Study of the usual nutrient intake of geriatric assessment team clients and the opinions of the Geriatric Assessment Team personnel on the nutritional needs of their clients

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STUDY OF THE USUAL NUTRIENT INTAKE OF GERIATRIC ASSESSMENT TEAM CLIENTS AND THE OPINIONS OF THE GERIATRIC ASSESSMENT TEAM PERSONNEL ON THE NUTRITIONAL NEEDS OF THEIR CLIENTS

A major project submitted in partial fulfilment of the requirement for the award of the degree of Master of Science, Nutrition and Dietetics

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Emma Patterson
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ABSTRACT

This study measured the nutrient intake of 60 clients of the Geriatric Assessment Team (GAT) based at Governor Phillip Special Hospital, Penrith, N.S.W. The relationship between nutrient intake and demographic, social, medical, exercise and food intake variables was examined, and the opinions of five members of the Geriatric Assessment Team on the nutritional problems of their clients were solicited.

The study utilised two methods; a researcher administered a questionnaire, including a diet history, to the GAT clients and undertook a focus group involving the GAT personnel.

Results indicated that the aged population in the Penrith area may be nutritionally at risk due to an increasing mean age, the number of older people living alone, a low level of education and the percentage of older people who are underweight or overweight. A need for some form of nutritional intervention and social stimulation for older people who were widowed and lived alone was particularly apparent.

A small percentage of older people surveyed never had visitors, ate away from home or indeed left their homes. It was found that dietary intake monitoring was required whether individuals lived alone or did not.

The majority of GAT clients suffered from diseases with nutritional implications such as arthritis (58 percent), hypertension (26 percent), heart disease (25 percent) and diabetes (13 percent), yet no dietetic service was provided by the GAT. Twenty-two percent of the GAT clients were on special diets, yet did not receive follow up treatment from dietitians.

(vii)
Respondents with medical conditions were found to have low intakes of energy and particular nutrients such as vitamin C and iron. The mean percentage of energy from macronutrients for the respondents was 18 percent protein, 34 percent fat and 48 percent carbohydrate, and males consumed significantly more energy than females ($x^2=10.772$, $p=.0046$, df=2).

Half the respondents exercised regularly and males were more active than females, but the difference was not significant ($x^2=.268$, $p=.6048$, df=1). GAT clients who did not participate in any exercise were found to consume nutrients above the Recommended Dietary Intakes (RDI's).

Significantly more females than males wore dentures ($x^2=4.275$, $p=0.0387$, df=1), and males were more likely to "eat anything" than females ($x^2=4.019$, $p=0.045$, df=1).

Only 35 percent of respondents cooked their own meals, and 30 percent shopped for themselves. The rest had family, friends or homehelp to cook and shop for them. Most GAT clients owned or used a stove, oven, frypan or microwave as the major cooking utensils.

Sixty-two percent of the GAT clients felt that what they ate effected their health and 43 percent of respondents wanted extra nutritional information. Significantly more males than females wanted more information ($x^2= 4.077$, $p=.0435$, df=1).

There were no professional nutrition and dietetic services offered by the GAT, except for referrals to the Diabetes Centre. Basic nutrition data collection methods, such as looking in the cupboard for food and obtaining a basic diet history, were employed by the GAT workers. However, clients
were only referred to homehelp or Meals on Wheels or were admitted to Governor Phillip Hospital if the client needed nutritional support. There is no dietitian employed at Governor Phillip Hospital.

GAT members believed that the nutrition problems of older people in the Penrith area could be better serviced by having a dietitian on the team. The suggested role for the dietitian included providing cooking lessons, providing education to homehelp and homcare workers and supplying diet sheets and nutritional information to the GAT personnel.

In conclusion, this study highlighted the nutrition problems of GAT clients in the Penrith area and suggested that these problems may be well addressed by the services of a dietitian.
CHAPTER ONE

INTRODUCTION
Undernutrition, or malnutrition, in the elderly patient is being increasingly recognised (Lehmann A, 1989).

During the past decade life expectancy has increased, due mainly to a decline in the birth rate and infant mortality, the control of communicable diseases, and improvements in nutrition and living standards. This has lead to an increase in both the number and proportions of older people in the community, especially the very old and frail, which in turn is associated with social, political and economic problems due to the risk of morbidity, disability and the need for medical services (Wahlqvist, M., Kouris, A., 1990).

In Australia, in 1985, there were 1,611,365 people aged over 65 years, representing 10 percent of the population (Horwath, C., 1990). This contrasts significantly with the equivalent group in 1901, which equated to four percent of the population. The over 75 group is now the fastest growing segment of our community. Interestingly, of the above 65 age group 93.6 percent live in private dwellings rather than institutions (Horwath, C., 1990).


Studies of older people, throughout the world, have demonstrated nutrition deficiencies (Bowman, B., and Rosenberg, I., 1983). One study in the United States of America, suggests that there are specific nutrient deficiencies in as many as 50 percent of elderly persons (Bianchetti, A., et al, 1990).
It can be identified that older people in the community have various needs, such as physical, social, and medical needs, that must be attended to. There are a number of health care services already established in Australia to help benefit the older person. One section of these services is provided by the Geriatric Assessment Team (GAT).

The GAT is a multi-disciplinary team established to maintain close contact with community based carers of older people and make recommendations regarding the ability of the older person to be maintained in his / her own home (Fardon, K., et al, 1991).

A person's ability to remain at home would depend on how well his/her physical, social and mental needs are being met. This includes the need for food and nutritional care.

To date, dietitians have not played a major role in GAT's. Hence, there is a need to examine how nutritional problems of older people are being dealt with by GAT's.

The following study was designed to focus on the nutrition service needs of older people in the Penrith area who are clients of the GAT, based at Governor Phillip Special Hospital. The food intakes of sixty clients were analysed and the opinions of GAT personnel in terms of nutrition and older people were collated and reported on.
1.1 RESEARCH QUESTIONS AND OBJECTIVES

RESEARCH QUESTIONS

The main questions which this study aims to address are:

1. What are the opinions of GAT personnel on the nutritional problems of their clients, and

2. What is the usual nutrient intake of a group of clients of the Geriatric Assessment Team (GAT) based at Governor Phillip Special Hospital.

OBJECTIVES

1. To measure the nutrient intakes of a group of Geriatric Assessment Team clients.

2. To compare the nutrient intakes of energy, protein, fat, iron, zinc, carbohydrate, calcium, and fibre to the Recommended Daily Intakes for Australian adults.

3. To identify nutrient intakes both above and below the Recommended Daily Intakes for Australian adults.
4. To determine if any correlation exists between individual social indicators and components of the dietary analysis.

5. To identify the nutrition services provided by the Geriatric Assessment Team.

6. To obtain the opinions of GAT members on the nutrition service needs of the GAT clients.

7. To postulate the role of a dietitian in a Geriatric Assessment Team.

1.2 DEFINITIONS OF TERMS

**GAT:** Geriatric Assessment Team

**RDI:** Recommended Daily Intake

**Older People:** People over the age of sixty-five.

**Focus Group:** A group interview or a group discussion where the focus is on a particular topic of interest. (Hawe, P., et al. 1990).
CHAPTER TWO

LITERATURE REVIEW
2. LITERATURE REVIEW

The proportion of older people in the world's population is increasing and this will continue for the foreseeable future. This can be seen in Table 2.1 which indicates the growth and projected growth for the USA for the over 65 age group.

Historically, in Australia, older people are described as those aged 65 or older. At this age both males and females are eligible to retire from employment (Stanhope, M., Lancaster, J., 1988).

<table>
<thead>
<tr>
<th>YEAR</th>
<th>NUMBER (in thousands)</th>
<th>PERCENTAGE (of total population)</th>
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<tbody>
<tr>
<td>1900</td>
<td>3,084</td>
<td>4.0</td>
</tr>
<tr>
<td>1920</td>
<td>4,933</td>
<td>4.7</td>
</tr>
<tr>
<td>1940</td>
<td>9,019</td>
<td>6.8</td>
</tr>
<tr>
<td>1960</td>
<td>16,560</td>
<td>9.2</td>
</tr>
<tr>
<td>1980</td>
<td>25,544</td>
<td>11.3</td>
</tr>
<tr>
<td>1990</td>
<td>31,697</td>
<td>12.7</td>
</tr>
<tr>
<td>2000</td>
<td>34,921</td>
<td>13.0</td>
</tr>
<tr>
<td>2010</td>
<td>39,195</td>
<td>13.8</td>
</tr>
<tr>
<td>2020</td>
<td>51,422</td>
<td>17.3</td>
</tr>
<tr>
<td>2030</td>
<td>64,581</td>
<td>21.2</td>
</tr>
<tr>
<td>2040</td>
<td>66,988</td>
<td>21.7</td>
</tr>
</tbody>
</table>

(Stanhope, M., Lancaster, J., 1988)
The mean age of the older population is also increasing. In 1980 the mean age of people over 65 in Australian society was 72 years of age. This is expected to increase to 74 years of age by the year 2000 (Truswell, A, 1990).

There is a predominance of women over the age of 65 years in Australia, with this predominance increasing as the mean age increases. The 1986 Census shows that, in NSW, women comprised 58 percent of those aged 65 years and above. Further, that this percentage increases to 64 percent for those over 75 and then to 75 percent for those above the age of 85 (Australian Bureau of Statistics, Census, 1986).

The continuation of studies into the nutritional status of older people in Australia is of increasing importance as the proportion of the older people in the population increases (Zador, D., et al, 1990).

2.1 THE AGING PROCESS

Aging is associated with a number of physiological changes.

* Heart-rate decreases
* Systolic blood pressure increases
* Cardiac output declines about 1 percent per year and total peripheral resistance increases.
* The risk of atherosclerosis and ischemic heart disease increases
* The secretory ability of the digestive glands is reduced
* Calcium absorption decreases
* Glucose tolerance is decreased due to a decreased ability to secrete insulin
* Constipation becomes a problem, (due to a variety of factors, such as low residue diets, semi-starvation, drugs, laxatives, and chronic inflammatory processes).
* The number of cells responding to antigenic stimulation decreases, and there is a decline in activity of antigen stimulated cells.
* Total body protein synthesis, body mass, and bone mineralisation decrease, while the proportion of body fat increases.


The majority of these changes can, in fact, be induced by nutritional deficiency. The risk of diet related health problems such as, heart disease, some cancers, diabetes, cirrhosis and obesity also increases with aging (Department of Health, NSW, 1986). There is an obvious potential for synergism between diet and aging.

### 2.2 STUDIES OF NUTRITION AND OLDER PEOPLE IN THE COMMUNITY

Nutrition and older people have been the focus of studies conducted throughout the world. Results from many of these studies suggest that older people in the population may be nutritionally at risk. Below is a summary of relevant past studies and their major findings.
2.2.1 Australian Studies

Older people are, generally, seen to be nutritionally at risk. For example, in a large study of non-institutionalised older people Horwath (1989) surveyed 2195 people about their food habits and intakes. A general conclusion from the study shows that the older people in the population were nutritionally at risk.

Two studies were carried out on 48 institutionalised older people in a Sydney area by Woodhill and Nobile (1972) and Silink, S, J., et al, (1972). They concluded that a large proportion of the respondents diets were low in one or more nutrients. In particular, 65 percent of the respondents consumed less than the Recommended Daily Intake (RDI) of vitamin C and iron and 56 percent ate less than the RDI for vitamin A.

Nguyen, et al, (1985) studied the nutrient intakes of 38 institutionalised older people in a Melbourne nursing home. This study illustrated that the residents who were supervised during meal time consumed a more adequate diet than did the residents who were not supervised. However, it was found that nutrient intake was compromised in this population because of low intakes of food energy and also because of poor quality meals.

A study was conducted in the Blue Mountains of Sydney, NSW, on 64 institutionalised residents. It was found that whilst the diets of these older people were adequate, based on a minimum requirement of two-thirds of the RDI, nutrients at risk were zinc, vitamins E and D, B-6 and folate. Dietary fibre was also low. (Zador, D.A., et al, 1990).
Dietary zinc was found to be below the RDI in a study conducted in an Adelaide nursing home by Baghurst, et al, (1985), as well as intakes for iron and dietary fibre.

A study in Australia by Flint., et al, (1979), compared the nutrient intake of community based older people and the intakes of institutionalised older people in the Melbourne area. Their major findings were that plasma vitamin C levels, folate, albumin, and zinc levels were lower in the institutionalised people than the community-based older people.

Stuckey S, et al, (1984), studied the dietary intakes of 124 non-institutionalised elderly people in inner Sydney. Participants in the study had either their midday meal at an Activity Centre or through a Meals on Wheels organisation. The dietary data were collected over 4 days. Height and weight and some sociological data were also collected. The study indicates that a significant proportion of the elderly population may be nutritionally at risk, and this was particularly so for males receiving Meals on Wheels (M.O.W.) (Stuckey, S.J., et al, 1984).
2.2.2 Overseas Studies

There are many studies on nutrition and older people that were conducted overseas. The conclusions drawn are similar to and support the Australian studies.

In the United States of America a study looked at the dietary intake of 100 non-institutionalised older people. It was concluded that the majority of mean nutrient intakes of the older people were adequate. However, two-thirds of the individuals were considered as having inadequate intakes of calcium and vitamin A (Betts, N.M., Vivian, V.M., 1985).

In the same study, it was found that zinc intakes were below 45 percent of the RDI in the majority of the men's diets. Total food energy, calcium, folic acid, zinc, vitamins B 12, B 6, and E were all below the RDI's for most of the women (Betts, N.M., Vivian, V.M., 1984).

