidale, Moree, Gunnedah, Taree and Muswellbrook)

A best practice model of dietetic staffing is one that provides a service that best meets the community's needs. This research is important for future workforce planning for dietitians in rural areas. It will also provide a detailed history of staffing and workload for each site and key features of the services involved.

Who can participate in the research?

We are seeking your participation in this project as you have been identified as a key stakeholder in one of the case study settings. Key stakeholders include:

- individuals who have been instrumental in the development of dietetics positions or
- those who have previously worked or currently work in dietetic positions in the case study settings.

What choice do you have?

Participation in this research is entirely your choice. Only those who give informed consent will be asked to participate in the project. Whether or not you decide to participate, your decision

will not disadvantage you in any way and will not affect your future involvement with members of the research team.

If you decide to participate you may withdraw from the project at any time without giving a reason. Participants who withdraw have the option of withdrawing their data from the study.

What would you be asked to do?
If you agree to participate you will be asked to provide the onsite researcher (Leanne Brown) with relevant de-identified departmental collections of letters, emails, data sets and other documents from 1991 to the present day (where records exist).

The information sought from these documents includes information on: start and end dates of employment, salary classifications, job title, location of employment, periods of position vacancies, occasions of service and types of service delivery, job descriptions and information regarding the development of positions.

How will your privacy be protected?
Data collected for this study will be stored securely and access to the data will only be available to the researchers involved in this study. All data provided to the research team will be de-identified to protect individual privacy. Any reports of this data will be stored securely and access to the data will only be available to the researchers involved in this study and you will not be identifiable in the reporting of the results.

How will the information collected be used?
Details of the results of this study can be provided to participants on request. Participants will not be identifiable in the reporting of the results at conferences and in journal articles.

What would you need to do to participate?
If you would like to participate, please complete the attached Consent Form and return it in the reply paid envelope provided. You will then be contacted by the onsite researcher regarding the research project.

Thank you for considering this invitation.

Yours sincerely

Leanne Brown	Professor Sandra Capra
Research Student	Research Supervisor

This project has been approved by the Hunter New England Research Ethics Committee of Hunter New England Health (Reference No.06/05/24/4.01) and registered with the University of Newcastle HREC.

Should you have any 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 Dr Nicole Gerrand, Professional Officer (Research Ethics), Hunter New England Human Research Ethics Committee, Hunter New England Health, Locked Bag 1, New Lambton NSW 2305, telephone (02) 49214950, email Nicole.Gerrand@hnehealth.nsw.gov.au

Appendix 2.3: Information Statement Two

Professor Sandra Capra
Professor of Nutrition and Dietetics
School of Health Sciences
Discipline of Nutrition and Dietetics
Box 38, Hunter Building
University of Newcastle
CALLAGHAN NSW 2308
TELEPHONE: 02 4921 5642
FACSIMILE: 02 4921 6984
Email:
Sandra.Capra@newcastle.edu.au

INFORMATION STATEMENT 2

Information Statement for the Research Project: Determining the factors that support the development of a best practice dietetic service in rural NSW (Part B: Individual Interviews)

Version 2: 6/6/06

The Research Team: Professor Sandra Capra (Phone: 02 4921 5642), Ms Leanne Brown (Phone: 02 6767 8467), Dr Lauren Williams (Phone: 02 49215649), Ms Julia Greaves (Phone: 02 6767 8540)

You are invited to take part in the research project identified above which is being conducted by Leanne Brown from the Discipline of Nutrition and Dietetics at the University of Newcastle. Leanne is conducting the research as part of her doctoral research (Nutrition and Dietetics) under the supervision of Professor Sandra Capra from the Discipline of Nutrition and Dietetics at the University of Newcastle.

Why is the research being conducted?

The purpose of the project is to:

- determine the factors that support the development of a best practice dietetic service in rural NSW and
- to determine the elements of a best practice model in each case study setting (Tamworth, Armidale, Moree, Gunnedah, Taree and Muswellbrook)

A best practice model of dietetic staffing is one that provides a service that best meets the community's needs. This research is important for future workforce planning for dietitians in rural areas. It will also provide a detailed history of staffing and workload for each site and key features of the services involved.

Who can participate in the research?

We are seeking your participation in this project as you have been identified as a key stakeholder in one of the case study settings. Key stakeholders include:

- individuals who have been instrumental in the development of dietetics positions or
- those who have previously worked or currently work in dietetic positions in the case study settings.

What choice do you have?

Participation in this research is entirely your choice. Only those who give informed consent will be asked to participate in the project. Whether or not you decide to participate, your decision will not disadvantage you in any way and will not affect your future involvement with members of the research team.

If you decide to participate you may withdraw from the project at any time without giving a reason. Participants who withdraw have the option of withdrawing their data from the study.

What would you be asked to do?
If you agree to participate in a individual interview with the onsite researcher (Leanne Brown). These interviews will be of approximately 1 hour duration and will be conducted in a private meeting room at the your site of employment. The interview will focus on questions pertaining to the development of dietetic positions in your area and factors influencing dietetic staffing.

These interviews will be audio taped with your permission and later transcribed by word-processing. You will not be identified on the tape or in the transcript, an identification number will be allocated to your interview. You will be given an opportunity to review transcripts of the interview and will be able to make any additions or corrections prior to analysis. Once analysis of the transcripts are completed the tapes will be erased or alternatively they can be returned to you.

How will your privacy be protected?
Data collected for this study will be stored securely and access to the data will only be available to the researchers involved in this study. Your data will remain confidential as your personal details will not be identified on the tape or in the transcript. An identification number will be assigned to your data and you will be anonymous in the reporting of the results. Any reports of this data will be stored securely and access to the data will only be available to the researchers involved in this study and you will not be identifiable in the reporting of the results.

