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CARDIOVASCULAR HEALTH BEHAVIOURS AND HEALTH NEEDS AMONG PEOPLE WITH PSYCHIATRIC DISABILITIES

Loranie Leas B.A. (Hons.)

Submitted in partial fulfilment of the requirements for the degree of Doctor of Psychology (Health)
School of Psychology, Deakin University, Melbourne, Australia

December 2004
I certify that the thesis entitled

“Cardiovascular health behaviours and health needs among people with psychiatric disabilities.”

submitted for the degree of Doctor of Psychology (Health)

is the result of my own work and that where reference is made to the work of others, due acknowledgment is given.

I also certify that any material in the thesis which has been accepted for a degree or diploma by any other university or institution is identified in the text.

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CONFERENCE PRESENTATIONS

Health risk behaviours and health care needs among people with psychiatric illness

28th International Congress of Psychology (ICP 2004) Beijing, August 2004

Physical health of women with a psychiatric disability

Victorian Women and Mental Health Network Melbourne, July 2004
VICSERV
"Promoting Healthy Lifestyles for Female Consumers"

Health risk behaviours among people with psychiatric illness

Werribee Mercy Hospital Research Conference Melbourne, April 2005
ACKNOWLEDGEMENT

I would like to thank the following people for their support throughout the last three years.

A special gratitude is owed to Professor Marita McCabe, for her brilliant guidance and support that went far beyond my expectations. She gave generously of her knowledge and time, for this I count myself most fortunate. Marita, I value your encouragement and endless enthusiasm about my work, as well as your patience and kindness in times when I had to deal with personal frustrations.

I would also like to express my gratitude to Dr Lina Ricciardelli and Joanne Buchanan for their kindness, hard work and support.

I am also indebted to the considerable amount of time generously given to me by all the staff at the psychiatric disability services and hospitals whom I contacted and interviewed, and the trouble to which many went to provide me with much insight and support. A special thank you to Peter O’Neil, Anita Govindan and Dr. Sean Jespersen.

I am also grateful to all the individuals who participated in the study. This thesis could not have been written without their selfless co-operation. I am privileged and a little bit wiser to have met all of you.

Thank you also to my fellow students, who have been a wonderful source of support, fun and laughter. I especially owe my sanity to Chi Mei, Claire, Jo, Kate and Sandra.

Last, but by no means least, I wish to thank my loving family and friends who provided support, diversion and comfort when spirit and motivation flagged. A special thank you to Putthy, who has been the best of friends during the rockiest path of my life.
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ABSTRACT

Recent research in Australia has found that people with a mental illness experience higher mortality rates from preventable illnesses, such as cardiovascular disease, respiratory disease and diabetes compared to the general population. Lifestyle and other behavioural factors contribute significantly to these illnesses. Lifestyle behaviours that affect these illnesses include lack of physical activity, consumption of a poor diet and cigarette smoking. Research on the influence of these factors has been mainly directed towards the mainstream population in Australia. Consequently, there remains limited understanding of health behaviours among individuals with psychiatric disabilities, their health needs, or factors influencing their participation in protective health behaviours. This thesis presents findings from two studies. Study 1 evaluated the utility of the main components of Roger's (1983) Protection Motivation Theory (PMT) to explain health behaviours among people with a mental illness. A clinical population of individuals with schizophrenia (N=83), Major Depressive Disorder (MDD) (N=70) and individuals without a mental illness (N=147) participated in the study. Respondents provided information on intentions and self-reported behaviour of engaging in physical activity, following a low-fat diet, and stopping smoking. Study 2 investigated the health care service needs of people with psychiatric disabilities (N=20). Results indicated that the prevalence of overweight, cigarette smoking and a sedentary lifestyle were significantly greater among people with a mental illness compared to that reported for individuals without a mental illness. Major predictors of the lack of intentions to adopt health behaviours among individuals with schizophrenia and MDD were high levels of fear of cardiovascular disease, lack of knowledge of correct dietary principles, lower self-efficacy, a limited social support network and a high level of psychiatric symptoms. In addition, findings demonstrated that psychiatric patients are disproportionately higher users of medical services, but they are under-users of preventive medical care services. These differences are primarily due to a lack of focus on preventive health, feelings of disempowerment and lower satisfaction of patient-doctor relationships. Implications of these results are discussed in terms of designing education and preventive programs for individuals with schizophrenia and MDD.
CHAPTER ONE

Introduction

Past research has demonstrated that people with a mental illness experience higher physical health problems than people from the general population (Harris & Barracough, 1998; Koran et al., 1989). Studies have also demonstrated that they have elevated mortality rates from preventable illnesses, such as cardiovascular disease, respiratory diseases, cancer and diabetes when compared to the general population (Coghlan, Lawrence, Holman, & Jablensky, 2001). Cardiovascular disease (CVD) is a major cause of morbidity and mortality in Australia, and rates are particularly high among individuals with a mental illness. People with a mental illness are three times more likely to develop CVD than people in the general population (Coghlan et al., 2001; Ruschena, Mullen, & Burgess, 1998).