In a South Carolina retirement village nutrient intakes of 51 older people were collated. The nutrients for which dietary intakes fell below 100 percent of the RDI were: calcium in both sexes; energy, in males; and iron, thiamin, riboflavin, and niacin in females. Except for calcium, few subjects had intakes below two-thirds of the RDI (Gray, G., et al, 1983).

A twenty-four hour dietary recall study, using 1303 older people in Italy, was used to determine the percentage of older subjects with dietary intakes of specific nutrients below two thirds of the RDI. The study found that 90 percent of the people examined showed inadequate intake of thiamine and vitamin B 6, and 30
percent to 40 percent demonstrated deficiencies of vitamin A, vitamin C, niacin, vitamin B12, calcium and iron. Only 10 percent of the population had an inadequate protein intake. Socio-economic conditions and health status were also used to help identify the sub groups that were at risk of malnutrition (Bianchetti, A., et al, 1990).

A Canadian study of 619 independently living adults aged 60 and over found that the mean energy and nutrient energy intakes of the older people seemed to be adequate. However, many of the participant's energy intake was low and their intake of fat high. Once again, calcium, vitamin D, A and C, zinc and protein were low in this population (Scythes, C.A., et al, 1989).

Similar findings were also recorded by a study in Boston. The nutrient intakes of 691 non-institutionalised older people were studied and it was found that their energy intake was lower than recommended. Protein intake, however, seemed adequate. Twenty percent of the males and 38 percent of the females consumed less than two-thirds of the RDA for calcium (McGandy, R.B., et al, 1986).

A conclusion was made in one study that nutrition plays a major role in the caring of elderly patients and their recovery. Fifty-nine patients were studied who had fractured femurs, half of the patients were supplemented with the remaining patients acting as the control group. The clinical outcome was better for those supplemented, deaths were lower and stays in hospital were shorter in the group that had had the nutritional support (Delmi, M., et al, 1990).
All the published studies suggest that calcium, zinc, potassium, vitamin B6, magnesium and folate are likely to be the nutrients least adequately supplied in the diets of older people. The total fat, refined carbohydrates intake are generally above the recommended levels while complex carbohydrates and fibre intakes are low (Horwath, C., 1989).

2.3 NUTRIENT INTAKE OF OLDER PEOPLE

The aging process alters body composition so that the nutritional status of a person changes as they get older (Roe, D. A., 1990). Socio-economic status, nutrient digestion, absorption, metabolism, utilisation and excretion all influence nutritional status. A decrease in food intake, loss of teeth, impaired taste and smell influence nutritional status as well (Bowman, B., Rosenberg, I., 1983). Poor nutritional status can contribute directly to mortality through such mechanisms as impaired immune function and diminished resistance to acute infections. (Campbell, J., et al., 1990). Additionally, long term poor eating habits may exacerbate chronic and acute disorders, hasten development of degenerative diseases and delay the recovery of illnesses (Glanz, K., 1985).

As we have discussed the older persons diet can often be inadequate in protein, and some vitamins and minerals (Gambert, S. R., Guansing, A.R., 1980 : Flint, et al., 1979). Nutritional deficiencies seem nearly always to be secondary to a social problem or to a medical problem. Some of these social problems that can effect nutritional status are loneliness, isolation, immobility (no transport), poverty, ignorance, bereavement and alcohol (Truswell, A., 1990).
Older people, especially those living alone, have often been considered susceptible to loneliness, social isolation and inadequate energy and nutrient intakes (Better Health Commission, 1987).

A study conducted by Walker and Beauchene (1991) in Tennessee, USA confirmed that:

"there is a relationship between loneliness and nutrient intake but that the magnitude is not great".


The number of social contacts, which is related to loneliness has also been studied. In 1991, a study of 2586 older people in Europe showed that between 10-30 percent of the sample surveyed ate dinner regularly at restaurants (Schlettuein- Gsell, D., et al, 1991). It was found that people who were more socially active reported less loneliness, and this appeared to be related to an increased nutrient intake (Walker, D., Beauchene, R., 1991).

Davis, M.A., et al (1985) stated that social isolation may adversely effect dietary quality. Men living with a spouse consistently had more favourable dietary patterns than either those living alone or those living with someone other than a spouse.

In a separate study Horwath found that males living with a spouse had more favourable dietary habits than those living alone. Women however living alone had largely similar dietary patterns and nutrient intake equal to or greater than those living with a spouse. (Horwath, C., 1989).
In a study to determine the relationship between nutrient intake and socio-economic status in older people in South Carolina, it was found that the results

"affirmed the literature findings that support a positive relationship between low socio-economic status and inadequate nutritional status".

(Ryan, V., Bower, M., 1989).

Several other studies confirm that older people with a low socio-economic status may be at a greater risk of nutritional problems (Horwath, C., 1989). McGandy, et al, (1986), stated that among the factors associated with poor dietary quality were lower education attainment, low income and denture wearing.

There are many factors, other than socio-economic and social isolation, that can effect the nutritional status of the older person, for example exercise.

The Better Health Commission (1987) reported that only 35 percent of males and 27 percent of females, in Australia, participated in any form of exercise. This could be a reason for 6.4 percent of males and 8.7 percent of females being obese in Australia. However, a study conducted by Osler, et al, (1991), showed that women spent more time exercising than did men.

It was also found, in a study of 2586 older people in Europe, that more women than men did their own shopping. The majority of men had their families and friends do their shopping, thus limiting their exercise (Schlettuein-Gsell, D., et al, 1991).
Therapeutic diets can also effect the nutritional status of older people. It was found in a survey population of 2586 older people in Europe that 25 percent of the clients were on a "special diet". The majority of these were low fat and low salt diets ordered by medical practitioners (Schlettuein-Gsell, D., et al, 1991). The Better Health Commission (1987) reported that of the elderly population 17.2 percent of males and 22.8 percent of females were on "special diets". "The elderly who are prescribed special diets should see a dietitian regularly to check that they are still eating a nourishing balanced diet." (Beck, M.E., 1985).

Another factor that can effect a person's nutritional status is the percent of nutrients that make up the total energy of a persons diet. A comparison between people's intakes of major nutrients and recommended levels shows that Australians have a high consumption of fat and inadequate consumption of complex carbohydrates (Health For All, 1986). The Australian diet consists of 40 percent fat, 16 percent protein and 44 percent carbohydrate. The recommended diet consists of approximate 30 percent fat, 12-14 percent protein and 50-60 percent carbohydrate (Better Health Commission, 1987).

Hospital admissions can also effect the nutritional status of older people. Diseases and conditions of old age, such as senility, arthritis and fractures, are a major reason for hospital admissions. These conditions are second only to cardiovascular disease in terms of frequency of hospital admissions (Better Health Commission, 1987).
As expected, there are differences found between men and women's intake of energy and nutrients (Moreivas, O., et al., 1991). From the past studies it can be seen that there are various nutrients that need to be looked at when studying older people in our community, such as; calcium, vitamin C, protein, fibre and zinc (Truswell, A., 1988).

There are many contributors to the nutritional problems in older people. These are best summarised in Table 2.2.
TABLE 2.2  PHYSIOLOGICAL, SOCIO-ECONOMIC AND SOCIAL FACTORS AFFECTING NUTRITIONAL STATUS

**PHYSIOLOGICAL**

- Anorexia
- Changes in taste or odour perception
- Poor denition
- Reduced salivary flow
- Dysphagia
- Lack of exercise
- Impaired nutrient absorption/digestion
- Physical disability (restricting the capacity to purchase, cook or eat a varied diet)
- Drug-nutrient interactions
- Side effects of drugs (anorexia, nausea, altered taste)
- Restrictive diets
- Chronic Disease
- Alcoholism

**SOCIAL PSYCHOLOGICAL FACTORS**

- Depression
- Loneliness
- Social isolation
- Bereavement
- Loss of interest in food or cooking
- Mental disorders
- Food faddism

**SOCIO-ECONOMIC FACTORS**

- Low income
- Inadequate cooking or storage facilities
- Poor nutrition knowledge
- Lack of transportation
- Shopping difficulties
- Cooking practices resulting in nutrient losses
- Inadequate cooking skills (particularly for men).

(Horwath C, 1990).
"A number of studies have shown a high degree of correlation between malnutrition, specifically protein calorie malnutrition, and the subsequent development of serious complications, including poor wound healing, decreased immune competence, and metabolic disturbances. The combination of all these factors has been shown to play an important role in the outcome and recovery time of hospitalised patients" (Burns, R., et al, 1986).

Those most at risk of malnutrition as they get older are those who lack access to food because of poverty, disability or a combination of both. Malnutrition is found in the elderly in our society who live in their own homes, indigent, isolated and homebound (due to disability) (Roe, D, 1990; Nguyen H., et al, 1985).

There is difficulty in assessing the nutritional status of elderly persons, so it is recommended that an early preventative approach, based on recognition of the risk factors that lead to malnutrition, is important (Horwitz, A., et al, 1989).

Following is a list of observations that can be used while assessing a person's nutritional status.
**TABLE 2.3  OBSERVATIONS OF NUTRITIONAL ASSESSMENT**

- Recent weight change
- Chewing, or swallowing difficulties
- Post Gastrectomy
- Physical disabilities
- Lack of sunlight
- Depression and loneliness
- Mental confusion
- Increased alcohol intake
- Side effects of medications
- Missing meals/drinks
- No food stores, ie in cupboard
- Food wastage/rejection
- Lack of fruit/vegetables
- Low food budget
- Poor nutritional knowledge


Malnutrition does not occur in isolation but is precipitated by other social, physical and medical problems. Below is a short list of factors that can lead to malnutrition:

**Extreme Age:**
Because of the increased frailty of the older person there is an increased risk of malnutrition.

**Social Isolation & loneliness:**
Fourteen percent of older people live alone and as life expectancy increases so will this number, therefore there will be more isolation and possible loneliness (Beck, M,E., 1985).
Loss of Appetite:
Could be due to a reduced activity, illness or drug treatment.

Nutrition Information:
Most ideas about food and dietary preferences develop in childhood. Attitudes founded 65 years ago are hard to change. Interestingly enough a study conducted by Popkin, et al, (1992) showed that women make changes to their diets more readily than do males.

Mental Health:
Senile dementia affects five percent of the post-retired population (Beck, M.E., 1985).

Physical Disabilities:
Ten percent of the older population in Australia are housebound. (Beck, M.E., 1985).

Therapeutic Diets:
Being on a diet can lead to malnutrition. "The elderly who are prescribed special diets should see a dietitian regularly to check that they are still eating a nourishing balanced diet." (Beck,M.E., 1985).

Dentition:
Older people with dentures have found to consume approximately 200-300 calories less than people with their own teeth (Beck,M.E., 1985)
2.5 GERIATRIC ASSESSMENT TEAM

There are a number of health care services that are already established in Australia to help benefit the elderly. One of these groups is the Geriatric Assessment Team. The Geriatric Assessment Team or GAT is a federally funded health care service.

The GAT is a multi-disciplinary team which maintains close contact with carers of elderly persons and makes recommendations regarding their ability to be maintained in their own homes (Fardon, K., et al, 1991).

To date dietitians do not play a major role in the GAT team and few dietitians are employed in services for the elderly. This raises the question of whether adequate provision has been made for nutritional assessment and treatment of the older people in our society.

2.6 RECOMMENDED DAILY INTAKES

This study will be utilising the Australian Recommended Daily Intakes (RDI's) as the standard for assessing adequate nutrient intake.

"The RDI are the levels of intakes of essential nutrients, considered in the judgement of the National Health and Medical Research Council, on the basis of available scientific knowledge, to be adequate to meet the known nutritional needs of practically all healthy persons" (Mackerras, D, 1991).
Various authors have criticized the RDI's because they do not include specific values for older people. Hegsted, (1989), argues that RDI's for the older person would not be useful, due to the fact that a large majority of the older people have more than one diagnosed disease, and are on medications therefore it is unlikely that specific dietary standards for such a group could be developed or if they would be useful.

If the RDI's were to be changed then, should they be increased or decreased and by how much? It has not been clearly established that older people, who do not require therapeutic diets, need to consume a diet which differs from the rest of the population. The RDI's are the best we have to assess whether the nutrient intake of older people are adequate (Hegsted D, 1989).

Further, it is accepted that the nutritional requirements of the older person are similar to that of younger adults with the exception of energy requirements which may be less (Roe,D,1990).

Protein-energy status is evaluated by anthropometry and biochemical methods (Zeman F, Ney D, 1990). Older individuals are more likely to be influenced by various biological, environmental and social factors, the effects of which would be generally to increase their protein needs above those for younger adults (Young, VR, 1990). Due to a decrease in energy intake, there would be a higher need for more protein. Total energy intake should include 12 -14 percent protein (Young, VR, 1990).

It is important to remember that the RDI's for most nutrients are usually set well above the minimum amount that is consistent with health for most people in the population (Mackerras, D., 1991).
The RDI's are derived from estimates of requirements for each sex/age category and incorporates generous factors to accommodate variations in absorption and metabolism. They therefore apply to group needs. " (Mackerras, D. 1991).

The RDI's are there to apply to population studies not to individuals. The RDI's shall be used to evaluate the adequacy of the respondent's diets, and protein and energy status will be taken into account.

2.7 ANTHROPOMETRY

"Anthropometry is the process of measuring various dimensions of the body. Anthropometry measures body size and contours, together with caliper-measured skinfolds thickness at selected sites, provide useful tools in general practice for estimating relative body composition" (Williams, S., et al, 1988).

Anthropometric measurements vary with age, sex, build and exercise level and they can be distorted by illness, however anthropometrics are an important part of clinical assessment. (Williams, S., et al, 1988) ".