How will the information collected be used?
Details of the results of this study can be provided to participants on request. Participants will not be identifiable in the reporting of the results at conferences and in journal articles.

What would you need to do to participate?
If you would like to participate, please complete the attached Consent Form and return it in the reply paid envelope provided. You will then be contacted by the onsite researcher regarding the research project.

Thank you for considering this invitation.

Yours sincerely

Leanne Brown	Professor Sandra Capra
Research Student	Research Supervisor

This project has been approved by the Hunter New England Research Ethics Committee of Hunter New England Health (Reference No.06/05/24/4.01) and registered with the University of Newcastle HREC.

Should you have any 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 Dr Nicole Gerrand, Professional Officer (Research Ethics), Hunter New England Human Research Ethics Committee, Hunter New England Health, Locked Bag 1, New Lambton NSW 2305, telephone (02) 49214950, email Nicole.Gerrand@hnehealth.nsw.gov.au

Appendix 2.4: Consent Form One

Professor Sandra Capra
Professor of Nutrition and Dietetics
School of Health Sciences
Discipline of Nutrition and Dietetics
Box 38, Hunter Building
University of Newcastle
CALLAGHAN NSW 2308
TELEPHONE: 02 4921 5642
FACSIMILE: 02 4921 6984
Email: Sandra.Capra@newcastle.edu.au

CONSENT FORM 1

Consent Form for the Research Project: Determining the factors that support the development of a best practice dietetic service in rural NSW (Part A)
Version 1: 24/3/06

Consent Statement

I agree to participate in the above research project and give my consent freely.

I understand that the project will be conducted as described in the Information Statement, a copy of which I have retained.

I understand that I can withdraw from the project at any time and do not have to give any reason for withdrawing.

I consent to providing the researchers with relevant de-identified departmental collections of letters, emails, data sets and other documents pertaining to the following information over the period of time 1991 to the present day (where data is available) as described in the Information Statement.

I understand that my personal information will remain confidential to the researchers.

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

Print Name:

Signature: Date:

The Research Team: Professor Sandra Capra (Phone: 02 4921 5642), Ms Leanne Brown (Phone: 02 6767 8467), Dr Lauren Williams (Phone: 02 49215649), Ms Julia Greaves (Phone: 02 6767 8540)

Appendix 2.5: Consent Form Two

Professor Sandra Capra
Professor of Nutrition and Dietetics
School of Health Sciences
Discipline of Nutrition and Dietetics
Box 38, Hunter Building
University of Newcastle
CALLAGHAN NSW 2308
TELEPHONE: 02 4921 5642
FACSIMILE: 02 4921 6984
Email: Sandra.Capra@newcastle.edu.au

CONSENT FORM 2

Consent Form for the Research Project: Determining the factors that support the development of a best practice dietetic service in rural NSW (Part B)
Version 1: 24/3/06

Consent Statement

I agree to participate in the above research project and give my consent freely.

I understand that the project will be conducted as described in the Information Statement, a copy of which I have retained.

I understand that I can withdraw from the project at any time and do not have to give any reason for withdrawing.

I consent to participating in a private individual interview with the onsite researcher as outlined in the Information Statement.

I understand that my personal information will remain confidential to the researchers.

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

Print Name:

Signature: Date:

The Research Team: Professor Sandra Capra (Phone: 02 4921 5642), Ms Leanne Brown (Phone: 02 6767 8467), Dr Lauren Williams (Phone: 02 49215649), Ms Julia Greaves (Phone: 02 6767 8540)

Appendix 2.6: Ethics approval - oncology service delivery case study

The UNIVERSITY of NEWCASTLE
AUSTRALIA

Form HE2:2/98

HUMAN RESEARCH ETHICS COMMITTEE

Certificate of Approval
for a research project involving humans

Applicant

Chief Investigator/Project Supervisor: (First named in application)	*Professor Sandra Capra*
Other Investigators:	*Ms Leanne Brown* *Dr Lauren Williams*
Project Title:	*Determining best practice dietetic services for rural patients with cancer undergoing chemotherapy*

In approving this project, 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 Research Involving Humans, 1999*, and the requirements within this University relating to human research.

Details of Approval

HREC Approval No: *H-773-0304*	**Date of Approval:** *17 March 2004*
Approval valid for: *3 years*	**Progress reports due:** *Annually*

Comments or conditions:

Approved with comments.

The Committee ratified the approval granted by the Acting Chair on 10 March 2004, which was subject to minor amendments to the Information Statement.

7 April 2004
Amendments received and accepted.
Approval confirmed.

Signed: _____

Ms Susan O'Connor
Secretary to the Committee

22nd March 2004

New England Health

Professor Sandra Capra
Professor of Nutrition & Dietitics
Box 38 Hunter Building
University of Newcastle
CALLAGHAN NSW 2308

Dear Professor Capra

Re: Research Project
DB171 "Determining best practice dietetic services for rural Patients with cancer undergoing chemotherapy"

The New England Area Health Service Research Ethics Committee at its meeting of 16th March 2004 discussed your submission on the above proposal.

It was resolved that: No ethical concerns. Approval given. It was agreed that until we have a functioning Aboriginal Ethics Committee to give advice on the Aboriginal Impact Statement, we can proceed.

Ethical approval is conditional upon adherence to the conditions outlined below.

1. The research project will be carried out as described in the application and in accordance with ALL subsequent correspondence.
2. The Chief Investigator will advise the NEAHS Research Ethics Committee of any changes in the research protocol or conduct, if any unforeseen events that might affect continued ethical acceptability of the project or adverse events take place, or should the project be abandoned for any reason. New ethical approval must be sought for substantially altered or revised research protocols.
3. In order to fulfil monitoring requirements of the Committee, a report is required annually and at completion of the study. The Committee should receive your final report by **January 2005,** for its consideration Ethical approval will lapse unless the report is received.

