

Profile of **CARDIOVASCULAR RISK FACTORS**

**in the New South Wales
Central Coast Population**

Analysis of Telephone Survey
of CVD Risk Factors, 2002

FIRST REPORT – OCTOBER 2003



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Caring for the Coast

Profile of the Cardiovascular Risk Factors in the Central Coast Population.
Analysis of the telephone survey of risk factors, 2002.

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Executive Summary

Cardiovascular disease (CVD) is the leading cause of death and disability in Australia and in 2000 was attributed to 39% of all deaths. The health and economic burden associated with CVD is greater than for any other disease. In 1993 –94 CVD accounted for \$3.9 billion or approximately 12% of recurrent health expenditure. This does not account for the fact that one in three Australian families are affected by CVD.

Much of the illness, disability and premature death, resulting from CVD is preventable. This has been recognised by the Commonwealth government, which in 1996 identified cardiovascular health as a National Health Priority Area (NHPA).

Many CVD risk factors are modifiable and linked with lifestyle behaviours. These risk factors include hypertension, cholesterol, diabetes mellitus, tobacco smoking, physical inactivity, overweight and obesity and poor nutrition. A considerable proportion of the Australian population has at least one modifiable risk factor and many have multiple risk factors. Major studies of the prevalence of CVD risk factors in Australia and New South Wales contain relatively small numbers of Central Coast participants.

The Cardiovascular Risk Factors profile of the Central Coast population was undertaken by Central Coast Health, in conjunction with Newcastle University, Central Coast Campus (CCC) in 2002. The study consisted of two components, a random telephone survey and CVD clinics. The purpose of the project was to develop a profile of the prevalence of CVD risk factors within the local population. This report presents the findings of the telephone survey of 1043 local residents.

Hypertension

- The majority of respondents reported having their blood pressure measured within the previous year.
- The proportion of respondents reporting hypertension was 24.8%: 25.1% males and 24.6% females. Hypertension became more common with age, particularly after the age of 45 years.
- The most common method reported for managing high blood pressure was medication (84.8%), while 39.5% were exercising and 24.6% were using weight control as a means of managing this risk factor.

Cholesterol

- Respondents were not having their cholesterol measured as frequently as their blood pressure. However, the majority of males over the age of 45 years reported having their cholesterol measured in the previous 12 months.
- The proportion of respondents reporting high cholesterol was 27.9%: 30.8% females and 24.0% males.
- The proportion of respondents reporting high cholesterol, increased with age, peaking in the 55 – 64 years age group.
- Medication was used as a means of managing cholesterol by 65.3% and diet was used by 62.0% of respondents with high cholesterol.

Overweight and obesity

- The proportion of respondents who were classified as overweight (BMI 25.0 – 29.9) was 31.4%: 40.8% for males and 24.8% for females.
- The proportion of respondents who were classified as obese (BMI \geq 30.0) was 18.7%: 20.3% of males and 17.5% of females.

Diabetes mellitus

- A total of 5.7% of respondents: 7.1% of males and 4.7% of females reported having diabetes.
- The most common type of diabetes reported was type 2, which affected 84.8% of those reporting they had diabetes.
- The majority of respondents with diabetes were over the age of 40 when first diagnosed.

Smoking

- The proportion of respondents who were current smokers was 24.8%: 27.2% of males and 23.1% of females.
- The proportion of current smokers was highest in the younger age groups and declined with age.

Physical activity

- Just over half of the respondents (54.4%) had undertaken sufficient physical activity in the previous week, while 19.1% had been sedentary.
- Females were less likely than men to be sufficiently active and more likely to be insufficiently active or sedentary.

Nutrition

- Only 6.0% of respondents reported consuming adequate serves of vegetables each day while 45.3% reported consuming adequate serves of fruit each day.
- Only 11.0% of respondents reported consuming adequate serves of breads and cereals daily.
- Fried potato products were consumed by 21.2% of respondents two or more times each week and processed meat products were consumed by 32.6% of respondents two or more times a week.
- The majority of respondents (49.1%) reported usually consuming full cream milk.

Conclusions

A number of CVD risk factors were present in a considerable proportion of survey respondents, which is consistent with trends in the broader NSW and Australian populations. Should this continue, the number of Central Coast residents experiencing a cardiovascular event and living with CVD will increase further in the coming years. This will place added strain on health services and resources as well as having a negative impact on the community and family.

Many CVD risk factors are linked therefore, the presence of one can predispose individuals to the development of others. This will increase the risk of CVD in the individual affected.

Future planning should take into account those in the population with existing CVD and risk factors as well as those at risk of developing CVD and associated risk factors. The challenge is to find a balance between treatment of those with CVD and the prevention of risk factors within the local community.

1 BACKGROUND

1.1 Rationale

The standard of health and life expectancy of Australians ranks amongst the best in the world. Despite this, the burden of disease attributable to cardiovascular disease (CVD) is considerable, and it remains a significant cause of mortality and morbidity in Australia (HEALTH and AIHW, 1999). As life expectancy continues to increase it is expected that CVD will become more common (NHPA, 2002).

Data on CVD mortality and hospitalisations is current and readily available. However, current data on the prevalence and burden associated with CVD risk factors in the population is limited. In 2000 Diabetes Australia conducted The Australian Diabetes, Obesity and Lifestyle Study (AusDiab) which investigated the prevalence of a number of CVD risk factors in the Australian population. New South Wales Health collects data on CVD risk factors as part of its Health Survey program. While these studies provide valuable information on risk factors and included a sample of Central Coast residents, this was quite small and not representative of the population as a whole.

1.2 Cardiovascular disease

CVD refers to heart, stroke and blood vessel disease (National Heart Foundation, 2003). Those types of CVD that are most prevalent are coronary heart disease (CHD), stroke, peripheral vascular disease and heart failure (AIHW, 2001).

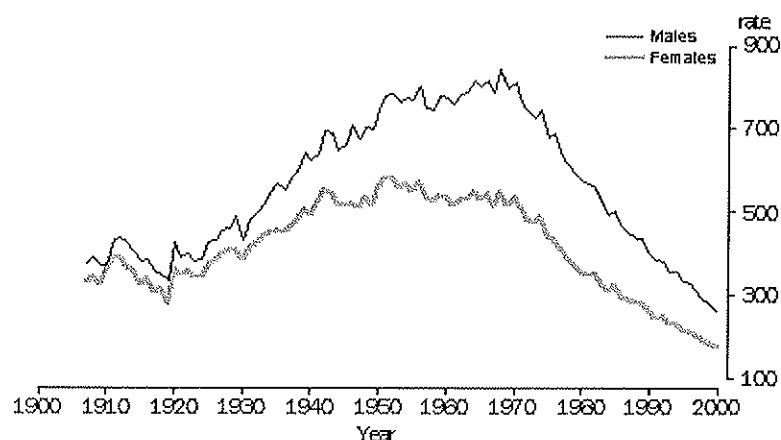
CHD, which encompasses conditions such as heart attack, and angina is the most common form of CVD and sudden death in Australia. Stroke is the most common manifestation of cerebrovascular disease. The majority of strokes are *ischaemic*, while a small number of strokes are *haemorrhagic* (HEALTH and AIHW, 1999).

Another important manifestation of CVD is rheumatic heart disease. While its prevalence amongst the general population is low, it is common in Aboriginal and Torres Strait Islander (ATSI) populations living in remote areas (HEALTH and AIHW, 1999). CVD may also manifest itself in abdominal aortic aneurysm, but this is rare (HEALTH and AIHW, 1999).

Cardiovascular disease trends

There have been significant advancements in the manner in which CVD and its associated risk factors are treated and managed (NHF, 2003). This is reflected in the declining number of CVD related deaths (Figure 1.1). In 1999-2000 annual death rates from CVD fell by 4.2% in males and 4.0% in females (NHF, 2003). The decline in CVD mortality has occurred more rapidly than for non-cardiovascular mortality (HEALTH and AIHW, 1999). Despite this, CVD remains the leading cause of mortality in Australia, and accounted for 39% of deaths in 2000 (ABS, 2002).

Figure 1.1 Death Rates for Cardiovascular Disease in Australia 1900 - 2000



Source: ABS Australian Social Trends, 2002

The leading causes of CVD related mortality are ischaemic heart disease and stroke (ABS, 2002). Ischaemic heart disease accounted for 21.0% of all deaths in males and 20.3% of all deaths in women in 2001 (AIHW, 2002). Stroke accounted for 7.4% of all deaths in males and 12.0% of all deaths in females in 2001 (AIHW, 2002).

Medical and surgical interventions

Advancements in medical interventions have increased the survival rate of people with CVD and reduced the length of stay in hospital. Improved diagnosis of CVD and public knowledge have led to an increase in the early detection of CVD (ABS, 2002). The long-term outcomes for CVD patients continue to progress.

Between 1993-94 and 1999-2000 there was a reduction in the average length of stay in hospital for cardiovascular disease from 7.6 days to 5.4 days (AIHW, 2002).

A range of medical procedures are used to diagnose and treat cardiovascular disease (AIHW, 1999). There has been a trend towards the development and use of less invasive techniques in the diagnosis and treatment of CVD for example insertion of stents (HEALTH and AIHW, 1998).

1.3 Burden of disease

It was estimated that, in 1996, CVD accounted for 22% of the burden of disease, 33% of premature mortality and 9% of equivalent 'healthy' life lost through disease, impairment or disability (AIHW, 2002). As the Australian population continues to age, it is expected that there will be an increase in the prevalence and public health impact of CVD (HEALTH and AIHW, 1999).

In 1993-94 the total direct costs of CVD in Australia was \$3,719 million. Those CVD conditions incurring the greatest costs were coronary heart disease, hypertension and stroke (AIHW, 1999).

In 1993-94 hospitals and nursing homes accounted for the majority of health service costs, followed by prescription and non-prescription drugs and medical services (AIHW, 1999).

CVD risk factors also contribute to the overall burden of disease in Australia. Risk factors contributing to the burden of disease in 1996 included tobacco smoking (10%), physical inactivity (7%), high blood pressure (5%), obesity (4%) and inadequate intake of fruit and vegetables (3%) (ABS, 2002).

In addition to the direct health system costs associated with CVD, there are substantial indirect costs associated with absenteeism, lost productivity, burden on carers and family and lost quantity and quality of life (AIHW, 1999).

1.4 Risk factors for CVD

There are several recognised, modifiable risk factors associated with the development of CVD which are often independent risk factors in the development of other diseases including diabetes and some cancers (HEALTH and AIHW, 1999). Consequently, improving the CVD risk factor status of the population has the potential to bring about broader public health gains.

The following trends have emerged in relation to CVD risk factors:

- In 1998, almost 22% of Australians aged fourteen and over reported smoking on a regular basis (AIHW, 2001).
- In 1999, 43% of the Australian population did not participate in the levels of physical activity recommended to achieve a health benefit (AIHW, 2001).
- In 1999-2000, 7.5 million Australians aged twenty-five years and over were overweight or obese (NHF, 2003).

- In 1999-2000, 29% of the population either suffered from or were receiving treatment for hypertension (NHF, 2003).
- In 1999-2000, 50% of the Australian adult population had total cholesterol levels in excess of 5.5mmol/L (NHF, 2003).

The risk of CVD increases when there is an interaction between multiple risk factors (AIHW, 2001). The National Health and National Nutrition surveys, conducted in 1995, found that over 10 million adults (80% of the adult population) had at least one of the following: tobacco smoking, insufficient physical activity, hypertension or overweight (AIHW, 1999).

In the period between 1980 and 1989, the proportion of males and females with more than one CVD risk factor decreased (AIHW, 1999). Bringing about further reductions in the prevalence of CVD risk factors in the Australian population could reduce the burden of CVD and increase the health status of Australians.

1.5 Populations at increased risk of CVD

The prevalence of CVD is greater in certain groups within the Australian population (HEALTH and AIHW 1999).

The risk of suffering from CVD is greater in males than females across all age groups (AIHW, 2001). In 2000, the death rate from CVD in males aged 25-79 years was 2-3 times greater than women (ABS, 2002).

The mortality rate from CVD in the Aboriginal and Torres Strait Islander population is twice that experienced in the broader population. The prevalence of smoking and diabetes amongst the Aboriginal and Torres Strait Islander population is more than double that of the general population (HEALTH and AIHW, 1999).

The socio-economically disadvantaged are at greater risk of CVD. The mortality rate attributable to CVD in those living in the most socio-economically disadvantaged areas is double that of others living in more affluent areas (HEALTH and AIHW, 1999). Smoking, physical inactivity and hypertension are more prevalent in lower socio-economic populations (HEALTH and AIHW, 1999).

The mortality rate from CVD is marginally higher in rural areas than urban areas. The major issue for those living in rural areas is access to health services (HEALTH and AIHW, 1999).

1.6 Challenges to reducing CVD

Despite the decline in CVD related mortality and improvements in the treatment and management of CVD, the morbidity associated with CVD is increasing. As the population ages, it is envisaged that this trend will continue. There remains great scope therefore for improving the health status of the population through improved treatment, provision of services and prevention strategies.

To further improve the cardiovascular health of Australians, it will be necessary to focus on the trends of several modifiable risk factors. The increase in the proportion of Australians, across all age groups, who are overweight or obese and the decline in the participation in sufficient physical activity are significant issues. As the population continues to age, preventing and controlling hypertension and increased levels of blood cholesterol will be crucial. Bringing about a further decline in the number of Australians who smoke regularly, and preventing young people from taking up smoking will continue to be a challenge.

One of the challenges in reducing the prevalence of CVD is addressing the inequalities that are often a contributing factor to diminished health status in individuals and groups. Health services must attend to the prevailing social, economic and environmental conditions in people's daily lives (HEALTH and AIHW, 1999). Of particular relevance to the Central Coast are the inequalities affecting the aged, socio-economically disadvantaged and ATSI populations.

The estimated resident population (ERP) 2002 of the Central Coast was 300, 337 (Department of Health, 2003). In comparison to the general NSW population in which 21.7% of people are aged over 55 years, the proportion of Central Coast residents aged over 55 years is 27.2%. The overall socioeconomic status of the Central Coast does not compare favourably to the rest of NSW. The area is characterised by poor opportunities for employment, low individual and household incomes and a tendency towards leaving school early (CCAHS, 1999). In 2001, the ATSI population comprised 1.7% of the Central Coast population (CCAHS, 2002).

While treatment of CVD is important in maintaining a healthy population, prevention offers greater scope (HEALTH and AIHW, 1999). The CVD risk factor study will provide local health services with current and reliable epidemiological data on the prevalence of risk factors within the Central Coast community. Having this information is essential in targeting specific risk factors, identifying community needs and developing strategic plans for the provision of future health resources and prevention initiatives.

2 Central Coast CVD Risk Factor Study

2.1 Background

As part of their Health Survey program, NSW Health collects epidemiological data on the prevalence of CVD risk factors. Data, which is self-reported, is collected on the general population, which includes a sample of Central Coast residents. The number of Central Coast residents sampled as part of the NSW Health Surveys is relatively small, preventing sub-group analysis and limiting the accuracy of generalisation.

Central Coast Health (CCH), in conjunction with the University of Newcastle, Central Coast Campus (CCC), gathered detailed data on the CVD risk factors of a representative sample of the Central Coast population. The Central Coast Cardiovascular Risk Factor (CVDRF) Survey telephone interviews were conducted between 6th May and 27th May 2002.

2.2 Aims and objectives

The aim of the Central Coast Cardiovascular Risk Factor (CVDRF) Study was to describe CVD risk factors in a representative sample of the population. The specific objectives of this study were to:

- Establish a baseline for future intervention in CVD risk factors;
- Identify current GP CVD risk factor management practices from a consumer perspective; and
- Identify any gaps in screening for risk factors and prevention.

The results of the study will allow CCH to more efficiently use preventive and intervention health resources, through the identification of high-risk groups within the population.

2.3 Study design

The Cardiovascular Risk Factor Profile of the Central Coast population was conducted in two stages.