Various anthropometry measurements will be recorded in this study. The commonly used measures are weight and height, and Body Mass Indices.

Poor nutrition status, as measured by BMI, has been associated with a decreased survival of elderly patients in the hospital population (Campbell ,A., et al, 1990).
BMI is difficult to measure in the elderly due to the difficulty in measuring height, and the effects of oedema and dehydration on body weight. In this study BMI and healthy weight range statistics will be collected.

2.8 DIETARY ASSESSMENT

Choice of dietary assessment measures must be appropriate to the stated objectives. In general the methods for dietary intakes assessment fall into two categories, methods based on memory and methods based on records of food eaten at the time of consumption (Bingham, 1987).

2.8.1 Modified Diet History

The modified diet history is based on a single interview. The interviewer tries to determine the "usual" daily food intake by inquiring about the client's intake for as many days as he/she can remember. Samples or models of the food are used to help the client visualise the quantities he/she consumes (Horwitz, A., et al, 1989). Modified diet histories quantifies amounts by means of food models (Truswell, A., 1990).

The method is rapid and simple and has been used in many studies of nutrition and older people. The co-operation needed by the client is minimal, and the costs are very low. This method is ideal for very large groups and it can show a change in the
consumption of foods. From the data the researcher is able to assess the usual dietary intake of a group or population. (Commonwealth Department of Health, 1983). Diet histories yield a "usual" intake of participants diet (Karkeck, M., 1987). The disadvantages of this method are:

1) it tends to underestimate the caloric intake
2) decreased short-term memory, hearing loss and poor communication skills may affect the validity of the information
3) it cannot measure day to day variations.

(Bianchetti, A., et al, 1990)

Several researchers have found, however, that the modified diet history is adequate for obtaining mean nutritional intakes when the sample size is sufficient. The diet history has also been found to be valid when used to compare the dietary intake of different groups (Bianchetti, A., et al, 1990).

The diet history method has been used in numerous studies as it measures quantitatively the usual diet intake of an individual over a specified time (Hankin, J.M., et al, 1975; Graham, S., et al, 1988). It is not a record of precisely what has been eaten in a given day or week but rather the usual long term pattern of food intake (Jain, M., 1989).

2.8.2. Food Frequency

A food frequency will elicit information concerning the frequency of consumption of specified foods and drinks. It has a very high
response rate and has a comparatively low burden for older people. It is also possible to assess usual intakes with the food frequency (Horwath, C., 1990).

Nutrients are computed by means of average servings as determined in samples of similar persons (Truswell, A., 1989). Food frequency, like modified diet histories, yield a "usual" intake (Karkeck, M., 1987).

A study was conducted to validate the food frequency questionnaire on 27 older persons. Intakes of 18 nutrients were computed from the questionnaire and compared with those derived from a 1 year diet record compiled 18 months earlier. The questionnaire's mean nutrient intakes were within 10 percent of the mean diet record measurement for 11 out of the 18 nutrients and the difference was less than 25 percent for all but one nutrient (Willett, 1989).

Food frequencies have many advantages. The response rate is very high and it is a comparatively low burden to respondents, it can be administered by a non-professional or can be self-administered, it assesses the usual intake and it is relatively inexpensive (Horwath, C. 1990).

This study will use a method that is based on memory. A modified diet history will be used to collect dietary data and a food frequency checklist will be used as a cross check to test the validity of the modified diet history.
A focus group is a group interview or a group discussion where the focus is on a particular topic. All the people involved in a focus group have something in common (Hawe, P., et al, 1990).

A focus group is a simple way to collect information from a target group. Using a discussion format, information is collated from the group. A focus group should draw out a range of perceptions, beliefs and self-reported behaviours in a group. The focus group is one of the methodologies used in qualitative research, when what you are principally interested in is the range of opinion (Hawe P., et al, 1990).

There is one guideline, that is relevant to this study, when running a focus group. If you are working with a very small defined population then it is appropriate to invite all of the target group. If the target group is large then you invite relevant subgroups within the target group. For every focus group you should invite ten people and ideally six or seven will participate. (Hawe P., et al, 1990).
"Poor nutrition and injury contribute significantly to the prevalence of morbidity and mortality in Australia." (Better Health Commission, 1987).

There are virtually no dietitians working in the GAT in NSW, nor are there many dietitians working in services for the older people in the community. This raises the question as to whether appropriate provision has been made for the nutritional assessment and treatment of older people in our community (NSW Institute of Dietitians, April, 1990).

From previous information we can see that there is a need for a person with nutritional expertise to work in the GAT. What can a dietitian do for a GAT? This can best by seen by reviewing a study on the role of a dietitian in a GAT in Massachusetts, Boston, by Delahanty, L (1980).

In 1980, a GAT team was formed at Massachusetts Hospital to meet the complex medical, psychological, rehabilitative, nutritional and social needs of the geriatric patients. There was a dietitian on the team. The dietitian conducted nutritional screening of each patient that was referred to the GAT. She also acted as a resource for team members and promoted collaboration in nutritional care planning.

The dietitian conducted nutritional assessment of every patient. This consisted of:

* Evaluation of anthropometrics, biomedical, clinical and dietary data as well as the nutritional implications of drug therapy.
* Identifying the medical problem, psychosocial issues and physical impairments that may effect dietary intake.
* Information was collected and recorded and it helped the dietitian to make recommendations for involvement of other health professionals in improving the patients nutritional care and status.

(Delahanty, L., 1984)

A multi-disciplinary approach resulted in earlier identification and evaluation of functional ability, more comprehensive individual care planning, and a reduced percent of readmissions (Delahanty, L., 1984).

The dietitian worked in with the team members much the same as she/he would work in a hospital, dealing with appropriate health professionals in their various areas of expertise for the benefit of the patient. The dietitian on the Geriatric Assessment Team could also develop recipe and nutrition information for the older people.

The team concept of whole health care for the older people in the NSW Department of Health has made significant improvements to health care for the elderly and their carers through the GAT. Through this study and various other studies, it can be seen that a dietitian would only improve the service of the GAT for the older people.
2.11 CONCLUSION

Older people in the community may be nutritionally at risk because of their vulnerability, physical and mental disabilities and poverty. This has been the general conclusion of many studies.

Nutrition research and intervention should play an important role in combating the problem of undernutrition in older people. In order to diagnose undernutrition a multifaceted approach is needed that includes clinical assessment, multiple measurements, laboratory and anthropometric measurements (Lehmann A, 1989). This has relevance for the Geriatric Assessment Team.

This study examines the nutrition aspect of a multifaceted approach of caring for older people. From the results of the study recommendations may be made concerning nutrition services for older people in the Penrith area.
CHAPTER THREE

MATERIALS AND METHODS
3. MATERIALS AND METHODS

The methods chosen for this study were:

A). To conduct a **focus group** to determine the attitudes of the GAT personnel towards the nutritional problems of the older people in the Penrith area (Appendix 1).

B). To conduct a **questionnaire** to determine the usual dietary intake of GAT clients as well as measuring demographic and social factors (Appendix 2).

3.1 ETHICS APPROVAL

The proposal for the study was approved by the University of Wollongong Human Experimentation Ethics Committee.

3.2 FOCUS GROUP

"A focus group is another name for a group interview or a group discussion, where the focus is on a particular topic of interest" (Hawe, P., et al, 1990).

The focus group is a method of qualitative research. One focus group was conducted in the research project and the aim of the focus group was to determine attitudes of the GAT personnel towards the nutritional problems of the older people in the Penrith area and the way they deal with these nutritional problems.
The focus group was directed towards the health professionals of the GAT. This included five professionals from the following disciplines; nursing, occupational therapy and social work.

On the first of August, 1992 the focus group was conducted from midday to 1pm. The focus group was held in the GAT building at Governor Phillip Special Hospital. The focus group concentrated on three main questions:

1) What do you think the major nutritional problems of the older people in the Penrith area are?

2) What do you do when you go and see a patient, in terms of nutrition?

3) How do you think that the nutritional problems that you have talked about could be better dealt with?

The focus group was an informal discussion that was recorded on cassette and later transcribed by the researcher. The three questions were all open ended questions to generate a discussion on the topic of nutrition and older people.

The GAT personnel at Governor Phillip Special Hospital have a monthly meeting. The researcher was present at one of their meetings and requested a time when most people would be available to participate in a focus group discussion. A time was settled upon and a few days before the date decided upon the researcher sent a memorandum to all staff reminding them of the meeting.

The ten GAT health professionals were invited to participate in the focus group, however, due to work or prior engagements only five of the health professionals participated. All of the participants of the GAT focus group were female and between the ages of 25-50. They had all been working at Governor Phillip Special Hospital for a number of years. The results were analysed and presented descriptively.
3.3 GAT CLIENT QUESTIONNAIRE

The questionnaire was directed towards the Geriatric Assessment Team clients from Governor Phillip Special Hospital. The aim was to determine the usual dietary intake of GAT clients as well as some necessary demographic and social information.

3.3.1. Pilot Study

On Saturday the 25th of July, 1992, the pilot study was performed at the homes of GAT clients who had agreed to participate in the study.

Four GAT clients were referred to the researcher by the GAT personnel and selected as the pilot sample. The only selection criteria used was that they had to be clients of the GAT and were able to communicate effectively. The sample was screened for dementia. The supervisor of the project, a geriatrician, overviewed the questionnaire.

The four GAT clients and one geriatrician who completed and commented on the pilot questionnaire were all volunteers. The questionnaire was completed by the GAT clients and no notable problems with the questionnaire were found. The geriatrician commented on improvements to make the questionnaire more appropriate for the target audience.
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3.3.2. The Questionnaire

The survey questionnaire was administered by the researcher and required minimal time to answer (approximately 15 minutes). There were twenty-seven questions (Appendix 2). The questionnaire consisted of mainly closed questions, with some open ended questions and a provision for a diet history.

The questionnaire was divided into sections, namely:

i) Demographic information
ii) Social Information
iii) Medical Information
iv) Exercise
v) Food and Nutrition

i) Demographic information

The first part of the questionnaire gathered demographic data which included, age and sex, marital status, employment and the level of education. Height and weight were also measured. The questionnaire contained demographics to allow cross analysis between collected data and sex.

ii) Social Information

The second part of the questionnaire gathered social information. The majority of social questions were asked to determine the average amount of social contact the client had. Information was collected regarding:

(i) Living arrangements
(ii) Loneliness
(iii) Social Visits and
(iv) Social Eating out habits
(i) & (ii) Living arrangements and feelings of loneliness were determined from two questions. Both questions were closed questions.

(iii) & (iv) Clients social visits and eating out habits were determined by questions enabling the client to choose an appropriate response from a list.

Social information was used to assess if there was a relationship between the usual dietary intake of GAT clients and their social contact.

**ii) Medical Information**

Limited medical information was recorded through two questions. The respondent had to check his/her answer against a given medical condition.

Medical information was recorded to create a profile on respondents to determine an overall picture of where dietetic input may be required or relevant.

**iii) Exercise Information**

Information on exercise was determined by two questions. One question was open ended, asking for a description of exercise while the other question was a closed question.

Exercise questions were included to determine the general exercise level of the respondents and to also assess how often the clients leave their homes.
iv) Food and Nutrition Information

The food and nutrition section forms the basis of the survey. The questions on the survey sought information about the client's diet and appetite as well as information about shopping and cooking practices. General questions were also asked about nutrition and health beliefs.

Issues were also investigated regarding special diets, transport, dentures and use of dietitians. A modified diet history was recorded to determine the usual dietary intake of the GAT clients.

3.4 SAMPLING

The questionnaire was completed in the Penrith Area, with the clients of the Geriatric Assessment Team at Governor Phillip Special Hospital. The sample size was 60 clients and the surveys were conducted on a one to one basis on a one off interview.

A single interviewer reduced the possibility of bias. Questions and queries could easily be answered at the time of collection.

Modified diet histories were a part of the questionnaire. All the diet histories were performed by a trained person with specific knowledge of food and dietary patterns. This was considered very important in terms of the quality of the results obtained.
3.5 METHOD OF RECRUITMENT OF SUBJECTS

3.5.1. GAT Client Questionnaire

The respondents were all drawn from the Geriatric Assessment Team client base. A mixture of recruiting methods were used, such as:

(i) When members of the GAT visited clients they asked the client if he or she would like to be involved in the study. Those in agreement would fill out an initial consent form. (Appendix 4). The researcher would telephone the GAT client to organise a follow-up visit.

(ii) GAT personnel listed individual clients whom they wished the researcher to interview. The researcher then telephoned the clients to seek consent to participate in the study and to arrange a follow up visit if appropriate.

(iii) The researcher contacted individuals on the GAT files by telephone and asked if they would like to be involved in the study and if so organised a time to visit them.

All respondents completed a consent form before the questionnaire was administered (Appendix 3).
3.6 DATA ANALYSES

3.6.1. Focus Group

To analyse the focus group results the researcher used a method consisting of four main steps from Hawe, 1990. These were;

1. Organisation of the Data
2. Shaping the Data
3. Summarising the Data, and
4. Explaining the Data

The results were coded and their frequency recorded.

3.6.2. GAT Client Questionnaire

The data were obtained and coded using the Macintosh Statview programme on the Wollongong University campus. Most of the results were determined by percent comparisons and chi-squared and t-test statistics. The statistical tests were used to compare demographic and social information with the usual nutrient intake of the GAT clients. The results were considered statistically significant if p=< 0.05.