Should you require any additional information please contact Virginia Braack on (02) 6766 2288.

Please quote Project No. DB171 in all correspondence.

Yours faithfully,

M Jamieson

Dr Maggie Jamieson
Director
NEH Research and Development Institute

Cc: Leanne Brown

NEW ENGLAND HEALTH SERVICE

New England Public Health Unit

PO Box 597
Tamworth NSW 2340

Tel 02 6766 2288
Fax 02 6766 3003

Appendix 2.7: Information Form - oncology service delivery case study

INFORMATION STATEMENT

Information Statement for the Research Project: Determining best practice dietetic services for rural patients with cancer undergoing chemotherapy.

Version 4: 7/4/04

You are invited to take part in the research project identified above which is being conducted by Ms Leanne Brown as part of her Masters of Medical Science, under the supervision of Professor Sandra Capra from the Faculty of Health at the University of Newcastle.

Why is the research being done?
The aim of this project is to determine what type of dietetic service will meet the needs of rural patients who have cancer and are undergoing chemotherapy. To evaluate this service participants will be asked to complete a series of questionnaires about their general health, nutrition and satisfaction with the services provided.

Who can participate in the research?
Patients attending the Oncology Clinic at Tamworth Base hospital are invited to participate in this project if you:

- are undergoing chemotherapy treatment
- are aged over 18 years,
- do not require an interpreter.

Patients undergoing radiotherapy treatment are unfortunately not eligible to participate in this study. Patients not eligible to participate in this study will be able to access usual dietetic services provided at the Oncology Clinic.

By participating in this study you may benefit from improved access to dietetic services and possible improved nutrition-related outcomes. We cannot, however, promise that you will benefit from participating in this research as the usual dietetic services will be available to those who do not participate in this study. There are no known risks involved in participating in this study.

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, please contact the researchers.

What choice do you have?
Participation in this research is entirely your choice. Only those people who give their informed consent will be included in the project. Whether or not you decide to participate, your decision will not disadvantage you in any way and will not affect your care or access to usual services. If you do decide to participate, you may decide to withdraw from the project at any time without giving a reason. Participants who withdraw have the option of withdrawing their data from the study.

What would you be asked to do?
If you agree to participate, you will be allocated to either of two groups.

- Group one will receive dietetic advice by the current standard delivery method.
- Group two will receive dietetic advice by a revised form of delivery.

You have the choice to have your dietetic services provided by a student dietitian or the clinic dietitian. You will be then asked to:

(i) Complete an assessment, which involves a visual examination of your body fat, muscle and fluid status. This will be conducted in a private area of the Oncology Clinic.

(ii) Complete a number of questionnaires relating to your general health, nutrition and satisfaction with services provided. These questionnaires can be filled out at your leisure during your time at the clinic or taken home to be completed if you prefer.

Questionnaires will be provided at:

- Your initial assessment
- 4 weeks after your initial assessment
- 8 weeks after your initial assessment and
- one month after your chemotherapy treatment has ceased.

Each questionnaire will take approximately 3-12 minutes to complete. This will require approximately 1 hour and 20 minutes of your time over an 8-12 week period.

(iii) Allow the researchers to access your medical record for the purpose of obtaining the following information; age, gender, diagnosis and stage of disease, other relevant diagnoses, nutrition-related symptoms and treatment details.

How will your privacy be protected?
Data collected for this study will be stored securely and access to the data will only be available to the researchers involved in this study. Your data will remain confidential as your personal details will not be recorded on the data collected. An identification number will be assigned to your data and any identifiable information will be stored separately and accessible only by the researcher/clinic dietitian.

How will the information collected be used?
Any reports of this data will not identify individuals involved in the study, as the reported results will remain anonymous. Details of the results of this study can be provided to participants on request. Once this study has concluded those participants still requiring dietetic services will be provided with usual dietetic services.

What would you need to do to participate?
If you would like to participate, please complete the attached Consent Form and return it in the box provided at reception. You will then be contacted by a member of the research team, during your current or next visit to the Oncology Clinic.

Thank you for your interest and time taken to read this information sheet.

Yours sincerely

Leanne Brown
Research Student

Professor Sandra Capra
Research Supervisor

The Research Team: Professor Sandra Capra from the Faculty of Health at the University of Newcastle (Phone: 02 4921 5642), Ms Leanne Brown from the University Department of Rural Health part of the Faculty of Health at the University of Newcastle (Phone 02 6761 9507) and Dr Lauren Williams from the Faculty of Health at the University of Newcastle (Phone: 02 4921 5649).

This project has been approved by the University's Human Research Ethics Committee, Approval No.H-773-0304. Should you have concerns about your rights as a participant in this research, or you have a complaint about the manner in which the research is conducted, it may be given to the researcher, or, if an independent person is preferred, to the Human Research Ethics Officer, Research Office, The Chancellery, The University of Newcastle, University Drive, Callaghan NSW 2308, telephone (02) 49216333, email Human-Ethics@newcastle.edu.au. Alternatively subjects can contact Associate Professor Maggie Jamieson, Director of the New England Area Health Service Research Institute on (02) 67662288.

Appendix 2.8: Consent Form - oncology service delivery case study

Professor Sandra Capra
Professor of Nutrition and Dietetics
Discipline of Nutrition and Dietetics
Box 38, Hunter Building
University of Newcastle
CALLAGHAN NSW 2308
TELEPHONE: 02 4921 5642
FACSIMILE: 02 4921 6984
Email: Sandra.Capra@newcastle.edu.au

CONSENT FORM

Consent Form for the Research Project: Determining best practice dietetic services for rural patients with cancer undergoing chemotherapy.
Version 3: 7/4/04

Researchers: Professor Sandra Capra (Phone: 02 4921 5642), Ms Leanne Brown (Phone: 02 6767 8467), Dr Lauren Williams (Phone: 02 4921 5649).