Research has indicated that a number of associations exist between mental illness and CVD (Bartsch, Shern, Feinberg, Fuller, & Willet, 1990). Although no definite conclusions can be drawn about the nature of these relationships, recent studies indicate that lifestyle behaviours contribute significantly to the development of CVD among individuals with mental illness (Coghlan et al., 2001; Davidson, Judd, Jolley, Hocking, Thompson, & Hyland, 2001; Farnam, Zipple, Tyrrell, & Chittinanda, 1999; Koran et al., 1989).

Lifestyle behaviours such as physical inactivity, a poor diet and cigarette smoking are particularly common among people with a mental illness (Brown, Birtwistle, & Thompson, 1999; Farnam et al., 1999). Although the influence of these lifestyle behaviours on physical well-being has been well documented, few studies have attempted to explore the reasons why individuals with a mental illness are engaging in less than optimal health behaviours. In addition, people with a mental illness tend not to seek out or utilise health care services, further compromising their physical health. A greater understanding of the cognitive and environmental factors involved in altering these health behaviours is necessary to assist health professionals in their efforts to decrease CVD rates among individuals with a mental illness.

To date, research on health behaviours has been conducted within a number of social cognitive theoretical frameworks or conceptual models. These theories have been used to understand the underlying reasons for unhealthy lifestyle behaviours. One such model is the Protection Motivation Theory (PMT) (Rogers, 1983). The
PMT is a cognitive theory which has been predominantly applied to assess health behaviours in the general population, and it is unclear if this model is useful in explaining the cardiovascular risk behaviours among individuals with a mental illness. The purpose of the current thesis is to examine the validity of the PMT in explaining health behaviours among individuals with a mental illness and explore this population’s barriers to health care services.

**Plan of the thesis**

This thesis has eleven chapters. Chapter two provides an overview of the epidemiology of CVD in Australia and the risk factors for CVD. This chapter will also examine the effectiveness of preventive behaviours on CVD and develop a rationale for investigating CVD among individuals with a mental illness.

Chapter three has two parts. The first outlines the nature of psychiatric disability, specifically focusing on Major Depressive Disorder (MDD) and Schizophrenia. The second part investigates the importance of lifestyle behaviours, in particular physical inactivity, poor diet and cigarette smoking in relation to general health and cardiovascular health of individuals with psychiatric disabilities.

Chapter four explores and critically examines the applicability of health behaviour models and theories, such as the Health Behaviour Model (HBM), the Theory of Reasoned Action (TRA) and the Protection Motivation Theory (PMT) in health behaviour research. This chapter also examines other important predictors that are not included in the above theoretical frameworks, but have been found to be influential in protective health behaviour research. Additional variables include psychiatric symptoms and social support.

Chapter five explores access to, barriers to and satisfaction with health care services in order to provide a more comprehensive understanding of the disparities in health status among individuals with mental illness. Chapter five concludes with the discussion of the potential value of the research on cardiovascular health behaviours and patterns of health care utilisation among individuals with a mental illness.

Chapter six presents the main research aims, hypotheses and research questions of the two studies in the thesis.

Chapter seven describes the general methods for the two main studies and Chapter eight presents the findings of Study 1. Chapter nine presents findings for Study 2.
Chapter ten discusses the findings from the two main studies and compares the findings with previous research. Finally, the conclusions, limitations and recommendations for future research, as well as the implications of the results for policy and practice are presented in Chapter Eleven.
CHAPTER TWO
Cardiovascular Disease Risk Factors and Related Behaviours

Overview of the chapter
This chapter provides an overview of Cardiovascular Disease (CVD) risk factors and is divided into three parts. The first part provides general information about CVD and rates of mortality and morbidity of cardiovascular related illnesses in Australia. The second part discusses the risk factors for the development of CVD. This section covers CVD non-modifiable risk factors, primary modifiable risk factors and secondary modifiable risk factors. The final part of this chapter summarises the effects of primary prevention, and concludes with the potential value of maintaining an active lifestyle, following a low fat diet and smoking cessation.