Diet histories were analysed by the researcher and nutrients estimated using the computer nutrient analysis programme "Diet One", Nuttab Version 3.12 (Xyris Software 1987-1991) at Nepean Hospital, Penrith. Where a food item was not found in the Diet 1 database a similar food was entered.

The results were also compared to the Australian Recommended Daily Intakes for adults (RDI's). Calculations were performed to measure energy, protein, fat, carbohydrate, vitamin C, iron and zinc intakes.
4.1 RESULTS OF CLIENT QUESTIONNAIRE

All respondents of the GAT questionnaire were clients of the Geriatric Assessment Team at Governor Phillip Special Hospital. The clients surveyed were assessed in the months of July and August, 1992 by a member of the Geriatric Assessment Team. The majority of clients were selected from the GAT files, however, the group was screened for dementia. The sample size of this project was sixty respondents.

4.1.2 Demographic Data

The sample consisted of 53 percent females (n=32) and 47 percent males (n=28). Respondents ages ranged from 41 to 97 years of age and were approximately normally distributed. An independent t-test found that there was no significant difference between the mean age of males and females surveyed (t=-1.748, df=58, p=0.0858). The mean ages were 73 (Sd=± 11.688) and 77 (Sd=± 8.843) respectively.

It was found that the mean school leaving age for the respondents was 14 years of age (Sd=+/-3.553). Indeed, 38.3 percent of the respondents left school at the age of 14.

Only three percent of the population surveyed were currently working and the rest were retired or on benefits. The marital status of the respondents is represented in figure 4.1. A chi-squared test indicated that there was no significant difference in the proportion of males and females falling into the "marital" categories (χ²=12.005, p=.0074, df=3). The majority of respondents were widowed (55 percent).
It was found, through an unpaired two-tailed t-test, that there was a significant difference between males and females in heights ($t=5.648$, df=58, $p=.0001$) and weights ($t=2.417$, df=58, $p=.0188$). The mean height and weight for the surveyed population are listed in Table 4.1.

### Table 4.1

<table>
<thead>
<tr>
<th></th>
<th>MEAN HEIGHT AND WEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OF THE STUDY SAMPLE</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>HEIGHT</td>
<td>SD</td>
</tr>
<tr>
<td>MALES</td>
<td>173.25 CM (8.04)</td>
</tr>
<tr>
<td></td>
<td>70 KG (21.543)</td>
</tr>
<tr>
<td>FEMALES</td>
<td>162.5 CM (6.701)</td>
</tr>
<tr>
<td></td>
<td>60 KG (11.253)</td>
</tr>
</tbody>
</table>
It was found from the results that 35 percent of the respondents were at an acceptable body weight. However, 15 percent of the males and 15 percent of the females weights were recorded as below an acceptable body mass index (BMI of twenty). Seventeen percent of the males and 18 percent of the females were considered to be above an acceptable body mass index of twenty-five.

### 4.1.3 Social Data

Of the people surveyed 48 percent lived alone. Fifty-two percent of respondents either lived with a friend or a family member. Although the proportion of males and females living alone were not statistically significant the results did show that 59 percent of the females lived alone while only 35 percent of the males lived alone.

Irrespective of living arrangements it was found that 40 percent of the clients surveyed stated that they were lonely. This ties in strongly with the next two questions which ask how often the clients received visits from their family or close friends and also how often they ate meals outside of their home.

Results show that the majority of respondents received daily visits (42 percent). However, 42 percent of the respondents never ate away from their home. There was no significant differences in the proportion between males and females in either the number of daily visits received ($x^2=6.112$, $p=.2955$, df=5) or the proportion of males and females eating away from home ($x^2=4.379$, $p=.4962$, df=5).

Figures 4.2 and 4.3 depict these results:
FIGURE 4.2  THE VISITS GAT CLIENTS RECEIVED

Never  Rarely  Monthly  Weekly  Daily

Frequency
4.1.4 Medical Data

Of the people surveyed 82 percent had at least one of the following medical conditions: arthritis; hypertension; heart disease; diabetes; inadequate vision; peptic ulcers; cancer; emphysema; chronic lung disease; kidney disease and osteoporosis.

As can be seen from Table 4.2, large groups of the sample population suffered from arthritis (58 percent), hypertension (26 percent), and heart disease (25 percent). There was no significant difference in the proportion of males and females for each condition. However, it can be seen that males had a higher percentage of the category "any of these"
than did females. Also the males in the sample had a higher level (3 percent) of osteoporosis and kidney disease than females (0 percent). Females (19 percent) had double the percentage of "inadequate vision" than did the males (7 percent). The details of each condition are listed in Table 4.2.

<table>
<thead>
<tr>
<th>MEDICAL CONDITION</th>
<th>TOTAL YES (%)</th>
<th>MALES (%)</th>
<th>FEMALES (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any of these</td>
<td>82</td>
<td>90</td>
<td>75</td>
</tr>
<tr>
<td>Arthritis</td>
<td>58</td>
<td>57</td>
<td>59</td>
</tr>
<tr>
<td>Hypertension</td>
<td>27</td>
<td>29</td>
<td>25</td>
</tr>
<tr>
<td>Heart Disease</td>
<td>25</td>
<td>21</td>
<td>28</td>
</tr>
<tr>
<td>Diabetes</td>
<td>13</td>
<td>11</td>
<td>16</td>
</tr>
<tr>
<td>Inadequate Vision</td>
<td>13</td>
<td>7</td>
<td>19</td>
</tr>
<tr>
<td>Peptic ulcer</td>
<td>12</td>
<td>11</td>
<td>13</td>
</tr>
<tr>
<td>Cancer</td>
<td>7</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>Emphysema</td>
<td>7</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>Chronic Lung Disease</td>
<td>5</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>Kidney Disease</td>
<td>3</td>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td>Osteoporosis</td>
<td>3</td>
<td>7</td>
<td>0</td>
</tr>
</tbody>
</table>

* Figures are rounded off to the nearest full number

In the past 12 months 95 percent of the respondents had had one or more of the following medical conditions: been admitted to hospital; falls; stroke; broken bones; pneumonia; or heart attack.
Of the respondents 82 percent had been admitted to hospital in the past 12 months and 58 percent had suffered a fall in the past year. No significant difference between males and females was found for any of the medical conditions.

However, Table 4.3 shows that females had a higher percentage of broken bones than the males. Males had a higher percentage of cases of pneumonia. Table 4.3 shows the medical problems encountered in the last 12 months.

TABLE 4.3  MEDICAL CONDITION SUFFERED BY THE GAT CLIENTS IN THE PAST 12 MONTHS

<table>
<thead>
<tr>
<th>MEDICAL CONDITION</th>
<th>TOTAL YES (n= 57) %</th>
<th>MALES (n= 28) %</th>
<th>FEMALES (n= 32) %</th>
</tr>
</thead>
<tbody>
<tr>
<td>One or more of these</td>
<td>95</td>
<td>93</td>
<td>97</td>
</tr>
<tr>
<td>Admitted to hospital</td>
<td>82</td>
<td>82</td>
<td>81</td>
</tr>
<tr>
<td>Falls</td>
<td>58</td>
<td>64</td>
<td>53</td>
</tr>
<tr>
<td>Stroke</td>
<td>22</td>
<td>21</td>
<td>22</td>
</tr>
<tr>
<td>Broken Bones</td>
<td>17</td>
<td>11</td>
<td>22</td>
</tr>
<tr>
<td>Pneumonia</td>
<td>12</td>
<td>18</td>
<td>6</td>
</tr>
<tr>
<td>Heart Attack</td>
<td>3</td>
<td>4</td>
<td>3</td>
</tr>
</tbody>
</table>

* Figures are rounded off to the nearest full number

** No difference between males and females in the proportion with medical conditions according to a chi-squared test. (P =.0.05)
4.1.5 Exercise Data

Exercise was defined as walking, gardening, bowling and driving. If a respondent indicated that he or she undertook a form of exercise then they were considered as having participated in exercise.

Exactly half the respondents (50 percent) undertook some form of exercise. There was no significant difference in the proportion of males and females undertaking exercise ($x^2 = .268, p = .6048, df = 1$). It should be noted that an equal number of males and females enjoyed some exercise while 43 percent of males and 57 percent of females stated that they did not participate in any form of exercise.

Included in the exercise section was a question regarding how often the respondents left their homes. It became apparent that 48 percent of the respondents left their home five days a week or more. However, in contrast to this 16 percent of people only left their homes once a week and 10 percent of respondents never left their home. Figure 4.4 below depicts the results obtained:

**FIGURE 4.4 GAT CLIENTS: FREQUENCY OF OUTINGS**

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>0</td>
</tr>
<tr>
<td>&lt; 1 a Month</td>
<td>5</td>
</tr>
<tr>
<td>2-3 Month</td>
<td>10</td>
</tr>
<tr>
<td>Once a Week</td>
<td>20</td>
</tr>
<tr>
<td>2-4 Week</td>
<td>30</td>
</tr>
<tr>
<td>5 days a Week</td>
<td>40</td>
</tr>
</tbody>
</table>
4.1.6 Food and Nutrition Data

The Food and Nutrition section, which constitutes the major part of the survey, contained many varied questions directed at food and nutrition practices and beliefs of the GAT clients. Information was collected, for example, on subjects ranging from dentures, to diets to financial information and health beliefs.

Dentures

A chi-squared analysis indicated that there was a significant difference in the proportion of men and women who wore dentures ($\chi^2=4.275$, $p=0.0387$, df=1). Seventy-three percent of the respondents wore dentures while 27 percent of them did not. Eighty-four percent of the females wore dentures compared to only 60 percent of the males.

Special Diets

The respondents were asked whether they were following a special diet at the time of the interview. Twenty two percent of the respondents were on a special diet. There was no significant difference in the proportion of males and females on a special diet. Table 4.4 shows the special diets the respondents indicated they were following:
### TABLE 4.4 THE SPECIAL DIETS OF GAT CLIENTS

<table>
<thead>
<tr>
<th>TYPES OF SPECIAL DIETS</th>
<th>FREQUENCY (n= 60)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetic</td>
<td>8</td>
</tr>
<tr>
<td>Low Fat</td>
<td>2</td>
</tr>
<tr>
<td>High Potassium</td>
<td>1</td>
</tr>
<tr>
<td>Warfarin</td>
<td>1</td>
</tr>
<tr>
<td>High Fibre</td>
<td>1</td>
</tr>
<tr>
<td>Weight Gain</td>
<td>1</td>
</tr>
</tbody>
</table>

**Seen by a Dietitian**

The respondents were asked whether they had ever been seen by a dietitian. It was discovered that 33 percent of the respondents had been seen in the past by a dietitian. The majority of the respondents had been seen during a stay in hospital. There was no significant differences between sexes. Table 4.5 depicts the given reasons for consulting a dietitian.
## TABLE 4.5 GAT CLIENTS REASONS FOR CONSULTING A DIETITIAN

<table>
<thead>
<tr>
<th>Reason for Consulting</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetic Diets</td>
<td>8</td>
</tr>
<tr>
<td>Nasogastric Tubes</td>
<td>2</td>
</tr>
<tr>
<td>Weight Loss</td>
<td>3</td>
</tr>
<tr>
<td>Low Fat</td>
<td>2</td>
</tr>
<tr>
<td>Bleeding Ulcers</td>
<td>1</td>
</tr>
<tr>
<td>High Potassium Diet</td>
<td>1</td>
</tr>
<tr>
<td>Diarrhoea</td>
<td>1</td>
</tr>
<tr>
<td>High Fibre</td>
<td>1</td>
</tr>
<tr>
<td>Weight Gain</td>
<td>1</td>
</tr>
<tr>
<td>Warfarin</td>
<td>1</td>
</tr>
</tbody>
</table>

**Appetite**

As has been noted earlier one possible contributing factor to an elderly person losing weight could be due to a loss of appetite. Therefore, the respondents were asked how their appetite was at the time of the interview. The results are shown in figure 4.5 below.

It can be seen that the majority of the elderly people surveyed responded that their appetite was "good".
The question was asked of the respondents whether their appetite had changed much in the past year. Thirty percent of the people said that their appetite had changed. Of this group, 67 percent said that their appetite had in fact decreased and 33 percent said their appetite had increased.

GAT Client Eating Habits

The respondents were asked about their usual eating patterns. They were given the choice of four answers and the results are listed in Table 4.6 following:
Possible responses
A) No special diet, I eat almost anything
B) No special diet, but I try to avoid fatty foods
C) No special diet but I avoid red meat
D) Diabetic diet

**TABLE 4.6  GAT CLIENTS EATING HABITS**

<table>
<thead>
<tr>
<th>RESPONSE</th>
<th>MALES</th>
<th>FEMALES</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>%</td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>A</td>
<td>50</td>
<td>14</td>
<td>25</td>
</tr>
<tr>
<td>B</td>
<td>32</td>
<td>9</td>
<td>50</td>
</tr>
<tr>
<td>C</td>
<td>7</td>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td>D</td>
<td>11</td>
<td>3</td>
<td>15</td>
</tr>
</tbody>
</table>

*Figures rounded up to the nearest whole number*

Collapsing the options so as to consider "no special diet" with all other options combined, a chi-squared analysis indicated that there was a significant difference between the proportion of men and women who chose this category rather than the rest of the alternative options ($x^2 = 4.019, P=0.045, df=1$). Thirty-seven percent of the people surveyed chose this category. Twenty-five percent of the women chose this category while 50 percent of the males surveyed responded that they ate almost anything.

There was no significant difference found in the proportion of males and females who chose the option "no special diet, but I try and avoid fatty foods" rather than the rest of the alternative options.