Consent Statement
I agree to participate in the above research project and give my consent freely.

I understand that the project will be conducted as described in the Information Statement, a copy of which I have retained. I understand I can withdraw at any time and do not have to give any reason for withdrawing.

I consent to:

- To complete a series of questionnaires as explained in the Information Statement.
- To have a physical examination of body fat, muscle status and fluid status, as explained in the Information Statement.
- The researchers accessing my medical records for the purposes of obtaining the following information; age, gender, diagnosis and stage of disease, other relevant diagnoses, nutrition-related
  symptoms and treatment details.

I understand that my personal information will remain confidential to the researchers.
I have the opportunity to have questions answered to my satisfaction.

Print Name: _____

Signature: _____ Date: _____

This project has been approved by the University's Human Research Ethics Committee, Approval No. H-773-0304. Should you have concerns about your rights as a participant in this research, or you have a complaint about the manner in which the research is conducted, it may be given to the researcher, or if an independent person is preferred, to the Human Research Ethics Officer, Research Office, The Chancellery, The University of Newcastle, University Drive, Callaghan NSW 2308, telephone (02) 4921 6333, email Human-Ethics@newcastle.edu.au. Alternatively subjects can contact Associate professor Maggie Jamieson, Director of the New England Area Health Service Research Institute on (02) 6766 2288.

Consent Form

The UNIVERSITY of NEWCASTLE AUSTRALIA

Appendix 3: Data collection forms

Appendix 3.1: Semi-structured Individual Interview Protocol 1

Semi-structured Interview
Protocol 1: Management/People in position of influence

I want to ask about the development of dietetic positions in the area and your involvement in this process.

1. What is your view on the importance of the services provided by dietitians?

2. What factors have influenced the allocation of funding to dietetic services in general?

3. Were you in this position when the _____ position was created?

4. What is your recollection of how _____ position eventuated?

5. What factors made it possible for this position to be created/funded?

6. What, if any, barriers were there to the creation of dietetic positions?

7. Is there anything else you would like to add?

8. Is there anyone else I should be interviewing in relation to this research who could add additional information to this study? Are they currently employed by Hunter New England Health? If not, could you please pass contact details on to them.

Thank participant for their time.

Appendix 3.2: Semi-structured Individual Interview Protocol 2

Semi-structured Interview
Protocol 2: Dietitians in Management

I want to ask about the development of dietetic positions in the area and your involvement in this process.

1. What factors influence the general level of funding to dietetic services?

2. Were you in this position when the _____ position was created?

3. What is your recollection of how _____ position was created?

4. What factors made it possible for this position to be created/funded?

5. What, if any, barriers were there to the creation of dietetic positions?

(repeat Q's 2-5 if discussing more than one position)

6. Is there anything else you would like to add?

7. Is there anyone else I should be interviewing in relation to this research who could add additional information to this study? Are they currently employed by Hunter New England Health? If not, could you please pass contact details on to them.

Thank participant for their time.

Appendix 3.3: Semi-structured Individual Interview Protocol 3

Semi-structured Interview
Protocol 3: Dietitians in positions (present)

I want to ask about your current position and the impact of the development of new position/s in the area.

1. How long have you been in your current position?

2. What influenced your decision to apply for your current position?

3. What influenced you to accept your current position?

4. How long do you intend to stay in your current position?

5. What factors might affect your decision to stay in your current position?

6. What factors might affect your decision to leave your current position?

7. Were you employed when _____ position was created?

If yes, go to question 8.

If no, to question 9.

8. Did the creation of the _____ position have an impact on you in any way?

9. Is there anything else you would like to add?

10. Is there anyone else I should be interviewing in relation to this research who could add additional information to this study? Are they currently employed by Hunter New England Health? If not, could you please pass contact details on to them.

Thank participant for their time.

Appendix 3.4: Semi-structured Individual Interview Protocol 4

Semi-structured Interview
Protocol 4: Dietitians in positions (past)

I want to ask about your previous position as a dietitian, and the impact of the development of new position/s in the area.

1. How long were you employed as a dietitian at _____?

2. What factors influenced your decision to apply for this position?

3. What influenced your decision to accept this position?

4. What factors influenced your decision to leave the position?

5. What, if anything, may have encouraged you to stay in the position?

6. Were you employed when this position _____ was created?

If yes, to question 7.

If no, go to question 8.

7. Did the creation of the _____ position have an impact on you in any way?

8. Is there anything else you would like to add?

9. Is there anyone else I should be interviewing in relation to this research who could add additional information to this study? Are they currently employed by Hunter New England Health? If not, could you please pass contact details on to them.

Thank participant for their time.

Appendix 3.5 Employment details for dietetic positions form

Data Sheet 1: Employment details for dietetic positions

Salary Classification				
ID number.				
Start & End date				
Employment Site				
ID number.				
Start & End Date				
Employment Site				
ID number.				
Start & End Date				
Employment Site				
Period of time position unfilled (dates)				

Appendix 3.6: Occasions of service data form

Data Sheet 2
Occasions of Service and Types of Service delivery

Site Number: _____

Year/Dates: _____

	Occasions of Service			
Type of Service	**Inpatients**	**Outpatients**	**Group Talks**	**Other**
Health Issues Addressed				
Diabetes				
Heart Disease				
Overweight				
Allergies				
Malnutrition				
Gastrointestinal				
Eating Disorders				
General Nutrition				
Other				
TOTAL				

Appendix 3.7: PG-SGA

Professor Sandra Capra
Professor of Nutrition and Dietetics
School of Health Sciences
Faculty of Health
University of Newcastle
University Drive
CALLAGHAN NSW 2308
TELEPHONE: 02 4921 5642
FACSIMILE: 02 4921 6984
Email: Sandra.Capra@newcastle.edu.au

Scored Patient-Generated Subjective Global Assessment (PG-SGA)

Patient ID

History (Boxes 1-4 are designed to be completed by the patient.)