Stage one, which was undertaken by the CCH Public Health Unit, involved the completion of a telephone survey by a random selection of Central Coast residents. The administration of the telephone survey was carried out by the Hunter Valley Research Foundation (HVRF), using Computer Aided Telephone Interviewing (CATI).

The questionnaire was based on that used in the NSW Health Survey program (1997 and 1998), and included additional questions examining CVD risk factors. This instrument was chosen to allow for comparisons to past and future surveys and to improve the precision of estimates of prevalence of CVD risk factors in Central Coast residents.

Stage two, was a joint project involving CCH and the University of Newcastle (CCC) and involved recruiting residents who participated in the telephone survey to attend a CVD risk factor clinic.

Residents who attended a CVD clinic had the following physical measurements taken:

- Height and weight (to determine BMI) measures
- Waist and hip (to determine waist:hip ratio) measures
- Blood pressure

In addition, clinic participants had blood samples taken to determine the following:

- Fasting cholesterol and triglycerides
- Fasting blood sugar levels
- Nutritional biomarkers

A food intake survey, developed in conjunction with the CCH Nutrition Department was also administered. The results of the CVD clinics are reported elsewhere (Clayton and Dixon, 2002).

2.4 Sample size

The calculation of the sample size for the telephone survey was based on the assumption that the population of the Central Coast was 300,000, a 95% confidence interval was required and that a change of more than 3% in risk factor prevalence was statistically significant. A sample of 1000 completed interviews was required.

2.5 Sample selection

New South Wales Health provided a random sample of the Central Coast population to recruit participants to the telephone survey. This was matched to the electronic white pages so potential participants could be sent an introductory letter and information sheet, outlining the nature and purpose of the project (Appendix 1 and 2).

Random Digit Dialing was used to recruit 1000 participants to the telephone survey. A random sample of 1300 Central Coast residents aged eighteen and over achieved a response rate of 1043 (80.2%) participants who completed the telephone survey. For some analyses the sample size was 1042. One respondent was unable to be assigned to a clearly defined age group.

The respondent was the person living in the household, aged eighteen years and over. When more than one member of the household was in this age group, CATI randomly selected the respondent from that household. Once the respondent had been identified, they could not be substituted with other household members for any reason.

2.6 Response Rate

The HVRF used several approaches to increase the response rate. At least six attempts were made by HVRF interviewers to establish contact with each household. Once contact had been made with the household, at least another five attempts were made to speak to the respondent and obtain a completed interview or refusal.

If the respondent was unable to complete the interview at the time they were contacted, an appointment was made for a time convenient to the respondent.

The Central Coast has a large proportion of elderly residents and commuters and this may have resulted in bias in the population of respondents who completed interviews. The demographic characteristics of respondents who completed interviews was checked in the first few days of interviewing and considered satisfactory.

2.7 Survey instrument

The questionnaire used for the telephone survey (Appendix 3) was based on the instrument used in the NSW Health Survey program. This was to allow for comparisons with past and future surveys of the NSW and Central Coast populations. The questions covered areas such as use of health care services, blood pressure, cholesterol, height and weight, diabetes, physical activity, smoking, compliance with the Australian Dietary Guidelines and cardiovascular disease. There were also questions on current risk factor management including medication, diet and exercise.

The questionnaire was piloted by the HVRF. In total, thirty pilot interviews were conducted in three stages, with changes being made to improve wording and flow.

2.8 Statistical Analysis

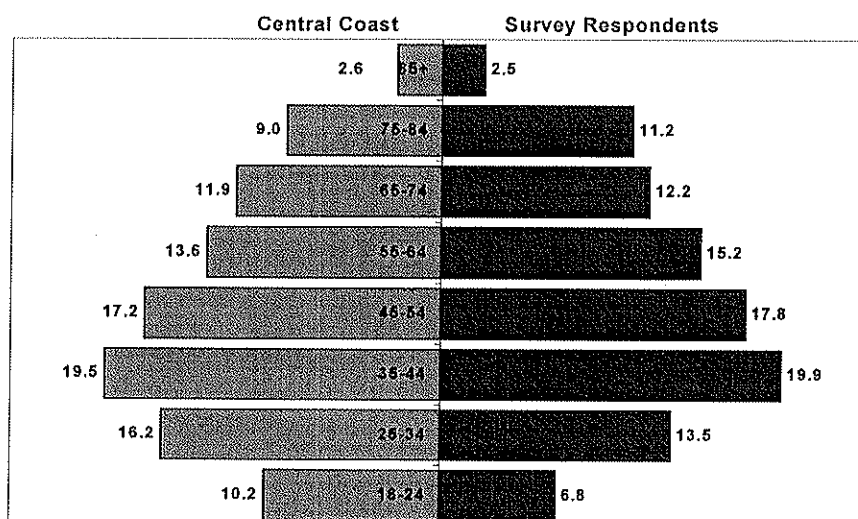
Descriptive statistical analysis of the data included in this report was generated using SAS version 8.2 for Windows. Initially, a univariate analysis was generated for all risk factors surveyed. A bivariate analysis generated results for each risk factor based on age and gender. The contents of this report are predominantly descriptive.

2.9 Representativeness Of The Sample

Technical issues associated with the collection and analysis of the data from the Cardiovascular Risk Factor Profile may impact on the way in which the information presented in this report is interpreted. The sampling method used was designed to ensure the survey respondents were representative of the Central Coast population.

The comparison between the 2002 Central Coast ERP and the telephone survey sample is outlined in figure 2.1.

Figure 2.1 Comparison between the 2002 Central Coast ERP and the CVD Risk Factor Survey telephone sample



* Source: Department of Health Interim Population Projections, Central Coast, April 2003. [Accessed: July 22 2003]

The telephone survey sample may not be representative of the Central Coast population across all age groups. Some of the older age groups may have been oversampled, while younger age groups may have been undersampled.

Telephone survey respondents were not asked whether they identified as being an Aboriginal or Torres Strait Islander. It is not possible to comment on the representativeness of the telephone survey sample to ATSI population of the Central Coast.

2.10 Limitations of data analysis

The data reported in this analysis are unweighted, crude estimates and have not been adjusted or standardised. Comparisons have been made between the CVD risk factor survey and results of other state or national studies in which adjustments to the crude data have been made. This should be taken into account when interpreting these comparisons. Generating adjusted prevalence estimates for individual risk factors is unlikely to have a significant effect on the precision of the raw estimates.

2.11 Comparisons to other surveys

As part of the discussion of the results for each risk factor, comparisons have been made with relevant state and national surveys. The sample sizes differ between surveys and between individual risk factors reported on in the surveys. Appendix 6 outlines the sample sizes in those surveys referred to in this report.

3 HYPERTENSION

3.1 Background

Hypertension is a major risk factor for CVD and can increase the risk of CVD by 2–4 times (AIHW, 1999). As blood pressure increases, so does the risk of CVD (AIHW, 1999). While controlling hypertension with medication decreases the risk of CVD, it still remains higher than for those who are not hypertensive (AIHW, 1999). There is an additional association between hypertension and other CVD risk factors including elevated cholesterol levels, physical inactivity, overweight and obesity and diabetes (AIHW, 1999).

The causes of hypertension are genetic, age and lifestyle related. Smoking, excess body fat, excessive alcohol intake, physical inactivity, dietary salt intake and inadequate intake of fruits and vegetables combined with a high intake of saturated fat all contribute to high blood pressure (AIHW, 2002).

Since 1980, there has been a decline in the prevalence of high blood pressure in Australian adults (AIHW, 2002). AusDiab (2001) reported that 28.8% of the adult population were hypertensive: 30.6% males and 27.1% females. These figures suggest that despite the decline, hypertension is still prevalent in the community.

The current recommendation is that all people aged sixteen and over have their blood pressure monitored (NHMRC, 1997). If blood pressure is $\leq 85\text{mmHg} / \leq 140\text{mmHg}$, measurement should take place every two years; if diastolic blood pressure is $85 - 89\text{mmHg}$, measurement should be annual; if hypertension is diagnosed ($\geq 90\text{mmHg} / \geq 140\text{mmHg}$), blood pressure should be measured as often as deemed necessary by the General Practitioner (GP).

3.2 Definition

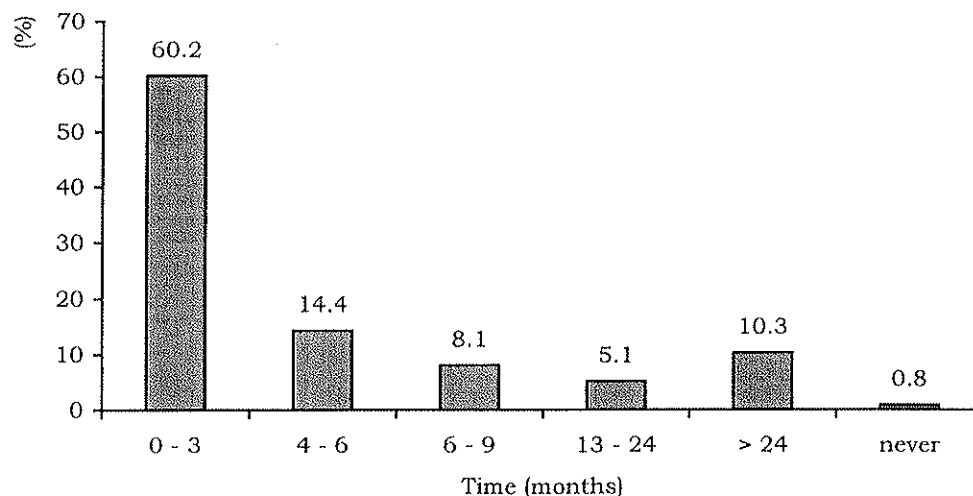
Respondents were asked to indicate when they last had their blood pressure measured. They were then asked if they had ever been told by a doctor or at hospital that they had high blood pressure. Those who reported being hypertensive were asked to indicate what measures they were taking to control their blood pressure and how often they believed they should have their blood pressure measured.

In this report, those who responded 'yes' to the question, "Have you ever been told by a doctor or at hospital that you have high blood pressure, sometimes called hypertension?", have been defined as being hypertensive.

3.3 Results

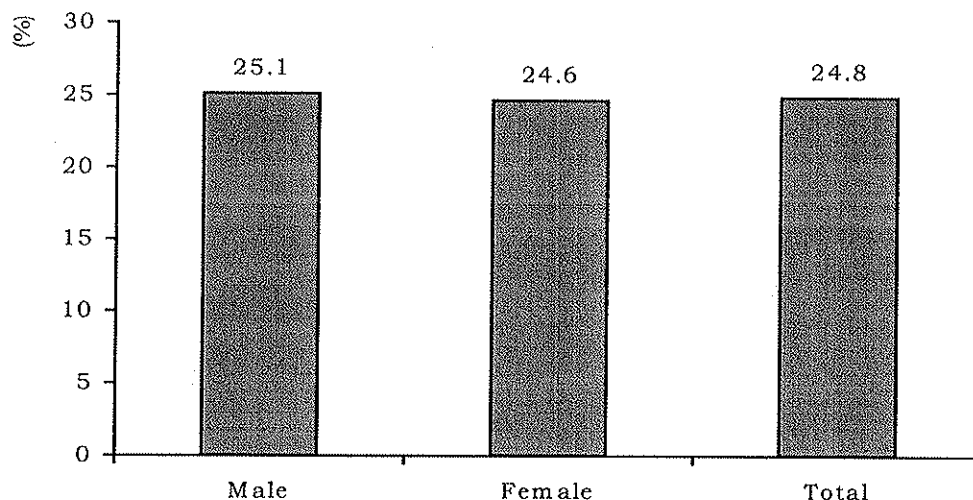
The majority of Central Coast residents (82.6%) reported that they had had their blood pressure measured within the previous twelve months and only a very small percentage (0.8%) of respondents indicated that they had never had their blood pressure measured (Figure 3.1).

Figure 3.1 Self-reported frequency (%) of blood pressure measurement in Central Coast residents, 2002 ($n=1034$)



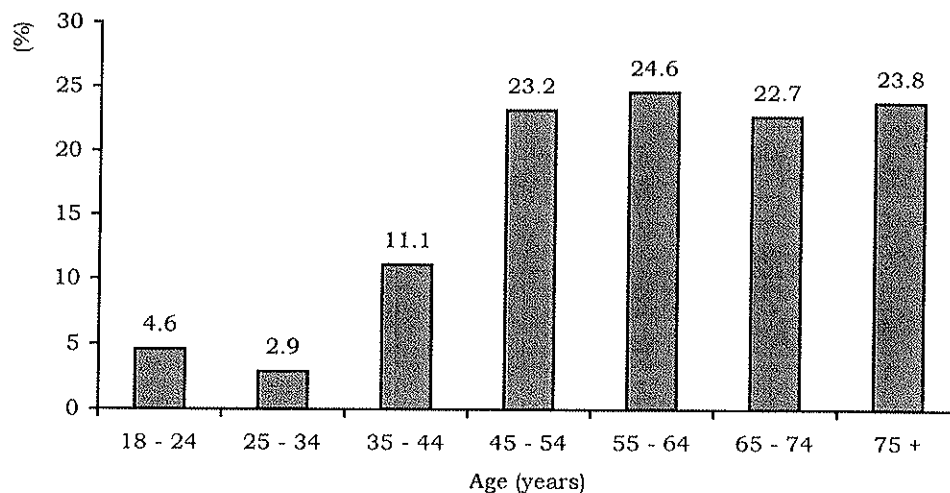
A total of 256 (24.8%) Central Coast residents in 2002 who had ever had their blood pressure measured, reported having been told they had high blood pressure. This figure does not include the 4.9% of residents who reported being hypertensive only temporarily and the 2.7% who reported being hypertensive during pregnancy. The rate of self-reported hypertension was 25.1% in males and 24.6% in females (Figure 3.2).

Figure 3.2 Gender specific (%) self-reported hypertension in Central Coast residents, 2002 (n=1034)



The prevalence of self-reported hypertension on the Central Coast increased with age, being most prevalent in those aged over 45 years (Figure 3.3).

Figure 3.3 Age specific (%) self-reported hypertension in Central Coast residents, 2002 (n=1034).

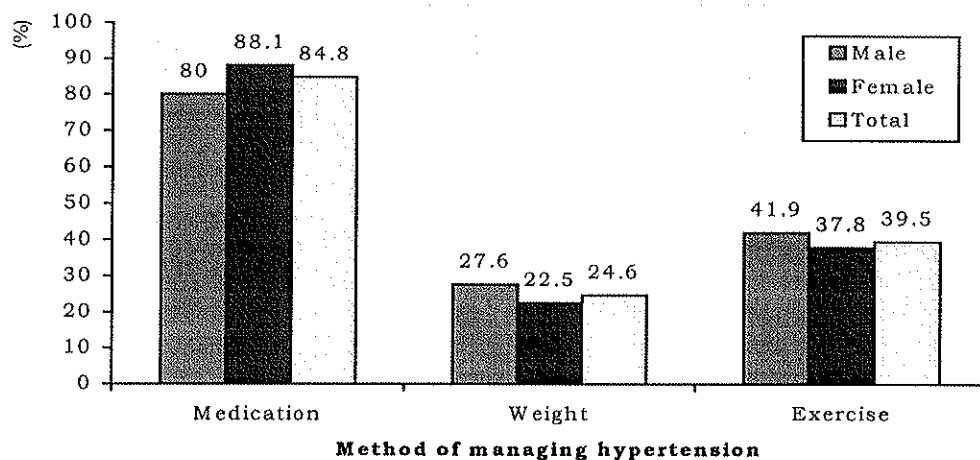


Of those Central Coast residents who reported being hypertensive, 88.3% believed that their blood pressure should be measured at least twice a year. A minority of those who reported being hypertensive (6.3%), had the belief they should have their blood pressure measured once a year or less. A small proportion of those with hypertension (5.5%) were unaware of how frequently their blood pressure should be measured.

The majority (94.9%) of those who reported being hypertensive, indicated having had their pressure measured in the past six months. Only a small proportion of hypertensive people (1.6%) indicated they had not had their blood pressure measured in more than one year.