CVD – The Australian Context
Cardiovascular disease remains the leading cause of death in Australia and places a heavy burden on society in terms of illness, disability and economic cost. Every day, 30 Australians die prematurely from heart attack, stroke or some other blood vessel disease (National Heart Foundation of Australia, 1996). In 1996, CVD accounted for 42% of all deaths in Australia (Australian Institute of Health and Welfare, AIHW, 1999).

CVD refers to a wide variety of heart and blood vessel diseases, including coronary heart disease, hypertension, stroke and rheumatic heart disease. In Australia, the types of CVD that pose the biggest cardiovascular problems are coronary heart disease and stroke (AIHW, 1999). These two major types of CVD will therefore be the focus of this thesis.

Coronary heart disease (CHD), also called ischemic heart disease or coronary artery disease, is a term used to describe several disorders that are caused by a decrease in blood supply to the heart muscle, whereby a reduction in oxygen causes heart muscle cell death (Foreyt & Poston, 1996). The most common manifestations of CHD are angina pectoris (chest pains), myocardial infarction (heart attack) and sudden death (Brownson, Remington, & Davis, 1993).
Cerebrovascular disease or stroke includes a group of diseases that affect the central nervous system. Stroke results when an artery in the brain is either ruptured or blocked, causing death to nerve cells in the affected part of the brain (Brownson, et al., 1993).

The underlying causes responsible for the development of CVD are complex and in many instances interrelated. Atherosclerosis is recognised as the main pathological process underlying the major forms of CVD (Foreyt & Poston, 1996). Atherosclerosis is a slow progressive condition in which the inner layers of the artery walls become thick and irregular because of plaque build-up. Plaque consists of deposits of fat, cholesterol and other substances. As this plaque builds up, the arterics narrow, the blood flow is decreased, and the likelihood of a blood clot increases, potentially leading to strokes or heart attacks (Brownson, et al., 1993).

**CVD Risk Factors**

Since the end of the Second World War, the increase in CVD in industrialised countries initiated large-scale prospective epidemiological research both within and between countries (Epstein, 1996). Five decades of research involving a large number of individuals all provided essentially the same results and identified a number of risk factors that are associated with the development of CVD. The famous Framingham Study conducted in the United States of America was one of the first studies to identify several classes of contributors to CVD (Dawber, 1980). The risk factors of CVD, notably CHD and strokes are presented in Table 2.1.

Although research into cardiovascular risk factors has identified factors that are not modifiable, such as age, sex, and genetics, it is now recognised that most of the premature deaths and much of the morbidity caused by CVD are to a significant extent, preventable through behaviour change. The positive relationships between sedentary lifestyle, high fat-diet and cigarette smoking and CVD have been consistently supported by a huge body of research (Brownson et al., 1993; Dawber, 1980; Hemmingway & Marmot, 1999). Behaviour change strategies, therefore, play an important role in the modification of CVD risk factors and the prevention and treatment of CVD. While the above three lifestyle behaviours may be considered as primary modifiable CVD risk factors because of their direct impact on the atherosclerotic process, physical inactivity, high fat diet and cigarette smoking also influence the development of obesity, diabetes and hypertension, which are
considered as clustering factors or secondary modifiable risk factors for CVD (AIHW, 1999). For example, obesity is associated with the elevation of blood pressure and serum cholesterol and lack of physical activity. The epidemiological and experimental evidence related to each risk factor is discussed below.

Table 2.1
Risk Factors for Coronary Heart Disease and Stroke.

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Note: ✓ substantial evidence of association between the risk factor and disease.
- no known association.
*Adapted from Australian Institute of Health and Welfare (1999).
Non-modifiable Risk Factors

Age

Although many of the known cardiovascular risk factors are modifiable to intervention, several factors, such as age and sex, remain beyond the control of an individual. Chronological age is the strongest single risk factor for CVD, even after adjustment for other risk factors (Kannel, 1986). Extensive evidence has indicated a positive linear relationship between age and CVD (Goldberg, 1992). CVD remains the most important cause of death and physical impairment among older persons. For example, among 54 to 74-year-old Australians, CVD accounts for over 50% of deaths (AIHW, 1998).

Sex

The threat of CVD is prominent in both females and males. However, of the two sexes, males have the greater relative risk of developing CVD at any given combination of age and risk profile score than women (Goldberg, 1992). Males are twice as likely to die from cardiovascular related illnesses than females, with males aged under 65 years experiencing three to five times higher death rates than females (Goldberg, 1992). Although there appears to be a large discrepancy between the CVD mortality rates for males and females, this trend only continues until the age of menopause. After this time of life, the sex difference in CVD mortality rate narrows, due mainly to the decrease in the female’s body production of oestrogen (Schwab, 2000). Therefore, the prevalence of CVD mortality rates among older females is similar to that of older males.