1. Weight *(See Worksheet 1)*

In summary of my current and recent weight:

I currently weigh about _____ kg
I am about _____ cm tall

One month ago I weighed about _____ kg
Six months ago I weighed about _____ kg

During the past two weeks my weight has:
☐ decreased (1) ☐ not changed (0) ☐ increased (0)

Box 1 ☐

2. Food Intake: As compared to my normal intake, I would rate my food intake during the past month as:
☐ unchanged (0)
☐ more than usual (0)
☐ less than usual (1)
I am now taking:
☐ *normal food* but less than normal amount (1)
☐ little solid food (2)
☐ only liquids (3)
☐ only nutritonal supplements (3)
☐ very little of anything (4)
☐ only tube feedings or only nutrition by vein (0)

Box 2 ☐

3. Symptoms: I have had the following problems that have kept me from eating enough during the past two weeks (check all that apply):
☐ no problems eating (0)
☐ no appetite, just did not feel like eating (3)
☐ nausea (1)
☐ constipation (1)
☐ mouth sores (2)
☐ things taste funny or have no taste (1)
☐ problems swallowing (2)
☐ pain; where? (3)_____
☐ other** (1) _____
☐ vomiting (3)
☐ diarrhea (3)
☐ dry mouth (1)
☐ smells bother me (1)
☐ feel full quickly (1)

** Examples: depression, money, or dental problems

Box 3 ☐

4. Activities and Function: Over the past month, I would generally rate my activity as:
☐ normal with no limitations (0)
☐ not my normal self, but able to be up and about with fairly normal activities (1)
☐ not feeling up to most things, but in bed or chair less than half the day (2)
☐ able to do little activity and spend most of the day in bed or chair (3)
☐ pretty much bedridden, rarely out of bed (3)

Box 4 ☐

Additive Score of the Boxes 1-4 ☐ A

The remainder of this form will be completed by your doctor, nurse, or therapist. Thank you.

5. Disease and its relation to nutritional requirements *(See Worksheet 2)*
All relevant diagnoses (specify) _____
Primary disease stage (circle if known or appropriate) I II III IV Other _____
Age _____

Numerical score from Worksheet 2 ☐ B

6. Metabolic Demand *(See Worksheet 3)*

Numerical score from Worksheet 3 ☐ C

7. Physical *(See Worksheet 4)*

Numerical score from Worksheet 4 ☐ D

Global Assessment *(See Worksheet 5)*
☐ Well-nourished or anabolic (SGA-A)
☐ Moderate or suspected malnutrition (SGA-B)
☐ Severely malnourished (SGA-C)

Total PG-SGA score
(Total numerical score of A+B+C+D above) ☐
(See triage recommendations below)

Clinician Signature _____ RD RN PA MD DO Other __ Date _____

Nutritional Triage Recommendations: Additive score is used to define specific nutritional interventions including patient & family education, symptom management including pharmacologic intervention, and appropriate nutrient intervention (food, nutritional supplements, enteral, or parenteral triage). First line nutrition intervention includes optimal symptom management.

0-1	No intervention required at this time. Re-assessment on routine and regular basis during treatment.
2-3	Patient & family education by dietitian, nurse, or other clinician with pharmacologic intervention as indicated by symptom survey (Box 3) and laboratory values as appropriate.
4-8	Requires intervention by dietitian, in conjunction with nurse or physician as indicated by symptoms survey (Box 3).
≥ 9	Indicates a critical need for improved symptom management and/or nutrient intervention options.

Professor Sandra Capra
Professor of Nutrition and Dietetics
School of Health Sciences
Faculty of Health
University of Newcastle
University Drive
CALLAGHAN NSW 2308
TELEPHONE: 02 4921 5642
FACSIMILE: 02 4921 6984
Email: Sandra.Capra@newcastle.edu.au

Worksheets for PG-SGA Scoring

Boxes 1-4 of the PG-SGA are designed to be completed by the patient. The PG-SGA numerical score is determined using 1) the parenthetical points noted in boxes 1-4 and 2) the worksheets below for items not marked with parenthetical points. Scores for boxes 1 and 3 are additive within each box and scores for boxes 2 and 4 are based on the highest scored item checked off by the patient.

Worksheet 1 - Scoring Weight (Wt) Loss

To determine score, use 1 month weight data if available. Use 6 month data only if there is no 1 month weight data. Use points below to score weight change and add one extra point if patient has lost weight during the past 2 weeks. Enter total point score in Box 1 of the PG-SGA.

Wt loss in 1 month	Points	Wt loss in 6 months
10% or greater	4	20% or greater
5-9.9%	3	10 -19.9%
3-4.9%	2	6 - 9.9%
2-2.9%	1	2 - 5.9%
0-1.9%	0	0 - 1.9%

Score for Worksheet 1 ☐
Record in Box 1

Worksheet 2 - Scoring Criteria for Condition

Score is derived by adding 1 point for each of the conditions listed below that pertain to the patient.[1]

Category	Points
Cancer	1
AIDS	1
Pulmonary or cardiac cachexia	1
Presence of decubitus, open wound, or fistula	1
Presence of trauma	1
Age greater than 65 years	1

Score for Worksheet 2 = ☐
Record in Box B

Worksheet 3 - Scoring Metabolic Stress

Score for metabolic stress is determined by a number of variables known to increase protein & calorie needs. The score is additive so that a patient who has a fever of > 102 degrees (3 points) and is on 10 mg of prednisone chronically (2 points) would have an additive score for this section of 5 points.