Thirty-two percent of the males avoided fatty foods while 50 percent of the females responded that they avoided fatty foods. ($x^2 = 1.959, p=.1616, df=1$).
Eight percent of the respondents said that they did try to avoid red meat. The majority of the respondents that did avoid red meat were the females (Nine percent of the females avoided red meat). However, there was no significant difference found between the proportion of males and females for this category.

Of all the clients surveyed only 13 percent had diabetes and followed a diabetic diet. The majority of these once again were females, however no significant difference existed between the proportion of males and females ($X^2 = .312, p=.5767, df=1$). Sixteen percent of all females and 11 percent of all males had diabetes. Figure 4.6 depicts the responses described above.

**FIGURE 4.6  GAT CLIENTS EATING HABITS**
Cooking and Shopping

A chi-squared analysis indicated that there was a significant difference in the proportion of men and women who cooked the majority of their meals. ($x^2 = 4.25, p=0.0392, df=1$).

Thirty-five percent of the respondents actually cooked their own meals. Forty-seven percent of the females cooked their own meals while only 22 percent of all the males cooked their own meals. Table 4.7 shows who does the cooking for the other 65 percent of people surveyed.

**TABLE 4.7 WHO DOES THE COOKING?**

<table>
<thead>
<tr>
<th>COOKING HELPER</th>
<th>FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(n = 60)</td>
</tr>
<tr>
<td>Wives</td>
<td>14</td>
</tr>
<tr>
<td>Daughters</td>
<td>8</td>
</tr>
<tr>
<td>M.O.W.</td>
<td>7</td>
</tr>
<tr>
<td>Family Members</td>
<td></td>
</tr>
<tr>
<td>(outside of immediate)</td>
<td>5</td>
</tr>
<tr>
<td>Husbands</td>
<td>2</td>
</tr>
<tr>
<td>Mothers</td>
<td>1</td>
</tr>
<tr>
<td>Carers</td>
<td></td>
</tr>
<tr>
<td>(other than mentioned)</td>
<td>1</td>
</tr>
</tbody>
</table>
Shopping, however, was another issue. Only 30 percent of the respondents actually shopped for themselves. The majority of these once again being female. Thirty-one percent of the females shopped for themselves and 29 percent of the males shopped for themselves.

There was no significant difference in the proportion of males and females who did their own shopping. ($\chi^2=.051$, $p=.8213$, df=1). Table 4.8 shows who did the shopping for the other 70 percent of the people surveyed.

**TABLE 4.8**  
WHO DOES THE SHOPPING?

<table>
<thead>
<tr>
<th>SHOPPING HELPER</th>
<th>FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(n= 60)</td>
</tr>
<tr>
<td>Wives</td>
<td>13</td>
</tr>
<tr>
<td>Daughters</td>
<td>12</td>
</tr>
<tr>
<td>Family Members (outside of immediate)</td>
<td>8</td>
</tr>
<tr>
<td>Homecare</td>
<td>3</td>
</tr>
<tr>
<td>Homehelp</td>
<td>3</td>
</tr>
<tr>
<td>Husbands</td>
<td>2</td>
</tr>
<tr>
<td>Friends</td>
<td>2</td>
</tr>
<tr>
<td>Sons</td>
<td>2</td>
</tr>
</tbody>
</table>

The next question asked was how often the GAT clients went shopping, or had it done for them, and how often they bought fruit and vegetables. The results showed that the majority of respondents went shopping or had it done for them once a week.
There was no significant difference found in the proportion of males and females and frequency of grocery shopping ($\chi^2=1.598$, $p=.6599$, df=3) or frequency of fruit and vegetable shopping ($\chi^2=.041$, $p=.9796$, df=1). The results are graphed in figure 4.7 and figure 4.8.

**FIGURE 4.7  FREQUENCY OF GAT CLIENTS GROCERY SHOPPING**

- Monthly: 18.33%
- Fortnightly: 1.67%
- Once a Week: 18.33%
- Twice a Week: 61.67%

**FIGURE 4.8  FREQUENCY OF GAT CLIENTS FRUIT AND VEGETABLE SHOPPING**

- Fortnightly: 21.67%
- Once a Week: 13.33%
- Twice a Week: 65.00%
Transport

Transport for the elderly is an important issue. Hence, the inclusion of this question in the survey. Generally, transport was not found to be a problem for this group. Eighty-five percent of the respondents said that they had no difficulty with transport, while 15 percent said they do have difficulty with transport. Nineteen percent of females and 11 percent of males responded that they did have difficulty with transport. There was no significant difference between males and females and transport. ($x^2 = .756, p = .3845, df=1$).

Cooking Equipment

There was no significant difference in the proportion of males and females who had specific cooking equipment. However, it was found that 100 percent of people have an oven and a stove. Fifty-eight percent of people have a microwave but only 32 percent of males and 40 percent of females use them as a major cooking equipment.

Eighty-seven percent of respondents had frypans, however, 7 percent of males and 9 percent of females used them more than any other cooking equipment.

The following table is of the equipment in the homes of the respondents and it also shows the equipment that is mainly used by the elderly at home.
### Table 4.9 Cooking Equipment Used by GAT Clients

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Frequency of Presence in Home</th>
<th>Used</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(n=60)</td>
<td>MALES (n= 28)</td>
<td>FEMALES (n=32)</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Oven</td>
<td>100</td>
<td>50</td>
<td>31</td>
</tr>
<tr>
<td>Stove</td>
<td>100</td>
<td>64</td>
<td>59</td>
</tr>
<tr>
<td>Frypan</td>
<td>87</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td>Freezer</td>
<td>87</td>
<td>**</td>
<td>**</td>
</tr>
<tr>
<td>Griller</td>
<td>83</td>
<td>18</td>
<td>9</td>
</tr>
<tr>
<td>Microwave</td>
<td>58</td>
<td>32</td>
<td>40</td>
</tr>
<tr>
<td>Other *</td>
<td>13</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

* Other includes, steamers, toasters, skillets, crockpots, BBQ.

** Not relevant to cooking

*** Rounded to the nearest whole number

#### Food and Health

The respondents were asked whether they believed what they ate affected their health. The results were very interesting, although not significant for sex differences ($x^2=0.2$, $p=.8871$, df=1). Sixty-two percent of the population surveyed said "yes" they did believe that what they ate affected their health, but 38 percent did not believe that what they ate affected their health. Sixty-two percent of females and 61 percent of males believed that what they ate affected their health.
Financial positions can have an effect on a person's nutritional status. During the survey the respondents were asked whether they felt that they had sufficient money to buy food for themselves. Ninety percent of the group said that they did have enough money to provide adequate food. Ninety-six percent of the females and 82 percent of the males stated that they had enough money. There was no significant difference found in the proportion of males and females for finance ($x^2=3.601$, $p=.0577$, df=1).

Nutritional Information

Respondents were asked whether they would like additional information on nutrition. The majority of the respondents felt that "they knew enough about nutrition not to worry about extra information." (57 percent). Only 43 percent of the respondents wanted extra information.

A chi-squared analysis indicated that there was a significant difference in the proportion of males and females who desired extra nutritional information. ($x^2=4.077$, $p=.0435$, df=1). Males, 57 percent, desired nutritional information while only 43 percent of females desired extra nutritional information.
4.2 RESULTS OF DIETARY ANALYSES

Dietary information was collected, coded and placed through the "Diet One" nutrient analysis program. Nutrients that were analysed were: energy; fat; protein; carbohydrate; vitamin c; iron; calcium and zinc.

Statistical tests were carried out on the nutrient intake values. These included unpaired t-tests, where the means of nutrients were analysed, and chi-squared tests. Chi-squared tests were carried out to discover if there was a significant difference between males and females and the usual nutrient intake of GAT clients compared to the Recommended Daily Intakes (RDI's) for adults.

Chi-squared tests were also used to analyse data to see if there was any significant difference between social, medical and exercise factors and the nutrient intake of GAT clients. The results are recorded below:

NB/. The use of chi-squared is not strictly appropriate in some tests that have been calculated. This is because a chi-squared test does not take into account differences that may exist in some tests. For example, it may not take into account the ordering of above, within or below.

4.2.1 MEAN INTAKE OF NUTRIENTS

T-tests were calculated on the various nutrient intakes analysed. There was no significant difference found between the proportion of means of nutrient intakes for males and females.
Table 4.10 depicts the means of the nutrients that were analysed and a t-test statistic between the sexes. It can be seen that the means for the males are greater than for the females. The exception to this being that females consumed fractionally more fibre than males. (22.77g) and (22.75 g) respectively.

<table>
<thead>
<tr>
<th>NUTRIENT</th>
<th>MEAN</th>
<th>T</th>
<th>P</th>
<th>DF</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MALES</td>
<td>FEMALES</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(n= 28)</td>
<td>(n=32)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENERGY Kj</td>
<td>7924.607</td>
<td>7409.156</td>
<td>.84</td>
<td>.4045</td>
</tr>
<tr>
<td>PROTEIN g</td>
<td>81.202</td>
<td>75.593</td>
<td>.886</td>
<td>.3793</td>
</tr>
<tr>
<td>FAT g</td>
<td>68.992</td>
<td>62.633</td>
<td>.81</td>
<td>.4212</td>
</tr>
<tr>
<td>CARBOHYDRATE g</td>
<td>228.929</td>
<td>221.52</td>
<td>.436</td>
<td>.6642</td>
</tr>
<tr>
<td>FIBRE g</td>
<td>22.75</td>
<td>22.779</td>
<td>.015</td>
<td>.9883</td>
</tr>
<tr>
<td>VITAMIN C mg</td>
<td>148.597</td>
<td>135.925</td>
<td>.537</td>
<td>.5934</td>
</tr>
<tr>
<td>CALCIUM mg</td>
<td>1032.304</td>
<td>859.663</td>
<td>1.022</td>
<td>.3113</td>
</tr>
<tr>
<td>IRON mg</td>
<td>12.786</td>
<td>12.387</td>
<td>.375</td>
<td>.7091</td>
</tr>
<tr>
<td>ZINC mg</td>
<td>10.029</td>
<td>9.869</td>
<td>.167</td>
<td>.8681</td>
</tr>
</tbody>
</table>
The mean intakes of macronutrients expressed as a percent of the total energy was made up of 18 percent protein, 34 percent fat and 48 percent carbohydrate. Compared to the "Recommended Diet", the average GAT clients diet is too high in fat and low in carbohydrate. This is, however, comparable with the average Australian diet. (Better Health Commission, 1987). Figure 4.9 depicts the GAT average diet as a percent of the total energy.
The RDFs were used as a standard measurement in this research project. The nutrients were analysed by using a chi-squared statistical test to see if there was a significant difference in the proportion of males and females whose intakes were either above, below or within the RDF's for energy, protein, fat, carbohydrate, iron, calcium and zinc. Table 13 lists the results.

It was found that there was a significant difference in the proportion of males and females and their energy intake level ($x^2=10.772$, $p=.0046$, df=2). There were no other significant differences between the sexes and nutrients. However, there were many interesting findings, as the table following depicts.
### TABLE 4.11 NUTRIENT INTAKES OF GAT CLIENTS COMPARED TO THE RDI's FOR ADULTS

<table>
<thead>
<tr>
<th>NUTRIENT</th>
<th>MALES (n=28)</th>
<th>FEMALES (n=32)</th>
<th>( x^2 )</th>
<th>P</th>
<th>DF</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BELOW %</td>
<td>ABOVE %</td>
<td>BELOW %</td>
<td>ABOVE %</td>
<td></td>
</tr>
<tr>
<td>Energy kj</td>
<td>43</td>
<td>32</td>
<td>10</td>
<td>31</td>
<td>10.772</td>
</tr>
<tr>
<td>Protein g</td>
<td>7</td>
<td>7</td>
<td>9</td>
<td>6</td>
<td>.11</td>
</tr>
<tr>
<td>Fat g</td>
<td>0</td>
<td>46</td>
<td>3</td>
<td>47</td>
<td>.913</td>
</tr>
<tr>
<td>Carbohydrates g</td>
<td>54</td>
<td>0</td>
<td>56</td>
<td>0</td>
<td>.043</td>
</tr>
<tr>
<td>Fibre g</td>
<td>14</td>
<td>0</td>
<td>13</td>
<td>6</td>
<td>1.821</td>
</tr>
<tr>
<td>Vitamin C mg</td>
<td>0</td>
<td>96</td>
<td>3</td>
<td>97</td>
<td>2.018</td>
</tr>
<tr>
<td>Calcium mg</td>
<td>50</td>
<td>0</td>
<td>69</td>
<td>0</td>
<td>2.187</td>
</tr>
<tr>
<td>Iron mg</td>
<td>0</td>
<td>96</td>
<td>3</td>
<td>97</td>
<td>2.018</td>
</tr>
<tr>
<td>Zinc mg</td>
<td>75</td>
<td>25</td>
<td>71</td>
<td>26</td>
<td>.94</td>
</tr>
</tbody>
</table>

* Significant Difference

** Figures are rounded to nearest whole decimal

### 4.3 SOCIAL AND DIETARY ANALYSIS

To determine if any relationship existed between social information, including medical and exercise data, and dietary analysis chi-squared statistics were conducted.
4.3.1 Social Data

Data were analysed to see if there were any significant differences between people who lived alone and those who did not live alone and their nutrient intake compared to the RDI's. The results are listed in Table 4.12

There was no significant differences found between people that did live alone and people that did not, in terms of nutritional intakes.