Family History of Disease

Findings from the Framingham Study cohort indicated that a family history of premature CVD confers excess CVD risks (Dawber, 1980). The Framingham Study found that individuals with first degree relatives, notably siblings or parents with documented CHD, had more than double the risk of a CHD event which was not accounted for by shared risk factors. Similarly, Goldberg’s (1992) overview of studies of family history of CHD concluded that CHD risk increases up to two times with a parental history of the disease. Although CHD has been observed to cluster in families, there has been some discussion about whether or not CHD is a result of genetic susceptibility or a product of family lifestyle and environment (King, Lee,
Spinner, Thomson, & Wrensch, 1984). This 'nature-nurture' debate remains equivocal. However, twin studies, such as those conducted by Feinleib, Garrison, and Fabsitz (1977) found positive evidence for the heritability of CHD through comparisons of concordance rates of myocardial infarction and CHD risk factors in separated monozygote and dizygote twins.

**Primary Modifiable Risk Factors**

*Physical Inactivity*

Since 1953, extensive epidemiological research has documented the protective effects of physical activity on several chronic diseases including reproductive cancer in women (Kohl, LaPorte, & Blair, 1989), colon cancer (Lee, Paffenbarger, & Hsieh, 1991) and osteoporosis (Snow-Harter, Shaw, Wegner, Robinson, & Shelly, 1993). In relation to CVD specifically, large-scale prospective studies have consistently found that maintaining a physically active lifestyle is associated with substantial reductions in the development of coronary heart disease, strokes, and hypertension (Blair et al., 1996; Leon, Connet, Jacobs, & Raumarra, 1987; Paffenbarger, Hyde, Wing, & Hsieh, 1986; Powell & Blair, 1994; Slattery, Jacobs, & Nichman, 1989). Being physically active has been shown to be useful in preventing CVD by lowering blood pressure, heart rates and cholesterol, to help control obesity, lessen the incidence of erratic heartbeats, decrease palate adhesiveness, and improve functional work capacity (Dubbert, 1992). For example, in the Framingham study, exercise of a moderate degree was found to have a protective effect against CHD in younger and old men at any level of other risk factors (Dawber, 1980). People who have a sedentary lifestyle are twice as likely to die from CHD as those who are active (Berlin & Colditz, 1990; Leon & Connet, 1991). Similarly, in a large review of the literature associating physical activity and mortality, the United States Department of Health and Human Services (U.S. DHHS) found that individuals who reported moderate to vigorous exercise were found to be significantly less likely to suffer premature all-cause mortality (CVD, colon cancer, non-insulin diabetes mellitus and osteoarthritis) compared to individuals who were inactive (U.S. DHHS, 1996).

Whether physical activity is measured through occupational activity or leisure-time activity, the association between physical inactivity and ill health is consistent and substantial. For example, early studies in the United States on an individual's occupation, found that people whose occupations were physically harder (i.e., railroad
employees) were less likely to develop CVD compared to employees with more sedentary occupations such as office clerks (Paffenbarger & Hale, 1975; Taylor, Klepetar, Keys, Parlin, Blackburn, & Puchner, 1962). Examples of studies that exclusively focused on leisure-time activities also demonstrated the protective health benefit of moderate physical activity (Paffenbarger et al., 1986).

Overall, studies that have assessed the relationship between physical activity and CVD have shown that for a given increase in activity level, the largest health benefit occurs when those who are sedentary become moderately active (Haskell, 1994; Paffenbarger et al., 1986), and smaller benefits are seen in individuals increasing their activity from moderate to high levels. Collectively, past studies reported that the protective effects of physical activity against CHD varied in magnitude from 35 to 55 per cent (Manson et al., 1992). As a result, the evidence documenting the beneficial effect of physical activity has resulted in health authorities acknowledging the need to develop strategies for increasing physical activity and decreasing sedentary lifestyle in the population.

**Dietary Factors**

Since the early 1980s, accumulated evidence for links between dietary fat, cholesterol and CVD has supported the argument that there is a strong direct relationship between the level of blood cholesterol and the occurrence of future CVD (Manson et al., 1992). In fact, some experts have claimed that the association between elevated blood cholesterol and the development of CVD is causal (Expert Panel, 1998). Furthermore, it has been suggested that the most important risk factor for CVD is dietary intake of cholesterol and fat, while the other risk factors are of much less importance in terms of development of atherosclerosis (Blackburn & Jacobs, 1984; Muldoon, Manuch, & Mathews, 1990).