Stress	none (0)	low (1)	moderate (2)	high (3)
Fever	no fever	>99 and <101	≥101 and <102	≥102
Fever duration	no fever	<72 hrs	72 hrs	> 72 hrs
Steroids	no steroids	low dose (<10mg prednisone equivalents/day)	moderate dose (≥10 and <30mg prednisone equivalents/day)	high dose steroids (≥30mg prednisone equivalents/day)

Score for Worksheet 3 = ☐
Record in Box C

Worksheet 4 - Physical Examination

Physical exam includes a subjective evaluation of 3 aspects of body composition: fat, muscle, & fluid status. Since this is subjective, each aspect of the exam is rated for degree of deficit. Muscle deficit impacts point score more than fat deficit. Definition of categories: 0 = no deficit, 1+ = mild deficit, 2+ = moderate deficit, 3+ = severe deficit. Rating of deficit in these categories are *not* additive but are used to clinically assess the degree of deficit (or presence of excess fluid).

Fat Stores:				
orbital fat pads	0	1+	2+	3+
triceps skin fold	0	1+	2+	3+
fat overlying lower ribs	0	1+	2+	3+
Global fat deficit rating	**0**	**1+**	**2+**	**3+**

Muscle Status:				
temples (temporalis muscle)	0	1+	2+	3+
clavicles (pectoralis & deltoids)	0	1+	2+	3+
shoulders (deltoids)	0	1+	2+	3+
interosseous muscles	0	1+	2+	3+
scapula (latissimus dorsi, trapezius, deltoids)	0	1+	2+	3+
thigh (quadriceps)	0	1+	2+	3+
calf (gastrocnemius)	0	1+	2+	3+
Global muscle status rating	**0**	**1+**	**2+**	**3+**

Fluid Status:				
ankle edema	0	1+	2+	3+
sacral edema	0	1+	2+	3+
ascites	0	1+	2+	3+
Global fluid status rating	**0**	**1+**	**2+**	**3+**

Point score for the physical exam is determined by the overall subjective rating of total body deficit.

No deficit	score = 0 points
Mild deficit	score = 1 point
Moderate deficit	score = 2 points
Severe deficit	score = 3 points

Score for Worksheet 4 = ☐
Record in Box D

Worksheet 5 - PG-SGA Global Assessment Categories

	Stage A	Stage B	Stage C
Category	Well-nourished	Moderately malnourished or suspected malnutrition	Severely malnourished
Weight	No wt loss **OR** Recent non-fluid wt gain	–5% wt loss within 1 month (or 10% in 6 months) **OR** No wt stabilization or wt gain (i.e., continued wt loss)	> 5% wt loss in 1 month (or >10% in 6 months) **OR** No wt stabilization or wt gain (i.e., continued wt loss)
Nutrient Intake	No deficit **OR** Significant recent improvement	Definite decrease in intake	Severe deficit in intake
Nutrition Impact Symptoms	None **OR** Significant recent improvement allowing adequate intake	Presence of nutrition impact symptoms (Box 3 of PG-SGA)	Presence of nutrition impact symptoms (Box 3 of PG-SGA)
Functioning	No deficit **OR** Significant recent improvement	Moderate functional deficit **OR** Recent deterioration	Severe functional deficit **OR** recent significant deterioration
Physical Exam	No deficit **OR** Chronic deficit but with recent clinical improvement	Evidence of mild to moderate loss of SQ fat &/or muscle mass &/or muscle tone on palpation	Obvious signs of malnutrition (e.g., severe loss of SQ tissues, possible edema)

Global PG-SGA rating (A, B, or C) = ☐

Appendix 3.8: QLQ-C30

›fessor Sandra Capra
›fessor of Nutrition and Dietetics
:cipline of Nutrition and Dietetics
Box 38, Hunter Building
University of Newcastle
CALLAGHAN NSW 2308

TELEPHONE: 02 4921 5642
FACSIMILE: 02 4921 6984
Email:Sandra.Capra@newcastle.edu.au

Pt ID: _____

EORTC QLQ-C30 (version 3)

We are interested in some things about you and your health. Please answer all of the questions yourself by circling the number that best applies to you. There are no "right" or "wrong" answers. The information you provide will be strictly confidential.

Your birthdate (Day, Month, Year): _____
Today's date (Day, Month, Year): _____

	Not At All	A Little	Quite a Bit	Very Much
1. Do you have any trouble doing strenuous activities, like carrying a heavy shopping bag or suitcase?	1	2	3	4
2. Do you have any trouble taking a long walk?	1	2	3	4
3. Do you have any trouble taking a short walk outside of the house?	1	2	3	4
4. Do you need to stay in bed or a chair during the day?	1	2	3	4
5. Do you need help with eating, dressing, washing yourself or using the toilet?	1	2	3	4
During the past week:				
6. Were you limited in doing either your work or other daily activities?	1	2	3	4
7. Were you limited in pursuing your hobbies or other leisure time activities?	1	2	3	4
8. Were you short of breath?	1	2	3	4
9. Have you had pain?	1	2	3	4
10. Did you need to rest?	1	2	3	4
11. Have you had trouble sleeping?	1	2	3	4
12. Have you felt weak?	1	2	3	4
13. Have you lacked appetite?	1	2	3	4
14. Have you felt nauseated?	1	2	3	4
15. Have you vomited?	1	2	3	4

Please go on to the next page

Professor Sandra Capra
Professor of Nutrition and Dietetics
Discipline of Nutrition and Dietetics
Box 38, Hunter Building
University of Newcastle
CALLAGHAN NSW 2308

TELEPHONE: 02 4921 5642
FACSIMILE: 02 4921 6984
Email:Sandra.Capra@newcastle.edu.au

