A study to determine if there is a need for a community dietitian to work in the Wentworth area of New South Wales

Angela O'Sullivan

University of Wollongong

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A STUDY TO DETERMINE IF THERE IS

A NEED FOR A COMMUNITY DIETITIAN TO

WORK IN THE WENTWORTH AREA OF NEW SOUTH WALES

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This thesis is submitted in partial fulfilment of

Master of Science

( Nutrition and Dietetics)

The University of Wollongong,

Department of Public Health and Nutrition.
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ACKNOWLEDGEMENTS

Special thanks must be extended to the following people, Ms Heather Yeatman for her assistance, patience and supervision in compiling this report, Ms Anne Porter for her assistance in the statistical analysis of results, Ms Christine Porter for her assistance and encouragement during this study, the Nutrition and Dietetic Services of the Wentworth Area Health Service for allowing me to conduct this study within their area, to Ms Sandra Longmore, Mr Rod Hughes and Mrs Mary Lecke for their help in the distribution of surveys, to all respondents for taking the time to fill in the survey and to Ms Edwina Macoun for time spent providing me with useful information relevant to the study.

I would like to thank my classmates especially Emma Patterson, Lynne Raynor, Collette Murray, Susan Lee, Judy Wellins and Elizabeth Robinson for their friendship, support and encouragement during this study and Tania Murphy and Andrea Mether for their continued encouragement.

A special thanks must be extended to Mr Steve McIntyre for kindly allowing me use of his computer equipment and for his encouragement. Finally I would like to thank my parents, Mr Rod and Mrs Marie O'Sullivan for their support without which none of this would have been possible.
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ABSTRACT

Diet-related health issues are prominent causes of morbidity and mortality in Australia. Dietitians have increasingly been recognised as the experts in nutrition. Community dietitians work with the community to help prevent diet-related diseases.

There are no community dietitians working in the Wentworth Area of New South Wales. The aim of this study was to determine if there was a need for community dietitians / nutritionists to work in the Wentworth Area.

The study was undertaken using two surveys and an investigation of secondary data. The first survey was randomly distributed to 166 health workers in the Wentworth area achieving a 74 percent response rate. The results indicated that the respondents had an accurate perception of the duties of a community dietitian and they believed the prominent health issues in the Wentworth area were similar to those indicated by the Australian Institute of Health (1990) for the whole of Australia. The majority of respondents believed a community dietitian could play a role in the prevention of the major diet-related health issues facing the Wentworth area.

The second survey was aimed at dietitians associated with the health promotion unit in area health services and regions in New South Wales other than the Wentworth area. The response rate was 97 percent. The results indicated that there was a mean of 2.1 community dietitians working in any area health service or region of New South Wales. The majority of areas had employed community dietitians for
The clinical, hospital based dietitians in six of the areas or regions spent less than 5 per cent of their time on community nutrition activities. Eight areas (mainly regional) indicated that the hospital based dietitians do community work.

The third component of the study comprised interviewing the clinical hospital based dietitians in the Wentworth area to determine the amount of community nutrition work being conducted in the area. The nutritional needs of the Wentworth area were determined from existing data. The results indicated that dietitians in the Wentworth area spent less than five per cent of their time on community nutrition activities, however, they spent this time actively planning community nutrition activities to help in the prevention of diet related diseases.

This study indicated that there was a felt need for a community dietitian as expressed by health workers in the Wentworth area. In comparison to other area health services and regions in New South Wales the Wentworth area is lacking in number of community dietitians per head of population despite having similar health issues and target groups. This indicates a comparative need for a community dietitian. According to this study there is a need for a community dietitian to work in the Wentworth area. However, there also appears to be a need for many other health professionals.
INTRODUCTION

The issue of nutrition in Australia has been documented. Diet-related health issues such as heart disease, hypertension, cancer, diabetes and obesity are widespread and have been identified as the major causes of morbidity and mortality in Australia (Duff 1990, Australian Institute of Health 1990).

Dietitians have increasingly been recognised as the experts in nutrition. Traditionally dietitians worked in a hospital setting dealing with sick patients who had special dietary requirements. However over the past decade nutrition care has begun to focus on prevention of diet related health issues through health promotion and nutrition education to healthy people, aiming to achieve behavioural and structural change.

To cater for this dietitians have begun to work in community settings as well as hospital settings so that they may target the larger community.

Few studies have been conducted to determine the effectiveness of community dietitians.

The Wentworth area of New South Wales did not employ community dietitians. The Wentworth area, however, had been found to have some of the highest rates of morbidity and mortality from diet-related disorders in New South Wales.
Profile of the Wentworth Area

The Community Health Services Directory for the New South Wales Department of Health (1991)(A) described 16 Areas and Regions in New South Wales. There were six country regions and 10 metropolitan areas. Refer to Appendix 1 for maps of the area and health regions of New South Wales.

The Wentworth Area Health Service encompassed the local government areas of the Blue Mountains, Hawkesbury and Penrith with a population of 280,000 in 1990. At the time of the study there were six public hospitals, three private hospitals and two nursing homes in the area. Other health services included six community health centres, eight early childhood centres, 58 generalist community nurse clinics, one Health Promotion Unit and six other non-government health units providing women's health services, Aboriginal medical services, drug counselling, pregnancy support and youth health services. (H.S.D.U., 1991)

Penrith was the main commercial area in the Wentworth area with smaller commercial areas existing at Richmond, Windsor, Springwood and Katoomba. Much of the area was rural and there were large wilderness areas in the Blue Mountains. Refer to Appendix 1 for a map of the Wentworth area.

The Wentworth area comprised a high percentage of low socio-economic residents. Fifty seven and one half per cent of Wentworth residents in 1986 aged 15 years and over received annual incomes of less than $15,000. This was a higher percentage than the national average.
In general terms the Wentworth Area has tended to attract low to middle income households often purchasing their first homes. (W.C.H.P.,1992)

In 1990 the birth rate in the Wentworth area was the highest in all the Sydney area, comprising 5000 births per year. The highest percentage of births was recorded for women aged 25 to 29 years, accounting for 41.7 per cent of births. There also was a higher percentage of births to women under the age of 20 years, accounting for 5.4 per cent of births in the Wentworth area, compared to 4.6 per cent of births in the rest of Sydney. (H.S.D.U.1991)

The total population of New South Wales has been projected to increase by 29 per cent from 1986 to the year 2001. (Cited H.S.D.U. 1991) The largest of these increases would occur in the older age groups. However the largest increases in child population was expected to be concentrated in the Western Metropolitan areas of Sydney which includes the Wentworth area. (H.S.D.U.1991). The Wentworth area population was projected to increase by 55 per cent between 1986 and 2001. (Cited H.S.D.U. 1991).

Overall the Wentworth area comprised a youthful age structure. Penrith and Hawkesbury Local Government Areas had similar youthful populations while the Blue Mountains had relatively large numbers of older residents as well as young children. (H.S.D.U,1991).

The Wentworth area had the second largest urban concentration of Aboriginal people in the Sydney area. In 1986 2000 Aboriginal people lived in the Wentworth area, with 1300 of these in the Penrith Local Government Area.
Since there are no community dietitians working in the Wentworth area it was decided to conduct a study to determine if there was a need for a community dietitian to work in the Wentworth area.

AIMS OF THE STUDY

The aim of this study was to determine if there was a need for community dietitian/nutritionists to work in the Wentworth area of New South Wales.

The goals for this study were as follows:

1. To determine the nutritional issues in the Wentworth area.

2. To compare other Area Health Services and Regions in New South Wales to the Wentworth area in terms of numbers of community dietitians/nutritionists per 100,000 population, community nutrition activities conducted, diet-related health issues and target groups.

3. To determine if the Wentworth area health workers had an accurate perception of the duties and work venues of a community dietitian/nutritionist.

4. To determine how the Wentworth area compared to the other areas and regions in New South Wales, in terms of nutritional needs.
DEFINITIONS

* **Community**: a community is defined as a population living in a defined geographic area that possesses the culture, customs and values that determine the use of natural resources and the functions performed in the social division of labour (Smith, 1979).

* **Qualified Nutrition Expert**: A person who is eligible for membership of the Dietitians Association of Australia.


* **Health Promotion**: The activities which are directed toward the prevention of health problems and the promotion and maintenance of health (N.S.W Department of Health, 1991.B).

* **Community Nutrition**: Community Nutrition is a primary health care activity. It is a multisectorial process coordinated and controlled by the community at a local level and is involved in skill development, education, behavioural and structural change. The process involves health issues with a nutritional component, is directed towards prevention of illness and promotion of health and is cognizant of different cultures (M.A.D.S of W.A.H.S, 1992).
CHAPTER 1:

LITERATURE REVIEW
1.1 Nutrition in Australia

In Australia nutrition has been recognised as one of the major sources of mortality and chronic illness (Duff, 1990). According to the Australian Institute of Health (1990) the major causes of illness and death in Australia, in descending order of prevalence, were:

1. Heart disease
2. Cancer
3. Injury
4. Communicable diseases
5. Musculoskeletal disease
6. Diabetes
7. Disabilities
8. Dental disease
9. Mental health
10. Asthma

Nutrition has been identified as playing a role in four of these illnesses, heart disease, cancer, diabetes and dental disease. Unbalanced nutrition was one of the three major risk factors for premature death in Australia (Australian Institute of Health, 1990).

The National Better Health Program, based on recommendations in the Health For All Australians report (1988) and from The Australian Institute of Health (1990), identified the following priority areas for health:

1. Improved nutrition
2. Prevention of high blood pressure
3. Cancer prevention
4. Improved injury prevention
5. Improved health for older people

According to the New South Wales Health Department's (1991)(A) Vision for Health report, the most preventable causes of death are life-style related. Darnton-Hill and English (1990) also reported
similar findings.

According to Macoun (1990) the disease patterns in the community of Australia indicated the need for nutrition education programs and services to be an integral part of primary prevention and health promotion. This was in accordance with the two primary goals of the strategic plan of the New South Wales Health Department for 1990:

1. To improve the health status of the community through public services and prevention and promotion programmes.

2. To ensure the delivery of appropriate health care services.

(amos, 1992)

Many studies have been conducted to determine the nutritional status and nutritional needs of the Australian community over the past decade. Recent surveys conducted in Victoria and South Australia have indicated there was widespread community concern with a range of food and nutrition issues (Crawford, Baghurst, 1991).

Crawford and Baghurst (1990) also reported on a national survey which investigated the knowledge base of the community in relation to the diet health nexus, to establish what dietary actions the public had attempted to take and barriers to success.

Crawford and Baghurst (1990) surveyed 1500 adults randomly chosen from the electoral roll, 300 subjects per state. A 67 per cent response rate was obtained after the questionnaire was mailed and reminders were sent. The results indicated that although the majority of the community perceived that fat, sodium and sugar contribute to the development of disease and ill health, there was
still a high proportion who remained unconvinced. Two thirds of the respondents associated fat with heart disease and 45 per cent linked sodium to hypertension. However there appeared to be confusion about the roles of simple carbohydrates and fibre in disease causation. The results indicated there was a wide spread need for community education on nutrition issues.

The first goal of interest indicated in the New South Wales Department of Health (1984) Diet, Nutrition and Health policy paper was to improve nutrition information and consumer education in New South Wales. This goal may be reached by a number of strategies, including further educating the public about nutrition (Darnton-Hill and English, 1990).

The literature has emphasised the importance of nutrition issues in the prevention of disease in Australia. Individual areas or communities within Australia have reflected this national trend. In particular the Wentworth area in New South Wales has experienced a high rate of diet related health issues.

1.2 Health profile of the Wentworth area

The major causes of death reported in the Wentworth area were heart disease, cancer, respiratory disorders and accidents. Heart disease and cancer were by far the main cause of death in the area (H.S.D.U, 1991).

A feasibility study was conducted in the Penrith Local Government Area in 1990 to determine if the New South Wales Health Department
could fund a multistrategy nutrition project centred on the food supply in the Penrith area. The feasibility study, conducted by the Penrith City Council, the Wentworth Centre for Health Promotion and the Department of Community Medicine, Westmead Hospital, identified that the Penrith community was at high risk of heart disease.

"From the available data on mortality and morbidity from diet related disease the problem which stands out in Penrith is an excess death rate from heart attacks." (Brierley et al, 1991).