Residents of the Central Coast who reported being hypertensive were using a number of methods to manage their hypertension. The most common approach to hypertension management was the use of anti-hypertensive medication (84.8%). Other approaches to management of hypertension were exercising on most days (39.5%) and weight control (24.6%). Figure 3.4 outlines the manner in which respondents with hypertension are managing this risk factor.

Figure 3.4 Gender specific management (%) of hypertension in Central Coast residents, 2002 (n= 256)



3.4 Discussion

AusDiab (2001) found that for every diagnosed and treated case of hypertension, there is one untreated and possibly one undiagnosed case of hypertension. Therefore, the self-reported rates of hypertension might not be an accurate indication of its prevalence in the Central Coast population. Given that hypertension is a major CVD risk factor, which becomes more common with age, it is vital that it be properly diagnosed and treated in the Central Coast population.

The 1995 National Health Survey (NHS) reported that 14.4 % of the adult population were hypertensive. In the 1997 and 1998 NSW Health Surveys, hypertension was reported by 17.3% of the population: 17.5% males and 17.1% females. The rates of self-reported hypertension in Central Coast residents in both the 1997 and 1998 NSW Health Surveys (21.1%: 23.0% males and 19.3% females) and the 2002 Central Coast CVDRF Survey (24.8%: 25.1% males and 24.6% females) are higher than that of the NSW population.

The higher reported rate of hypertension on the Central Coast is likely to be influenced by the higher proportion of residents aged over 55 years living in the region. As the proportion of elderly residents increases further, it is probable that hypertension will become more prevalent. This has the potential to impact on the need for and availability of health services and resources within the local community.

It appears that regular blood pressure screening is being carried out within the community and that those with hypertension are having their blood pressure monitored regularly. This is an important aspect of managing hypertension and minimising the impact of CVD on the Central Coast.

The most common treatment for hypertension reported in the Central Coast CVDRF Survey was medication. Fewer respondents reported adopting more positive lifestyle practices such as weight control and physical activity. Encouraging people with hypertension to modify their lifestyle, has the potential to have a positive impact on not only the prevalence of hypertension, but other CVD risk factors including elevated cholesterol, type 2 diabetes and overweight and obesity.

4 CHOLESTEROL

4.1 Background

High blood cholesterol is recognised as a major risk factor for CVD (NHF, 1997). Increased levels of total cholesterol in the blood result in blockages in the vessels and arteries that supply the heart with blood (AIHW, 1999). As with hypertension, as the level of blood cholesterol increases so too does the risk of CVD (AIHW, 1999).

While dietary cholesterol can contribute to overall blood cholesterol, the majority of cholesterol is derived from saturated fat in the diet. In addition, there is a genetic component to blood cholesterol levels, which may predispose a person to high cholesterol, regardless of their intake of saturated fat (AIHW, 1999).

AusDiab (2001) reported that 51.2% of the adult population: 51.1% males and 51.2% females in 2000 had high blood cholesterol levels (total cholesterol ≥ 5.5 mmol/l). They noted that their study found no considerable decrease in the prevalence of high blood cholesterol since the NHF survey conducted in 1980.

Population wide cholesterol screening is not currently recommended by the National Health and Medical Research Council (NHMRC). The guidelines do however, recommend men aged 45 –64 years with a total non fasting cholesterol of ≥ 6.0 mmol/l and men under the age of 70 years with existing CHD have regular total blood cholesterol readings (NHMRC, 1997).

4.2 Definition

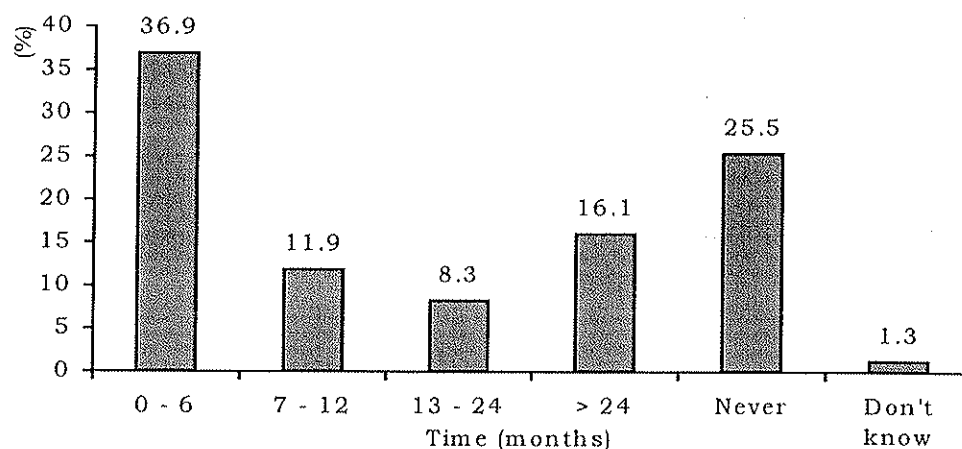
Respondents were asked when they last had their cholesterol measured. They were then asked if they have ever been told by a doctor or at a hospital that they have high cholesterol. Those who indicated they had been told they have high cholesterol were then asked how they were controlling their cholesterol.

In this report, those who responded 'yes' to the question, "Have you ever been told by a doctor or at hospital that you have high blood cholesterol?", have been defined as having high blood cholesterol.

4.3 Results

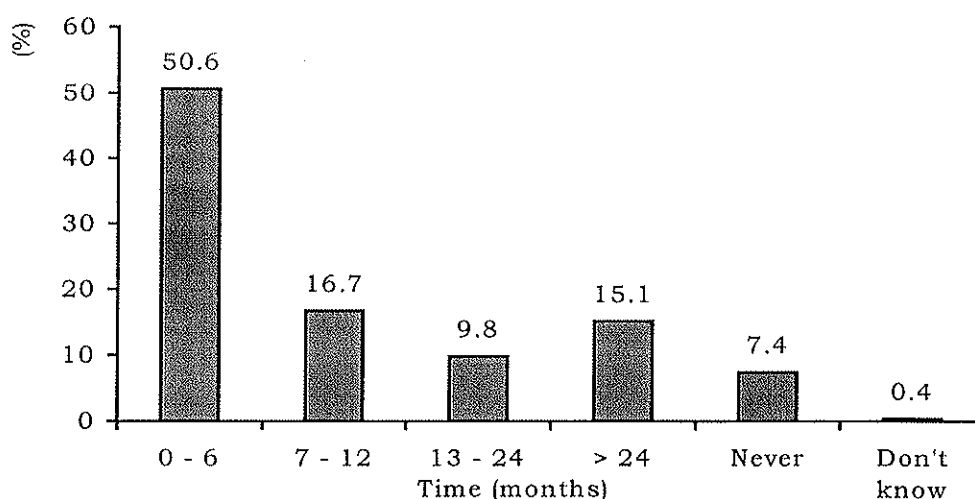
Central Coast residents appear to have their blood cholesterol levels measured less frequently than their blood pressure (Figure 4.1). In 2002, 73.3% had had their cholesterol measured at some time, while 25.5% had never had their cholesterol measured. Of those reporting that they have had their cholesterol measured, 48.8% had this measurement in the past year.

Figure 4.1 Self-reported frequency (%) of cholesterol measurement in Central Coast residents, 2002(n=1043)



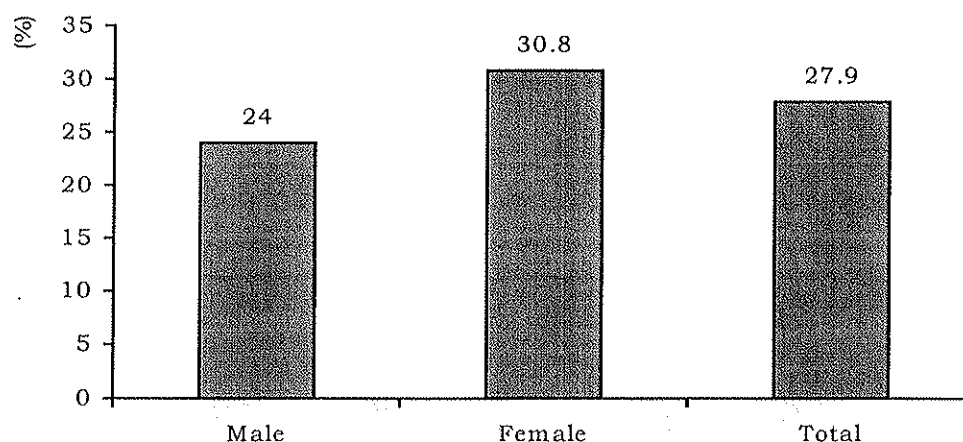
Approximately two-thirds (67.3%) of male respondents aged over 45 years, reported having had their cholesterol levels measured within the past 12 months. A small proportion (7.4%) of men in this age group reported that they have never had their cholesterol levels measured. Figure 4.2 outlines the frequency of cholesterol measurement in male respondents over the age of 45 years.

Figure 4.2 *Self-reported frequency (%) of having cholesterol measured in Central Coast males aged over 45 years, 2002 (n= 423)*



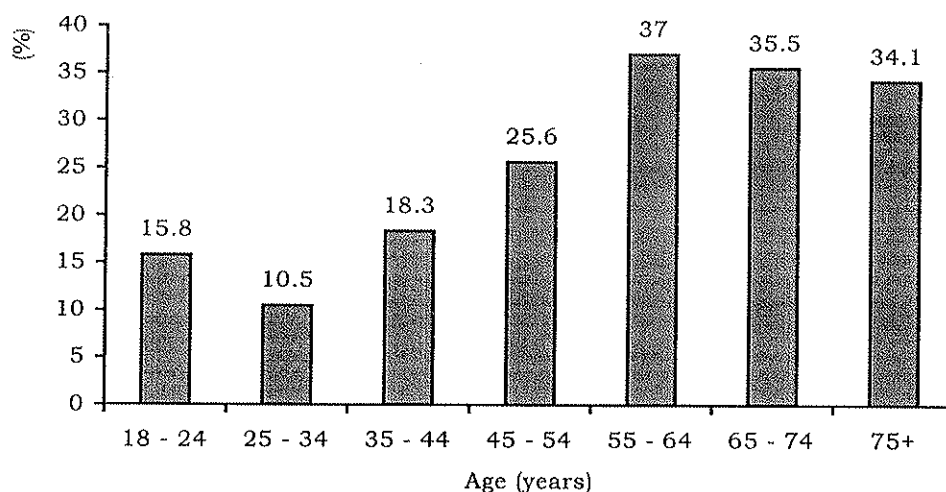
In 2002, 213 (27.9%) residents who had ever had their cholesterol measured, reported having elevated total blood cholesterol levels. The prevalence of elevated total cholesterol was greater in females (30.8%) than males (24.0%). An additional 4.7% of residents: 5.6% males and 4.1% females reported that a past total cholesterol reading had been borderline (Figure 4.3).

Figure 4.3 *Gender specific self-reported high total cholesterol (%) in Central Coast residents, 2002 (n=763)*



The proportion of respondents reporting elevated total cholesterol increased steadily with age (Figure 4.4), being most common in those aged over 55 years. Elevated cholesterol peaked in the 55 – 64 years age group before declining slightly as age increased.

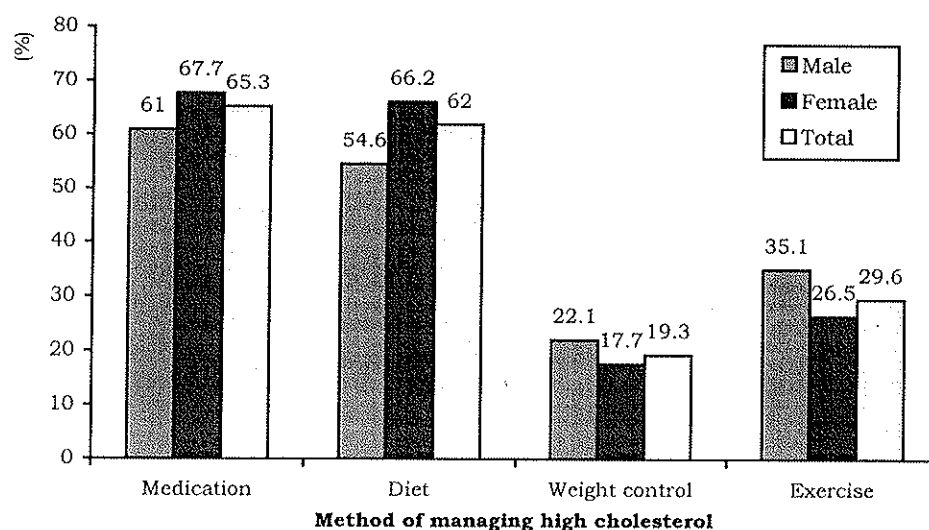
Figure 4.4 *Age specific self-reported elevated total cholesterol (%) in Central Coast residents, 2002 (n= 763)*



The majority (85.0%) of residents who reported having elevated cholesterol levels had their cholesterol levels measured within the 12 months. The proportion of males (84.4%) and females (85.3%) with elevated cholesterol levels who had had this measured in the past 12 months were similar.

Of those residents who reported elevated cholesterol levels, 93.0% were taking measures to manage this risk factor. The manner in which elevated cholesterol levels were being managed varied (Figure 4.5). The most common approaches to cholesterol management were taking medication (65.3%) and modifying dietary habits (62.0%). Other approaches to cholesterol management used by Central Coast residents included exercising regularly (29.6%) and weight control (19.3%). There were proportions of males (11.7%) and females (4.4%) with elevated cholesterol not taking any measures to manage this risk factor.

Figure 4.5 *Gender specific (%) management of elevated cholesterol levels in Central Coast residents, 2002 (n= 213)*



4.4 Discussion

The proportion of Central Coast residents with elevated cholesterol is greater than the general NSW population. In the 1997 and 1998 NSW Health Surveys, 14.2% of the NSW population aged over 16 years: 14.9% males and 13.6% females reported having elevated cholesterol levels. In these same surveys, 16.3% of Central Coast residents: 16.4% males and 16.2% females reported having elevated cholesterol levels. The 2002 Central Coast CVDRF survey found 27.9% of respondents, 24.0% male and 30.8% female reported elevated cholesterol.

In this survey, females reported having elevated cholesterol more often than males. As with hypertension, elevated cholesterol was more commonly reported as age increased. This may reflect more widespread screening in older age groups, who are then having their elevated cholesterol detected.

Respondents in the Central Coast CVDRF survey were not having their total cholesterol levels monitored as regularly as their blood pressure. This may be because the NHMRC guidelines do not recommend population screening for total cholesterol. Males over the age of 45 years however, were having their cholesterol levels more regularly, in line with NHMRC guidelines.

Medication and dietary modification were the most frequently reported methods for management of elevated cholesterol among survey respondents. Other lifestyle modification practices such as weight control and exercise are less common.

5 OVERWEIGHT AND OBESITY

5.1 Background

Overweight and obesity result from an imbalance between energy intake and energy expenditure over an extended period of time. People who are overweight or obese are at higher risk of developing health problems including CHD, type 2 diabetes, breast cancer, gallstones and degenerative joint disease (NSW Health 2000). In addition, those who are overweight or obese tend to be physically inactive. While the effects of weight reduction on risk of CVD are unclear, achieving an ideal weight can have positive effects on the presence of other CVD risk factors (AIHW, 2001).

The proportion of Australians who are considered overweight or obese has increased in the past twenty years (AusDiab, 2001). Using the BMI as a measure, the AIHW (2002) reported that 59.6% of Australian adults could be classified as overweight: 67.4% males and 56.5% females. Further, 20.5% of people: 19.1% males and 21.8% females had a BMI measurement indicating they were obese.

Given the nature of the study, it was not possible to collect data on waist circumference in those residents participating in the telephone survey. While being a good measure of overall obesity, BMI does not measure the distribution of body fat. The measurement of abdominal obesity through waist circumference, may be a better predictor of CVD risk (Dubbert et al., 2002).