Although many studies have demonstrated the significance of high blood cholesterol in predicting CVD, data now show that not all cholesterol is the same. There are three major classes of lipoproteins – transporting cholesterol in the plasma: very low-density lipoproteins (VLDL), low-density lipoproteins (LDL) and high-density lipoproteins (HDL). The VLDL cholesterol is largely composed of triglyceride and it constitutes approximately 10-15 per cent of total serum cholesterol. The association between VLDL and CVD is controversial and equivocal (Castelli et al., 1977). In contrast, LDL cholesterol has been identified as the main risk factor for
CVD as it is primarily related to dietary fat (Castelli et al., 1977; Miller & Miller, 1977). LDL cholesterol contains 60–70 per cent of the total cholesterol. Conversely, the high-density lipoprotein (HDL) cholesterol appears to provide some protection against CVD and contains 20–30 per cent of total serum cholesterol (Pocock, Shaper, & Phillips, 1989). Thus, total cholesterol is a combination of these three types of lipoproteins. However, total cholesterol is primarily related to the LDL cholesterol component, and it is this total cholesterol/HDL ratio that is one of the strongest predictors of CVD.

There is substantial evidence that lowering total and LDL cholesterol levels will reduce the incidence of CHD (Litman, 1993; Manson et al., 1992; Smith & Leon, 1992). The association between the consumption of saturated fats and the incidence of CVD mortality rates has been extensively and consistently documented from experimental studies using animal models, large series of randomised clinical trials, observation data and primary and secondary prevention trials. For example, Yasuf, Wittes, and Friedman's (1988) review of 22 randomised trials on the effects of the reduction of cholesterol levels on approximately 40,000 individuals found beneficial consequences from cholesterol-lowering regimens in both drugs or dietary therapies. Overall, the review found a 10 per cent reduction in cholesterol level was associated with a 10 per cent reduction in the risk of CVD for 14 trials over a period of four years.

Further evidence in support of the relationship between high cholesterol and the development of CVD accrues from migration studies and observation studies. An example of the most convincing piece of evidence that supports the contention that fat consumption and cholesterol contribute to mortality is the Seven Countries Study, in which Keys and colleagues (Keys, 1970; Keys et al., 1980) examined 12,770 men aged between 40 and 59 from Finland, Greece, Italy, Japan, the Netherlands, USA and Yugoslavia. This study showed that saturated fat intake is a strong determinant of serum cholesterol and mortality from CHD. In general, the study found a low incidence of CHD in adulthood in both men and women in countries such as Japan and Greece, in contrast to the United States and Northern European countries. These findings were related to the habitual diet of most Japanese, which was high in vegetable products and low in total lipid. Corroborating this finding, four major prospective studies also found an association between diet high in saturated fat and

In summary, substantial experimental, epidemiological and observational evidence suggests that elevated blood cholesterol concentrations are associated with heightened risk for CVD. Fortunately, studies have also demonstrated that changing dietary fat intake and life-style in a relatively short period of time can significantly lead to the reduction in the risk of CVD.

**Cigarette Smoking**

Cigarette smoking has been shown to be a strong risk factor for atherosclerotic CVD (Krumpski, 1991; Prescott, Hippe, & Schonohr, 1998). This is not unexpected, since nicotine increases heart rate, blood pressure and decreases oxygen carrying capacity of blood as a result of carbon monoxide build-up (Kannel, McGee, & Castelli, 1984). As such, it is widely accepted that cigarette smoking leads to a marked increase in the risk of heart, stroke and vascular disease (Smith & Leon, 1992; World Health Organization, 1986). Manson et al.'s (1992) review of the literature indicated cigarette smokers experience 70 per cent greater cardiovascular related death than non-smokers and that smoking is directly responsible for 21 per cent of all mortality from heart disease. Cessation in cigarette smoking is, therefore, commonly regarded as the most important modifiable risk factor for CVD.