The feasibility study consisted of:

- collated demographic and nutrition data
- data from existing studies of similar populations
- mapping of retail food outlets and services
- developed and commissioned price and availability audits
- a shopping habits survey
- an opinion leaders interview about dietary habits and beliefs.

The feasibility study was designed to determine whether an intervention such as a multistrategy nutrition project could be directed towards changes in the local food supply.

A number of food supply issues were identified, including difficulties with access and availability of basic foods, a high proportion of takeaway shops, fewer grocery shops per head of population than the rest of Sydney, longer distances to travel to grocery shops than the rest of Sydney and inadequate public transport for shopping. The study concluded that there was a need to
pursue nutrition promotion through local action aimed at improving the food supply.

Other diet related health issues such as stroke and non insulin dependent diabetes mellitus were found to be very common in the Wentworth Area. In the Penrith area alone 0.2 per cent of the population had diabetes. This was higher than the national average (Brierley, et al, 1991).

During the feasibility study, key leaders in the Penrith local government area were chosen to represent the Penrith community as a whole in a study to determine their opinion of the current nutrition and food situation in Penrith. The study found that most people in Penrith agreed that although it was the responsibility of each individual to take care of his or her diet it was not within the individual's power to achieve this single handedly. The community had an important role to play in making healthy foods more available and in improving eating habits.

Brierley et al (1991) described this as promotion of healthy food through the mechanism of community education to stimulate increased demand.

Information given by the respondents on food and nutrition issues was found in most cases to be wrong. There had been little action in the Penrith area despite a well recognised need for more nutrition activity to address the extent of diet related problems (Brierley, et al, 1991).
The Wentworth Centre for Health Promotion (1992) identified nutrition as one of the main priorities to improve in the area. They suggested that there was a need to re-orientate health services in the area towards a more preventive style.

The Wentworth Centre for Health Promotion planned to conduct the following two community nutrition activities:


2. Hazelbrook Healthy Village Community Development project which would develop a model approach for community development in health promotion using food and nutrition as a focus to facilitate healthier eating (W.C.H.P, 1992).

1.3 Prevention of nutrition related health issues

Diet related health issues are major determinants of the dominant health problems in Australia (Ibrahim, 1990). Many such diet related health problems could be prevented.

The concept of preventive medicine has moved from being mainly concerned with the physical environment to the physical condition of the human individual. According to Duff (1990) there was a need to return to preventive styles of health care that reach a wider population. Nutrition research also needed to be more community based (Duff, 1990).
The New South Wales Health Department's 1991 Corporate Plan (NSW Health Department, 1991) indicated that a comprehensive and integrated range of services should be made available and accessible to the community for effective disease prevention. Dietetics and applied nutrition were included in this plan as being a service provided as part of community health services.

Dietetic services have been identified as a source of nutrition information which played a part in prevention of diet related disease. A study described by Crawford and Baghurst (1991) designed to address the issues of attitudes and use of various sources of nutrition information indicated that the Australian public consider that the major sources of nutrition information were the National Heart Foundation, other health foundations, dietitians, schools and the food industry.

The above organisations may address diet related illness prevention through programs designed to target particular population groups who are at risk. Information on the effectiveness of such community based prevention programs is limited as only impact and process evaluations are available. Most nutrition interventions are lifestyle or behavioural change related. Therefore studies of long term behaviour change could be a measure of effectiveness. Studies of this kind are limited.

To date, it has been apparent that health promotion and community education has been effective and that diet related diseases can be prevented through community based interventions. Impact evaluations of community programmes indicate this. James et al (1990) described
a study which measured the effectiveness of the community health education program (CHEGS) weight control program. The study compared the weight loss over four weeks of an overweight group of adults who completed the CHEGS weight control program to a control group of overweight adults who started the program but failed to complete it. All participants who completed the program lost an average of 4.7 kilograms or 0.52 kilograms per week each. Ninety seven per cent of completers lost weight whereas only 65 per cent of non completers lost weight.

This study was biased as the non completers did attend some of the program. They may have gained enough information to lose weight without completing the program. However evidence showed that 32 per cent of program completers lost weight who would not have lost weight if they had quit the program.

The CHEGS study compared favourably with other behaviour based weight - control groups reported in the literature. Stunkard et al (1980) have shown that participants in behaviourial therapy groups reduced weight by 0.45 kilograms and Peterson et al (1985) reported a reduction of 0.34 kilograms per week in a group run by trained professionals.

The impact evaluation of the James et al (1990) CHEGS study indicated that community based interventions can help to prevent risk factors for diet related illnesses, such as overweight.

During 1990/1991, according to Macoun (1992) nutrition intervention was included in the strategic plan for all health areas and regions of New South Wales. Eleven of the 16 areas were addressing nutrition
policies with education programs, indicating that prevention of diet
related health issues, via use of community based education
interventions and incorporating a variety of community health
services was in wide use in New South Wales.

Another method of prevention of diet related health issues other
than community education programs are local food and nutrition
policies. Local food and nutrition policies are small scale efforts
to create community systems that respond to nutritional needs
(Grossman, Webb, 1991). They can assist in the prevention of diet
related health issues through community action to increase

According to Grossman and Webb, 1991, nutritionists/dietitians are
often reluctant to work at this political cutting edge. However food
and nutrition policy initiatives offer an opportunity for
nutritionists to function as planning and technical advisors to
those responsible for political intersectorial action (Grossman,

1.4 Community dietitians

Few studies have been conducted in Australia on the effectiveness of
community dietitians in community based nutrition interventions.
Dietitians have been recognised increasingly as the nutrition
experts by the general public and other health professionals
(Dodd, 1990). Interest in food choices for good health has continued
to rise as the public has recognised how diet influences health. As
this interest expands the need for nutrition education and nutrition
counselling by qualified experts will expand (Dodd, 1990).
The responsibility to help provide the public with reliable nutrition information should rest with many health professionals (Chapman et al., 1991). Dietitians / nutritionists who are suitably qualified have been identified as resource persons to train other health service professionals in nutrition (Robertson, 1991).

Traditionally dietitians / nutritionists have been employed in hospital settings where they provided secondary and tertiary nutritional care to sick or rehabilitation patients. However, the need for the profession of dietetics to expand from the hospital setting and target a larger range of the population, has been recognised (Robertson, 1991). In response to this the training of dietitians / nutritionists in Australia began to focus on primary health care or prevention of diet related illnesses through communication and education in a community setting (Robertson, 1991).

Community nutrition has become an expanding speciality area for dietitians and was recognised by the Better Health Commission (1987) as a field of dietetics in which more dietitians should be employed in order to disseminate reliable information and practical advice about healthy eating to the Australian population.

In 1983 five per cent of Dietitian Association of Australia members described their area of employment as community nutrition. By 1989 this number had grown to 13 per cent of the total membership (Scott, 1991).

A survey of recent graduate dietitians found that only eight per cent of respondents were employed in the community nutrition area but a further 15 per cent intended to move into this field within the next
five years (Scott, 1991).

The Nutrition Taskforce of the Better Health Commission (1987) made recommendations for the training of workers in the field of nutrition. Targets set in 1987 for 1995 were to increase the numbers of dietitians throughout Australia from 65 to 120 per 1 million population. Within this increase the number of community dietitians should be doubled.

It was recommended that dietitians / nutritionists should be involved in all aspects of nutrition education, acting as nutrition specialists, resource people and educators of patients, health professionals, teachers, industry, government policy makers, mass media and the general public (Better Health Commission, 1987).

Macoun (1990) in a survey of nutrition projects being run in New South Wales determined, that all health areas and regions of New South Wales employed community dietitians except the Wentworth Area and the Eastern Sydney Area. Numbers of community dietitians in an area ranged from 0 to 5.6 full-time equivalents, with two being the average.

The areas or regions with more than one dietitian reported a marked increase in numbers of nutrition projects being run. Macoun (1992) compiled a list of all nutrition education programs and projects that had been run in New South Wales in 1990 and 1991. The target population for these projects included the general population, school children, mothers and infants, people with low incomes, people of non English speaking backgrounds, older people, Aboriginal people and overweight / obese people. These were also the population
groups adopted by the Nutrition Education Subcommittee of the National Health and Medical Research Council (Macoun, 1992). Dietitians were involved with the majority of the projects or programs on the list.

The following is a list of the areas in which projects / programs were run and the number of projects / programs conducted in that area in 1990.

- North Coast ——— 3
- Hunter area ——— 2
- Western Sydney ——— 1
- Central Sydney ——— 2
- Illawarra area ——— 7
- Eastern Sydney ——— 2
- Central coast ——— 2
- Southern Sydney ——— 6
- South West region ——— 2
- Central West region ——— 2
- South West Sydney ——— 5
- Northern Sydney ——— 3

The dietitians employed at the three local hospitals of the Wentworth Area Health Service have formed a combined group known as the Nutrition and Dietetic Services of the Wentworth Area Health Service (N.A.D.S of W.A.H.S). The mission statement for the Nutrition and Dietetic Services of the Wentworth Area Health Service included "to promote, protect and maintain the nutritional health of residents of the Wentworth Area Health Service." The three main
areas of service were clinical services, food services and community nutrition services. Clinical and food services were adequately covered by the present employees however community nutrition activities tend to be limited (N.A.D.S. of W.A.H.S., 1992)

The N.A.D.S of W.A.H.S's community nutrition policy identified groups in the Wentworth area which were at risk of nutrition related health illnesses. These target groups included adolescents, families with young children, older people, socioeconomically disadvantaged, Aboriginal people and people of non English speaking backgrounds.

The policy outlined activities that were being planned to increase their involvement in community nutrition activities. A shortage of staff to complete the planned activities indicated that the area needed to consider creating a new community dietitian position to help in the prevention of diet related illnesses. The need for such a position should be thoroughly assessed to make sure that it would meet the community's needs.

1.5 Needs assessments

Methods for assessing needs of the community include consulting target groups and local health workers on their opinion (Jackson 1985). Studies on needs assessments for specific health professions or justifying new health positions are limited as most staff departments put in submissions for new positions but these are never published. However, studies have been conducted on planning health services according to the needs of the community, roles of specific health personnel and numbers and areas of work for dietitians in
The identification of the needs of a community is a complex issue requiring the collation of data and information from a variety of sources including the opinions of consumers and potential consumers of health services as well as the views of the providers (New South Wales, Department of Health, 1985).

There have been four dimensions of need identified. Assessments must be made in all four dimensions to provide a total picture of the needs of a community.

1. Informative needs: the area's performance, on traditional health indicators, compared with the norms of those indicators or with predetermined goals or standards.

2. Felt needs: those perceived by the community themselves to be needs.

3. Expressed needs: were reflected in the use of current services, for example if services are being heavily used or waiting lists existed.

4. Comparative need: the comparison of population characteristics and availability of services between different areas. (New South Wales, Department of Health, 1985)

In 1978 the Health Commission of New South Wales produced a paper on methods for assessing the needs for community health services. The research paper was based on a Sutherland Shire case study that assessed the Sutherland Shire community needs (Thomas, 1978). The
study identified the following methodology as being effective in assessing community needs.

1. Obtain detailed maps of the community area to determine population size, health services and demographic boundaries.

2. Tap existing sources of information to determine the main health problems facing the area.

3. Identify apparent and expressed health problems of target populations within the geographic area, through morbidity and community health collection of data and community surveys on perceptions of health problems.

4. Identify health problems which remain to be addressed and current resources available which could be used.

The Sutherland Shire study did not conduct a comprehensive health survey due to lack of time and resources. Instead, focal community members constituted the sample for the survey. The focal people were community members who were able to provide an overall picture of the community's needs by virtue of their occupation, interests or activities. There were four criteria to this focal group.

1. Observers - people who were in contact with a large number of other community members but were not health workers.

2. Representatives - leaders of groups who could represent the special needs and interest of those groups.

3. Funnel people - service providers, including health professionals.
4. Influential people - people who could effect change in the community.

The sample size for the Sutherland Shire focal survey was 300. Letters were sent to each focal person to request their agreement to be interviewed. This was followed by a phone call by the interviewer to set an appointment. Sixty five staff members conducted three interviews each.