5.2 Definition

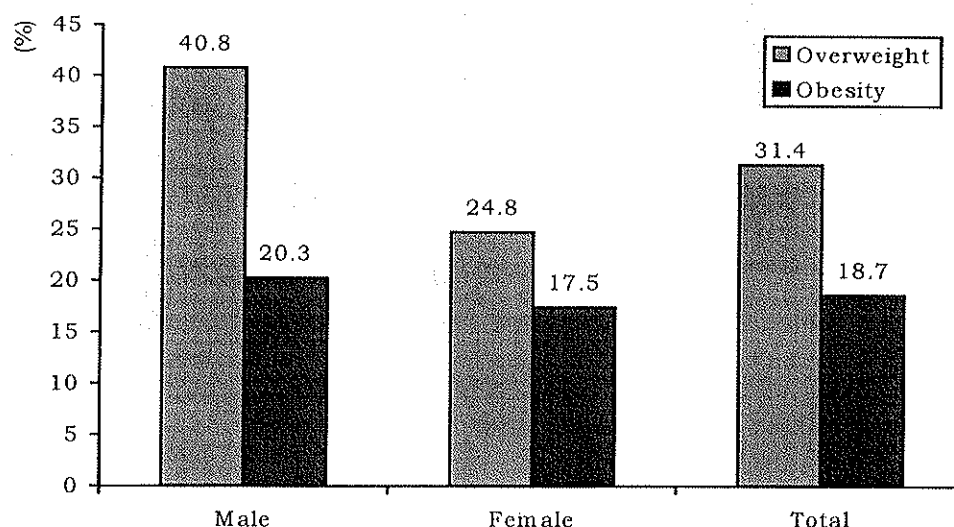
Respondents were asked to indicate their height and weight. The measure used to determine the self reported prevalence of overweight and obesity in the CVD telephone survey is the Body Mass Index (BMI), using self-reported height and weight. The BMI = weight (kg)/ height (m)².

For the purpose of this report, a BMI of 25.0 – 29.9 was classified as overweight and a BMI \geq 30 is classified as obese.

5.3 Results

Using self-reported data on height and weight, 50.1% of respondents, were classified as overweight or obese: 31.4% overweight and 18.7% obese (Figure 5.1). Males were more likely than females to be both overweight and obese.

Figure 5.1 Gender specific proportion (%) of self-reported overweight and obesity in Central Coast residents, 2002 (n= 1042)



Overweight and obesity were most common in respondents aged over 25 years. Overweight was most common in those aged 55-64 years (33.6%) and 65-74 years (35.2%). Obesity appeared to fluctuate across age groups, and was most common in those aged 55-64 years (29.0%) and 65-74 years (24.8%). Figures 5.2 and 5.3 outline the proportion of respondents in each age group classified as being overweight and obese according to their BMI.

Figure 5.2 *Age specific proportion (%) of self-reported overweight and obesity in Central Coast Residents, 2002 (n=1012)*

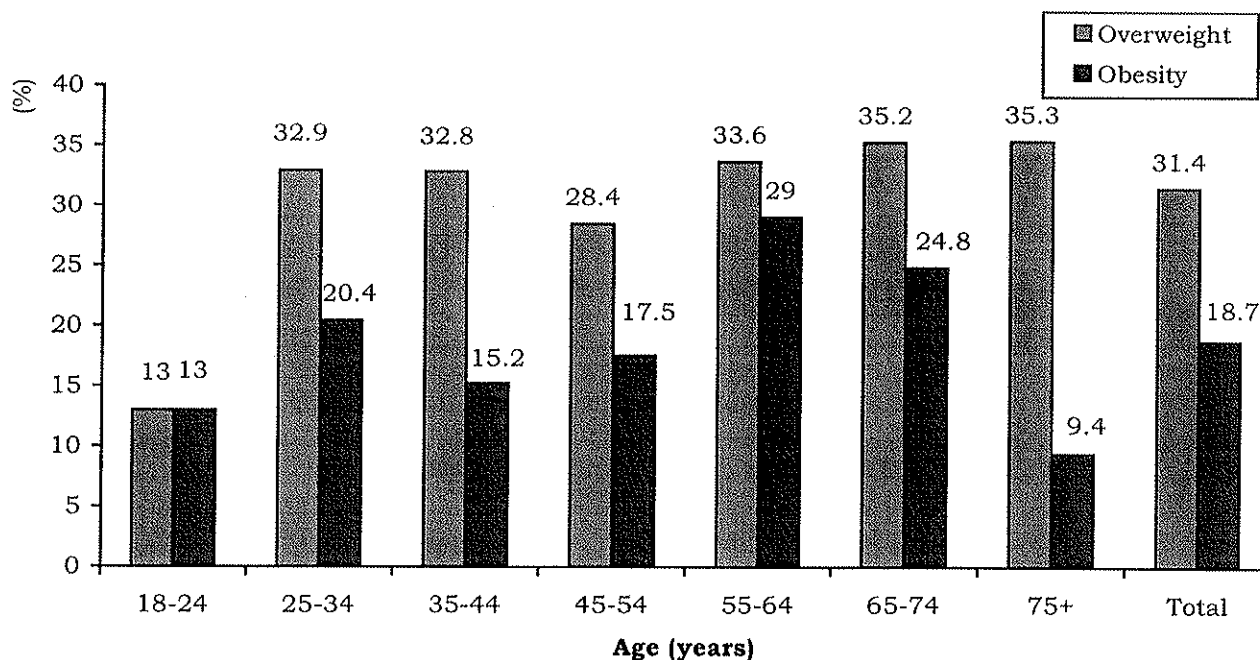
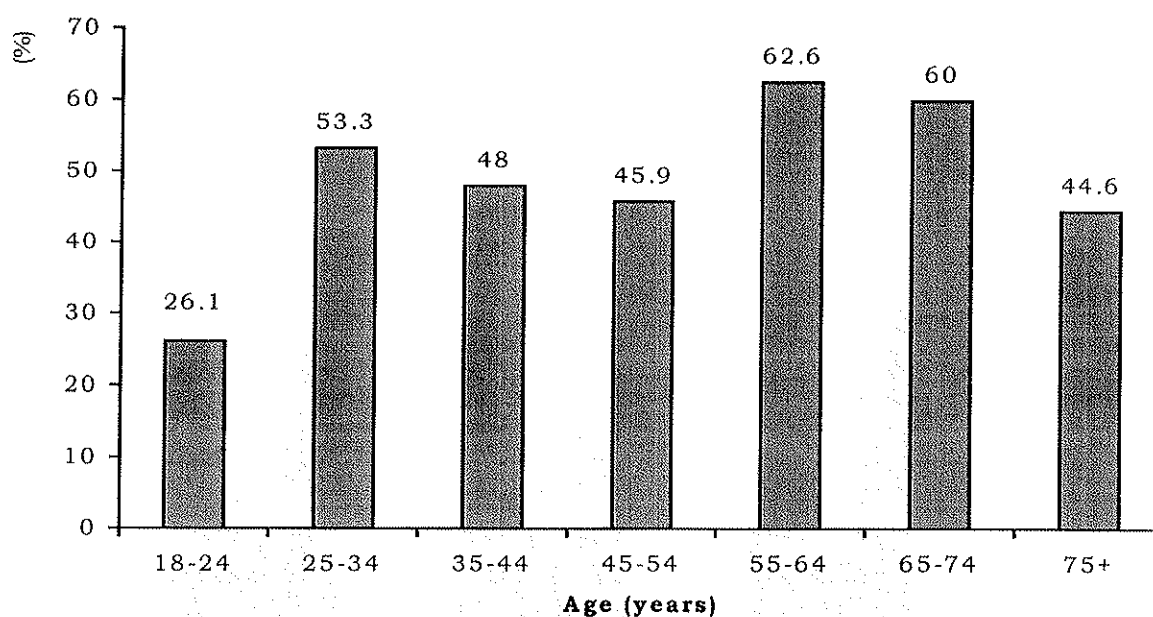


Figure 5.3 *Age specific total proportion (%) of self-reported overweight and obesity in Central Coast residents, 2002 (n= 1012)*



5.4 Discussion

The rates of self-reported overweight and obesity are higher in Central Coast residents than the general NSW population. In the 2002 NSW Health Survey, 46.2% of the NSW population aged 16 years and over: 53.8% males and 38.4% females were classified as being overweight or obese. In this same survey: 51.7% of Central Coast respondents: 61.2% males and 42.7% females reported being overweight or obese. These rates are comparable to those of the Central Coast CVDRF Survey in which 50.1% of respondents: 61.1% males and 42.3% females were overweight and obese.

Using self-reported data, a considerable proportion of respondents were classified as being overweight or obese. Both overweight and obesity were more common among male respondents than female. The rates of self-reported overweight and obesity in 2002, reflect trends in both the New South Wales and Australian populations.

The results for overweight and obesity from the Central Coast CVDRF Survey are unlikely to reflect their true prevalence in the local population. Flood et al (2000) found that self-reported height and weight resulted in an underestimation of the prevalence of overweight and obesity. The 2002 Central Coast CVD Risk Factor clinics found that self-reporting of height and weight tended to lead to an underestimation of BMI in the Central Coast population. Of those participants who attended the CVD Risk Factor clinics (391), 51.9% were overweight or obese using self-reported data. When the same people were physically measured, 62.7% had a BMI classified as overweight or obese.

Given the relationship between overweight and obesity and other CVD risk factors including hypertension and type 2 diabetes, it is imperative that measures be taken to control and reduce its prevalence in the community.

6.0 Diabetes Mellitus

6.1 Background

Diabetes is a common disease, characterised by impaired glucose and lipid metabolism. Those who suffer from diabetes have an increased risk of developing CVD (AIHW, 1999). Long term complications associated with diabetes involve the eyes, kidneys, nerves and major blood vessels (NSW HEALTH, 2000).

Type 1 diabetes, also known as juvenile onset diabetes, predominantly affects people under the age of 40 years. It is estimated that between 10-15% of diabetics suffer from Type 1 diabetes (NSW HEALTH, 2000).

Type 2 diabetes, also known as maturity onset diabetes, predominantly affects people over the age of 40 years. It is estimated that type 2 diabetes accounts for 85-90% of diabetes in Australia. The risk factors associated with the development of type 2 diabetes are overweight and obesity, physical inactivity and a high intake of saturated fat (NSW HEALTH, 2000).

Gestational diabetes occurs in approximately 5.5- 8.0% of pregnancies. Risk factors for the development of gestational diabetes include maternal obesity, family history of type 2 diabetes and advanced maternal age. While gestational diabetes is usually temporary until the birth of the child, it does increase the risk of later development of Type 2 diabetes (NSW HEALTH, 2000).

A considerable proportion of the population will suffer from undiagnosed Type 2 diabetes (NSW HEALTH, 2000). AusDiab (2001) found that the actual prevalence of diabetes was twice that which was self-reported. It is likely therefore that the following is not a true indication of the prevalence of Type 2 diabetes in the Central Coast population.

6.2 Definition

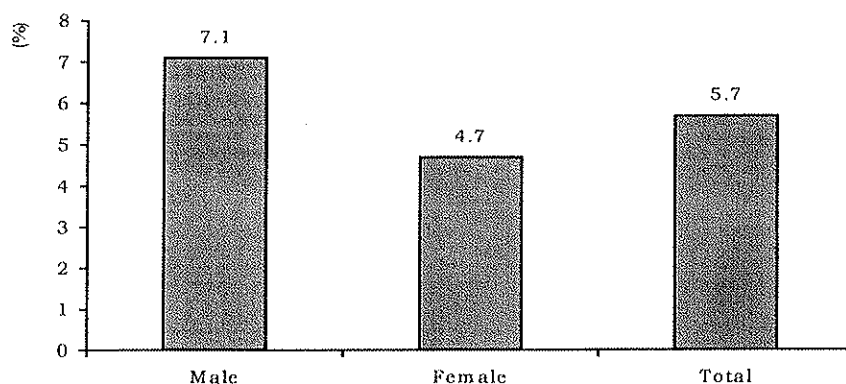
Respondents were asked whether they have ever been told by a doctor or at a hospital that they have diabetes. Those who indicated they have been told they have diabetes were then asked what type of diabetes they have, or have had, and the age at which they were first diagnosed.

In this report, those who responded 'yes' to the question "Have you ever been told by a doctor or at hospital that you have diabetes?", have been defined as being diabetic. Women who have previously had gestational diabetes, have not been classified as currently having diabetes.

6.3 Results

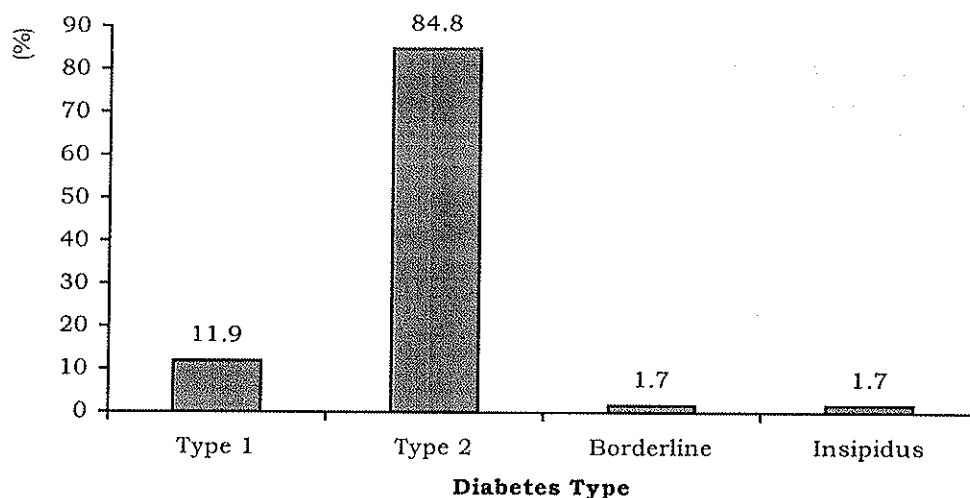
In 2002, 59 (5.7%) of the population surveyed reported that they were diabetic and an additional 10 (1.0%) had suffered from gestational diabetes at some time. Males (7.1%) were more likely than females (4.7%) to report being told by a doctor or at hospital that they have diabetes (Figure 6.1).

Figure 6.1 Gender specific self-reported diabetes (%) in Central Coast residents, 2002 (n=1042)



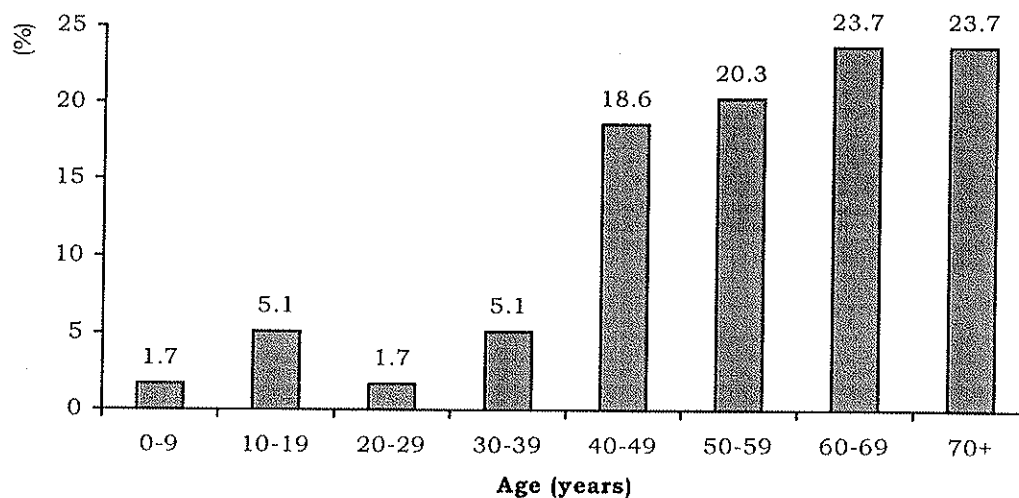
Of those residents who reported that they had been told that they have diabetes, the majority (84.8%) indicated that they had type 2 diabetes (Figure 6.2). Type 2 diabetes, which has been linked to modifiable lifestyle factors, is very common within the telephone survey respondents.