A decline in risk of death from CVD following smoking cessation has been observed in both case-control and prospective studies (Department of Health and Human Services, DHHS, 1990; Rosenberg, Palmer, & Shapiro, 1990). Case-control studies of men and women have found that individuals who stop smoking for two to three years reduce their risk of myocardial infarction to levels similar to those for people who had never smoked (Rosenberg, Kaufman, Helmrich, & Shapiro, 1985; Rosenberg et al., 1990). However, both Rosenberg et al. (1985, 1990) studies only examined the reversible damage of cigarette smoking among individuals aged less than 55 years old; the decline of CVD risk is not evident for the older individuals. Despite this, Burns (2000) argued that the magnitude of the benefit of smoking cessation at any age still outweighs the risk of CVD.
Secondary Modifiable Risk Factor

High Blood Pressure (Hypertension)

High blood pressure refers to the levels of systolic and/or diastolic blood pressure. Increased blood pressure can precipitate and accelerate damage to coronary arteries, which in turn promote cholesterol deposition at the site of arterial wall damage, increasing the atherosclerosis process (Castelli, 1984; WHO, 1996). As a result, high blood pressure sustained over a long period of time contributes substantially to the risk of CVD and pathological changes in blood vessels and target organs (Kannel & Stokes, 1985).

Much epidemiology evidence indicates that high blood pressure is positively related to CVD. MacMahon et al.’s (1990) meta-analysis of nine, prospective, observational studies of 420,000 individuals found a direct and continuous association between elevated blood pressure and the development of CHD. This finding corroborates those of previous studies. The most notable of these studies is the Multiple Risk Factor Intervention (MRFIT) Study, which reported a positive association between mortality and high blood pressure in over 12,000 participants followed up to 9 years (Gump & Matthews, 2003). However, more encouragingly, Manson et al.’s (1992) review of the effectiveness of reducing diastolic blood pressure found that the risk of myocardial infarction can be reduced 2 to 3 per cent for each decline of 1 mm HG in diastolic blood pressure. High blood pressure can be reduced by increasing physical activity, decreasing cigarette smoking levels and maintaining a healthy weight (Brownson et al., 1993).

Obesity

Similar to high blood pressure, the association between obesity and CVD incidence is associated with other risk factors. Obesity is often associated with a diet high in fat, physical inactivity and high blood pressure. In a study of women with no pre-existing illnesses, Williamson, Pamuk, Thun, Flanders, Byers, and Heath (1995) found that there was a 106% increase in risk for CVD-related death among women with a BMI greater than 39 when compared to women with BMIs in the 27 to 30 range.
Although substantial evidence demonstrates the associations between obesity and other coronary risk factors, the results are mixed in relation to CHD. For example, some studies have shown the relationship between obesity and CHD as a positive linear association, while other studies have shown U OR J shaped relations, no association, and even inverse association (Simopoulos & Van Itallie, 1984). The inconsistencies in results may be due to methodological biases, such as failure to control for cigarette smoking or other physical illnesses (Manson et al., 1992).

Of the epidemiological studies that demonstrated a positive relationship between obesity and CHD, the nature of fat deposition was shown to be an important risk factor for CHD (Björntorp, 1995; Manson et al., 1992). In particular, abdominal fat appears to be associated with increased coronary risk (Lapidus, Anderson, Bengtsson, & Boscaus, 1989). While the direct association between obesity and CHD remains debatable, obesity has been found to be a major determinant of diabetes mellitus, another major risk factor for CHD.

**Diabetes Mellitus**

Diabetes is a disease in which the body is unable to sufficiently produce and/or properly use insulin, a hormone essential in the conversion of glucose into energy (Brownson et al., 1993). There are two types of diabetes mellitus, insulin-dependent diabetes mellitus (Type I) and non-insulin dependent diabetes mellitus (Type II) (Kannel & McGee, 1979a). It is the latter type of diabetes mellitus that is most likely to be associated with CHD (Foreyt & Poston, 1996). Diabetes Mellitus influences the development of CHD by either accelerating the atherogenesis process or is an independent risk factor for CHD (Manson et al., 1993).

Studies have shown that mortality rates for CHD are 2 to 3 times higher among diabetic men and 3 times higher for diabetic women (Kannel & McGee, 1979b). Determinants that influence diabetes mellitus are: obesity, age, smoking, and hypertension (Brownson et al., 1992), all of which are modifiable.
Effectiveness of Preventive Behaviour on Cardiovascular Disease

CVD remains the largest cause of premature death and death overall in Australia, accounting for 42 per cent of all deaths in 1996 (AIHW, 1998). However, CVD is not limited to its effect on mortality, since many of its morbid consequences result in considerable immobility and impairment of function, leading to an increased dependence on a range of social and health services among survivors.

Given these consequences, prevention strategies have important ramifications for public health. As increasing evidence supports the notion that modest changes in one or more risk factors can have a large health impact, an important focus in research is on prevention rather than cure. Prevention research commonly attempts to control major preventable risk factors at the individual level (National Health and Medical Research Council, 1996).