The needs assessment survey consisted of two parts. The first comprised a checklist of items ranked randomly. Respondents were asked to circle yes beside any item they believed was a serious problem in the area. Part two offered respondents the opportunity to nominate and comment on three major community problems.

Data analysis was conducted by way of tallying the frequency with which each item or target group was ticked as yes. The problems were then ranked according to the numbers of times they had been ticked and a priority list was formed. The comments were analysed by noting comments under a list of defined headings (Thomas 1978).

The above study was a comprehensive study which would have taken a long time and a large number of staff to conduct. This type of study is necessary if the area in question needs a whole new comprehensive set of community health services. A needs assessment for one particular service within the community health service or one particular health professional position would be similar to the Sutherland Shire study but not as detailed. For example the survey of focal groups may consist of only one or two of the four criteria mentioned.
The sample size chosen was adequate for a focal study and the questionnaire design was easy to read. The questionnaire asked respondents which health issues they believed were prominent in the area but failed to ask which health services they believed needed to be set up. Data analysis was effective in determining a priority list of health issues that needed to be addressed, however it did not determine which services were needed to address these issues.

Justifying new health positions or justifying the existence of current community health positions is an ongoing process. In the Western Sydney area every ten weeks each community health worker fills out a community health staff activity survey. The respondents are asked to list their activities for that week and time spent on each activity (Department of Health New South Wales, 1985). Such surveys are used to determine activities that are actually being done in the area and what activities are lacking due to limited time and demands being placed on current employees. If undertaken regularly over a period of time, they can be used to justify the need for new staff due to a backlog of work.

Data collection and analysis methods for studies involving needs assessments, or justification for additional health workers have been undertaken in a variety of studies. However, no studies have been conducted specifically to determine if there is a need for a community dietitian to work in an area.

Zallen (1990) measured the frequency with which American dietitians had participated in nutrition activities for the public during 1986. A questionnaire was mailed to a sample of 1000 members of the
American Dietetic Association (ADA). Questions in the survey included demographic, self evaluation of educational competencies and frequency of participation in 12 categories of public nutrition education activities. Respondents reported on nutrition activities in two categories, employment related or volunteer. The results were compared to a similar study in 1978. Percentage and frequency tables were used to display the results.

Compher and Colaizzio (1992) conducted a study in 1989 to determine staffing patterns for hospital based, clinical dietitians in an attempt to update the 1986 data base of dietetics staffing patterns in the United States of America. The survey was mailed to every sixth area code from the 1986 listings of hospitals, addressed to the clinical nutrition manager. A sample of 1000 hospitals were surveyed. Reminder cards were sent six weeks after mailing. A 27 per cent response rate was observed. The results were compared to a similar survey conducted in 1986.

Smith and Wellman (1991) conducted a study to determine numbers, characteristics and duties of dietitians who worked in spas in the USA. A questionnaire was addressed to the dietitian / nutritionist at 84 luxury residential spas in the USA. There was a 33 per cent response rate. No follow-up reminders were sent.

Results were compared to the data from the 1986 census of the ADA on duties, in the form of a table which listed the percentage of each parameter for the spa and the American Dietetic Association. Tables were simple but effective and clearly understandable.
A survey to other health professionals on their opinions and attitudes towards nutrition was conducted by Worsley and Worsley (1991). The study consisted of a survey to a random sample of 1000 general practitioners. The survey was mailed so that the doctors could participate at times convenient to them. The survey consisted of three to four pages. A response rate of 78 per cent was observed. The results was analysed by way of frequency distributions of answers to questions. Worsley and Worsley identified that general practitioners in New Zealand had a heavy work load and were unlikely to respond to lengthy questionnaires or interviews.

Although no studies have been conducted on the effectiveness of community dietitians, studies have been conducted on numbers and duties of dietitians in different areas.

A national work-force study was undertaken by Scott and Binns (1989) to provide a detailed profile of the demographic and professional characteristics of the dietetic profession in Australia. The study consisted of a mailed self-administered questionnaire to a sample size of 913 Australian dietitians, of which 623 were returned. The questions asked about present and past employment and future intentions. The data were reported in the form of tables, which showed numbers and percentages of full time equivalent respondents in each state and full time equivalents per million population in each state. There was also a table which presented the percentage of employees in different areas of dietetics, that is hospitals, private or community. At the time these percentages were 62.1, 8.2 and 6.8 respectively.
Crockett (1989) identified that the sample size for a survey to health workers depended on the time available to run the surveys, the numbers of health workers and general practitioners in the area and the length of the survey. The process of cluster sampling, that is, selecting members of the target population groups rather than individually was the easiest way to sample groups of people such as health professionals as they mainly worked from a central place where the survey could be delivered all at once and then picked up on a specified date. One main disadvantage of cluster sampling was a higher sampling error because members within a cluster tended to be similar while differences between clusters could be large. The extent of the sampling error depended on how representative the cluster sample members were of the target population (Crockett, 1989).

Some groups of health professionals such as general practitioners cannot be cluster sampled because they are distributed throughout the community. Random sampling can be used where the general practitioners are randomly chosen from a complete list of the target group, until the sample size has been filled (Crockett, 1989).

Pilot testing of surveys should involve formally testing a questionnaire with a small sample of respondents in the same way that the final survey would be conducted so that any problems may be identified (Crockett, 1989).

The most effective method of collecting data was identified as via self-enumeration surveys. The surveys should be sent out and returned by post or hand delivered and collected. The second method
was considered the most reliable as the person running the survey could be sure that all surveys had reached the respondents and were going to be returned. Several reminders may be needed before the surveys are completed (Crockett, 1989).

1.6 CONCLUSION

The Wentworth Area Health Service had a high rate of morbidity and mortality from diet related disease. This reflected the nutritional status of the majority of the Australian population.

Health care in Australia was moving towards preventive styles of medicine. Prevention of disease in an affluent society required a comprehensive range of community health services who collaborated and worked together in their local communities.

At the time of this study it had been identified that prevention of diet related diseases required a combination of local food and nutrition policies, nutrition education programs and teamwork between different health professions.

Community dietitians worked in the majority of area health services in New South Wales and were involved in nutrition intervention, community education and health promotion. The Wentworth area had no community dietitians.

A needs assessment to determine if a community dietitian was needed in the Wentworth area would include assessments of felt need, comparative need, expressed need and informative need.
The most efficient method of data collection would be via a questionnaire. The most effective methods of sampling were random or cluster sampling. The sample size for a survey will depend on the size of the target population, time available to complete the study and resources available. The questionnaire should be pilot tested on a small percentage of the target population.

The most effective methods of delivery of a questionnaire were by mail or by hand delivery. A reminder call to respondents increased the response rate. Other methods of data collection were via analysis of secondary data on the community's health status, work load of employees and comparisons of areas.
CHAPTER 2 : METHOD
The method used to conduct this study consisted of three stages, comprising two surveys and an analysis of existing data.

2.1 Survey 1

A survey consisting of 12 questions was distributed to health workers (general practitioners, community nurses, and community allied health staff) in the Wentworth area. The aim of this survey was intended to determine the respondents' perceptions of the health issues in the area, if they had ever referred a client to a dietitian and if they saw a need for a community dietitian / nutritionist to be employed in the Wentworth area. The survey was pilot tested on six health workers. The wording of the questionnaire was altered as a result. Refer to Appendix 2 for a copy of survey 1.

The sampling procedure for survey 1 consisted of determining numbers of health professionals working in the community in the Wentworth area and randomly selecting 25 per cent. Numbers of each health professional surveyed were as follows:

- General Practitioners ——— 80
- Community Nurses/Allied Health — 80
- Health Promotion Officers ——— 6
- Total Sample size ——— 166

One hundred per cent of health promotion officers were surveyed due to the small numbers that existed compared to other health professionals. Allied health and community nurses were grouped together as they worked from the same central positions and there were considerably less of these professionals compared to the general practitioners.
General practitioners were sampled by randomly selecting respondents from a list of the entire target population until the sample size was filled. The survey was distributed and collected in person. The remaining surveys were cluster sampled at each Community Health Centre and Health Promotion Unit and distributed through the team leaders at each centre.

Analysis of survey 1 was undertaken on the statistical package "Statview". Each variable was analysed for frequency, distribution and means, where appropriate. Anova tables, Chi square tables and F-tests were produced to determine if there were significant differences between the opinions of different occupations.

2.2 Survey 2

A survey consisting of 14 questions was distributed to dietitians associated with the Health Promotion Unit in each area health service and region of New South Wales other than the Wentworth area. (total number 16). The surveys were distributed by way of post and returned by way of self addressed envelopes. This survey was used to collect information on the population, health issues and the numbers and duties of community dietitians in each area. Refer to Appendix 2 for a copy of the survey.

Survey 2 was analysed using the "Statview" program and were reported in simple frequency distribution tables. A correlation coefficient was used to determine if there was a relationship between population size and the number of community dietitians employed. Simple statistical comparisons of frequency of variables were made between the Wentworth area results and the other areas in
New South Wales. Where individual similarities were seen these were mentioned, otherwise the results were compared to the Wentworth area as a whole so that norms could be determined.

2.3 Secondary data and Interviews

The third component of the study comprised interviewing the clinical dietitians working in the Wentworth area, to determine:

1. The percentage of time they spent on community nutrition activities.

2. What, if any, community nutrition activities they were currently involved in.

3. If they believed there was a need for more community nutrition activities to be run in their Local Government Area that they are unable to run due to lack of time or other reasons.

Secondary data on recommendations for numbers of community dietitians per head of population in Australia also were investigated and compared to the Wentworth Area and other Area Health Services in New South Wales.

The nutritional needs of the Wentworth Area were determined from existing data obtained from the Wentworth Area Health Service. These data were related to the community nutrition activities conducted in the Wentworth area by clinical dietitians over the past year.

The three local communities in the Wentworth area were investigated for people working in the area of nutrition who were not qualified dietitians. This was done via listings under nutrition, diet and weight loss in the local telephone book.
CHAPTER 3

RESULTS
3.1 Survey 1: Health workers in the Wentworth area

3.11 Demographics

The sample size for survey 1 was 166, of which 123 surveys were returned, achieving a 74 per cent response rate. Response rate according to occupation is detailed in Table 3.1.

**TABLE 3.1: Percentage of respondents per occupation**

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Per cent response rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>General practitioners</td>
<td>73</td>
</tr>
<tr>
<td>Community Nurses/Allied Health</td>
<td>73</td>
</tr>
<tr>
<td>Health Promotion</td>
<td>83</td>
</tr>
</tbody>
</table>

Sixty four per cent of the respondents were female while 35 per cent were male. As detailed in Figure 3.1, general practitioners accounted for 48 per cent of respondents as did the nurses and allied health professionals combined. Health promotion officers accounted for only four per cent of the respondents.

The age of respondents ranged from less than 30 to greater than 51 years. Table 3.2 shows that 72 per cent of respondents were between 31 and 50 years.

**TABLE 3.2: Percentage of respondents per age range**

<table>
<thead>
<tr>
<th>Age ranges</th>
<th>Per cent of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 - 30</td>
<td>16</td>
</tr>
<tr>
<td>31 - 40</td>
<td>36</td>
</tr>
<tr>
<td>41 - 50</td>
<td>36</td>
</tr>
<tr>
<td>51+</td>
<td>12</td>
</tr>
<tr>
<td>TOTAL</td>
<td>100</td>
</tr>
</tbody>
</table>
FIGURE 1: Respondents per occupation

- Nurses
- General practitioners
- Allied health professionals
- Health promotion officers
3.12 Work venues for community dietitians

The work venues that were considered appropriate for a community dietitian to work from are listed in Table 3.3.

**TABLE 3.3:** Percentage of respondents who believe a community dietitian could work from each work venue.

<table>
<thead>
<tr>
<th>Work Venues</th>
<th>per cent of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight loss centre</td>
<td>37</td>
</tr>
<tr>
<td>Cooking schools</td>
<td>21</td>
</tr>
<tr>
<td>Health centre</td>
<td>51</td>
</tr>
<tr>
<td>Food companies</td>
<td>15</td>
</tr>
<tr>
<td>Hospital</td>
<td>59</td>
</tr>
<tr>
<td>Health promotion unit</td>
<td>53</td>
</tr>
<tr>
<td>Local government</td>
<td>10</td>
</tr>
<tr>
<td>Community health centre</td>
<td>80</td>
</tr>
</tbody>
</table>

Table 3.4 reports the percentage of each occupation's respondents who stated they believed that community dietitians should work in a hospital. A significant difference (chi square: 10.13 p=0.0175 df=3) existed between health promotion officers and all the other occupations on this point.