During the past week:	**Not At All**	**A Little**	**Quite a Bit**	**Very Much**
16. Have you been constipated?	1	2	3	4
17. Have you had diarrhoea?	1	2	3	4
18. Were you tired?	1	2	3	4
19. Did pain interfere with your daily activities?	1	2	3	4
20. Have you had difficulty in concentrating on things, like reading a newspaper or watching television?	1	2	3	4
21. Did you feel tense?	1	2	3	4
22. Did you worry?	1	2	3	4
23. Did you feel irritable?	1	2	3	4
24. Did you feel depressed?	1	2	3	4
25. Have you had difficulty remembering things?	1	2	3	4
26. Has your physical condition or medical treatment interfered with your family life?	1	2	3	4
27. Has your physical condition or medical treatment interfered with your social activities?	1	2	3	4
28. Has your physical condition or medical treatment caused you financial difficulties?	1	2	3	4

For the following questions please circle the number between 1 and 7 that best applies to you.

29. How would you rate your overall health during the past week?

1	2	3	4	5	6	7
Very Poor						Excellent

30. How would you rate your quality of life during the past week?

1	2	3	4	5	6	7
Very Poor						Excellent

Appendix 3.9: Modified Constipation Assessment Scale

Professor Sandra Capra
Professor of Nutrition and Dietetics
Discipline of Nutrition and Dietetics
Box 38, Hunter Building
University of Newcastle
CALLAGHAN NSW 2308
TELEPHONE: 02 4921 5642
FACSIMILE: 02 4921 6984
Email: Sandra.Capra@newcastle.edu.au

Pt ID: _____

BOWEL HEALTH ASSESSMENT SCALE (BHAS)

1. Overall, how would you rate your satisfaction with your bowel health at the moment?

Please circle the number which best applies to you, where **one** represents **extremely dissatisfied** and **five** is **very satisfied**.

1	2	3	4	5
Extremely dissatisfied				**Very satisfied**

2. Please answer whether you are currently experiencing any of the following by placing a tick (√) in the appropriate box.

	No problem	Some problem	Severe problem
i) Abdominal distension or bloating	❒	❒	❒
ii) Change in the amount of gas passed rectally	❒	❒	❒
iii) Less frequent bowel movements	❒	❒	❒
iv) More frequent bowel movements	❒	❒	❒
v) Oozing liquid stool	❒	❒	❒
vi) Rectal fullness or pressure	❒	❒	❒
vii) Small volume of stool	❒	❒	❒
viii) Large volume of stool	❒	❒	❒
ix) Unable to pass stool	❒	❒	❒

The BHAS is based on the Constipation Assessment Scale developed by Mc Millan and Williams.
Mc Millan SC and Williams MS. Validity and reliability of the constipation assessment scale. Cancer Nursing. 1989;12(3):183-188.

Version 3, March 2001.

Appendix 3.10: Patient satisfaction questionnaire

Professor Sandra Capra
Professor of Nutrition and Dietetics
Discipline of Nutrition and Dietetics
Box 38, Hunter Building
University of Newcastle
CALLAGHAN NSW 2308
TELEPHONE: 02 4921 5642
FACSIMILE: 02 4921 6984
Email: Sandra.Capra@newcastle.edu.au

Pt ID: _____

Patient Satisfaction Questionnaire

1. Were you able to talk to a dietitian when you wanted to? ❒Yes ❒ No
If no, please explain why _____

2. Did you talk with a dietitian more than once? ❒Yes ❒ No
If yes, was the follow-up contact useful? ❒Yes ❒ No

3. Why did you talk with a dietitian at Tamworth Base Hospital Oncology Clinic?
❒ for advice on (please specify)_____
❒ for reassurance that I was eating properly
❒ I am not sure
❒ other (please specify) _____
❒ for general nutrition advice
❒ someone recommended that I see the dietitian
❒ for advice about nutrition supplements

4. Circle how much you agree or disagree with each statement below:
(1 = disagree strongly; 2 = disagree; 3 = neither agree nor disagree; 4 = agree; 5 = agree strongly;
N/A = not applicable)

	Disagree Strongly				Agree Strongly
a. The dietitian provided useful information	1	2	3	4	5
b. The dietitian knew what she or he was talking about	1	2	3	4	5
c. The advice from the dietitian was suited to my special needs	1	2	3	4	5
d. After talking to the dietitian I knew what to eat for my special needs	1	2	3	4	5
e. After talking with the dietitian I changed my diet	1	2	3	4	5
f. By talking with the dietitian I learned I did not need to change my diet as my intake was already suited to my needs	1	2	3	4	5
g. After talking with the dietitian I could not change my diet	1	2	3	4*	5*

*If you circled 4 or 5 at (g), were any of these a problem (please tick one or more)?
❒ Knowing what to eat ❒ Getting to the store
❒ Preparing meals and snacks ❒ Finding the foods I needed in the store
❒ Eating ❒ The foods I needed cost too much
❒ Other (please specify) _____

	Disagree Strongly				Agree Strongly	
h. After changing my diet my _____ improved	1	2	3	4	5	NA
i. After talking with the dietititan I felt better emotionally	1	2	3	4	5	
j. After talking with the dietitian I felt better physically	1	2	3	4	5	
k. After talking with the dietitian I felt in control of my condition	1	2	3	4	5	NA
l. The dietitian provided support and encouragement	1	2	3	4	5	
m. The dietitian cared about me	1	2	3	4	5	
n. Anyone with my condition should talk to a dietitian	1	2	3	4	5	
o. There was no benefit in talking with the dietitian	1	2	3	4	5	

Appendix 3.11 Patient feedback questionnaire

Professor Sandra Capra
Professor of Nutrition and Dietetics
Discipline of Nutrition and Dietetics
Box 38, Hunter Building
University of Newcastle
CALLAGHAN NSW 2308
TELEPHONE: 02 4921 5642
FACSIMILE: 02 4921 6984
Email: Sandra.Capra@newcastle.edu.au

Pt ID No: ____

Patient Feedback Questionnaire

1. Have you had any nutrition advice previously (please circle)? Yes No

2. If yes, where/who did you receive this information from? _____

3. How far would you be prepared to travel to see a dietitian? ___ travelling time (mins) or ___ distance (km).

4. How far did you have to travel to attend the Oncology Clinic at Tamworth Base Hospital? ___ travelling time (mins) or ___ distance (km).