Figure 6.2 *Type specific self-reported diabetes (%) in Central Coast residents, 2002 (n= 59)*



The majority of those who reported being a diabetic in 2002, were over the age of 40 at the time they received their first diagnosis (Figure 6.3). This reflects the tendency to be diagnosed with type 2 diabetes over the age of 40.

Figure 6.3 *Age at diagnosis of diabetes in Central Coast residents, 2002 (n=59)*



6.4 Discussion

The 1995 NHS found that 2.4% of the Australian population reported being diagnosed with diabetes at some point during their lives. From the NHS (1995) it was estimated that 4.8% of the population were diabetic. AusDiab (2001) found that 7.5% of the population aged over 25 years has diabetes.

AusDiab (2001) reported that for every known case of diabetes, they found one previously undiagnosed case. Therefore, it is unlikely that the self-reported rate of diabetes in Central Coast CVDRF Survey respondents (5.7%) is an accurate indication of its prevalence on the Central Coast.

Among the Central Coast CVDRF Survey respondents, males were more likely to report being diagnosed with diabetes. This may be linked to the rates of overweight and obesity, which is associated with the development of type 2 diabetes, reported by the male population.

Type 2 diabetes, which is associated with lifestyle behaviours, is becoming more common and being diagnosed at an earlier age. While it was most common in respondents aged over 40 years, should the trend for overweight and obesity remain consistent, in the future, people may be diagnosed with type 2 diabetes at a younger age.

The increasing prevalence of diagnosed and undiagnosed diabetes as well as the trend for earlier age at diagnosis has implications for current and future provision of health services at a local level.

7 Smoking

7.1 Background

Cigarette smoking is a major factor in approximately 13% of CVD related deaths in Australia (NHF, 2001) and increases the risk of hypertension and a range of cancers (AIHW, 1999). In addition, it increases the risk of respiratory and vascular disorders occurring as complications of diabetes and dyslipidaemia (AusDiab, 2000). Tobacco use, including passive smoking, contributes more to the burden of premature death and disability than any other behavioural risk factor (Public Health Division, 2002).

The 2001 National Drug Strategy Household Survey reported that 19.5% of Australians aged 14 years and over smoked daily: 21.1% males and 18.0% females (AIHW, 2002). It also reported that male were more likely than females to smoke daily, weekly or less often than weekly. The NSW 1997 and 1998 Health Surveys found that of the 17 Area Health Services, the Central Coast recorded the highest rate of current smoking in females and the second lowest rates of current smoking in males.

Cessation of smoking has immediate health benefits. Those who are ex-smokers have an increased life expectancy and reduced risk of suffering from diseases related to smoking (Public Health Division, 2002). The numbers of Australians who smoke has decreased and the proportion of ex-smokers in the population has increased since 1980 (Bennett and Magnus, 1994). Despite this favourable trend, the proportion of Australians who smoke is still considerable and of concern (NHF, 2001). AusDiab (2001) reported that 15.6% of Australians were current smokers.

7.2 Definition

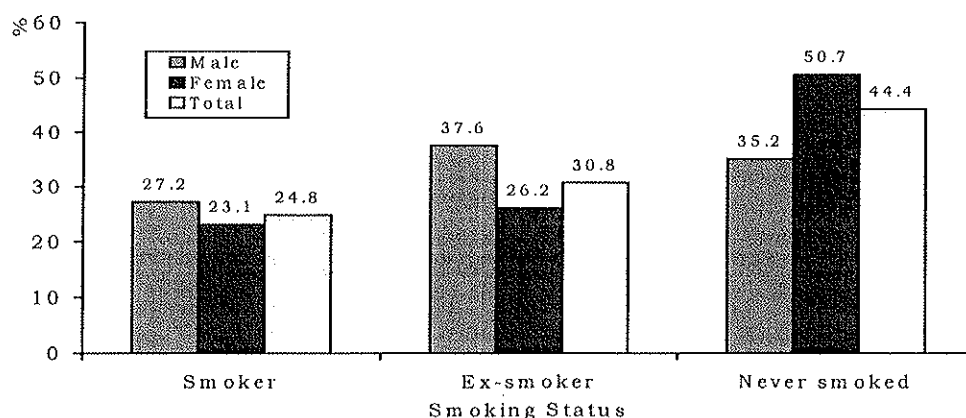
Respondents were asked whether they smoked daily, smoked occasionally, don't smoke but used to, tried it a few times but never smoked regularly or never smoked. Self-reported smokers were also asked about their intention to quit smoking.

For the purpose of this report, a current smoker was someone who smokes daily or occasionally, an ex-smoker does not smoke now but used to and someone who has never smoked or tried a few times but never smoked regularly is classified as having never smoked.

7.3 Results

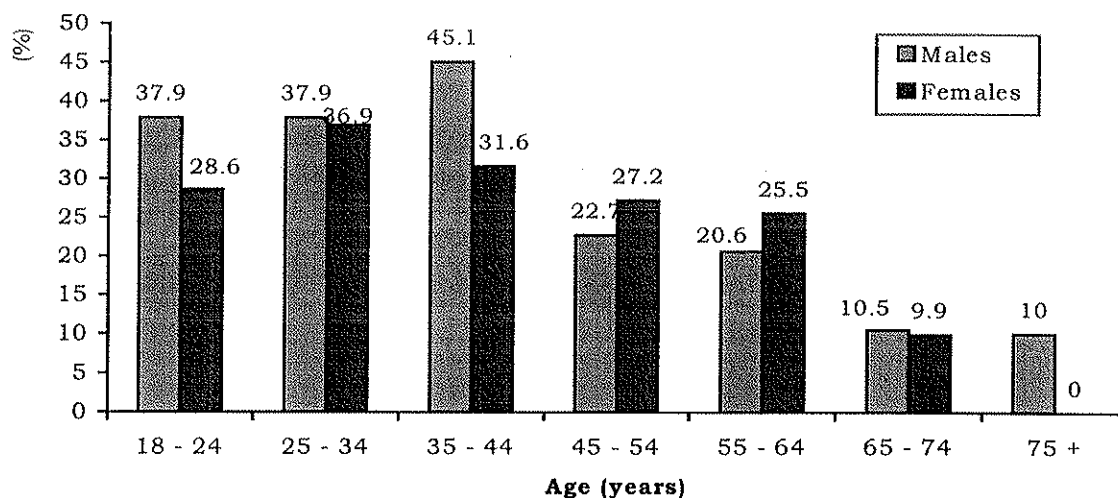
In 2002, 258 (24.8%) of residents surveyed were classified as current smokers. A higher proportion of males (27.2%) reported being current smokers compared to females (23.1%). In addition, 30.8% of the population reported being ex-smokers. Again, the proportion of males (37.6%) who reported being an ex-smoker was greater than females (26.2%). Of the residents surveyed, 44.4% reported having never smoked. The proportion of females (50.7%) who have never smoked was higher than males (35.2%). Figure 7.1 outlines the smoking status of respondents.

Figure 7.1 Self-reported smoking status (%) of Central Coast residents, 2002 (n=1042)



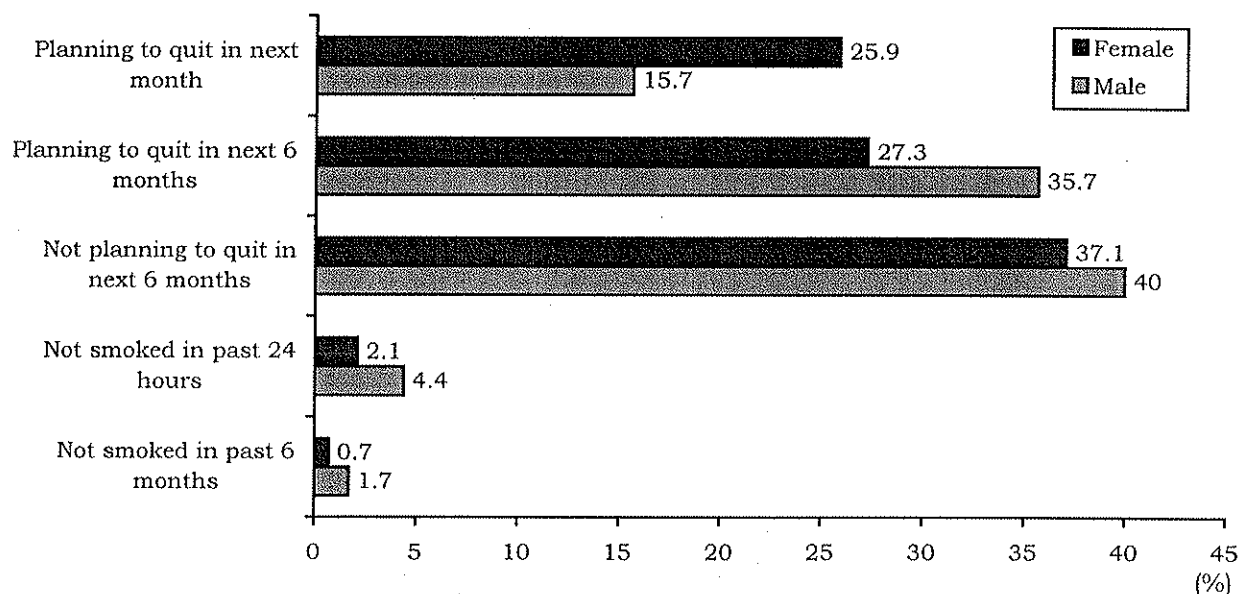
Smoking was more common among males than females across all age groups, except for those aged 45-64 years. The rates of current smoking remained consistent or increased up to the age of 35 – 44 years before declining over time (Figure 7.2).

Figure 7.2 *Age specific proportion (%) of self-reported current smokers among Central Coast residents, 2002 (n=1042)*



Thirty-one percent of self-reported smokers: 35.7% males and 27.3% females indicated they were planning on quitting within the next six months. A further 21.3% of smokers: 15.7% males and 25.9% females, were planning on quitting within the next month. A proportion (38.4%) of self-reported smokers: 40.0% males and 37.1% females had no plans to quit smoking within the next six months. The intention to quit smoking of self-reported smokers surveyed in 2002 is outlined in figure 7.3.

Figure 7.3 *Intention to quit of self-reported smokers (%), Central Coast residents 2002 (n= 258)*



7.4 Discussion

The NSW Health Survey program reported a decline in the rates of current smoking in the Central Coast and NSW populations between 1998 and 2002. In 2002 NSW Health Survey, 18.3% (95% CI:14.5 – 22.1) of the Central Coast population reported being current smokers, compared to 21.4% (95% CI:20.4 – 22.5) of the general population. The proportion of respondents in the Central Coast CVDRF Survey who reported being current smokers was 24.8% (95% CI:22.1 –27.4).

While the 2002 NSW Health Survey and Central Coast CVDRF Survey asked the same questions and analysed the data in the same manner, there is a discrepancy in the rates of current smoking reported by Central Coast residents. There were varying sample sizes for each survey, which may have influenced the results however, the confidence intervals of the point estimates for current smoking by Central Coast residents overlap.

Of concern were the rates of current smoking reported by male and females respondents in the younger age groups and the proportion of current smokers who indicated they were not planning to quit within the next six months.

The Central Coast region has a number of programs and initiatives aimed at reducing the rate of current smoking and targeting specific groups to prevent smoking uptake. Achieving a reduction in the proportion of current smokers and preventing younger people from taking up smoking has the potential to impact on the incidence of cardiovascular and respiratory disease in the local community.

8 Physical Activity

8.1 Background

Insufficient physical activity is recognised as being as important as hypertension and elevated cholesterol levels in the development of CVD (AIHW, 1999). It is likely that physical inactivity is associated with other CVD risk factors including hypertension, elevated cholesterol levels and overweight and obesity (AIHW, 1999). Achieving the recommended level of physical activity has the potential to reduce the risk of coronary heart disease and stroke (NSW Health, 2000).

The National Physical Activity Guidelines for Australians recommend that individuals accumulate at least 30 minutes of moderate intensity physical activity, on most, preferably all days. Achieving 30 minutes of moderate physical activity each day has the potential to achieve major health benefits. Moderate physical activity includes brisk walking, swimming, jogging and cycling (AIHW, 1999). It is important that people are physically active throughout their life to maintain the health benefits associated with being physically active (NSW Health, 2000).

The proportion of Australians who are leading a sedentary lifestyle is increasing. The AIHW reports that in 2000, approximately 5.7 million Australians aged 18–75 years (43% of that population) were not sufficiently active. Over 2 million of these (15% of people aged 18–75 years) were sedentary, that is they reported undertaking no physical activity in the week prior to interview. Overall, males (58.0%) and females (56.5%) were equally likely to participate in sufficient levels of physical activity to achieve a health benefit. However, among younger adults (aged 18–24 years) males (81.9%) were more likely than females (67.6%) to achieve sufficient activity levels for health.

8.2 Definition

Respondents were asked how many times they had walked continuously for at least ten minutes for recreation, exercise or to get to and from places; how many times they had participated in vigorous activity that caused them to breathe harder and how many times they participated in any other more moderate physical activity not already mentioned in the previous week. They were also asked to estimate the amount of time spent engaging in each of these activities.

“Physical activity time” was calculated by adding the time spent walking continuously, performing moderate activity and double the time spent in vigorous activity.

For the purpose of this report, respondents were classed as having participated in sufficient physical activity if they had accumulated at least 150 minutes ‘physical activity time’ in the previous week, and insufficient activity if they had accumulated some ‘physical activity time’ in the previous week but less than 150 minutes. Respondents were classed as being sedentary if they had accumulated no ‘physical activity time’ in the previous week.

8.3 Results

A total of 54.4% of respondents were classified as participating in sufficient physical activity. Males (62.4%) were more likely than females (48.9%) to have undertaken sufficient physical activity in the previous week. A further 26.5% of respondents: 20.3% males and 30.7% females had participated in some physical activity in the previous week but the time spent was insufficient. Of those surveyed, 19.1% were classed as being sedentary in the previous week. Females (20.3%) were more likely than males (17.3%) to have been sedentary in the previous week. Figure 8.1 outlines the activity status of Central Coast residents surveyed in 2002.