**TABLE 3.4:** Occupation versus whether respondents believed community dietitians work in a hospital.

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Per cent in agreement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurses</td>
<td>42</td>
</tr>
<tr>
<td>General practitioners</td>
<td>63</td>
</tr>
<tr>
<td>Allied Health professionals</td>
<td>75</td>
</tr>
<tr>
<td>Health promotion officers</td>
<td>20 *</td>
</tr>
</tbody>
</table>

* significant difference (chi square p=0.0175)

No significant differences between occupations were found for
any of the other work venues listed in Table 3.3.

3.13 Duties of a community dietitian

Table 3.5 indicates that 89 per cent of respondents believed a community dietitian should design, implement and evaluate nutrition programmes. Other popular duties included giving talks to other health professionals and the community (86 per cent of respondents) and one to one counselling on diet (85 per cent). Less popular duties included running cooking classes (21 per cent) and cooking for sick people in hospital (9 per cent).

**TABLE 3.5 : Percentage of respondents who believe community dietitians are responsible for each duty.**

<table>
<thead>
<tr>
<th>Duties</th>
<th>per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>One to one</td>
<td>85</td>
</tr>
<tr>
<td>Cooking classes</td>
<td>21</td>
</tr>
<tr>
<td>Nutrition programs</td>
<td>89</td>
</tr>
<tr>
<td>Talks</td>
<td>86</td>
</tr>
<tr>
<td>Cooking in hospitals</td>
<td>9</td>
</tr>
</tbody>
</table>

A significant difference existed between Health promotion officers and all other occupations as to whether or not they believe that community dietitians do one to one counselling on diet. (Chi square :29.118 p=0.001). Table 3.6 displays this difference. There were no significant differences between occupations for any of the other duties displayed in Table 3.5.
TABLE 3.6: Occupation of respondents with percentage agreeing / disagreeing that dietitians should do one-to-one counselling

<table>
<thead>
<tr>
<th>Should do one-to-one counselling</th>
<th>Occupation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Per cent</td>
</tr>
<tr>
<td></td>
<td>Allied</td>
</tr>
<tr>
<td></td>
<td>Health</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>-----------</td>
</tr>
<tr>
<td>Yes</td>
<td>84</td>
</tr>
<tr>
<td>No</td>
<td>16</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
</tr>
</tbody>
</table>

* Significant difference (chi square, p=0.001)

3.14 Health issues

The respondents were asked to rank a set of health issues in the order they thought were most in need of prevention in the Wentworth area. Respondents ranked the health issues from 1 to 10 with 1 being the most in need of prevention and 10 the least in need of prevention. Table 3.7 lists the means of these rankings for each health issue.

TABLE 3.7: Health issues in need of prevention (Mean ranking scores)

<table>
<thead>
<tr>
<th>Health issue</th>
<th>mean</th>
<th>st.dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heart disease</td>
<td>2.0</td>
<td>1.6</td>
</tr>
<tr>
<td>Cancer</td>
<td>3.8</td>
<td>2.1</td>
</tr>
<tr>
<td>Obesity</td>
<td>4.1</td>
<td>2.3</td>
</tr>
<tr>
<td>Drug abuse</td>
<td>4.3</td>
<td>2.3</td>
</tr>
<tr>
<td>Diabetes</td>
<td>4.6</td>
<td>1.8</td>
</tr>
<tr>
<td>Accidents</td>
<td>4.8</td>
<td>2.7</td>
</tr>
<tr>
<td>Gastrointestinal</td>
<td>6.8</td>
<td>2.1</td>
</tr>
<tr>
<td>Aids</td>
<td>6.9</td>
<td>2.1</td>
</tr>
<tr>
<td>Malnutrition</td>
<td>7.9</td>
<td>2.3</td>
</tr>
<tr>
<td>Common cold</td>
<td>8.5</td>
<td>2.1</td>
</tr>
</tbody>
</table>
The responses given by occupation were analysed and a significant difference between occupation was found in the ranked means for cancer (F-test, \( P=0.0523 \)) and obesity (F-test, \( P=0.0036 \)). This is reported in Tables 3.8 and 3.9. No other significant differences were found between occupation and mean rankings for health issues in the area.

Table 3.8 highlights that health promotion officers placed prevention of cancer as a greater health need in the area than do nurses, general practitioners and allied health professionals.

The mean ranked need for prevention of obesity for allied health and general practitioners was 5.3 and 3.4 respectively (see Table 3.9), which indicated a significant difference (Scheffe F-test = 4.523) between the opinions of these two professional groups.

No significant differences between occupation were found for the mean ranking of the remaining health issues.

**TABLE 3.8 : Occupation mean rated scores for the need to prevent cancer**

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Mean</th>
<th>St.dev. for obesity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurses</td>
<td>3.5</td>
<td>1.9</td>
</tr>
<tr>
<td>General practitioners</td>
<td>4.4</td>
<td>2.3</td>
</tr>
<tr>
<td>Allied health professionals</td>
<td>3.4</td>
<td>1.7</td>
</tr>
<tr>
<td>Health promotion officers</td>
<td>2.6*</td>
<td>1.9</td>
</tr>
</tbody>
</table>

* significant difference (F-test, \( p=0.0523 \))
TABLE 3.9: Occupation versus mean rated scores for the prevention of obesity

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Mean</th>
<th>St.dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurses</td>
<td>4.2</td>
<td>2.1</td>
</tr>
<tr>
<td>General practitioners</td>
<td>3.4*</td>
<td>2.1</td>
</tr>
<tr>
<td>Allied health professionals</td>
<td>5.3</td>
<td>2.2</td>
</tr>
<tr>
<td>Health promotion officers</td>
<td>4.8</td>
<td>3.7</td>
</tr>
</tbody>
</table>

* Significant difference (Scheffe F-test, p = 4.523)

Respondents were asked to rank a list of health professionals in priority order of, if there were funds to employ a new health worker, which health professional would the area be in most need. The health professionals were ranked from 1 to 8 with one being the health professional that the area was in most need of and 8 being the health professional the area was in least need. Table 3.10 shows the list of health professionals and the mean ranked scores for each in terms of which was considered in most need in the area.

TABLE 3.10: Mean ranked scores for the need for different types of health professionals.

<table>
<thead>
<tr>
<th>Health professional</th>
<th>mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community development officer</td>
<td>3.6</td>
</tr>
<tr>
<td>Community nurse</td>
<td>3.8</td>
</tr>
<tr>
<td>Social worker</td>
<td>3.9</td>
</tr>
<tr>
<td>Occupational Therapist</td>
<td>4.2</td>
</tr>
<tr>
<td>Community dietitian</td>
<td>4.8</td>
</tr>
<tr>
<td>Speech pathologist</td>
<td>4.9</td>
</tr>
<tr>
<td>Youth worker</td>
<td>5.3</td>
</tr>
<tr>
<td>Other</td>
<td>7.4</td>
</tr>
</tbody>
</table>
Occupations were compared to determine if there were any significant differences between occupations in terms of which health professionals they believed the area was in most need. Significant differences between occupations were found in the mean rankings for community development workers (F-test, \( p = 0.0142 \)), community dietitians (F-test, \( p = 0.0064 \)), and community nurses (F-test, \( p = 0.0001 \)).

Table 3.11 indicates the mean rankings for community development workers according to occupation. The main significant difference was between health promotion officers and all other occupations.

**TABLE 3.11 : Occupation versus the mean ranked scores for the need for a community development officer**

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurses</td>
<td>5.4</td>
</tr>
<tr>
<td>General practitioners</td>
<td>5.5</td>
</tr>
<tr>
<td>Allied health</td>
<td>5.3</td>
</tr>
<tr>
<td>Health promotion</td>
<td>2.6*</td>
</tr>
</tbody>
</table>

* significant difference (F-test, \( p=0.0142 \))

Table 3.12 shows the mean rankings for the need for community dietitians in the area according to occupation. The main significant difference was between health promotion officers and all other occupations (F-test, \( p=0.0064 \)).
**TABLE 3.12**: Occupation versus mean ranked scores for the need for a community dietitian

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurses</td>
<td>3.4</td>
</tr>
<tr>
<td>General practitioners</td>
<td>2.9</td>
</tr>
<tr>
<td>Allied health professionals</td>
<td>3.9</td>
</tr>
<tr>
<td>Health promotion officers</td>
<td>6.4*</td>
</tr>
</tbody>
</table>

* significant difference (F-test, $p=0.0064$)

Table 3.13 shows the mean rankings for the need for a community nurse in the area according to occupation. The main significant difference existed between nurses and all other health professionals (F-test, $p=0.0001$).

**TABLE 3.13**: Occupation Versus mean ranked scores for the need for a community nurse

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurse</td>
<td>2.4*</td>
</tr>
<tr>
<td>General practitioners</td>
<td>4.8</td>
</tr>
<tr>
<td>Allied health professionals</td>
<td>4.2</td>
</tr>
<tr>
<td>Health promotion officers</td>
<td>5.8</td>
</tr>
</tbody>
</table>

* significant difference (F-test, $p=0.0001$)

There were no significant differences observed between occupations in their rankings of the need for any of the remaining health professionals.
3.15 Health issues - a community dietitians role in prevention them.

Table 3.14 displays ten health issues and for each health issue the percentage of respondents who believed a community dietitian would have a role in helping to prevent the health issue.

The main issues which they believed a dietitian could help to prevent were obesity (100 per cent), heart disease (96 per cent), malnutrition (92 per cent), diabetes (85 per cent), gastrointestinal disorders (76 per cent), and cancer (72 per cent).

TABLE 3.14 : Percentage of respondents who believe a community dietitian could help to prevent the listed health issues

<table>
<thead>
<tr>
<th>Health issues</th>
<th>Per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heart disease</td>
<td>96</td>
</tr>
<tr>
<td>Diabetes</td>
<td>85</td>
</tr>
<tr>
<td>Cold</td>
<td>22</td>
</tr>
<tr>
<td>Gastrointestinal</td>
<td>76</td>
</tr>
<tr>
<td>Cancer</td>
<td>72</td>
</tr>
<tr>
<td>Accidents</td>
<td>7</td>
</tr>
<tr>
<td>Drugs</td>
<td>11</td>
</tr>
<tr>
<td>Aids</td>
<td>11</td>
</tr>
<tr>
<td>Obesity</td>
<td>100</td>
</tr>
<tr>
<td>Malnutrition</td>
<td>92</td>
</tr>
</tbody>
</table>

A significant difference was found between occupations as to whether they considered that a community dietitian could help prevent heart disease (Chi square: 8.979, df=3, P=0.0301). Results regarding this are summarised in Table 3.15. All 100 per cent of the general practitioners agreed a community dietitian could help prevent heart disease while 87 per cent of nurses and 96 per cent of allied health
professionals agreed.

A significant difference existed between occupations as to whether a community dietitian could help prevent the common cold. (Chi square: $11.61$, df=3, $P=0.0088$). Table 3.15 indicates this difference.

**TABLE 3.15**: Occupation versus if a community dietitian can help to prevent heart disease or the common cold

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Per cent can prevent heart disease</th>
<th>Per cent can prevent the common cold</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurses</td>
<td>87*</td>
<td>29</td>
</tr>
<tr>
<td>General practitioners</td>
<td>100</td>
<td>10</td>
</tr>
<tr>
<td>Allied health professionals</td>
<td>96</td>
<td>32</td>
</tr>
<tr>
<td>Health promotion officers</td>
<td>100</td>
<td>60*</td>
</tr>
</tbody>
</table>

* Significant difference

There were no significant differences between occupations' opinions as to whether a community dietitian could help prevent any of the remaining health issues.

A total of 58 per cent of respondents had not had any type of professional contact with a community dietitian. However 68 per cent of respondents had referred clients to a hospital based or private dietitian. Figure 3.2 presents the professional contact with a dietitian reported by different occupations.