**TABLE 4.12 NUTRIENT INTAKES OF GAT CLIENTS WHO LIVE ALONE COMPARED WITH THOSE WHO DO NOT**

<table>
<thead>
<tr>
<th>NUTRIENT</th>
<th>DONT LIVE ALONE (n=31)</th>
<th>LIVE ALONE (n=29)</th>
<th>$x^2$</th>
<th>P</th>
<th>DF</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BELOW %</td>
<td>ABOVE</td>
<td>BELOW %</td>
<td>ABOVE</td>
<td></td>
</tr>
<tr>
<td>Energy kj</td>
<td>32</td>
<td>29</td>
<td>17</td>
<td>35</td>
<td>1.808</td>
</tr>
<tr>
<td>Protein g</td>
<td>10</td>
<td>3</td>
<td>7</td>
<td>10</td>
<td>1.311</td>
</tr>
<tr>
<td>Fat g</td>
<td>0</td>
<td>45</td>
<td>4</td>
<td>48</td>
<td>1.225</td>
</tr>
<tr>
<td>Carbohydrates g</td>
<td>52</td>
<td>0</td>
<td>59</td>
<td>0</td>
<td>.297</td>
</tr>
<tr>
<td>Fibre g</td>
<td>16</td>
<td>3</td>
<td>10</td>
<td>4</td>
<td>.434</td>
</tr>
<tr>
<td>Vitamin C mg</td>
<td>0</td>
<td>100</td>
<td>4</td>
<td>93</td>
<td>2.212</td>
</tr>
<tr>
<td>Calcium mg</td>
<td>58</td>
<td>42</td>
<td>62</td>
<td>38</td>
<td>.1</td>
</tr>
<tr>
<td>Iron mg</td>
<td>0</td>
<td>100</td>
<td>4</td>
<td>93</td>
<td>2.212</td>
</tr>
<tr>
<td>Zinc mg</td>
<td>77</td>
<td>23</td>
<td>68</td>
<td>29</td>
<td>1.499</td>
</tr>
</tbody>
</table>

* Significant Difference

** Figures are rounded to nearest whole number
4.3.2 Medical Data

Data were analysed to see if there were any significant differences between people who had at least one of the medical conditions listed and clients who did not and their nutrient intake of protein, fat, carbohydrate, calcium, zinc and iron, compared to the RDI's.

It can be seen that there was no significant differences.

**TABLE 4.13** NUTRIENT INTAKES OF GAT CLIENTS WHO HAVE "ONE OR MORE" MEDICAL CONDITION COMPARED WITH THOSE WHO HAVE NO MEDICAL CONDITIONS

<table>
<thead>
<tr>
<th>NUTRIENT</th>
<th>NO MEDICAL CONDITIONS (n=11)</th>
<th>AT LEAST 1 MEDICAL CONDITION (n=49)</th>
<th>( \chi^2 )</th>
<th>P</th>
<th>DF</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BELOW</td>
<td>ABOVE</td>
<td>BELOW</td>
<td>ABOVE</td>
<td>( \chi^2 )</td>
</tr>
<tr>
<td>Energy kj</td>
<td>18</td>
<td>27</td>
<td>27</td>
<td>33</td>
<td>.723</td>
</tr>
<tr>
<td>Protein g</td>
<td>9</td>
<td>9</td>
<td>8</td>
<td>6</td>
<td>.144</td>
</tr>
<tr>
<td>Fat g</td>
<td>0</td>
<td>46</td>
<td>2</td>
<td>47</td>
<td>.25</td>
</tr>
<tr>
<td>Carbohydrates g</td>
<td>36</td>
<td>0</td>
<td>59</td>
<td>0</td>
<td>1.89</td>
</tr>
<tr>
<td>Fibre g</td>
<td>27</td>
<td>0</td>
<td>10</td>
<td>4</td>
<td>2.594</td>
</tr>
<tr>
<td>Vitamin C mg</td>
<td>0</td>
<td>100</td>
<td>2</td>
<td>96</td>
<td>.464</td>
</tr>
<tr>
<td>Calcium mg</td>
<td>82</td>
<td>18</td>
<td>55</td>
<td>45</td>
<td>2.672</td>
</tr>
<tr>
<td>Iron mg</td>
<td>0</td>
<td>100</td>
<td>2</td>
<td>96</td>
<td>.465</td>
</tr>
<tr>
<td>Zinc mg</td>
<td>90</td>
<td>9</td>
<td>69</td>
<td>29</td>
<td>2.251</td>
</tr>
</tbody>
</table>

* Significant Difference

** Figures are rounded to the nearest whole decimal
4.3.3 Exercise Data

Data were analysed to see if there were any significant differences between who undertook some form of exercise and clients that did not and their nutrient intake compared to the RDI's. There were no significant differences.

**TABLE 4.14**

**NUTRIENT INTAKES OF GAT CLIENTS WHO UNDERTAKE EXERCISE COMPARED WITH THOSE WHO DO NOT UNDERTAKE ANY EXERCISE**

<table>
<thead>
<tr>
<th>NUTRIENT</th>
<th>NO EXERCISE (n=30)</th>
<th>EXERCISE (n=30)</th>
<th>P</th>
<th>DF</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BELOW %</td>
<td>ABOVE %</td>
<td>BELOW %</td>
<td>ABOVE %</td>
</tr>
<tr>
<td>Energy kJ</td>
<td>27</td>
<td>30</td>
<td>23</td>
<td>33</td>
</tr>
<tr>
<td>Protein g</td>
<td>10</td>
<td>3</td>
<td>7</td>
<td>10</td>
</tr>
<tr>
<td>Fat g</td>
<td>0</td>
<td>40</td>
<td>3</td>
<td>53</td>
</tr>
<tr>
<td>Carbohydrates g</td>
<td>49</td>
<td>52</td>
<td>52</td>
<td>48</td>
</tr>
<tr>
<td>Fibre g</td>
<td>20</td>
<td>7</td>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td>Vitamin C mg</td>
<td>0</td>
<td>97</td>
<td>3</td>
<td>97</td>
</tr>
<tr>
<td>Calcium mg</td>
<td>53</td>
<td>47</td>
<td>67</td>
<td>33</td>
</tr>
<tr>
<td>Iron mg</td>
<td>0</td>
<td>97</td>
<td>3</td>
<td>97</td>
</tr>
<tr>
<td>Zinc mg</td>
<td>73</td>
<td>27</td>
<td>72</td>
<td>24</td>
</tr>
</tbody>
</table>

* Significant Difference

** Figures are rounded to nearest whole number
4.4 FOCUS GROUP RESULTS

As has been stated the focus group consisted of three main questions. The range of answers that arose in the focus group discussion are provided.

91 WHAT DO YOU THINK ARE THE MAJOR NUTRITIONAL PROBLEMS OF THE OLDER PEOPLE IN THE PENRITH AREA ARE?

The GAT personnel appeared to believe that the nutritional problems of the elderly are due to financial, social and medical problems.

One Nurse stated that "the main problem is being able to get out and get the actual foods "while her colleague felt that" another significant problem is elderly people being left alone. A conclusion was drawn that "you have to consider each person individually and start your planning from there ", where nutrition is involved.

A nurse felt that "those elderly who are basically immobile through arthritis or cardiovascular disease find it difficult to mobilise because they may need help. They are therefore the ones that tend to have the weight problem. And the people that have dementia or are not eating properly are the ones that are thin ". The GAT personnel felt that these were the older people to target.

The majority of GAT personnel expressed views that the lack of education, the medical problems involved, eating disorders, isolation, and financial hardship as well as the loss of appetite and pleasure in food as the major nutritional problems in the elderly population in the Penrith Area. Other reasons noted that were held by a few of the personnel were, dentures, depression, manipulative skills and transport.
9 2 WHAT DO YOU DO WHEN YOU GO AND SEE A PATIENT IN TERMS OF NUTRITION?

"Part of your assessment would be looking at the nutritional aspect, are they losing weight, are they not eating properly, etc?" stated a member of the GAT.

The majority of ways in which the GAT personnel work with the elderly to find out their nutritional status are: to take a brief diet history, find out information about who cooks and shops for the food, check their cupboards and the fridge. With this information the GAT will refer the older person to a government service such as, M.O.W. or homehelp or homecare.

If a person was malnourished then they would be placed in hospital or placed on M.O.W. Homecare was also offered and sustagen was available for the elderly.

9 3. HOW DO YOU THINK THAT THE NUTRITIONAL PROBLEMS THAT YOU HAVE TALKED ABOUT COULD BE BETTER DEALT WITH?

"The basis of many problems is poor nutrition." commented a nurse from the GAT. The GAT personnel recognise the importance of nutrition for older people and they felt that the nutritional problems of the elderly could be better dealt with by:

* Having a dietitian
* Having practical cooking session (especially for the men), and
* The education of helpers (ie homehelp) and
* GAT client education (diet sheets and nutritional information).
CHAPTER FIVE

DISCUSSION
There was an even distribution of males and females in the sample, with 53 percent of the respondents being female and 47 percent males. As there is a predominance of females over the age of 65 in the Australian population, (Australian Bureau of Statistics, Census, 1986), it was expected that there would be more females responding to the questionnaire than men. This result may have been skewed however by the client selection process.

There was no significant difference between the mean ages of males and females, due to the very specific targeted audience of the questionnaire. The combined mean age for the respondents was 75 years of age. Females had a higher mean age (77) than males (73). The age range of the respondents varied from 41 years of age to 97.

The mean age of older people, generally, is expected to increase to 74 by the year 2000 (Truswell, 1990). It can be seen that the mean age of the surveyed women respondents is already above this expected mean age and the men are very close.

In terms of employment status, 97 percent of the respondents were retired or on sickness benefits. Both the mean age of the males (73) and females (77) indicated that most respondents were above the retiring age. Because of the increasing population of older people this will inevitably cause social, political and economic problems due to the increased risk of morbidity, disability and the increased need for medical and health services (Horwath, 1990).

The average school leaving age for the surveyed population was 14 years of age. Many of the respondents stated that they "had to leave school to help their families financially". During the
focus group with the GAT personnel, it was identified that a "low level of knowledge", in terms of nutrition, existed in the GAT clients. This low level of knowledge may be a result of the low school leaving age of the sample population. This confirms results of previous studies which found that low educational attainment was associated with poor dietary intake by older people (Horwath, C., 1989; McGandy, R., Russell, R., et al., 1986).

Past studies have concluded that marital status has an important role to play in the nutritional status of older people (Horwath, C. 1989), particularly, in terms of their isolation and social activities. During the focus group with the GAT personnel, concerns were expressed that older people who are isolated or who live alone are more likely to spend less time preparing and eating meals than those who live with their spouse, family members or friends. In terms of marital status it was found that the majority of respondents (55 percent) were widowed, eight percent were single and three percent of respondents were divorced. Thirty-three percent of respondents were married. Past studies have shown that men who lived with a spouse had consistently more favourable dietary patterns than either those living alone or those living with someone other than a spouse (Davis, M.A., et al., 1985).

Horwath C, (1989), also found that males living with a spouse had more nutritionally favourable diets than those who lived alone. Nutrient intake in women, however, was seen to be independent of their living arrangements/marital status. (Horwath, C., 1989). However, in this study it was generally found that men had more favourable diets than the females. This finding highlights the need for some form of nutritional intervention and social stimulation in respondents who were widowed and lived alone.
In terms of anthropometric data a significant difference was found between males and females for height ($x^2=5.648$, df=58, $P=.0001$) and weight ($x^2=2.417$, df=58, $P=.018$). This finding was expected as males are generally bigger than females. This confirms that the survey group fits within the mean for their age group population.

The results showed that a higher level of respondents were actually overweight than underweight. In Australian studies 6.4 percent of males and 8.7 percent of females were found to be obese. (Better Health Commission, 1987). Obesity contributes to other nutritionally related disease such as, diabetes, cardiovascular disease, and hypertension. It is recommended that this is an area that may need targeting in future nutrition programs for older people.

A lack of exercise could also be a contributing factor in the frequency of obesity in the older people. It was found that 50 percent of the respondents did not participate in any type of exercise. This is consistent with reports that only 35 percent of males and 27 percent of females in Australia participate in any form of exercise (The Better Health Commission, 1987).

Although the results show that underweight or overweight, in terms of BMI, is not a major problem in this sample population, it can be seen that 32 percent of males and 33 percent of females were either above or below an acceptable body weight. It is considered that this is a substantial proportion of the respondents and is indeed an area that needs further examination.

The aged population is increasing in Australia. This study highlights the fact that the aged population in Penrith may be nutritionally at risk because of their increasing mean age, their marital status, their low level of educational attainment and the percentage of people above and below an acceptable BMI.
The social information was collected to determine the average amount of social interaction that the GAT clients were involved in on a weekly basis. Of the people surveyed, nearly half the population (48 percent) lived alone, compared to other studies which suggest that only 14 percent of older people in Australia live alone (Beck, M.E., 1985). A chi-squared analysis was conducted to see if there was a relationship between males and females living alone. Although, the chi-squared showed no significant relationship between the proportion of males and females living alone.

Fifty-nine percent of the females surveyed lived alone while only 35 percent of the males lived alone. The majority of females were widowed, as the females had a higher mean age (77 years) than the males (73 years).

Males living alone may be considered nutritionally at risk. (Horwath, C, 1989 and Davis, M.A.,1985). This study found to the contrary that males nutrient intakes were more favourable than those for the females. There were also more woman who lived alone than males. It could be concluded that not only the males who live alone are nutritionally at risk, but also the women who live alone.

It has been shown that there is a difference between living with a spouse and with a non-spouse in terms of adequate nutritional status (Davis, M.A., et al, 1985). In this project 48 percent of the respondents lived alone, however 40 percent of the clients surveyed stated that they were lonely. It must be mentioned that even people who were living with others stated that they were lonely. Living with others therefore was not always a guarantee that a person would not feel lonely and that this in turn may effect their nutritional status.