Figure 8.1 Gender specific (%) self-reported physical activity status among Central Coast residents, 2002 (n= 1038)

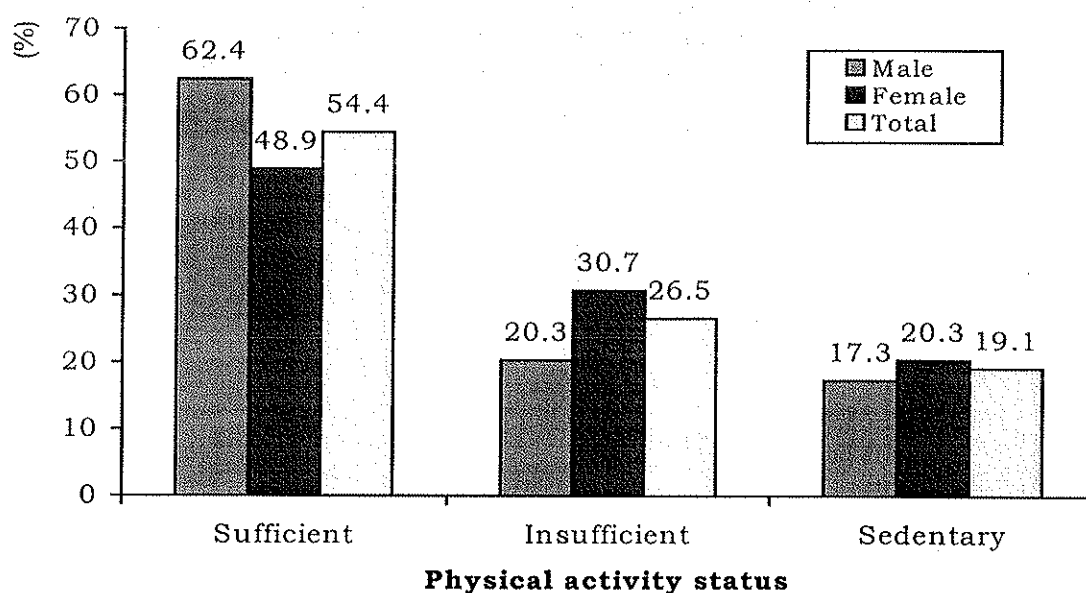
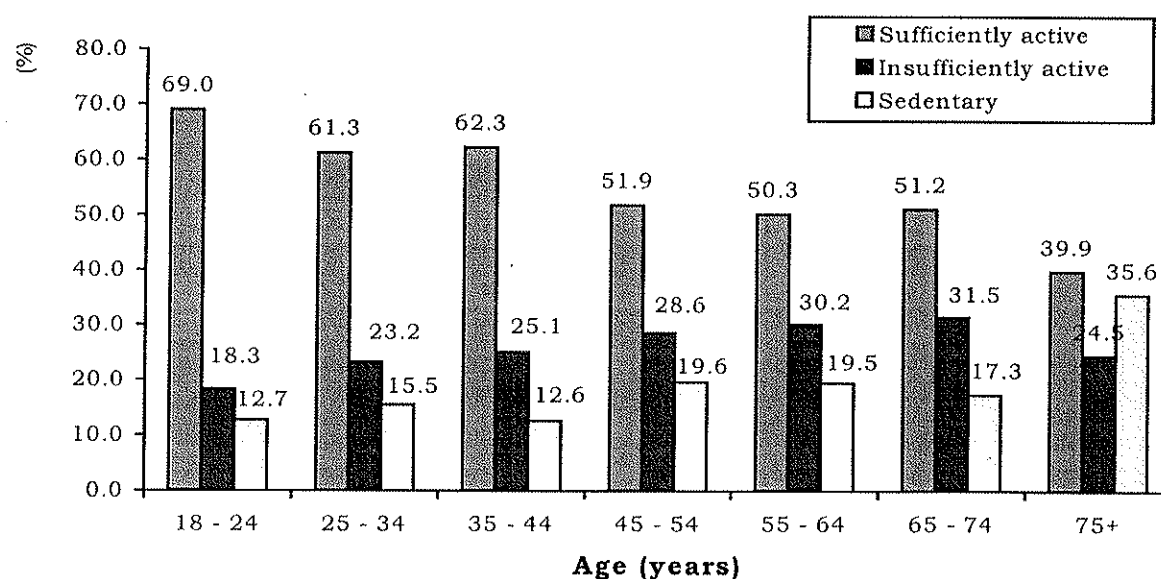


Figure 8.2 shows physical activity patterns according to age. The proportion of respondents who reported being sufficiently active was greatest in the younger age groups and steadily declined with age. Similarly, reporting of insufficient physical activity steadily increased with age, peaking in the 65 – 74 year age group. Respondents over the age of 75 years were most likely to have been sedentary in the previous week.

Figure 8.2 Age specific (%) self-reported physical activity status among Central Coast residents, 2002 (n= 1038)



8.4 Discussion

AusDiab (2001) found that only 49.8% of the population, aged over 25 were sufficiently active to achieve a health benefit. While just over half of Central Coast CVDRF Survey respondents were classified as being sufficiently active, the proportion who were either insufficiently active or sedentary in the week prior to being interviewed was considerable. The proportion of survey respondents who were classified as sedentary (19.1%) was greater than that found by AusDiab (15.6%). This may reflect the age structure of the Central Coast population.

Those in the younger age groups are most likely to achieve adequate levels of physical activity while those who are older are more likely to be sedentary. Females were more likely than males to be insufficiently active or sedentary and less likely to achieve sufficient levels of physical activity.

The Central Coast region has a number of programs aimed at encouraging participation in sufficient levels of physical activity in a number of age groups. Increasing the physical activity levels of the local population has the potential to impact positively on the rates of hypertension, type 2 diabetes, overweight and obesity and subsequently CVD.

9 Nutrition

9.1 Background

Nutritional status is an important determinant of health, which can contribute to or protect from disease (NSW Health, 2000). While any single aspect of an individual's diet cannot in itself be attributed to CVD, nutrition impacts on several of the known CVD risk factors including, hypertension, blood cholesterol levels, diabetes and overweight and obesity (AIHW, 1999).

Fruits and vegetables are a source of dietary fibre, complex carbohydrates, antioxidants, vitamins and minerals (NSW Health, 2000). The consumption of fruits and vegetables has been shown to reduce the risk of CVD in men and women (Joshipura, 2001). In addition, it is believed increasing consumption of fruits and vegetables, results in a decrease in the intake of dietary fat.

Bread and cereal products provide a number of important nutrients including, carbohydrates, dietary fibre, protein and vitamins and minerals. In addition, they are low in fat (Marks et al, 2001). The Dietary Guidelines for Australians (NHMRC, 1992) recommend that diets be plentiful in breads and cereals, preferably wholegrain. Consumption of a diet rich in breads and cereals may prevent CVD and the development of CVD risk factors including hypertension and type 2 diabetes (Marks et al, 2001).

It has long been recommended, through the Dietary Guidelines for Australians, that fat intake, particularly saturated fat, be limited (NSW Health Survey, 1999). Foods that are high in fat, especially saturated fat, have been linked to other CVD risk factors including high blood cholesterol levels and obesity (Marks et al., 2001), which in turn contribute to Type 2 diabetes and hypertension (AIHW 1999).

Total fat intake contributes approximately 33% of the total energy intake of Australian adults. It is recommended that fat contribute no more than 30% of the total energy intake (AIHW, 1999). While the overall consumption of saturated fat has declined, it currently contributes about 13% of the total energy intake. The NHMRC recommends that saturated fat account for no more than 10% of the total energy intake (AIHW, 1999).

The consumption of trans fatty acids, found in foods such as fat spreads, meat and meat products, increases blood cholesterol levels, and thus the risk of coronary heart disease (AIHW, 1999). The major sources of dietary cholesterol include eggs and meat (AIHW, 1999).

While milk is a source of saturated fat, which should be avoided, it is also excellent source of calcium. Consumption of calcium rich foods is recommended by the NHMRC, particularly for women and girls, as it can reduce the risk of osteoporosis (NSW Health, 2000). Consumption of reduced and low fat milk reduces both total and saturated fat intake (Marks et al., 2001), while promoting the consumption of calcium.

9.2 Definition

In this report, the recommended daily intake (RDI) for fruits, vegetables and breads and cereals are based on the Australian Guide to Healthy Eating (HEALTH, 1998). This dietary model recommends that Australians consume a minimum of 5 serves of vegetables, 2 serves of fruit and 4 serves of breads and cereals each day. In addition, it is recommended that foods high in fat, particularly saturated fat, including processed meat products and fried potato products be consumed in moderation.

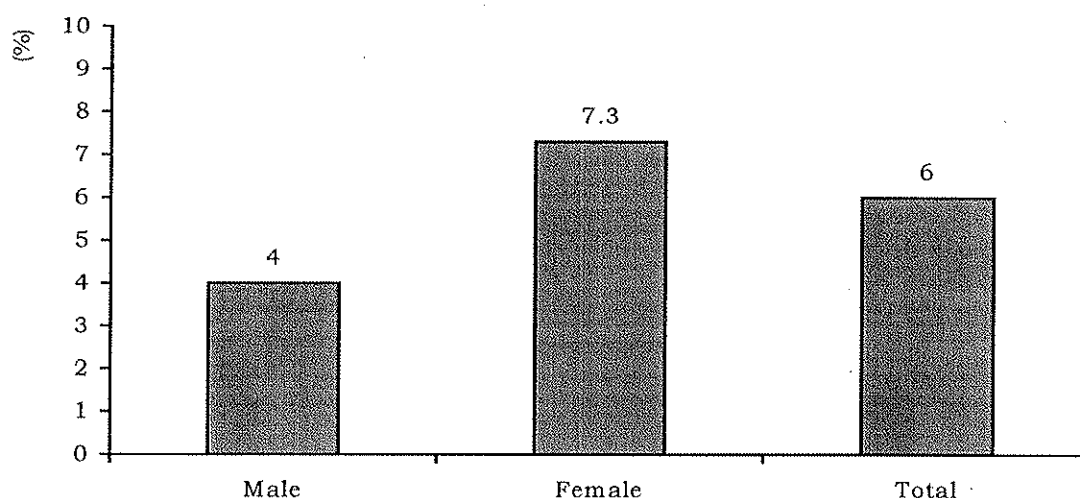
Milk products were grouped as follows: Regular milk includes whole or full cream milk and full cream soy milk; reduced fat includes Farmers' Best, Hi-Lo, Life Reduced Fat, Lite White and Soy Lite; and Low fat includes Shape and skim. Those respondents who indicated they consumed rice milk were considered to not drink milk.

9.3 Results

Vegetable consumption

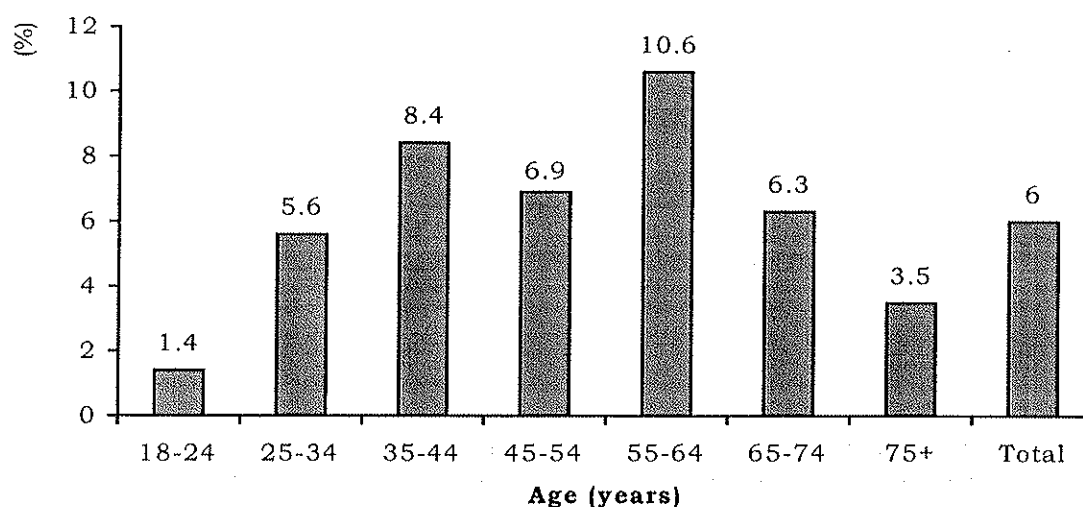
Of those Central Coast residents surveyed 6.0%: 4.0% males and 7.3% females reported consuming 5 or more serves of vegetables each day. A minority of residents (0.6%) reported that they never eat vegetables. Figure 9.1 outlines the vegetable consumption patterns of respondents.

Figure 9.1 *Gender specific (%) self-reported consumption of RDI of vegetables among Central Coast residents, 2002 (n= 1042)*



Across all age groups, the proportion of respondents reporting adequate consumption of vegetables daily is small (Figure 9.2). In 2002, those aged 55-64 years (10.6%) were most likely to consume the RDI of vegetables while those aged 18-24 years (1.4%) were least likely to consume the RDI of vegetables.

Figure 9.2 *Age specific (%) self-reported consumption of the RDI of vegetables in Central Coast residents, 2002 (n= 1042)*



Fruit consumption

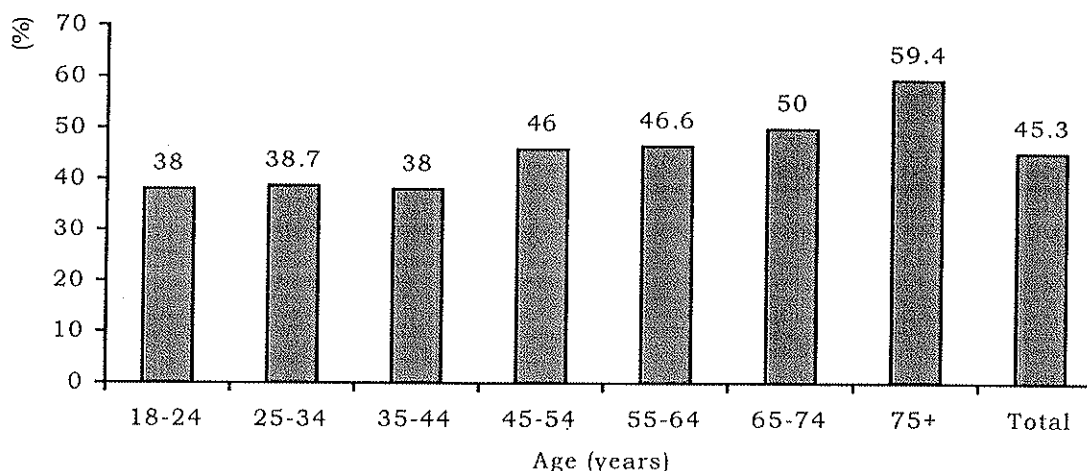
A total of 45.3% of Central Coast residents reported consuming the recommended two serves of fruit each day. More females (50.4%) than males (37.8%) consumed the RDI of fruit. Of those surveyed, 5.3% indicated that they never consume fruit. Figure 9.3 outlines the fruit consumption patterns of survey respondents.

Figure 9.3 *Gender specific (%) self-reported consumption of RDI of fruit among Central Coast residents, 2002 (n= 1042)*



In comparison to consumption of vegetables, a greater proportion of respondents across all ages consumed the recommended daily intake of fruit (Figure 9.4). Fewer respondents in the younger age groups, reported consuming the RDI of fruit each day. Those aged over 75 years were most likely to consume two or more serves of fruit each day.

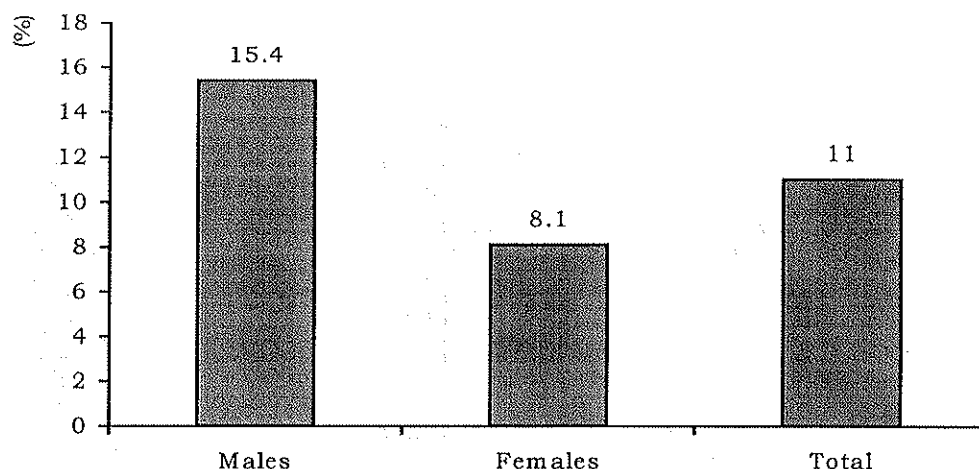
Figure 9.4 *Age specific (%) self-reported consumption of the RDI of fruit among Central Coast residents, 2002 (n= 1042)*



Breads and Cereals Consumption

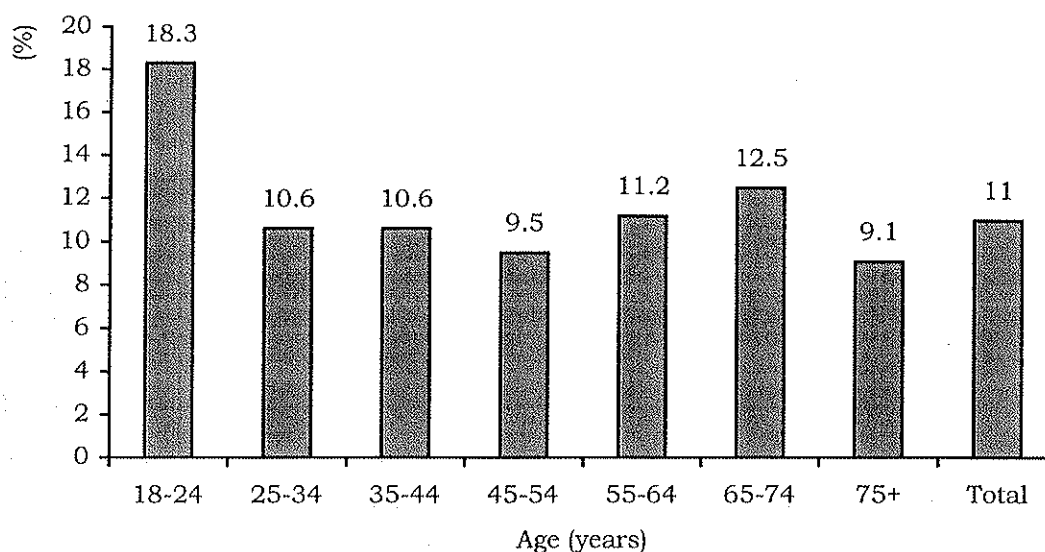
A total of 11% of respondents reported consuming the recommended number of servings of breads and cereals each day in 2002 (Figure 9.5). Males (15.4%) were more likely to consume the RDI of breads and cereals than females (8.1%).