A significant difference was found between occupations as to whether or not they had professional contact with a dietitian. (Chi square $11.814$, df=3, $P=0.008$). Fifty-eight percent of general practitioners had professional contact with a community dietitian.
compared with only 23 per cent of nurses, 32 per cent of allied health professionals and 40 per cent of health promotion officers.

**FIGURE 2: Occupation v's contact**

- Nurse
- General practitioner
- Allied health
- Health promotion

% contact with dietitian
A significant difference was found between occupations and whether they had referred a client to a dietitian. (Chi square: 37.315, df=3, p=0.0001). This information is reported in Table 3.16. The total percentage of respondents who had referred clients to dietitians was 68 per cent.

### TABLE 3.16 : Occupation versus if have referred clients to dietitians

<table>
<thead>
<tr>
<th>Referred client to a dietitian</th>
<th>General prac.</th>
<th>Nurses</th>
<th>Allied health</th>
<th>Health prom. off.</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>yes</td>
<td>92*</td>
<td>58</td>
<td>39</td>
<td>0</td>
<td>68</td>
</tr>
<tr>
<td>no</td>
<td>9</td>
<td>42</td>
<td>61</td>
<td>100</td>
<td>32</td>
</tr>
<tr>
<td>total</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

* Significant difference (Chi square 37.315, df=3, p=0.0001)

A total of 76 per cent of respondents would like to have a community dietitian in the area to whom they could refer clients. There was a significant difference between occupations with regard to this (Chi square 22.686, df=3, p= 0.0001). None of the health promotion officers would refer a client to a community dietitian, compared with 85 per cent of general practitioners, 84 per cent of nurses and 61 per cent of allied health professionals.

Overall 87 per cent of respondents reported that they believed there was a need to employ community dietitians in the Wentworth area. Table 3.17 presents the data on the response of occupation groups to the need for a community dietitian.
### TABLE 3.17: Percentage of each occupation group who see a need for community dietitians in the Wentworth area

<table>
<thead>
<tr>
<th>Occupation</th>
<th>% yes</th>
<th>% no</th>
<th>% unsure</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health promotion officers</td>
<td>66</td>
<td>0</td>
<td>34</td>
<td>100</td>
</tr>
<tr>
<td>Allied health professionals</td>
<td>96</td>
<td>4</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>Nurses</td>
<td>93</td>
<td>7</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>General practitioners</td>
<td>97</td>
<td>3</td>
<td>0</td>
<td>100</td>
</tr>
</tbody>
</table>

3.16 **Reasons given by respondents for the need for a community dietitian.**

The following is a list of comments respondents made that explain why they believe there is a need for a community dietitian to work in the Wentworth area.

- "To be a resource to other community health staff"
- "Because current services (dietitian) are not community based"
- "For prevention of heart disease"
- "We need one"
- "Nutritional dietary manipulation can reduce morbidity and prevent disease"
- "Nutrition tends to be poorest amongst those who can least afford to see a dietitian"
- "Nutrition information should be provided via health promotion for the wider community."
- "Dietary advice is hard to obtain"
- "Need to access to dietitian for little or no cost."
- "Professional advice on specific diets"
- "General practitioners do not generally have adequate training in this area and limited time to spend discussing these issues"
- "Valuable resource person to give advice on individual diets, groups and health professionals on issues related to diet, nutrition and health."
- "Every area need at least one community dietitian/nutritionist."
- "Because community health does not have one."
- "For provision of a comprehensive range of health services to the population of the Wentworth area health service."
- "To provide input into heart disease and cancer prevention programs."
- "Because of lack of input from hospital based dietitians/nutritionists and difficulty in transportation of clients to hospital from their homes."
- "To help develop preventive programs and health education."
The following is a list of reasons given by respondents who believed there was not a need for community dietitians to work in the area.

"Clients can be referred to hospital or private dietitians"

"Always a need but never the resources"

"The area is under resourced in a lot of areas and professions."

"Ample written material available through the health department"

"Because registered nurses and local medical officers give enough hand-outs and advice when needed."

3.2 SURVEY 2

The sample for survey 2 was the 15 area and regional health services in New South Wales, excluding the Wentworth area. Questionnaires were sent to the community dietitian associated with the health promotion units in each area or region. Fourteen questionnaires were returned which was a response rate of 93 per cent. Northern Sydney Area Health Service was the only area not to respond. Refer to Appendix 1 for a map of area and regional health services in New South Wales.

Table 3.18 details the number of community dietitians reported to be working in each of the area and regional health services and the population of each area and region. This does not indicate the number of positions in the areas only the actual number of personnel.
TABLE 3.18: Number of community dietitians per area health service or region and population of each area or region.

<table>
<thead>
<tr>
<th>Area/Region</th>
<th>Number</th>
<th>Population (ABS, 1991)</th>
<th>Number/100 000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orana and far west</td>
<td>4</td>
<td>143 000</td>
<td>2.8</td>
</tr>
<tr>
<td>Central Sydney</td>
<td>4</td>
<td>416 000</td>
<td>1.0</td>
</tr>
<tr>
<td>South Western Sydney</td>
<td>0</td>
<td>650 000</td>
<td>0.0</td>
</tr>
<tr>
<td>Hunter</td>
<td>2</td>
<td>514 000</td>
<td>0.4</td>
</tr>
<tr>
<td>Central west</td>
<td>1</td>
<td>166 000</td>
<td>0.6</td>
</tr>
<tr>
<td>Western Sydney</td>
<td>2</td>
<td>616 000</td>
<td>0.3</td>
</tr>
<tr>
<td>North coast</td>
<td>1</td>
<td>321 000</td>
<td>0.3</td>
</tr>
<tr>
<td>South west</td>
<td>1</td>
<td>258 000</td>
<td>0.4</td>
</tr>
<tr>
<td>Illawarra</td>
<td>3</td>
<td>337 000</td>
<td>1.0</td>
</tr>
<tr>
<td>Southern Sydney</td>
<td>4</td>
<td>662 000</td>
<td>0.6</td>
</tr>
<tr>
<td>New England</td>
<td>5</td>
<td>181 000</td>
<td>2.8</td>
</tr>
<tr>
<td>Central coast</td>
<td>3</td>
<td>230 000</td>
<td>1.3</td>
</tr>
<tr>
<td>South eastern region</td>
<td>1</td>
<td>131 000</td>
<td>0.8</td>
</tr>
<tr>
<td>Eastern Sydney</td>
<td>1</td>
<td>224 000</td>
<td>0.4</td>
</tr>
<tr>
<td>Wentworth</td>
<td>0</td>
<td>270 000</td>
<td>0.0</td>
</tr>
</tbody>
</table>

Mean number community dietitians / 100 000 population = 0.8

The mean number of community dietitians per area was 2.1 with a standard deviation of 1.6. The minimum number of dietitians was 0 and the maximum was 5.

A negative correlation (-0.136) was found between the number of community dietitians and population.

Table 3.19 lists the number of areas or regions that consider the listed health issues to be a concern in their area.
TABLE 3.19: Number of areas that identified the listed diet related health issues were a problem in their area.

<table>
<thead>
<tr>
<th>Health issue</th>
<th>Number of areas who indicated these health issues were a problem</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heart disease</td>
<td>14</td>
</tr>
<tr>
<td>Diabetes</td>
<td>8</td>
</tr>
<tr>
<td>Cancer</td>
<td>8</td>
</tr>
<tr>
<td>Obesity</td>
<td>10</td>
</tr>
<tr>
<td>Malnutrition</td>
<td>4</td>
</tr>
<tr>
<td>Stroke</td>
<td>6</td>
</tr>
</tbody>
</table>

Table 3.20 indicates the number of areas who identified each target group to be important in their area.

TABLE 3.20 : Number of areas versus target groups in areas

<table>
<thead>
<tr>
<th>Target group</th>
<th>Number of areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elderly</td>
<td>9</td>
</tr>
<tr>
<td>Youth</td>
<td>3</td>
</tr>
<tr>
<td>Children</td>
<td>6</td>
</tr>
<tr>
<td>Unemployed</td>
<td>7</td>
</tr>
<tr>
<td>Socioeconomically disadvantaged</td>
<td>11</td>
</tr>
<tr>
<td>Ethnic groups</td>
<td>7</td>
</tr>
<tr>
<td>Aboriginal</td>
<td>8</td>
</tr>
</tbody>
</table>

Table 3.21 indicates the number of years the areas have been employing community dietitians.
TABLE 3.21: Number of areas versus the range of years community dietitians have been employed

<table>
<thead>
<tr>
<th>Range of years community dietitians have been employed</th>
<th>Number of areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>10+</td>
<td>3</td>
</tr>
<tr>
<td>5 - 10</td>
<td>4</td>
</tr>
<tr>
<td>1 - 4</td>
<td>6</td>
</tr>
<tr>
<td>&lt;1</td>
<td>0</td>
</tr>
<tr>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

The clinical or hospital based dietitians in six of the areas or regions spent less than five per cent of their time on community work. The dietitians in the other eight areas spent more than 10 per cent of their time on community dietetics.

Eight areas indicated that the clinical, hospital based dietitians do some community nutrition work. These areas/regions were:

- Orana and Far West region
- Hunter area
- Eastern Sydney area
- Central Western region
- North Coast region
- South West region
- New England region
- South East region

The remaining areas indicated that clinical, hospital based dietitians did not do any community work. The Western Sydney area were unsure.
Community dietitians in the Orana and Far West region, the Central Coast area, and the South East region worked from a hospital. Community dietitians in the Illawarra, the South West region, the North Coast region, and the Central Western region worked from a community health centre. Community dietitians in Eastern Sydney, Western Sydney and Southern Sydney worked from a Health Promotion Unit. Community dietitians in the New England region and the Hunter area worked from both a hospital and a community health centre. Finally community dietitians in Central Sydney worked from both a hospital and health promotion unit.

All areas indicated that more community dietitians needed to be employed in the area or region to meet their communities' needs.

Respondents in each area were asked to list the duties of the community dietitians in their area. The following is a list of the range of duties that respondents indicated:

- To develop plans and priorities for nutrition services.
- To participate in the development of health promotion plans.
- To plan, implement and evaluate nutrition projects, programs and activities.
- To liaise with organisations and institutes to co-ordinate and integrate nutrition promotion in the area.
- To provide nutrition education, consultation and advice for individuals, groups and organisations and the media.
- To consult and advise community based food service personnel on appropriate menus and canteen supplies.
- To conduct on going needs assessments of community and target groups.
- To train community health staff to plan, implement and evaluate
nutrition education.

- To design and distribute nutrition literature.

- To increase public awareness of nutrition and its relationship to health.

- To network other health service teams and community groups and work with them as a team on project and programs when appropriate.

- To record statistics, log project activities and write reports on projects.

- To keep abreast of current knowledge and developments in public health and community nutrition.

Respondents in each area were asked to report on or state the names of any nutrition projects or programs that were being run in the area. These project or programs were reported as follows:

Orana and Far West region:
- FWR community nutrition report
- Good tucker project
- Multicentre nutrition study
- Health hospital food supply project

Hunter area:
- Hypertension life-style intervention
- Food services consultant
- Clinic service gut buster
- Caring for children

New England area:
- Caring for children
- Meals on wheels survey/ review
- WHISP- school canteen project

Extra comments made by respondents of survey two were as follows:

"In country areas hospital and community health are one organisation therefore dietitians in the hospitals do community work "(Central west region).
"We have applied for numerous funding grants in order to increase our numbers" (Illawarra area)

"Positions - 1 1/2 Have not been filled due to funding constraints"

(South Western Sydney area)

### 3.3 Nutrition issues in the Wentworth area

The third part of this study consisted of investigating secondary data to determine the nutrition issues in the Wentworth area. The secondary data investigated were data collected by Brierley et al (1991) for a multistrategy nutrition project feasibility study, and issues identified by the Wentworth Centre for Health Promotion (1992). The following results describe the nutrition issues that were most prevalent in the area from 1986 to 1991.

**TABLE 3.22 : Percentage of deaths from diet related illnesses in the Wentworth area.**

<table>
<thead>
<tr>
<th>Health issue</th>
<th>Per cent of deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heart disease</td>
<td>42</td>
</tr>
<tr>
<td>Cancer</td>
<td>9</td>
</tr>
<tr>
<td>Diabetes/digestive</td>
<td>4</td>
</tr>
</tbody>
</table>

The health status of the Wentworth area was comparable to New South Wales as a whole, however premature mortality rates were above the New South Wales average (Brierley et al, 1991).