In this survey, incidence of loneliness was not found to depend upon the number of people who came into contact with the client.
The majority of respondents received daily visits from family or close friends (42 percent) and 38 percent received visits weekly. However, 3.34 percent of respondents did not receive any visits and 17 percent of respondents only received visits monthly or rarely. There were no significant differences in the proportion of males and females who received daily visits ($x^2 = 6.112, p = .2955, df = 5$).

It can be seen that the majority of respondents received social stimulation either daily or weekly (80 percent). However, there was also a small percent of people who received visits rarely or never. Social isolation may adversely affect dietary quality of older people (Davis, M.A., et al, 1985).

Social interaction is very important for the elderly, it can effect the person's life in so many ways, not the least being their nutritional status. One study found that people who were more socially active reported less loneliness, and appeared to have an increased nutrient intake (Walker, D., Beauchene, R., 1991). This emphasises the importance of meeting the social needs of the elderly as well as their other needs.

The number of social contacts, which is related to loneliness has also been studied. In terms of frequency of eating out it was found that 42 percent of the respondents never ate away from their home. The remaining 58 percent of respondents ate away from home from time to time, or irregularly. This result is confirmed by a study of 2586 older people in Europe which showed that 10-30 percent of the older people ate dinner regularly at a restaurant (Schlettuein-Gsell, D., et al, 1991). No significant difference was found between the proportion of males and females who do and do not eat away from home ($x^2 = 4.379, p = .4962, df = 5$).
It can be seen that even if the respondents received visits weekly (38 percent), some of them never really venture out of the home (42 percent). Further, that when being visited they stay in the home with the visitor rather than seeking outside stimulation.

Results also revealed that 16 percent of the respondents left their homes only once a week and 10 percent of respondents did not ever leave their homes. These results show that this sample of the older people are homebound (10 percent). This compares with another study of older people which found approximately 10 percent of older people that are homebound (Beck, M, E., 1985).

Data were analysed to see if there were any significant differences between people who lived alone and those who did not live alone, and whether this influenced their nutrient intake in terms of the RDI. It was found that there was no statistically significant difference between people who did live alone and people that did not and their dietary intake. Ryan and Bower (1989) also found that a relationship did not exist between living arrangements and nutrient intake.

Social isolation has been found to adversely affect dietary quality (Davis, M.A., et al, 1985). This study found that a small percentage of clients who lived alone consumed below the RDI for all the nutrients analysed. The nutrients of particular concern were fat, carbohydrate, vitamin C, calcium and iron. However, it should be noted that those clients who did not live alone still consumed six out of the nine nutrients below the RDI. A decreased consumption of fat and carbohydrates in this population could lead to an inadequate energy intake, and a lack of essential fatty acids. An inadequate consumption of iron, calcium and vitamin C could lead to osteoporosis, anaemia and scurvy.
Respondents who lived alone had a higher level of consumption, above the RDI, for energy and individual nutrients such as, fat, protein, fibre and zinc. Likewise a diet in excess of fat and protein has the potential for obesity to develop and the many disease that are related to obesity.

It can be concluded that the group of people who live alone are nutritionally at risk. However, it can also be seen that some of the group who did not live alone were not better off nutritionally. The results indicate that both groups require nutritional monitoring.

Medical information was recorded and collated to create a profile of respondents to determine an overall picture of where dietetic input may be required or relevant. Additionally, medical information was used to assess if there was a relationship between the usual dietary intake of GAT clients or whether they suffered from a medical condition.

Eighty-two percent of the respondents had at least one of the mentioned medical conditions. Generally, it was found that large groups of the sample population suffered from arthritis (58 percent), hypertension (26 percent), and heart disease (25 percent) or diabetes (13 percent).

There was no significant difference in the proportion of males and females for each condition. However, males (90 percent) had a higher percentage of medical conditions than did females (75 percent). Females (19 percent) had more than double the percentage of "inadequate vision" than did the males (7 percent).

The males in the sample also had a higher level (3 percent) of osteoporosis than females (0 percent). This contradicts past studies, which shows that more females have osteoporosis than males (Williams, S., et al, 1988).
Of the respondents 95 percent had either been admitted to hospital, had falls, suffered a stroke, broken bones, had pneumonia, or had a heart attack in the past 12 months. Eighty-two percent of the respondents had been admitted to hospital in the past 12 months and 58 percent had suffered a fall in the same period.

Hospital admissions can adversely affect the nutritional status of older people. It has been found that arthritis, fractures and disease of old age are usual reasons for hospital admissions (Better Health Commission, 1987), as can be seen in the population surveyed for these conditions. As the mean old age increases health care will also need to increase.

No significant difference between males and females were found for any of the conditions listed, except that females (22 percent) had a higher percentage of broken bones than males (11 percent) and males (18 percent) had a higher percentage of cases of pneumonia than females (6 percent).

Three of the above four medical conditions, hypertension, heart disease, diabetes are areas where dietetic involvement is needed. These groups form the majority of the respondents and yet no real dietetic involvement is incorporated in the GAT assessment, except that all the clients with diabetes are referred to the Diabetes Centre.

Medical and dietary data were analysed to see if there were any significant differences between the medical information and the usual dietary intake of GAT clients compared to RDI's. It was found that there was no statistical significant differences between medical information and individual nutrient intakes. It was found that a small percentage of clients who had at "least one" medical condition consumed below the RDI for all the nutrients analysed, those nutrients at particular risk were energy, fat, carbohydrate, vitamin C, and iron.
A small percentage of clients also consumed above the RDI for eight out of the nine nutrients analysed, in particular, energy, fat, calcium, fibre and zinc. So it can be seen that the group that had at least one or more medical conditions had both a higher percentage of clients above and below the RDI for the listed nutrients than the other group.

It can therefore be concluded that the group of people who had at least one medical condition were at risk of low intakes of particular nutrients. Although, as there were no significant differences found, it can be concluded that the group that did not have any medical conditions were only marginally better off nutritionally than those who had at least one medical condition.

Data were also collected to determine the level and frequency of exercise of the sample. Exercise information was also used to assess if there was a relationship between the usual dietary intake of GAT clients and whether or not they undertook some form of exercise. In this study, half of the respondents (50 percent) participated in some form of exercise. It has been reported that, in Australia, 35 percent of males and 27 percent of females are involved in some form of exercise (The Better Health Commission, 1987). The results from this study confirms the result from the sample population. There were, however, no significant differences in the proportion of males and females undertaking exercise ($x^2 = .268, \ p = .6048, \ df = 1$).

In this study an equal number of males and females participated in some form of exercise while 43 percent of males and 57 percent of females stated that they did not participate in any form of exercise. Past studies however found that females actually spent longer exercising than what men did (Osler, M., et al, 1991).
Exercise is not only beneficial for health reasons but also for the maintenance of social contact. It should be noted that exercise was not a physical option for some of the GAT clients. It was impossible for some of the respondents to carry out any form of exercise. This could help explain why there is quite a large percentage of clients who were overweight (17 percent of males and 18 percent of females).

One social problem that can affect an older person's nutritional status is lack of access to transport. This could also play a part in the ability of some clients to play a sport or participate in exercise. (Truswell, A, 1990). Fifteen percent of the respondents stated that they had difficulty with transport.

It was found that half the surveyed GAT clients conducted some form of exercise and that this finding agrees with past studies.

Exercise information was also analysed to assess if there was a relationship between the usual dietary intake of GAT clients and frequency of exercise. It was found that there were no statistically significant differences between exercise and individual nutrient intakes.

It was found that a small percentage of clients undertaking some form of exercise consumed below the RDI for all the nutrients analysed, particularly; fat, carbohydrate, vitamin C, calcium, and iron and only a small percent consumed above the RDI for eight out of the nine nutrients analysed.

A small percentage of the group that did not conduct any exercise consumed six out of the nine nutrients below the RDI in particular energy, fibre, protein, and zinc and another percentage consumed nine out of nine nutrients above the RDI.
We can see here a relationship between no exercise and the consumption of all the nutrients being above the RDI's exists, and may obviously relate back to the percent of GAT clients that were overweight (17 percent of males and 18 percent of females).

Another interesting finding was that a small group of people not undertaking exercise consumed above the RDI for all the individual nutrients. Of those who conducted exercise, there was a small percent who consumed below the RDI for all the nutrients analysed.

The food and nutrition section sought information about shopping and cooking practices. General questions were also asked about nutrition and health beliefs. Included in this section is the influence of this data upon dietary intake. This section also describes the usual dietary intake of GAT clients and seeks to show if there is a significant difference between males and females for each nutrient analysed.

A significant difference was found to exist between the proportion of men and women who wore dentures ($\chi^2 = 4.275$, $p = 0.0387$, df = 1). Seventy-three percent of the respondents in this study wore dentures, with 84 percent of the females and 60 percent of the males wearing dentures. This result is not surprising due to the age of the respondents.

A study conducted by McGandy, R., et al. (1986), stated that among these many factors associated with poor dietary quality was denture wearing. Therefore, as a large percent of older people in the surveyed sample wore dentures it can be concluded that this may be a factor that is determining poor dietary intake.
Many elderly people are placed on diets.

"The elderly who are prescribed diets should see a dietitian regularly to check that they are still eating a nourishing balanced diet". (Beck, 1985).

Twenty-two percent of the respondents were on a "special diet", and no significant difference in the proportion of males and females on a special diet was found to exist in this sample.

The special diets included: diabetic diets (n = 8), low fat diets (n = 2 =), high potassium diets (n = 1), a warfarin diet (n = 1), a high fibre diet (n = 1) and a weight gain diet (n = 1).

These results can be compared with the results from a study conducted in Europe on 2586 older people, which found that 25 percent of the respondents were on a "special diet". The majority of these diets were low salt and low fat diets. In Australia, there were 17.2 percent of males and 22.8 percent of females on "special diets" (Better Health Commission, 1987).

From this survey it can be concluded that there is a significant number of respondents who are on a special diet. However, there is no professional dietitian following up the clients of the GAT to determine if the diets of the older people are adequate.

As has been noted earlier, one possible contributing factor to weight loss in older people could be a loss of appetite. Fifty-seven percent of the respondents stated that their appetite was good and five percent stated that it was excellent. However, 28 percent of the respondents said their appetite was fair and 10 percent said their appetite was poor. Loss of appetite can be due to reduced activity, illness or drug treatment (Beck, 1985), and can seriously affect a person's nutrient intake.
Thirty percent of the people said that their appetite had changed in the past year. Of this 30 percent, 67 percent said that their appetite had in fact decreased, with 33 percent saying their appetite had increased. There is a percentage of people whose appetite has decreased and this could play a role in the weight loss or underweight in the GAT clients.

A chi-squared analysis indicated that there was a significant difference between the proportion of men and women who chose the category, "no special diet, I eat almost anything" rather than the rest of the alternative options (x² = 4.019, P = 0.045, df = 1,).

Thirty-seven percent of the people surveyed chose this category. It is interesting to note that 25 percent of the females chose this category while 50 percent of the males surveyed responded that they ate almost anything. The men appeared less interested in the types of food they ate while the women seemed more interested in healthy type foods. In the focus group, a comment was made "that men don't seem to know what to eat where as females do". This can be compared to the study by Horwath, C. (1989) who found that females nutrient intake was not dependent on whether they lived with someone or not, whereas nutrient intake in males was. It was also found that women tend to change their diets more than men and are more willing to do so (Popkin, B., et al. 1982).

Of all the clients surveyed only 13 percent had diabetes and followed a diet for diabetes. The majority of these clients once again were females, however no significant difference existed between the proportion of males and females (x² = .312, p = .5767, df = 1). Sixteen percent of all females and 11 percent of all males had diabetes. All the elderly people who had diabetes were seen by the dietitian in the Wentworth Area Health Service Diabetes Centre, in Penrith.
Thirty-five percent of the respondents cooked their own meals. It was interesting to discover that 47 percent of the females cooked and only 22 percent of all the males cooked their own meals. Once again this was discussed in the focus group were recommendations were made to introduce a cooking program for the male GAT clients. Sixty-five percent of the clients had the cooking done for them by family members or carers.

Only 30 percent of the respondents did the food shopping themselves. The majority of these respondents were female, which correlates with a study conducted in Europe that showed that more females than males did their own shopping. (Schlettuein-Gsell, D., et al, 1991).

Once again the people that shopped for the GAT clients were family members, or people from homehelp or homecare services. This also occurred in Europe, where the men had their families and friends to conduct their shopping. (Schlettuein-Gsell, D., et al, 1991). During the focus group the issue of educating the homecare or homehelp on nutrition principles was voiced so that they would know which foods to buy for their clients.

One of the social problems that has been found to affect the nutritional status of older persons, is immobility through having no transport (Truswell, A., 1990). Transport helps with older peoples accessibility to shops, exercise and social activities. Generally, transport was not found to be a problem in this study.

There was no significant difference in the proportion of males and females and the cooking equipment that they had and used. The microwave, frypan, oven and stove were the most frequently used cooking utensils. Therefore if a cooking class was initiated then it would be worthwhile using a stove, oven, frypan and microwave as methods of teaching.
Ryan, V., Bower, M., 1989 conducted a study and found that there was a positive relationship between low socio-economic status and inadequate nutritional status in older people. However, in this study 90 percent of the group said that they did have enough money to provide adequate food.

There was no significant difference found in the proportion of males and females in terms of financial resources ($x^2 = 3.601, p = .0577, df = 1$). Finance is an important issue for older people and it has already been stated that 97 percent of the GAT clients were on the pension or sickness benefits. Therefore, it can be concluded that the respondents had enough money to buy adequate food for themselves.