Figure 9.5 *Gender specific (%) self-reported consumption of RDI of breads and cereals among Central Coast residents, 2002 (n=1042)*



The majority of respondents across all age groups reported not consuming the recommended amounts of breads and cereals daily. Those aged 19-24 years (18.3%) were most likely to consume the RDI of breads and cereals while those aged over 75 years (9.1%) were the least likely to consume the RDI of breads and cereals. Figure 9.6 outlines the consumption patterns of breads and cereals by age.

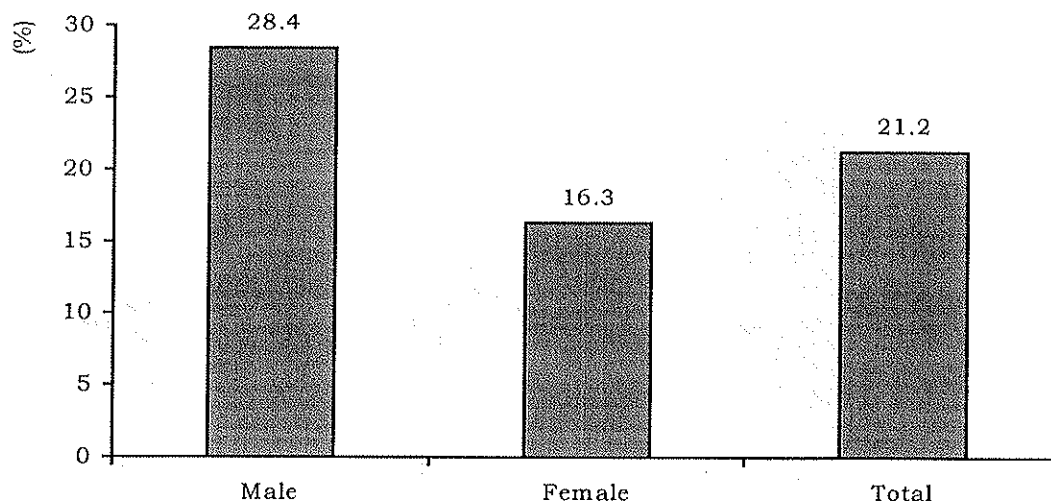
Figure 9.6 *Age specific (%) self-reported consumption of RDI of breads and cereals among Central Coast residents, 2002 (n=1042)*



Fried Potato Product Consumption

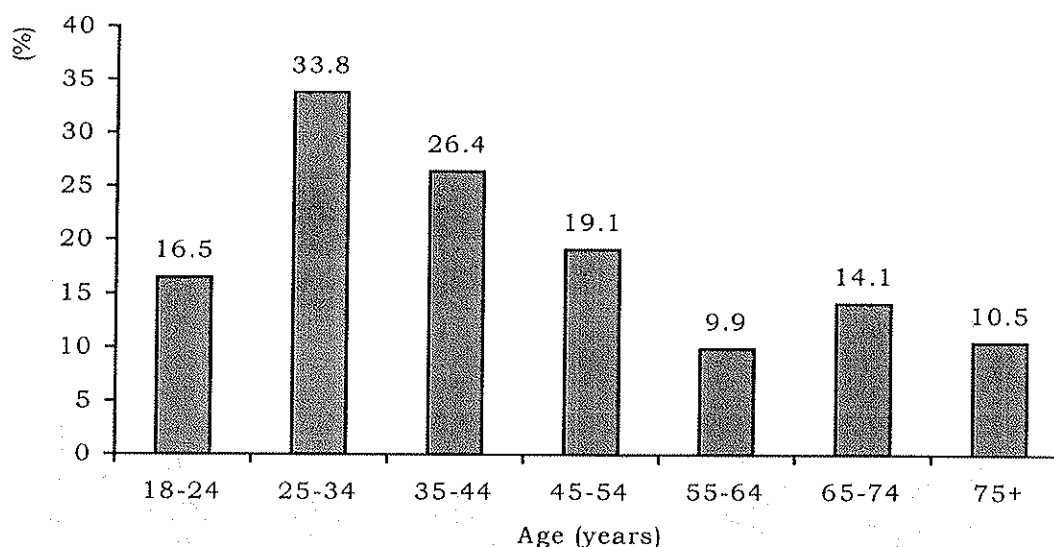
In 2002, 21.2% of the population reported that they consumed fried potato products on two or more occasions each week. Males (28.4%) were more likely than females (16.3%) to consume fried potato products on a regular basis (Figure 9.7).

Figure 9.7 *Gender specific (%) self-reported consumption of fried potato products two or more times each week among Central Coast residents, 2002 (n= 1042)*



Younger respondents were more likely to report consumption of fried potato products on two or more occasions each week than those in the older age groups (Figure 9.8). Those aged 25 – 34 years (33.8%) and 35-44 years (26.4%) were most likely to consume two or more serves of fried potato products each week.

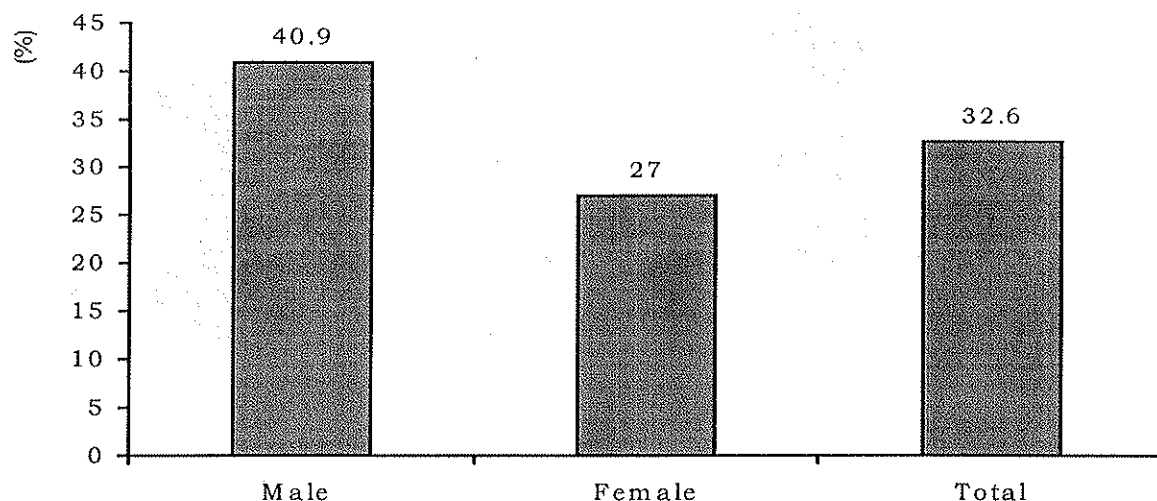
Figure 9.8 *Age specific (%) self-reported consumption of fried potato products two or more times each week among Central Coast residents, 2002 (n=1042)*



Processed Meat Product Consumption

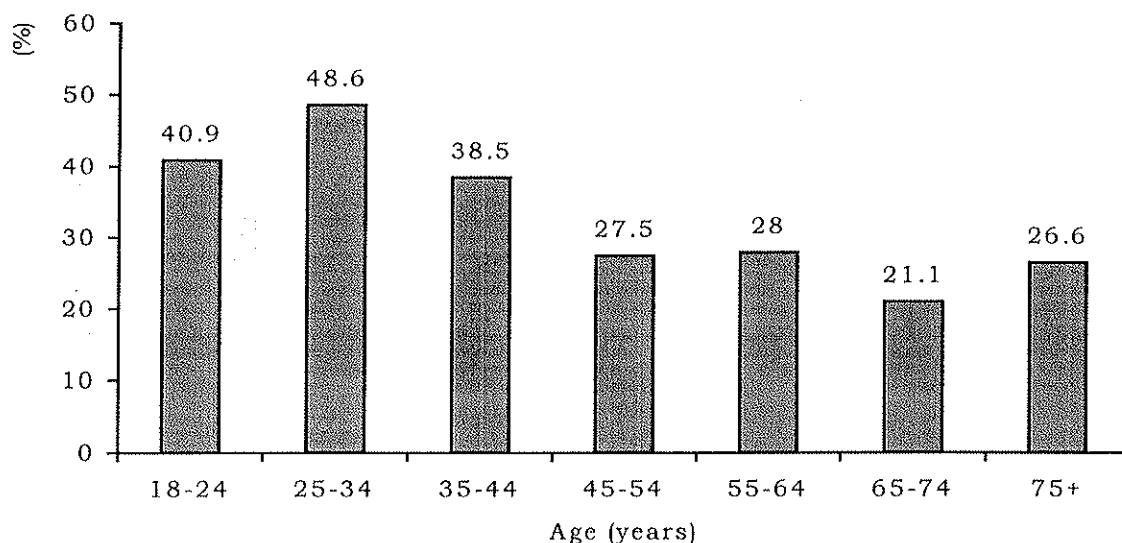
Respondents were more likely to report consuming processed meat products two or more times each week than fried potato products. Of those surveyed, 32.6% reported consuming processed meat products on two or more occasions each week (Figure 9.9). The proportion of males consuming processed meat products two or more times a week (40.9%) was greater than females (27.0%).

Figure 9.9 Gender specific (%) self-reported consumption of processed meat products two or more times each week among Central Coast residents, 2002 (n=1042)



Residents in the 25-34 years (48.6%), 18-24 years (40.9%) and 35-44 years (38.5%) age groups were most likely to consume processed meats on two or more occasions each week (Figure 9.10).

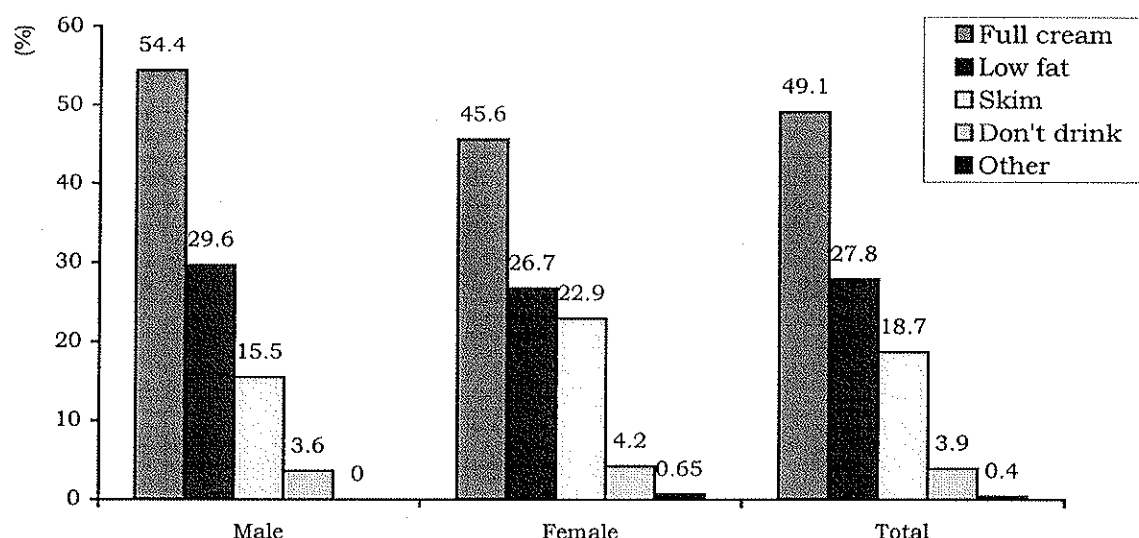
Figure 9.10 Age specific (%) self-reported consumption of processed meat products two or more times each week among Central Coast residents, 2002 (n=1042)



Type of milk consumed

Full cream milk was the most commonly consumed type of milk consumed by Central Coast residents in 2002. Low fat and reduced fat milks were consumed by 46.5 % of residents: 42.1% males and 49.6% of females. A small proportion of males (3.6%) and females (4.2%) reported never consuming milk. Figure 9.11 outlines the milk consumption patterns of respondents.

Figure 9.11 Gender specific (%) self-reported consumption of milk according to type among Central Coast residents 2002 (n=1042)



Discussion

In summary, of the Central Coast CVDRF Survey respondents, 6% reported consuming adequate serves of vegetables, 11% reported consuming adequate serves of breads and cereals, and 45% reported consuming adequate serves of fruit each day. The consumption of fruits and vegetables and breads and cereals is recommended by the Australian Dietary Guidelines.

In contrast to this, 21% reported consuming fried potato products two or more times a week, 32% reported consuming processed meat products two or more times a week and 43% usually consume full cream milk. The Australian Dietary Guidelines recommends consumption of these foods, which are considered to be high in fat, be limited.

Across all age groups, respondents were not consuming the RDI of fruit and vegetables and breads and cereals. Given the potential protective role of the nutrients contained in these foods, increasing the proportion of the population who consume adequate amounts, can have a positive impact on the rates of CVD, risk factors and some cancers in the population. Males are less likely than females to consume adequate amounts of fruits and vegetables but more likely to consume adequate quantities of breads and cereals.

While a considerable proportion of respondents did not consume the RDI of fruit, 73.4% were consuming at least one piece of fruit each day. Likewise, 16.3% of respondents reported consuming four or more serves of vegetables and 35.0% reported consuming three or more serves of vegetables each day. Similarly, 33.2% of respondents reported consuming three or more serves and 70.6% reported consuming two or more serves of breads and cereals daily.

The consumption of fried potato and processed meat products on two or more occasions each week was common especially among male respondents. Respondents were more likely to report consumption of full cream milk than reduced or low fat alternatives. Reducing the consumption of fried potato and processed meat products and increasing the consumption of reduced and low fat milks has the potential to decrease the total and saturated fat intake of the population.

Appendix I

Central Coast Health Survey Notification Letter to Residents

Date

The «surname»
«addr 1»
«addr2»
«suburb» NSW «pcode»

Household Ref No: HS/

Dear Householder

Central Coast Heart Health Survey

I am writing to tell you about an important survey about the heart (or cardiovascular) health of people on the Central Coast that is being conducted by the Public Health Unit, Central Coast Health.

The main aim of the survey is to learn more about the cardiovascular health of people on the Central Coast and the factors that affect it.

We will be interviewing people by telephone. About 1,000 people from the Central Coast will take part. Your telephone number has been randomly chosen to be part of the Central Coast Heart Health Survey. One of our trained telephone interviewers will be calling you within the next 2 weeks to invite your household to participate. They will ask to interview one person randomly selected from your household. Each interview will take around 10 minutes. If you are unable to be interviewed at the time our interviewer rings, a time that is convenient to you will be arranged for us to call back. Interviews are conducted both daytime and in the evening, as well as weekends. We hope you can help us in our project as your opinion is important. However, we understand that you may not wish to participate. If this is the case, simply let the interviewer know and we will remove your household from our contact list.