The main causes of death were largely life-style related and included cardiovascular disease, cancer, respiratory disease and motor vehicle accidents.
The Wentworth Centre for Health Promotion (1992) identified the main problems relating to diet in each of the three local government areas of the Wentworth area as:

PENRITH

Poor eating habits amongst families with young children.
Availability of healthy food for the financially disadvantaged and unemployed.
Availability of food for older people living alone.
General access to healthy foods for the whole community.
A predominance of take away stores

BLUE MOUNTAINS

Availability of food for isolated young families and older people.
Poor eating habits of adolescents.
Expensive food.
Healthy food for child care services and school canteens.

HAWKESBURY

Excessive alcohol intake.

The Wentworth Centre for Health Promotion (1992) identified nutrition as a priority area for health promotion intervention. The target groups they identified were:

Older people
Adolescents and young families
Health workers
3.4 Nutrition activities in the Wentworth area

The fourth section of this study was to determine the nutrition activities that were being conducted or planned in the Wentworth Area community at the time of the study. The following is a list of community nutrition activities that were being planned and conducted in the Wentworth area by the clinical, hospital dietitians working in the three local government areas of the Wentworth Area Health Service.

Blue Mountains:

- Planning for "Caring for children."
- Planning for "Centsible cooking."
- A meals on wheels review (Student project).
- Planning for "Healthy older peoples project."
- Planning for "More than a cup of tea program."
- Consultant on the management committee for "Healthy Villages Hazelbrook."

The above activities were only started in 1992. No project had been undertaken in any detailed way.

The dietitians who worked at the Blue Mountains ANZAC Memorial Hospital believed there was a need for at least one community dietitian to cover issues arising from nursing homes and HACC targets and one community dietitian for all other diet related health issues in the community of the Blue Mountains. There were three dietitians working at the Blue Mountains Hospital. One was a full time position and two were 0.5 full time equivalents. The full
time dietitian reported spending approximately five percent of her time on community nutrition activities. One 0.5 full time equivalent dietitian spent 50 - 75 percent of her time on community nutrition activities while the third dietitian spent less than five percent of her time on these activities.

HAWKESBURY:

Lectures and promotions to schools and baby health centres when time was available.

Talks to local groups - was only able to conduct two talks in the past year.

School canteen policy development.

Acts as a part of the nutrition working party in the area which organised nutrition health promotion activities.

Future plans: Caring for children
Centsible cooking

The dietitian at Hawkesbury hospital reported that less than five percent of his time was spent on community nutrition activities due to commitments to clinical workload.

PENRITH

Supermarket sleuth

First bunchies - conducted by a dietitian on maternity leave with the help of 2 students. Funded by a seeding grant.

Future plans: Caring for children and inclusion on the Food Policy Council for the Penrith Food and Nutrition project being run by the Wentworth Centre for Health Promotion and the Penrith city council.
Due to a heavy clinical load the above activities were a result of the dietitians at the Nepean hospital putting in extra time in an attempt to increase their profile. The dietitians at the hospital reported spending less than five per cent of their time on community nutrition activities.

People working in the field of nutrition in the Wentworth area.

At the time of this study, according to the listing in the local telephone books, there were approximately twenty naturopaths/herbalists or homoeopaths working in the Wentworth area. These people specialised in homoeopathy and herbal medicine, iridology, and gave nutritional advice to individual clients. At least 13 of these were situated in the Blue Mountains.

Weight loss centres in the area at the time of this study included Gloria Marshall figure salons, Jenny Craig weight loss centres, The Natural Way weight loss centres, Slender You, Stay Slim, Trimtastic and Weight Watchers. All offered individual counselling on weight loss. Weight Watchers had group support. All cost money to join.

Private dietitians in the area:

At the time of this study a private dietitian consulted with individual clients on diet from health centres in Penrith and Windsor. There was a fee for service.

A dietitian worked one night per week at a local fitness centre in the Penrith area, counselling individual clients on diet. Clients had to be a member of the fitness centre to receive this service.
CHAPTER 4 :

DISCUSSION
The results of the study from the two surveys and secondary data have described a needs assessment from a number of different perspectives. The most evident type of needs found in this study were expressed need and comparative need. Expressed need was demonstrated by the fact that 87 per cent of respondents of survey 1 believed there was a need for a community dietitian to work in the Wentworth area. Comparative need was demonstrated in that the majority of area and regional health services in New South Wales employed at least one community dietitian. Thus this study design was effective in determining a need for community dietitians to be employed in the Wentworth area. However, there were limitations to this study which may have been avoided if more time and resources had been available.

4.1 Survey 1: To health workers in the Wentworth area.

4.11 Demographics

The response rate for the survey sent to health workers in the Wentworth area was excellent (74 per cent) compared to the response rate of reviewed studies by Compher and Colaizzio (1992), 27 per cent and Smith and Wellman (1991), 33 per cent. Health promotion officers had a higher response rate than did the other health workers. This was possible due to the fact that the sample size for health promotion officers was considerably smaller than for the other health workers and all health promotion officers were accessed from one central office.

The high female to male ratio (64:36 per cent) of respondents was a reflection of the sample. A high proportion of community nurses and
allied health professionals were female. Sex of respondents was not considered an important variable in this study and comparison of results according to sex were not made.

Equal numbers of respondents were general practitioners and allied health professionals / community nurses. Allied health and community nurses were grouped together as the population size for these professions was smaller than for general practitioners. The sample size for general practitioners accounted for approximately 25 per cent of general practitioners in the area, as did the sample size for allied health and community nurses. This sample size was considered representative of the community of health workers as it was evenly distributed throughout the three local government areas in the Wentworth area.

Health promotion officers comprised only a small percentage of the total respondents, as there were only six employed in the area. However, due to the high response rate of health promotion officers the sample size was representative of the total population of health promotion officers in the area. Therefore their results and opinions were important in the analysis of results.

Comparisons between workers in different local government areas were not made because the majority of surveys were identified by area. The majority of respondents were aged between 31 and 50 years, indicating a mature professional group.
4.12 Work venues

The majority of respondents believed that a community dietitian would work from a community health centre. Other popular choices included a hospital, health promotion unit and health centre. Less popular choices include weight loss centres, cooking schools, food companies and local government. These responses were similar to the actual work venues of dietitians in other area health services and regions reported in the second survey. The health workers in the area thus had an accurate perception of where a community dietitian would work.

A number of respondents expressed confusion between the definitions of a health centre and a community health centre. A health centre was defined as a medical centre where general practitioners and other specialists consulted with patients on a one to one basis for a fee. A community health centre was a government run organisation of the Health Department of New South Wales that serviced the community’s health needs. Private dietitians were more likely to work from a health centre whereas community dietitians were more likely to work from a community health centre.

A significant difference (Chi square 10.13, p=0.0175) was found between occupations as to their opinions of where a community dietitian would work. The main difference was between allied health professionals and health promotion officers. Allied health professionals were more likely to believe that a community dietitian worked from a hospital while health promotion officers responded a community health centre. This may have been due to the fact that
health promotion officers tended to be more community oriented while the allied health professionals tended to be individual client oriented. Allied health professionals work in community health centres and with community members on an individual basis.

4.13 Duties of a community dietitian

The responses of health staff to the identification of duties of a community dietitian were consistent with the actual duties of community dietitians in other areas and regions. These duties included planning, implementing and evaluating nutrition programs, giving talks to community groups and health professionals and one to one counselling on diet to individual clients.

An interesting finding was that the majority of allied health professionals, general practitioners and nurses believed that a community dietitian would do one to one counselling on diet to individual clients, while health promotion officers did not consider this to be part of their duties. The opinions of the health promotion officers more accurately reflected the situation of community dietitians in other areas and regions who did not generally undertake one to one counselling unless the hospital dietitians in the area could not handle the out-patient workload.

The duties of community dietitians were reported to be aimed more at the wider community than individuals. Duties such as running nutrition/health education programs and talking to groups and the media were more common than one to one counselling. These results highlighted that allied health professionals, general practitioners and community nurses appeared to be more clinically oriented where
one to one counselling was important.

There were no significant differences found between occupations for any of the duties of a dietitian other than one to one counselling.

4.14 Health issues in the Wentworth area

The ranking of the health issues from 1 to 10 in order of most in need of prevention in the Wentworth area appeared to be confusing for some respondents. It was not determined whether the question was ambiguous or if the respondents could not decide which health issues were in most need of prevention.

The mean ratings for each health issue indicated how important the respondents believed the need to prevent each health issue was in comparison to other health issues.

The resultant health issue priority list compared favourably to the major causes of illness and death in Australia identified by The Australian Institute of Health (1990). Heart disease, cancer and diabetes, in particular, compared directly.

In comparison to the health issues identified by the Health Services Development Unit (1991) for the Wentworth area, the priorities were compatible, with heart disease, cancer and accidents high on the cause of death list. Brierley et al (1991) also identified heart disease and diabetes as priorities for intervention.

Significant differences were evident between occupations as to the priority listings for prevention of cancer, (F-test, p=0.0523) and obesity (F test p=0.0036) in the Wentworth area. Health promotion
officers placed more need on prevention of cancer than did nurses, general health practitioners and allied health professionals. The Wentworth Centre for Health Promotion (1992) indicated that cancer was one of their priority areas for health promotion and prevention in the Wentworth area. Allied health professionals placed the prevention of obesity lower in priority than did the general practitioners. These significant differences may have been a reflection of the issues that the different health professionals were interested in at any particular time. Cancer and obesity overall were seen as important health issues in need of prevention.

4.15 Health professionals needed in the Wentworth area.

The question in the survey that asked respondents to rank a list of health professionals from one to eight in terms of which they believed the Wentworth area were in most need of, was asked in order to determine how the respondents rated the need for a community dietitian in comparison to other health professionals in the area. As with the ranking system for the health issues, the listing of health professionals proved confusing for some respondents. Some interpreted the question as asking which worker was most important in the area, which was not the case. It merely asked the respondent to indicate which health professionals they thought the area was in need of due to a lack of staffing or a high consumer demand. Some respondents were unsure of the community's needs and therefore did not feel they could answer the question accurately.
The results from the respondents who did answer the question were tabulated as mean ranked scores for each type of health professionals listed in the survey. The scores were all very close, ranging, on a scale of 1 to 8, from 3.8 to 5.5. The general consensus was that there was a need for more staff in all areas and health professions.

However, the answers to this question tended to be biased as most occupations indicated that more of their own type of health professional were in most need. For example, health promotion officers saw a need for a community development worker, and community nurses see a need for employing more community nurses.

Most health professionals may have been able to comment on the need for their own services but not that of other professions. One respondent pointed out in a cover letter returned accompanying a completed questionnaire:

"the W.A.H.S. has not established a strong framework for practices of a collaborative multidisciplinary approach, nor has the yet to be completed corporate plan provided the focus for service, so the issue of 'what is most needed' cannot be answered before what 'is the direction'."

There was found to be a significant difference (p=0.064) between the mean ranked scores for the need for a community dietitian according to occupations of respondents. Health promotion officers did not regard community dietitians to be nearly as in need of, compared to community nurses, general practitioners and allied health
professionals. This may have been due to the fact that the Wentworth Centre for Health Promotion's priorities included nutrition and they have nutrition plans for the area which did not include a community dietitian. These plans tended to focus on the food supply and changing it to improve health, which was an important and innovative approach to health promotion. However allied health professionals, general practitioners and nurses also could see the need for widespread community education on diet and healthy life-styles which could be best provided by a community dietitian.

Overall the respondents believed there was an equal need for more staff to be employed in all professions including community dietitians.

4.16 Health issues that a community dietitian could help to prevent

The respondents believed a community dietitian would have an important role in the prevention of the major health issues facing the Wentworth area, particularly obesity, heart disease, malnutrition, diabetes, gastrointestinal disorders and cancer.

Comparing these issues with the health issues most in need of prevention in the Wentworth area, it was found that dietitians would have a role in helping to prevent four of the five top ranked health issues, that is, heart disease, cancer, obesity and diabetes. Gastrointestinal disorders are not considered widespread enough to be dealt with by a community dietitian. They could be dealt with on an individual basis by a out-patient or private dietitian. Malnutrition was a term that could describe a range of diet-related illnesses. Therefore a community dietitian would have a role in
helping to prevent these but the term was not specific enough to be placed in high priority by health professionals.