Sixty-two percent of respondents stated that they believed that what they ate affected their health. However, the majority of the respondents felt that their knowledge of nutrition was more than adequate (57 percent). Only 43 percent of the respondents felt that they required extra information on nutritional issues.

Males expressed the need for more nutritional information than females, while only 43 percent of females desiring extra nutritional information. This is in contrast to the investigation by Popkin, B., et al, 1982, which showed that women were more interested in changing their diets than men.

No significant difference was found between mean intakes of nutrients for male and female GAT clients. Generally, the means for the males were higher than the means for the females. The dietary requirements of males are generally higher than dietary requirements for females. There was only one exception to this, where females (22.77 g) consumed fractionally more fibre than the males (22.75 g).
On examination of the total contribution of fat, protein and carbohydrate to total energy amongst GAT clients, a number of interesting findings were revealed. GAT clients average dietary intake was made up of 18 percent protein, 34 percent fat and 48 percent carbohydrate.

Compared to the "Recommended Diet", which is approximately, 20 percent protein, 30 percent fat, and 50 percent carbohydrate, the average GAT clients diet is too high in fat and too low in carbohydrate. This is comparable with the average Australian diet which is 40 percent fat, 16 percent protein, and 44 percent carbohydrate (Better Health Commission, 1987). This is an area for further education.

The RDI's were used as a standard measurement in this research project. All the nutrients were analysed to determine the percent of males and females that were above and below the RDI's. It is important to remember that the RDI's for older people are based on data collected from younger adults and it is recommended that appropriate RDI's need to be developed for older people.

It was found that there was a significant difference of the proportion of males and females and their energy intake level ($x^2= 10.772$, $p= .0046$, $df= 2$). This may be a reflection of differing requirements of men and women (Williams, S, et al, 1988). There were no other significant differences between the sexes and nutrients, however, there were many interesting findings.

It can be seen that the majority of respondent's dietary intakes were abnormal when compared to the RDI's, i.e. both above and below. Females had a higher number of people below and above the RDI's than did the males particularly for, fibre, fat, vitamin C, and iron. The findings support all the previous studies findings.
In conclusion, it can be seen that male respondents had a higher energy intake than the females. There was a percentage of males and females that were below the RDI for energy, protein, carbohydrate, fibre, calcium, and zinc and only some females were also below in fat, vitamin C and iron.

There was also a small percent of males and females that were above the RDI's in energy, fat, vitamin C, iron and zinc.
5.1 FOCUS GROUPS

The results of the focus group indicate that the GAT personnel believe that the nutritional problems of the elderly in the Penrith area are due to financial, social and medical reasons.

The majority of GAT personnel thought that the lack of education, the prevalence of medical problems, eating disorders, isolation, and financial hardship plus the loss of appetite and pleasure in food were the major causes or contributing factors to nutritional problems in the elderly population in the Penrith Area.

It was stated that if patients were malnourished or had lost a lot of weight they were placed in hospital. If that hospital was Governor Phillip Hospital then the person could still be at a disadvantage compared to most other hospitals because Governor Phillip Special Hospital does not have a dietitian working there. One of the major problems is that there is no real dietetic follow up of patients or expertise in nutrition for the GAT client, either in the community setting or at the associated hospital.

It can be seen from the focus group that there is no real nutritional assessment of the elderly by the GAT at Governor Phillip Special Hospital. The other health professionals do their utmost to help the patient however, they have their own areas of speciality and they do not have the time nor the training to take on the responsibility of conducting a nutritional assessment. Therefore, as a result of the focus group it would be considered extremely beneficial for a dietitian to work in this area.
CHAPTER SIX

CONCLUSION
This study measured the nutrient intake of 60 clients of the Geriatric Assessment Team (GAT) based at Governor Phillip Special Hospital, Penrith, N.S.W. The relationship between nutrient intake and demographic, social, medical, exercise and food intake variables was examined, and the opinions of five members of the Geriatric Assessment Team on the nutritional problems of their clients were solicited.

Results indicated that the aged population in the Penrith area may be nutritionally at risk due to an increasing mean age, the number of older people living alone, a low level of education and the percentage of older people who are underweight or overweight. A need for some form of nutritional intervention and social stimulation for older people who were widowed and lived alone was particularly apparent. However, it was found that dietary intake monitoring was required whether individuals lived alone or did not.

Respondents with medical conditions were found to have low intakes of energy and particular nutrients such as, vitamin C and iron. The mean percentage of energy from macronutrients for the sample was 18 percent protein, 34 percent fat and 48 percent carbohydrate, and males consumed significantly more energy than females ($x^2 = 10.772, p= .0046, df=2$).

GAT clients who did not participate in any exercise were found to consume nutrients above the Recommended Dietary Intakes (RDI). It was also found that significantly more females than males wore dentures . ($x^2 = 4.275, p= 0.0387, df = 1$), and males were more likely to "eat anything" than females. ($x^2 = 4.019, p= 0.045, df = 1$).

Only 35 percent of respondents cooked their own meals, and 30 percent of respondents shopped for themselves. The rest had family, friends or homehelp to cook and shop for them.
Most GAT clients owned or used a stove, oven, frypan or microwave as the major cooking utensils.

Sixty-two percent of the GAT clients felt that what they ate effected their health and 43 percent of respondents wanted extra nutritional information. Significantly more males than females wanted more information. ($x^2 = 4.077, p=0.435, df=1$).

The majority of GAT clients suffered from diseases with nutritional implication yet no dietetic service was provided by the GAT. Twenty-two percent of the GAT clients were on special diets, yet did not receive follow up treatment from dietitians. There were no professional nutrition and dietetic services offered by the GAT, except for referrals to the Diabetes Centre. Basic nutrition data collection methods were employed by the GAT workers. However, clients were only referred to homehelp or Meals on Wheels or were admitted to Governor Phillip Hospital if the client needed nutritional support. There is no Dietitian employed at Governor Phillip Hospital.

GAT personnel believed that the nutrition problems of older people in the Penrith area could be better serviced by having a dietitian on the team. The suggested role for the dietitian included providing cooking lessons, providing education to homehelp and homecare workers and supplying diet sheets and nutritional information to the GAT personnel.

The older people in the Penrith area are at risk of undernutrition and overnutrition. There needs to be the intervention of a nutrition program to monitor, control and educate the older people. In conclusion, this study highlighted the nutrition problems of GAT clients in the Penrith area and suggested that these problems may be well addressed by the services of a dietitian.
LIMITATIONS OF THE STUDY

The limitations of the study are listed below:

* The sample size was too small to determine probable significant differences between samples.

* A food record or diary would have been useful as well as the diet history to help with the accuracy of the results.

* The wide demographic area that the GAT assessed. This was a problem in terms of transport and regrettably involved eliminating clients that lived too far away.

* Working with the elderly the accuracy of the results could be questioned. However, the elderly clients all answered the questions to the best of their knowledge.
AREAS FOR FURTHER IMPROVEMENT

* Study could be conducted to evaluate the effectiveness of a dietitian in the Geriatric Assessment Team.

* Diet sheets and information could be developed for the elderly in the Penrith area.

* Cooking programs could be evaluated to see if they would be beneficial in the Penrith area.
CHAPTER SEVEN

APPENDICES AND REFERENCES
REFERENCES


Cameron, W. and Roche, A. and Mukherjee, D. Nutritional Assessment of the Elderly Through Anthropometry. Fels Research Institute, Ohio.


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APPENDIX 1
FOCUS GROUP QUESTIONS

1. What do you think the major nutritional problems of the older people in the Penrith area are?

2. What do you do when you go and see a patient in terms of nutrition?

3. How do you think that the nutritional problems that you have talked about could be better dealt with?
APPENDIX 2
SURVEY

THE NUTRITIONAL ASSESSMENT OF THE ELDERLY

Interviewer: Emma Patterson (BApp Sci. Food & Nutr.)

SOCIAL AND DEMOGRAPHIC DETAILS

1. Could you please provide the following demographic information?

   SEX: _______   AGE: _______
   HEIGHT: _______   WEIGHT: _______
   MARITAL STATUS: _______   EMPLOYMENT: _______
   LEVEL OF EDUCATION: ____________________________________________

2. Do you live alone?

   YES _____   NO _______

3. Are you lonely?

   YES _____   NO _______

4. About how often do you receive visits from close family or friends?

   Never   Rarely
   Monthly   Weekly
   Daily
5. How often do you eat away from home?

- Daily
- 3 - 4 times a week
- Less than once a month
- 1 - 2 times a week
- 1 - 2 times a month
- Never

6. Do you have any of the following?
Circle if any

- Diabetes
- Heart Disease
- Hypertension
- Obesity
- Cancer
- Kidney disease
- Arthritis
- Osteoporosis
- Chronic Lung Disease (chronic bronchitis)
- Emphysema
- Peptic Ulcer
- Vision (adequate)

7. Have you had one of the following in the last 12 months?

- Pneumonia
- Broken bones
- Stroke
- Heart attack (myocardial infarction)
- Falls
- Admission to hospital
EXERCISE

8. About how often do you go out of this house / building in good weather?
   Never
   Less than once a month
   2 or 3 days a month
   Once a week
   2 to 4 days a week
   5 days a week or more

9. What exercise do you do?

   _______________________________________________________
   _______________________________________________________

FOOD AND NUTRITION

10. Do you wear dentures?
    YES _______    NO _______

11. Are you following a special diet at the moment?
    YES _______
    NO _______
12. Have you ever been seen by a dietitian? If yes, when and why?

YES

NO

13. How is your appetite?

Poor  Good
Fair  Excellent

14. Has your appetite changed much in the past year?

YES (If so how)

NO

15. Which of the following describes your usual way of eating?

No special diet, I eat almost anything
No special diet, but I try to avoid fatty foods
No special diet but I avoid red meat
Fat modified diet to lower blood fat or cholesterol
Pritikin diet
Vegetarian
Diabetic
Weight Loss
16. What is your usual consumption of food in a normal day?

BREAKFAST:

MORNING TEA:

LUNCH:

AFTERNOON TEA:

DINNER:

SUPPER:
17. Below, could you please list how much in a day you would have of the following foods?

- Bread
- Milk
- Fruit
- Cheese, Yoghurt
- Sweets/Lollies/Chocolates
- Vegetables
- Nutritional Supplements
- Liver, Eggs, Pulses
- Meat, chicken, fish, nuts, legumes
- Alcohol
- Cigarettes

18. Do you cook the majority of your meals?

YES _____ NO _______ (If no, why not ____________________).

19. Do you do most of the shopping for food?

YES _____ NO _______ (If no, why not ____________________).

20. How often do you do grocery shopping, or have it done for you?

Once a week  Twice a week
Fortnightly  Monthly  Other
21. How often do you buy Fruit and Vegetables?
   Once a week  Twice a week
   Fortnightly  Monthly  Other

22. Do you have difficulty with transport to buy food?
   YES _____   NO _____

23. What cooking equipment do you have from the list below?
   (circle below)
   Oven  Microwave
   Stove  Griller
   Frypan  Other
   Freezer

24. What equipment do you use the most when cooking?
   Oven  Microwave
   Stove  Griller
   Frypan  Other

25. Do you believe that what you eat effects your health?
   YES _____   NO _____

26. Do you feel you have enough money to provide you with adequate food?
   YES _____   NO _____
27. Do you feel that you could benefit from the use of some nutritional information or support?

YES _____    eg ______________________

NO _____

Thank you

Emma Patterson
APPENDIX 3
CONSENT FORM

STUDENT: Emma Patterson
UNIVERSITY: University of Wollongong
SUPERVISOR: Ms. L. Tapsell

Dear Volunteer,

My name is Emma Patterson, a student at the University of Wollongong, majoring in Nutrition. During my study I am working on a project to study the nutrient intake of a number of Geriatric Assessment clients. I am hoping to receive this information through the use of surveys. I would appreciate your help in reading the paragraph below and filling out this survey form. The information from these surveys will help to determine whether the elderly in this area need additional nutrition services.

As participants you are free to withdraw at any time and this non-participation will not in any way prejudice the services or treatment that you are currently receiving. If you have any complaints regarding the conduct of my research they can be directed towards the Secretary of the University of Wollongong Human Experimentation Ethics Committee on 213079.

Yours Sincerely,

Emma Patterson

The information I have given is freely obtained and willingly given. The information is also true to the best of my knowledge. I know that I can leave the research at any time I desire and that this non-participation will in no way affect the services or treatments that are offered to me. The information I disclose is to be used as a collective finding not as individual findings and this has been explained in full to me. I give my consent for this project.

Name ____________________________

Signature _________________________

Date ____________________________
APPENDIX 4
3 August 1992

Dear

My name is Emma Patterson, and I am in my final 6 months of a Master of Science course in Nutrition & Dietetics at the University of Wollongong. As part of this course, I am planning a study which will look at the food intake of older people who are in contact with the Geriatric Assessment Team from Governor Phillip Hospital.

If you are willing to assist me by taking part in the study, it would involve me collecting the following information from you:

1. Age and social information
2. Your normal food intake for a day
3. Measurement of your weight and height
4. Information of your current health.

It is proposed that this information will be obtained by a face to face interview in your own home.

If you are interested in assisting me with this study could you please fill out your name and address below so I am able to contact you.

Thank you for considering taking part in this study. If I receive a reply from you, I will then contact you to arrange a suitable time for the interview.

Yours Sincerely

Emma Patterson

I would be happy to participate in this study. I can be contacted at the following telephone number or address:

Name: ___________________ Phone Number: ___________________

Address: _____________________________________________________