5. How long are you prepared to wait to see a dietitian on your clinic day? ___ (hours) ___ (mins)

6. How long are you prepared to wait for an appointment to see a dietitian? (weeks)___ (days) ___

7. Would you be prepared to pay for a dietetic service (please circle)? Yes No

8. Did you find the dietetic sessions were (please circle). Too Long Too Short Just Right.

9. Did you find the service intrusive in any way (please circle)? Yes No

If yes, please explain why? _____

10. Did you feel you received enough dietetic input? Yes No

If no, please explain why? _____

11. Do you have any other comments about the contact you had with the dietitian?

_____

_____

Patient Feedback Survey Page 1 of 1

Appendix 4: Research publications

Appendix 4.1: Publications arising from this thesis

Articles

Brown L, Capra S and Williams L. Profile of the Australian dietetic workforce 1991-2005. *Nutrition and Dietetics* 63(3):166-178, 2006.

Brown L, Capra S and Williams L. A best practice dietetic service for rural patient with cancer undergoing chemotherapy: a pseudo-randomised controlled pilot study. *Nutrition and Dietetics* 65(2):175-180, 2008.

Conference Abstracts

Brown L, Capra S and Williams L. Opportunity and Inequity in the dietetics workforce. Dietitians Association of Australia 23rd National Conference Abstracts, 26-28 May 2005, Perth.

Brown L, Capra S and Williams L. Features of a best practice service for rural patients with cancer undergoing chemotherapy. *Nutrition and Dietetics* 63 (Supp 1):A3. Dietitians Association of Australia 24th National Conference Abstracts 11-13 May 2006, Sydney.

Brown L, Capra S and Williams L. Development and characteristics of the dietetic workforce in six rural sites in NSW. *Nutrition and Dietetics* 64 (Supp 1):S7. Dietitians Association of Australia 25th National Conference Abstracts, Hobart 24-26 May 2007.

Brown L, Capra S and Williams L. Recruitment and retention issues for rural dietetic workforce. *Nutrition and Dietetics* 65 (Supp 2):A15. Dietitians Association of Australia 26th National Conference Abstracts, Gold Coast 29-31 May 2008.

Brown L, Williams L and Capra S. Recruitment and retention issues for rural dietetic workforce. NSW Rural and Remote Health Conference, Coffs Harbour, 19-21 November 2008.

Conference posters

Brown L and Capra S. The changing face of dietetics in Australia. Dietitians Association of Australia 22nd National Conference. 20-22 May 2004 Melbourne.

Brown, L and Capra S. The dietetics workforce in rural and remote Australia. The National Services for Rural and Remote Allied Health Conference, Alice Springs, 26-28 August 2004.

Brown L, Capra S and Williams L. Dietetic workforce in six rural sites in NSW. The 2007 Rural Health Research Colloquium. 15-17 May 2007, Tamworth.

Brown L, Capra S and Williams L. Ensuring Equitable Access to Dietetic Services in Australia. 15th International Congress of Dietetics, Yokohama Japan. September 8-11 2008.

Research grants

2004 Early Career Researcher Grant $6 201, University of Newcastle. Used in support of the Oncology Case Study, reported in Chapter Seven of this thesis.

2006 Primary Health Care Research and Education Development (PHCRED) UDRH Grants-in-Aid $5 000, University Department of Rural Health Northern NSW, University of Newcastle. Used in support of the Dietetics Workforce Case Study, reported in Chapters Three to Six of this thesis.

2006 Research Grants Committee Travel Grant $1 120, University of Newcastle

2008 Research Grants Committee Travel Grant $1 700, University of Newcastle

Appendix 4.2: Dietetics workforce article

Journal Article 1: Brown L, Capra S and Williams L. Profile of the Australian dietetic workforce 1991-2005. *Nutrition and Dietetics* 63(3):166-178, 2006.

This research paper was accepted for publication in the journal *Nutrition and Dietetics* (Journal of the Dietitians Association of Australia, including the Journal of the New Zealand Dietetic Association) in 2006. Since this paper was published additional DAA membership data sets and more recent dietetics workforce data from the 2006 Census has become available. The new data has been incorporated into this thesis, which explains why there are some differences in the data that is presented in Chapter Two of this thesis.

Appendix 4.3: Dietetics best practice service delivery article

Journal Article 2: Brown L, Capra S and Williams L. A best practice dietetic service for rural patients with cancer undergoing chemotherapy: a randomised controlled pilot study. *Nutrition and Dietetics* 65(2):175-180, 2008.

This research paper was accepted for publication in early 2008 by the journal *Nutrition and Dietetics* (Journal of the Dietitians Association of Australia, including the New Zealand Dietetic Association). Since it was accepted for publication, additional research papers have been reported in the literature. While these references were not available at the time of the original publication they have now been incorporated into Chapter Seven of this thesis.

Appendix 4.4: Statement of Collaboration

The dietitian EPC and FTE data by Division of GP in Table 34 of Chapter Six, has been provided by Ms Lana Mitchell, PhD candidate at the University of Newcastle who is also being supervised by Professor Sandra Capra. The data relevant to the six study sites in Study Two of this thesis has been accessed for this study. This data is also being used in a joint journal article to be submitted for publication in 2009.

……..

Leanne Brown