Although the majority of respondents were in agreement that a community dietitian could help prevent heart disease, a significant difference between occupations was found. (Chi square: 8.979, p=0.0301). General practitioners were more likely to say yes, a community dietitian has a role in preventing heart disease, than did nurses, allied health professionals and health promotion officers. This may have indicated that general practitioners were more aware of the relationship between diet and heart disease than were the other health professionals, or that not all allied health professionals, health promotion officers and nurses were aware of a community dietitian's role in the prevention of prominent health issues.

An interesting find was that there was significant difference between the opinions of occupations (Chi square: 11.61, df=3, p=0.0088) as to whether or not a community dietitian could help in the prevention of the common cold. The majority of health promotion officers said yes they could whereas in all other occupations the majority of respondents indicated that a community dietitian could not help prevent the common cold. This may have indicated that health promotion officers were not fully aware of the diet related health issues that a dietitian was able to work with. Or it may indicate that health promotion officers' were less aware than other occupations that the common cold was not generally related to diet.
4.17 Professional contact with a community dietitian / nutritionist

Over half of the respondents had professional contact with a community dietitian. The respondents were well informed about the duties of a community dietitian even if they had not had contact with one.

A significant difference (Chi square 11.814, df=3, p=0.008) was found between occupations as to whether or not they had any professional contact with a community dietitian. General practitioners and health promotion officers were more likely to have had contact with a community dietitian than allied health professionals and nursing staff. As no community dietitians had been employed in the Wentworth area it is understandable that contact with community dietitians was limited.

Health promotion officers tended to have more contact with community dietitians as they may have liaised with or worked with community dietitians in other area health services or regions during the planning, implementation or evaluation of health promotion programs which involved nutrition. General practitioners may have had more contact due to their pattern of referring clients to other specialists.

4.18 If respondents had referred clients to a dietitian

The majority of respondents had referred a client to either a private or hospital dietitian over the past year. There were significant differences between occupations as to whether or not they had referred clients to dietitians. (Chi square: 37.315, df=3,
General practitioners were the most likely to have referred clients to a dietitian and health promotion officers were the least likely. General practitioners were in a position to refer clients to other specialists, whereas health promotion officers generally did not deal with individual clients and therefore did not refer clients. Nurses were more likely to have been in a position to refer clients to dietitians than an allied health professional.

The majority of respondents wished there was a community dietitian they could refer clients to for individual or group counselling. The main reasons for this were that hospital dietitian waiting lists were too long and private dietitians were too expensive for most clients in the Wentworth area.

Again there was a significant difference between occupations with regard to whether they wished there was a community dietitian to refer clients. This may have been due to the fact that health promotion officers did not refer clients.

4.19 Did the respondents see a need for a community dietitian

The majority of respondents believed there was a need to employ a community dietitian in the Wentworth area. Again there was a significant difference between the respondents' opinions in different occupations. The main difference was between health promotion officers and all other occupations. More than 90 per cent of allied health professionals, nurses and general practitioners saw a need for a community dietitian where as only 66 per cent of health promotion officers saw a need. The remaining 34 percent of health promotion officers were unsure as to whether a community dietitian
was needed because they reported that they had not been working in the Wentworth area long enough to make such a decision.

Reasons given by the remaining 14 per cent of allied health professionals, nurses and general practitioners for not seeing a need for a community dietitian have been collated in the results section. The following counter arguments could be made against some of these comments

1. "Clients can be referred to a hospital or private dietitian ."

- Most hospitals in the area are understaffed. There are long waiting lists for out-patient clinics.

- Private dietitians are not affordable for all clients.

- Community dietitians do more than just one to one counselling to individuals, they also talk to groups, other health professionals, and plan and implement health promotion/education programmes on nutrition issues.

2. "Ample written material is available through the health department" and "Registered nurses and local medical officers give enough hand-outs ad advice when needed."

- There may be ample written material available on nutrition through the health department but are these written materials relevant and reaching all the target groups in the Wentworth area? Is there someone who has the time and expertise to explain this material to individuals or the community?
Overall, the perceptions of health professionals in the Wentworth area regarding a community dietitian / nutritionist were not related to a lack of suitably qualified community dietitians being employed in the area, as most professionals were aware of their duties, work venues and roles in prevention of diet related diseases. The only exception to this rule was health promotion officers who appeared to be able to see the need for prevention of disease and health promotion but did not consider a community dietitian's role in this prevention process. Health promotion officers may have seen a need for a community dietitian if the strategic direction for such a position fitted with the corporate plan for the Wentworth Area Health Service.

The majority of respondents thus had expressed a felt need for the inclusion of a community dietitian within the community health services provided to the Wentworth area population.

4.2 Survey 2 : Area health services and regions in New South Wales

The sample for survey 2 included the 15 area health services in New South Wales other than the Wentworth area. The response rate was excellent especially without any follow up reminders, as only one area did not return the survey.

The Wentworth area was situated on the outskirts of the Sydney City area as shown in Appendix 1. The area had a combination of city and country sections. Therefore it was compared with both country regions and city areas in New South Wales.
All areas reported employing community dietitians except for the South Western Sydney area and the Wentworth area. The South Western Sydney area had two positions available but up until recently have not had the funds to fill the positions.

A negative correlation was found between population and the number of community dietitians per area or region, identifying a trend for the number of community nutritionists/dietitians per area to decrease as population increased. This may be explained by the fact the areas with lower populations were mainly the country or regional areas. Health services in regional areas has tended to be more community based due to limited access to health facilities and distances that needed to be travelled. Therefore a nutritionist/dietitian had been employed for each of the communities within the country region. Regional community dietitians also were required to do clinical work as they may have been the only dietitian for the hospital and community health services.

In city areas distances to travel were less and the community had easier access to health care facilities. Populations were larger and hospitals catered for a larger intake than in regional areas requiring more clinical dietitians to be employed. Community dietitians and clinical dietitians in city areas were usually two separate positions. Thus the total number of dietitians per population may be larger in city areas but the number of community dietitians may be smaller than in regional areas.

The mean number of 2.1 community dietitians per area (St.dev. 1.6) indicated that the majority of areas were addressing the issues of
prevention of diet-related diseases through the services of at least one to two community dietitians. The health issues being addressed by community dietitians in the majority of areas or regions were those considered most prevalent, that is heart disease, obesity, diabetes and cancer. Therefore the health issues in the Wentworth area reflected the health issues being addressed by community dietitians in other area health services. Heart disease was by far the issue identified as most in need of prevention in all areas.

Important target groups at risk of diet related illness in other area health services and regions included socioeconomically disadvantaged people, Aboriginal people, ethnic groups and the unemployed. A small percentage of areas were targeting children and youth.

The Wentworth area target groups (Brierley 1991, the Wentworth Centre for Health Promotion 1992, and the Nutrition and Dietetic Services of the Wentworth Area Health service 1992) were low socio-economically disadvantaged groups, families with young children, the elderly, Aboriginal people and ethnic groups. These were similar to those of the other areas of New South Wales. This indicates a normative need (New South Wales department of health, 1985), for a community dietitian to deal with the health issues and target groups in the Wentworth area. The areas that the Wentworth area had most in common with, in terms of population size, were:

- Eastern Sydney Area
- Central Coast Region
- South West Region
- North Coast region
Three of these areas had one community dietitian employed and the Central Coast region had three community dietitians.

The majority of areas and regions had employed community dietitians over the last decade, with most being employed for less than five years. Only three areas had employed community dietitians for longer than 10 years. Those areas were the South West region, the Illawarra area and the Southern Sydney area. Only one area had never employed a community dietitian, that was the Wentworth area. This indicated that the Wentworth area was behind the other area health services in providing a comprehensive range of community health services.

In eight of the areas or regions, the clinical dietitian working in a hospital setting spent more than 10 percent of his/her time on community nutrition activities. The majority of these areas were regional areas where the hospital and community health services were run from the same base, as previously described. In the remaining areas, the clinical dietitians spent less than five percent of their time on community nutrition activities.

In the Wentworth area the majority of dietitians spent less than five per cent of their time on community nutrition activities. However one dietitian spends more than 25 percent of her time on community nutrition activities, focused mainly in the Blue Mountains area. Therefore the clinical dietetic services in the Wentworth area were comparable to other areas.

The results of the survey indicated that community dietitians were employed in a variety of work venues including community health centres, hospitals and health promotion units. Some areas had
community dietitians working from both community health centres and hospitals or health promotion units.

Different patterns also existed for the lines of accountability for community dietitians in the different areas and regions. The different health professionals to whom they were accountable included regional advisors on nutrition and dietetics, dietitians in charge, senior health promotions officers, hospital medical superintendents, directors of community health and senior community nutritionists.

If a community dietitian was employed in the Wentworth area it would be up to the Wentworth Area Health Service to decide to whom she/he would be accountable and where she/he would be located.

The main duties of a community dietitian were found to include the planning, implementing and evaluation of nutrition projects and programs that were consistent with the plans for health promotion and preventive medicine in the area. A summary of the community dietitians duties was given in the results section. Community nutritionists did not generally deal with sick patients but dealt with community groups and target populations of healthy at-risk groups.

One-to-one counselling was conducted by some community dietitians but was not considered a priority. It thus would be envisaged that if a community dietitian were to be employed in the Wentworth area, they would be responsible for developing and implementing nutrition related education programs in the community and helping with
individual consultations of clients when hospital dietitians could not cope with the work load.

4.3 Nutrition activities in the Wentworth area

The Wentworth Centre for Health Promotion (1992) identified a number of issues which needed to be addressed in each local government area within the Wentworth area. These issues were listed in the "Nutrition in the Wentworth area" section of the results.

The clinical dietitians of the Nutrition and Dietetic Services of the Wentworth Area Health Service reported that they were planning various community nutrition projects and programs in an attempt to help with the prevention of identified diet related disorders. The clinical dietitians in each of the three local government areas of the Wentworth area reported a heavy workload. Therefore planning for activities was limited or conducted out of work time. Many of the planned projects were of the train-the-trainer type, where the dietitian would train other health workers or volunteers to conduct the programs, due to limitations of the clinical dietitians' time.

The clinical position which involved more than 5 per cent on community nutrition activities was located in the Blue Mountains. This dietitian also had out-patient and clinical commitments. Another dietitian in the Wentworth area found that the only way she could run a community program was while she was on maternity leave. During this time she applied for a seeding grant to run a community nutrition programme and was able to run and evaluate a pilot session with the help of two student dietitians.
Further seeding grants could assist the development of in community nutrition activities, however staff members were limited and there would be no one available to run such community programs. Student dietitians have helped over the past year with various projects. Unfortunately students only stayed in the area for short periods of time and no in-depth evaluation or ongoing education was possible.

Therefore although there were a lot of planning activities for community nutrition activities in the area by the Nutrition and Dietetic Services of the Wentworth Area Health Service, the time to conduct and evaluate these programmes was limited due to clinical commitments. This indicated an expressed need (New South Wales Department of Health 1985) for a community dietitian to be employed in the Wentworth area to ensure the planned programs reached the target populations and were in-depth enough to be effective.

In addition to the behaviours which placed consumers at risk of diet-related health issues, consumers are faced with a number of sources of conflicting information on nutrition. According to the Penrith, Blue Mountains and Richmond/Windsor telephone books the Wentworth area had many people working in the field of nutrition who were not dietitians. These included naturopaths, herbalists, homoeopaths and weight loss clinics. Most of these people provided one to one counselling on diet issues. A community dietitian could target a larger population and be available to all members of the community as a credible source of nutrition advice.
CONCLUSIONS

According to the results of this study there is a felt, comparative and normative need for a community dietitian to work in the Wentworth area of New South Wales. This was determined by relating the results obtained with the goals of the study as follows.

The first goal was to determine the nutritional issues in the Wentworth area. These were defined by the health workers in the area as being heart disease, cancer, accidents, diabetes and obesity, and were comparable to the diet-related health issues identified by Brierley (1991) for the Wentworth area and the Australian Institute of Health (1990) for the whole of Australia. The results indicated that the health workers in the Wentworth area believed a community dietitian would play an important role in the prevention of these diet-related illnesses.