If you participate in the phone interview we would like to invite you to attend a free clinical assessment. During this Clinic Assessment some of cardiovascular disease risk factors, including your weight, blood pressure and those in your blood (such as cholesterol), will be measured. Also, because foods you eat can affect your risk factors, a diet assessment will be made.

The clinics will be conducted at a variety of Community Health Centres. Of course participation in the clinic is entirely voluntary.

Please be assured that your answers to the survey questions will remain confidential. The results will not be used in any way in which they can be associated with your name and address.

I do hope that you will help us with this survey. The results will be of great value to the community by helping us to plan and improve your local health services.

**Questions & Answers about the Central Coast
Heart Health Survey**

Answers to some questions about the Heart Disease Health Survey are given overleaf. If you have any questions please contact the Survey Supervisor, Helen Beddow, on freecall 1800355534 between 1pm and 8pm, Monday to Friday.

Thank you in advance for your help with the survey.

How did you choose my telephone number?

Your number was chosen at random from all possible telephone numbers in your local area, similar to a Lotto draw.

When will the interviewer ring me?

Interviewers will call between 9.00am and 9.00pm on weekdays or between 12.00 midday and 6.00pm on Saturdays and 11.00 am and 7.00pm on Sundays. If you are busy when they ring, they will be happy to phone back at a time convenient to you.

What types of questions will be asked?

You are more at risk of developing a Cardiovascular Disease if you:

- | | |
|-------------------------------|----------------------------|
| * Have high blood cholesterol | * Have high blood pressure |
| * Smoke | * Have diabetes |
| * Are physically inactive | * Are overweight |

These are called "risk factors" for cardiovascular disease.

The questions in the survey cover:

- Cardiovascular disease risk factors
- how you and your GP manage these risk factors
- individual characteristics such as age, occupation and languages spoken at home

Do I have to answer all the questions?

We would really appreciate your help with this important survey. However, your participation is voluntary and you are free to withdraw from the survey at any time. Also, you don't have to answer all the questions in the survey. Some of the questions are of a personal nature. If you feel uncomfortable with any question, you can just tell the interviewer and they will move on to the next question.

How long will it take?

The whole survey will take around 15 minutes for most people. It may take a little longer for people who have a heart disease or one of the risk factors for heart disease.

Will the information I give be kept confidential?

The results will not be used in any way in which they can be associated with your household's name, address or phone number. Please be assured that your answers to the survey questions will remain confidential. Reports that are written as a result of the survey will refer to groups of people, not individuals e.g 25% of men reported that they were smoke.

Appendix III
2002 Central Coast CVD Risk Factor Study -Telephone Survey

1. Do you:
Have a regular GP (ie See the same GP at least every 2 years)
Have a regular specialist (who you see more often than any GP)
Attend the same local medical centre, where your medical records are kept
Attend a local medical centre and use whatever GP is available
None of the above
2. Have you seen a GP at least every 2 years?
3. How often do you visit a GP or specialist or doctor (as appropriate)?
4. When did you last have your blood pressure measured?
5. Have you ever been told by a doctor or at a hospital that you have high blood pressure (sometimes called hypertension)?
6. What are you doing now to manage your high blood pressure (hypertension)?
following a diet (including reducing salty food, weight reduction diet)
trying to lose weight
exercising most days
taking medication to help lower your blood pressure
7. Are you doing anything else to manage your blood pressure?
8. How often do you think you should visit your GP or specialist or doctor to have your blood pressure checked?
9. When did you last have your cholesterol measured?
10. Have you ever been told by a doctor or at a hospital that you have high blood pressure?
11. What are you doing to manage your high cholesterol?
following a diet
trying to lose weight
exercising most days
taking medication to help lower your cholesterol
12. Are you doing anything else to manage your cholesterol?
13. On your last visit to your GP or specialist or doctor, did your GP or specialist or doctor provide any advice about weight?
14. How many serves of vegetables do you usually eat each day? One serve is ½ cup cooked or 1 cup of raw vegetables or 1 cup of salad vegetables. (If respondent usually eats less than one serve per day enter weekly value)
15. How many serves of fruit do you usually eat each day? A serve is 1 medium piece or 2 small pieces of fruit or 1 cup of diced pieces. (If respondent usually eats less than 1 serve per day, enter weekly value)
16. How often do you usually eat bread? (Includes bread rolls, flat breads, crumpets, bagels, English or bread type muffins) If respondent usually eats less than once a day, then enter the weekly/monthly value.

17. How many cups of breakfast cereals do you usually eat each day? One cup is equal to 1 cup of cornflakes or other flake based cereal including Just Right or flaked based muesli; 2 Weetbix; ½ cup cooked porridge 1/3 cup toasted muesli; ½ cup Allbran. If respondent usually eats less than once a day, enter weekly/monthly value.
18. How often do you eat breakfast cereal (ready-made, home-made or cooked)? If respondent usually eats less than once a day, enter weekly/monthly value.
19. How often do you eat pasta, rice, noodles or other cooked cereals (not including cooked breakfast cereals)? If respondent eats less than once a day enter weekly/monthly value.
20. What type of milk do you usually have?
Regular cows milk (whole or full cream)
Low/reduced fat cows milk
Skim cows milk
Evaporated or sweetened cows milk
Don't have milk
Don't know
21. How often do you eat meat products such as sausages, frankfurters, devon, salami, meat pies, bacon or ham? If respondent usually eats less than once per day, enter weekly/monthly value.
22. How often do you eat chips, French fries, wedges, fried potato or crisps? If respondent usually eats less than once per day, enter weekly/monthly value.
23. How tall are you without shoes?
24. How much do you weigh without shoes or clothes?
25. Have you ever been told by a doctor/specialist or as a hospital that you have diabetes?
26. What type of diabetes were you told you had?
27. How old were you when you were first told you had diabetes/high blood sugar?
28. Have you and your GP developed a written Care Plan to manage your diabetes? (It is not a care plan unless it is signed by the respondent and they have a copy. Not all doctors do Care Plans)
29. In the last week how many times have you walked continuously for at least 10 minutes for recreation or exercise or to get to or from places?
30. What do you estimate was the total time you spent walking in this way in the last week.
31. In the last week, how many times did you do any vigorous activity which made you breathe harder or puff and pant (eg football, tennis, squash, athletics, cycling, jogging, gym, swimming etc)?
32. What do you estimate was the total time you spent doing this vigorous physical activity in the last week?
33. In the past week, how many times did you do other more moderate physical activity that you haven't already mentioned (eg lawn bowls, golf, tai chi)?
34. What do you estimate was the total time you spent doing these activities in the past week?

35. Have you participated in any organised group exercise activity in the last week?
Examples could include: gentle exercise, groups at fitness centres, walking groups, aqua aerobics, team sports, tai chi or any other organised group exercise.
36. What type of activity have you participated in?
37. What is the main reason you did not participate?
38. On your last visit to your GP or specialist or doctor, did your GP or specialist or doctor provide any advice on exercise?
39. Which of the following best describes your smoking status?
I smoke daily
I smoke occasionally
I don't smoke now but used to
I've tried it a few times but never smoked regularly
I've never smoked
Don't know
40. Which of the following best describes your feeling about smoking?
I am not planning on quitting in the next 6 months
I am planning on quitting in the next 6 months
I am planning on quitting within the next month
I have not smoked in the past 24 hours but was smoking 6 months ago
I have not been smoking in the past 6 months
Don't know
41. On your last visit to your GP or specialist or doctor, did your GP or specialist or doctor provide any advice on stopping smoking?
42. What was this advice?
Recommended nicotine replacement therapy
Recommended Quit program
Recommended/prescribed Zyban (bupropion)
Don't remember
42. Which of the following best describes your home situation regarding smoking?
My home is smoke free (includes smoking is only allowed outside)
People occasionally smoke in the house
People frequently smoke in the house
Don't know
43. Have you ever been to hospital for a heart condition?
44. What was the diagnosis of the condition?
45. When did this occur?
46. Did you attend a rehabilitation program after your were discharged?
47. Who referred you to the program?
48. When did you last visit your GP or specialist or doctor to check on this condition?
49. Thinking about your health, do you think you are at a high, medium or low risk of having a heart attack in the next ten years.
50. Has anyone in your immediate family ever had a heart attack or a stroke? Immediate family only includes mother, father, brothers and sisters.
51. Was your mother or father or brother or sister under 55 years old when this occurred?

52. What gender is the respondent?
53. Could I ask your age please?
54. What is your age group?
 - 18 - 24
 - 25 - 29
 - 30 - 34
 - 35 - 39
 - 40 - 44
 - 45 - 49
 - 50 - 54
 - 55 - 59
 - 60 - 64
 - 65 - 69
 - 70 and over
55. Which country were you born in?
56. What language do you usually speak at home?
57. What is the highest level of education you have completed?
58. What is your current or usual occupation?
59. What suburb do you live in?
60. What is your postcode?
61. Were you in the same postcode 5 years ago? If no enter previous suburb and/or postcode.
62. Were you in the same suburb and postcode 1 year ago? If no enter previous suburb and/or postcode.
63. As it says in the letter you received, the Central Coast Health Service is conducting free health clinics looking at risk factors for heart disease, so it can provide better healthcare for Central Coast residents.

 Would you like to attend a free clinic to have your risk factors for heart disease checked(includes blood pressure and cholesterol)?
64. What is your approximate family income before tax and other deductions? That's the total for you, your partner, and your children if they live at home.
 - Less than \$10,000
 - \$ 10,000 - \$ 20,000
 - \$ 20,000 - \$40,000
 - \$ 40,000 - \$ 60,000
 - \$ 60,000 - \$ 80,000
 - More than \$80,000
 - Don't know
65. How many adults 18 years and over, including yourself, live at home?

Thank you for taking the time to complete this questionnaire. The information will be used to help improve health services in your local area.

Appendix IV

Glossary

Body mass index

Derived from self-reported weight and height. BMI is calculated in the following manner – weight (kg)/ height (m)². BMI classifications for overweight and obesity were the same as those used by NSW Health in their health survey program.

Classification	BMI
Overweight	25.0 – 29.9
Obese	≥ 30.0

Physical activity

Physical activity time was calculated as: the sum of time spent walking performing moderate activity plus double the time spent in vigorous activity. Classification of physical activity used the method developed by the AIHW and adopted by AusDiab Study, 2000.

Classification	Physical activity
Sufficient	At least 150 minutes 'physical activity time' in the previous week
Insufficient	Less than 150 minutes 'physical activity time' in the previous week
Sedentary	No participation in physical activity in the previous week

Recommended daily component Intakes

Recommended daily intakes used in the analysis of nutrition are based on the Australian Guide to Healthy Eating, which is used by the NSW Health Survey's.

Food	RDI
Fruit	Two serves
Vegetables	Five serves
Breads and cereals	Four serves

Sample serves

Sample serves for main food groups were based on the Australian Guide to Health Eating, which is used by the NSW Health Survey's.

Food	Sample serve
Fruit	1 medium piece of fruit, 2 small pieces of fruit, 1C diced pieces or canned fruit.
Vegetables	1/2C cooked vegetables, 1C raw vegetables, 1C salad vegetables
Breads and Cereals	2 slices bread, 1C cooked rice, pasta, noodles, 1C cooked porridge, 1 1/3 C ready made breakfast cereal.

Smoking status

Smoking status was classified in the same manner as for the 1997 and 1998 NSW Health Survey's.

Classification	Amount Smoked
Current	Smoke daily or occasionally
Ex-smoker	Don't smoke now but used to
Never smoked	Never smoked or tried it a few times but never smoked regularly.

Appendix V

Summary Table with Confidence Intervals

Classification	Persons	Male	Female
Hypertension	24.8 (22.1 – 27.4)	25.1 (20.9 – 29.2)	24.6 (21.1 – 28.0)
High cholesterol	27.9 (24.7 – 31.1)	24.0 (19.3 – 28.7)	30.8 (26.5 – 35.1)
Diabetes	5.7 (4.2 – 7.1)	7.1 (4.7 – 9.6)	4.7 (3.0 – 6.3)
Overweight	31.4 (28.6 – 34.3)	40.8 (36.1 – 45.5)	24.8 (21.3 – 28.3)
Obesity	18.7 (16.3 – 21.1)	20.1 (16.4 – 24.1)	17.5 (14.5 – 20.6)
Current smoker	24.8 (22.1 – 27.4)	27.2 (23.0 – 31.4)	23.1 (19.8 – 26.4)
Ex smoker	30.8 (28.0 – 33.6)	37.6 (33.0 – 42.2)	26.2 (22.7 – 29.6)
Never smoked	44.5 (41.5 – 47.5)	35.2 (30.7 – 39.8)	50.7 (46.8 – 54.7)
Sufficiently active	54.3 (51.4 – 57.5)	62.4 (57.8 – 67.0)	48.9 (45.0 – 52.9)
Insufficiently active	26.5 (23.8 – 29.2)	20.3 (16.5 – 24.2)	30.7 (27.1 – 34.4)
Sedentary	19.0 (16.6 – 21.4)	17.3 (13.7 – 20.9)	20.3 (17.2 – 23.5)
Consumes RDI fruit	45.3 (42.3 – 48.3)	37.8 (33.2 – 43.4)	50.4 (46.5 – 54.3)
Consumes RDI vegetables	6.0 (4.5 – 7.4)	4.0 (2.1 – 5.9)	7.3 (5.2 – 9.3)
Consumes RDI breads/cereals	11.0 (9.1 – 12.9)	15.4 (11.9 – 18.8)	8.1 (5.9 – 10.2)
Consumes processed meat products 2+ times each week	32.6 (29.8 – 35.5)	40.9 (36.2 – 45.6)	27.0 (23.5 – 30.5)
Consumes fried potato products 2+ times each week	21.2 (18.7 – 23.7)	28.4 (24.2 – 35.5)	16.3 (13.4 – 19.2)
Usually consumes regular milk	49.1 (46.1 – 52.2)	54.4 (49.6 – 59.1)	45.6 (41.6 – 49.5)
Usually consumes low/reduced fat milk	46.6 (43.5 – 49.6)	42.1 (37.4 – 46.8)	49.6 (41.9 – 53.7)

Data are percentages (95% confidence intervals)

Data based on self-reporting

Definitions will be found in the text

Appendix VI

Sample Sizes in Comparison Surveys

NSW Health Survey 1997 and 1998

Risk Factor	NSW Sample	Central Coast Sample
Hypertension	33139	1995
Cholesterol	35025	1473

Source: NSW HEALTH. 2000. Public Health Division, *Report on the 1997 and 1998 NSW Health Survey's*. NSW Health Department, Sydney. Available at: <http://www.health.nsw.gov.au/public-health/nswhs> [Accessed 3rd April, 2003].

NSW Health Survey 2002

Risk Factor	NSW Sample	Central Coast Sample
Overweight and Obesity	11998	651
Smoking	12617	685

Source: Public Health Division, 2003. *New South Wales Health Survey 2002. Central Coast Area Health Service Report*. Sydney: New South Wales Department of Health.

AusDiab, 2001

Component	Sample
Respondents to interview	20257
Respondents to physical examination	11247

Source: Diabetes and Associated Disorders in Australia 2000 – Australian Diabetes, Obesity and Lifestyle Report (AusDiab). 2001. Melbourne: International Diabetes Institute.

Abbreviations

ABS	Australian Bureau of Statistics
AIHW	Australian Institute of Health and Welfare
ATSI	Aboriginal and Torres Strait Islander
BMI	Body mass index
CABG	Coronary artery bypass graft
CATI	Computer Aided Telephone Interviewing
CCC	Central Coast Campuses
CCH	Central Coast Health
CHD	Coronary heart disease
CVD	Cardiovascular disease
CVDRF	Cardiovascular disease risk factor
ERP	Estimated Resident Population
GP	General Practitioner
NDSHS	National Drug Strategy Household Survey
NHF	National Heart Foundation
NHMRC	National Health and Medical Research Council
NHPA	National Health Priority Areas
HVRF	Hunter Valley Research Foundation
RDI	Recommended daily intake

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