There are three levels of prevention strategy: primary, secondary and tertiary. Primary prevention is defined as taking action to prevent a disease/illness or injury. Secondary prevention refers to identifying and treating a disease early, such as illness screening. Finally, tertiary prevention refers to minimising the effects of an illness, such as adherence to medication regimes (Allen, 1998). In relation to CVD, the widespread identification of “life-style” risk factors has led to a substantial amount of research and interventions examining primary preventive strategies.

The impact of the primary preventive approach can be clearly seen in several large control studies. For example, the Framingham Study followed three independent cohorts of men aged 50-59 years (in 1950, 1960 and 1970) over a ten-year period and found that cumulative mortality from CVD disease was 43% less in the 1970 cohort compared to the 1950 cohort and 37% less than the 1960 cohort (Dawber, 1980). Similarly, Muldoon et al. (1990) reviewed the effects of dietary changes on CVD for six randomised trials of a total of 24,847 participants. The authors found that individuals in the dietary intervention group demonstrated a significant reduction in serum cholesterol and reported lower CVD deaths compared to controls.

In contrast, the WHO collaborative trial (WHO, 1986) and the Multiple Risk Factor Intervention Trial (MRFTI) (MRFTI, 1982) found altered risk factors did not reduce CHD. Both studies randomly allocated thousands of participants to treatment and control groups. Individuals in the treatment groups were provided with treatment for hypertension, counselling for cigarette smoking and dietary advice for lowering
blood cholesterol levels. Results from both studies found no differences between the two groups in CHD or overall mortality (MRFTI, 1982; WHO, 1986). The reasons these two studies failed to show the beneficial effects of lifestyle changes on CHD mortality may be due in part to a trend toward higher rates of deaths from other illnesses, such as cancer. Furthermore, these studies did not control for real behavioural changes and the intervention may not have been long enough to detect real changes and therefore the studies may have had insufficient statistical power to detect group differences in mortality associated with the treatment group.

Despite the equivocal results of past studies, the death rates from cardiovascular disease in Australia have been declining over the past two decades, and this decline has been attributed to improved medical treatments and awareness and a reduction in lifestyle CVD risk factors (AIHW, 1998). Dobson (1987) concluded that a substantial portion of the decline in CVD death rates in Australia from the 1960s to the 1980s was due to changes in lifestyle, particularly to reduction in cholesterol levels, systolic blood pressure and cigarette smoking.

Summary

In summary, the personal costs as well as the economical and social costs of CVD are substantial and widespread. However, because CVD has the potential to be prevented, increasing attention has tended to focus on amendable, known cardiovascular risk factors. As such, control of these modifiable risk factors, at both the population and individual levels, is the key to primary and secondary prevention of CVD. Strategies for CVD prevention, like mass intervention approaches represent an ideal approach for health professionals and the community. These approaches aim to achieve a community-wide reduction in risk factors, usually by altering behaviour within a population, such as increasing physical exercise, modifying diet, or reducing cigarette smoking levels.

Indeed, much progress has been made in the fight against CVD in Australia, and some risk factors have improved for the general population, but these benefits have not been uniformly distributed among all Australians (AIHW, 1998). Certain population groups have reported higher CVD related mortality and morbidity rates. Indigenous Australians, people of lower socio-economic status, and people with mental illness appear to be the most disadvantaged (Davidson et al., 2001). CVD continues to be the most significant cause of natural mortality and morbidity affecting
individuals with a mental illness (Coghlan et al., 2001; Davidson et al., 2001). Reasons for this discrepancy may be attributed to the fact that mass campaigns and public health messages have been more effective in certain sections of the population than others, or that people with mental illness may have higher cardiovascular risk behaviours compared to the general population.
CHAPTER THREE
Psychiatric Disability and Cardiovascular Disease

Overview of the Chapter
This chapter provides an overview of the definition and characteristics of psychiatric disability, with a particular focus on schizophrenia and Major Depressive Disorder (MDD). The chapter then provides a brief literature review on the prevalence of CVD among individuals with psychiatric disabilities. This chapter concludes with a discussion of the health behaviours of individuals with psychiatric disabilities and the consequences of these health behaviours in the development of CVD.

Psychiatric Disability
Mental illness is a common health problem and is quickly becoming one of the leading causes of disability in the world. The World Health Organisation (1996) projected that mental illness will become the second most important cause of global disease burden in the next century, second only to ischemic heart disease.