The second and fourth goal of the study was to compare the Wentworth area to all other area health services in terms of numbers of community dietitians, community nutrition activities conducted and diet related health issues and target groups present in the community. The majority of area and regional health services in New South Wales employ at least one community dietitian. The Wentworth area was comparable to all areas in terms of the health issues and target groups prevalent in the area and compared with four other areas or regions in terms of population size. Each of these 4 areas employed an average of 2 community dietitians each, indicating that according to numbers of community dietitians per 100 000 population the Wentworth area is disadvantaged.
The clinical, hospital-based dietitians in most of the areas and regions were found to spend no more than 10 per cent of their time on community nutrition activities. This differed slightly for regional areas where the same dietitians acted as both clinical and community dietitians. The dietitians of the Nutrition and Dietetic Services of the Wentworth Area Health Service were comparable to other areas in that the majority of them spent less than five percent of their time on community nutrition activities. Despite this, they were planning for future community nutrition activities and could see a need to expand their services to the community as a whole. However, they had limited time and resources to do so.

According to the duties of community dietitians compiled from information provided by the area and regional health services in New South Wales, a community dietitian should be involved in designing, implementing, and evaluating nutrition education programs and projects, giving talks to the community and health professionals on nutrition issues and providing nutrition education consultation and advice to individuals, groups, organisations, and the media. The hospital-based dietitians did not have the time or resources to conduct these activities on a large scale therefore there was a need for a community dietitian to conduct these tasks.

Goal number three was to determine if the Wentworth area health worker's perception of the duties of a community dietitian/nutritionist were related to the lack of suitably qualified community dietitians/nutritionists working in the area. The majority of health workers had an accurate perception of the duties and work places of a community dietitians; therefore, there appeared
to be no relationship between this and the lack of community dietitians working in the area.

Overall this study indicates that there was a need for a community dietitian / nutritionist to work in the Wentworth area of New South Wales to assist with the prevention of diet-related illnesses, health promotion, and diet counselling. However, concerns were shown that there was also a need for many other health professionals in the area, and community dietitians are but one of the professionals that the area lacks.
LIMITATIONS OF STUDY

There were many limitations to this study mainly due to a lack of time and resources in which to conduct the study. The main limitations of the study were:

1. The results of the survey distributed to health workers were not representative of the entire Wentworth area community. It only provided the opinions of health professionals working in a community setting. The general public would have strong opinions and needs on this matter and should have been addressed, if more time was available.

2. The study did not investigate the demands placed on the hospital based dietitians working in the area or the statistics of their activities. These indicators would have been useful in determining if there was a demand for more staff in not only the community area but also the clinical area.

3. The study did not take into consideration the need for other health workers other than a community dietitian. The area may be in need of a wide range of health professionals. The importance of more community dietetic staff should be determined in relation to the importance of other health staff to determine priorities for creating new positions.

4. The results of the survey to health workers may not have been one hundred per cent accurate as some respondents appeared unsure about the differences between a community dietitian, hospital
dietitian and private dietitian. This could have been overcome by providing definitions of each with the questionnaire.

5. This study did compare the number of community dietitians in the Wentworth area to all other areas in New South Wales but it did not determine if the community dietitians in the other areas were effective in their duties and goals.

6. A few of the questions in survey 1 appeared ambiguous for respondents therefore the results may have been biased by incorrect perceptions of some questions. This could have been rectified if a larger pilot study was conducted.

7. The three local communities of the Wentworth Area Health Service were not studied individually due to lack of time and resources. Therefore there may have been stronger needs in one community than another.

8. A small pilot test was conducted on each survey however, due to time constraints they could not be tested for reliability. Therefore it is not certain if this study was conducted again that the same results would be obtained. Reliability could be tested by retesting the surveys after a set period of time. If the same answers were found then the surveys were reliable. Another method would be to split the surveys into two groups. The groups should correspond in the way they classify the respondents to the study. If they measure differently there were problems with reliability. There were no surveys already established in reliability that measured the desired variables necessary for this study. The interviews could have been
tested for reliability by having two interviewers asking the same questions at separate times. If the same answers were obtained then the interview would be reliable.

8. The study was tested for criterion-related validity. Criteria were set in the goals of the study as to how a "need" would be measured. However, the study did not address the issues of content validity or construct validity. These need to be tested to determine if the study adequately reflected the real meaning of the concepts under consideration.

9. Some shortcomings of the methods of this study are:

a. Questionnaire designs were not adequately tested for reliability and validity.

b. A bias existed in the distribution of questionnaires to health workers in the Wentworth area in that respondents were not randomly selected but chosen by the distributors of the questionnaires if they agreed to fill out the questionnaire. If this study was conducted a second time the respondents would be randomly selected to avoid this validity error.

c. There was confusion with the interpretations of some of the questions on the survey to health workers in the Wentworth area this may have introduced an error in the results. This could be overcome by testing the reliability of these questions and/or conducting the survey by way of personal interview.
AREAS FOR FURTHER RESEARCH

Areas that need to be researched in order to reinforce this study are:

1. The effectiveness of a community dietitian in helping to prevent diet-related illnesses and conditions.

2. The effectiveness of health promotion and nutrition education in preventing diet-related illnesses and conditions.

3. The pressures and demands for dietetic services in the Wentworth area.

4. A study of the Hawkesbury, Penrith and Blue Mountains communities individually to determine specific issues that need addressing in each area.

5. A study to determine the needs and wishes of the general public of the Wentworth area in terms of health services.
REFERENCES


NS-V Health Regions and Areas

- ORANA & FAR WEST
  - Broken Hill

- NORTH COAST
  - Lismore
  - Tamworth

- NEW ENGLAND
  - Dubbo
  - Bathurst

- HUNTER
  - Newcastle

- CENTRAL WEST
  - Goulburn
  - Wollongong

- SOUTH WEST
  - Albury

- SOUTH EAST
  - Illawarra

Sydney
Metropolitan Area Health Services
(separate map)
APPENDIX 2
Dear Respondent,

This survey is being conducted by a Master of Science, Nutrition and Dietetics student in conjunction with the University of Wollongong to determine if there is a need for a Community Dietitian/ Nutritionist in the Wentworth Area of NSW.

The study has been approved by the University of Wollongong Human Experimentation Ethics Committee and enquiries on the research may be directed to the Secretary of this committee on (042) 213 079.

Your participation in this study by completing the survey would be appreciated. Participation is completely voluntary and your non-participation will not prejudice any services you are currently receiving.

Thankyou for your time.

Yours Sincerely,

Angela O'Sullivan (B.A.S, Food and Nutrition) (Master of Science, Nutrition and Dietetics student The University of Wollongong).
HEALTH PROFESSIONALS SURVEY ON THE NEED FOR COMMUNITY DIETITIANS / NUTRITIONISTS IN THE WENTWORTH AREA

1. What is your age?
   a. 20 - 30  
   b. 31 - 40  
   c. 41 - 50  
   d. 51+  

2. What is your sex?
   a. Female  
   b. Male  

3. What is your occupation / position? ____________________________

4. Have you ever had any professional contact with a Community Dietitian / Nutritionist?
   a. Yes  
   b. No  

5. Where would you expect a Community Dietitian / Nutritionist to work?
   a. Weight loss centres  
   b. Cooking schools  
   c. A Health centre  
   d. Food companies  
   e. Hospitals  
   f. Health promotion units  
   g. Local Government  
   h. Community health centres  
   i. Other ____________________________
6. Which of the following would you expect to be the duties of a Community Dietitian / Nutritionist?

a. One to one counselling on diet
b. Running cooking classes
c. Designing and implementing nutrition programmes
d. Giving talks to the community and other health workers about nutrition
e. Cooking food for sick people in hospital
f. Other

7. In column 1 below rank the listed health issues from 1 to 10 in order of which you believe are in most need of prevention in the Wentworth Area.

<table>
<thead>
<tr>
<th>Column 1</th>
<th>Column 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Heart disease</td>
<td></td>
</tr>
<tr>
<td>b. Cancer</td>
<td></td>
</tr>
<tr>
<td>c. Diabetes</td>
<td></td>
</tr>
<tr>
<td>d. The common cold</td>
<td></td>
</tr>
<tr>
<td>e. Gastrointestinal disorders</td>
<td></td>
</tr>
<tr>
<td>f. Accidents</td>
<td></td>
</tr>
<tr>
<td>g. Drug abuse</td>
<td></td>
</tr>
<tr>
<td>h. Aids</td>
<td></td>
</tr>
<tr>
<td>i. Obesity</td>
<td></td>
</tr>
<tr>
<td>J. Malnutrition</td>
<td></td>
</tr>
</tbody>
</table>

8. In column 2 above place a tick beside the health issues that you believe a Community Dietitian / Nutritionist would have a role in helping to prevent.
9. If the Wentworth Area Health Service had the resources to employ 1 new health worker at present, rank from 1 to 8 in order of which worker you would consider the area is in most need of:

a. Occupational therapist
b. Social Worker
c. Community Development Worker
d. Community Dietitian
e. Speech Pathologist
f. Community Nurse
g. Youth Worker
h. Other

10. Have you ever referred a client to a dietitian? (In the last 6 months to a year).

a. Yes, a private dietitian [ ]
b. Yes, a hospital dietitian [ ]
c. No, I have not referred a client to a Dietitian [ ]

11. Have you ever wished there was a Community Dietitian / Nutritionist in the Wentworth Area that you could contact as a resource or to refer clients to? (In the last 6 months to a year)

a. Yes []
   b. No []

12. In your opinion is there a need for a Community Dietitian / Nutritionist to be employed in the Wentworth Area?

a. Yes [] Why? ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________

b. No [] Why? ________________________________________________________________
   ________________________________________________________________

Thankyou for your time
Dear Respondent,

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Yours Sincerely,

Angela O'Sullivan (B.A.S, Food and Nutrition)  
(Master of Science, Nutrition and Dietetics student  
The University of Wollongong).
1. What is the name of this Area Health Service?

2. Which of the following diet related health issues are most prevalent in this area?
   a. Heart Disease
   b. Diabetes
   c. Cancer
   d. Obesity
   e. Malnutrition
   f. Stroke

3. Who are the main target groups that are at risk of diet related health issues in this area?
   a. The elderly
   b. Youth
   c. Children
   d. Unemployed
   e. Socioeconomically disadvantaged
   f. Ethnic communities
   g. Aboriginal people

4. Are there any Community Dietitians / Nutritionists working in this Area Health Service?
   a. Yes
   b. No

5. How long have the positions for Community Dietitians / Nutritionists existed in this area?
   a. More than 10 years
   b. 5 - 10 years
   c. 1 - 5 years
   d. Less than 1 year
   e. They do not exist
6. For what reason are there no Community Dietitians / Nutritionists employed in this area?

   a. There is no need for them
   b. It is not financially feasible
   c. Clinical Dietitians do the community nutrition work
   d. Other health issues / workers are more important
   e. other __________________________ [ ]

7. What are the general duties of the Community Dietitians / Nutritionists in this Area Health Service? (Attach copies of duty statements if available)

   __________________________________________
   __________________________________________
   __________________________________________
   __________________________________________
   __________________________________________
   __________________________________________
   __________________________________________

8. Who are the Community Dietitians / Nutritionists accountable to?

   __________________________________________
   __________________________________________

9. How many Community Dietitians / Nutritionists are based at

   a. A Hospital ______
   b. A Community Health Centre ______
   c. A Health Promotion Unit ______
   d. Other __________________________
10. Do the Clinical Dietitians in the area do any Community Nutrition work?

a. Yes [ ]
   b. No [ ]

11. If answered yes to the above question, what percentage of the Dietitians time is allocated to Community Nutrition work?

a. 5% [ ]
   b. 10% [ ]
   c. 15% [ ]
   d. More than 15% [ ]

12. What is the population of the area covered by this Area Health Service? _______________________

13. Are the number of Community Dietitians / Nutritionists employed in this area sufficient to fulfil the needs of the area?

a. Yes, exactly the right amount [ ]
   b. There are too many employed [ ]
   c. No, more need to be employed to fulfil the areas needs [ ]

14. Please add any other comments on Community Nutrition or activities being run in this area? ____________________________________________
   ____________________________________________
   ____________________________________________