People with mental illness are among the most marginalized people in our community (Bijl & Ravelli, 2000; Felker, Yazel, & Short, 1996). The consequences of mental illness extend beyond the direct symptoms of the illness. Mental illness is often pervasive, affecting many aspects of a person’s life (Sanderson & Andrews, 2002).

Evidence has shown that persons with a mental illness suffer from a number of functional limitations, including poorer physical, psychological, and role functioning. For example, Broadhead, Blazer, George, and Tse (1990) estimated that people with major depression are five times more likely than individuals with no mental illness to be unproductive or have greater difficulty functioning in their normal roles. Consistent with this conclusion, Goering, Lin, Campbell, Boyle, and Offord (1996) found that compared to the general population, people with a mental illness have a greater number of days during which they are unable to function at full capacity, reporting an increased number of disability days.

Although there is a growing agreement that mental illness creates a heavy burden on an individual’s functioning capacity, studies have shown that the population of individuals who are disabled and the severity of the disablement vary according to the
type of mental disorder (Basset, Chas, & Folstein, 1998; Bijl & Ravelli, 2000). In a study that measured mental health-related disability across various common mental health disorders in Australia, Sanderson and Andrews (2002) found that the level of disability varied substantially with diagnosis. Disability was particularly prominent among participants who had a mood disorder, anxiety disorder, personality disorder and psychosis. Similarly, Bijl and Ravelli's (2000) study reported that among the mental illnesses investigated, depression and schizophrenia were the most disabling, and were significantly associated with physical morbidity.

While much research has documented the relationship between certain types of mental illnesses and physical morbidity, depression and schizophrenia appear to be the most investigated of all mental illnesses (Harris & Barraclough, 1998; Koran et al., 1989; Martin, Cloninger, Guze, & Clayton, 1985). These two mental illnesses are also the two most common disorders reported in psychiatric rehabilitation centres in Victoria, Australia (Spink, 2000). Therefore, the current thesis will limit its focus only to the associations between health behaviours, depression and schizophrenia.

**Major Depressive Disorder (MDD)**

Depression is a debilitating and life-disrupting disorder that causes significant distress and impairment in areas of emotional, behavioural, somatic and cognitive functioning (American Psychiatric Association, 2000). Depression comes in different forms. It can range from sadness and unhappiness to extreme misery and despair. The American Psychiatric Association (APA, 2000) classifies Unipolar Depressive Disorders into three categories: Major Depressive disorder (MDD), Dysthymia, and Depressive Disorder Not Otherwise Specified. These three categories present variations in symptoms, severity and persistence. MDD will be the focus of this thesis.

MDD is manifested by a combination of symptoms that interfere with the ability to work, sleep, eat and enjoy once pleasurable activities (APA, 2000). MDD is characterised by one or more major depressive episodes without a history of manic, mixed or hypomanic episodes (APA, 2000). The Diagnostic Statistical Manual, fourth edition, Text Revision (DSM-IV-TR) criteria for a major depressive episode requires the person to experience at least five out of the possible nine symptoms for most of the day, nearly every day, over a period of two weeks or more, and there must be a change in the individual's prior level of functioning (APA, 2000): depressed
mood, loss of interest in or pleasure in activities, significant weight loss/gain, insomnia/hypersomnia, psychomotor retardation/agitation, fatigue/loss of energy, feelings of worthlessness or guilt, diminished thinking, concentration or indecisiveness and recurrent thoughts of death, suicidal ideation, attempt or presence of suicidal plan. However, at least one of the two essential features in clinical depression (depressed mood or loss of interest or pleasure in activities) must be present in order to suspect a diagnosis of major depressive disorders, the other seven features of MDD are additional symptoms.

The degree of impairment associated with MMD varies. If impairment is severe, the person may lose the ability to function adequately in significant areas of his or her life. These activities may include performing minimal self-care, sleep disturbances, work and social activities (APA, 2000).

_Schizophrenia_

Schizophrenia is a complex, heterogeneous disorder that affects a person's cognitions, affect and behaviour. It is a disorder that causes chronic disability. It is characterised by extreme disruptions of thought, emotion, behaviour, sensation and perception, and motivation (APA, 2000).

The DSM-IV-TR diagnostic criteria for schizophrenia require two (or more) symptoms, namely, delusions, hallucinations, disorganised speech, grossly disorganised or catatonic behaviour and negative symptoms, that have been present for a significant portion of time during a 1-month period (or less if successfully treated) (APA, 2000). In addition to these signs and symptoms, the person’s functioning must have declined markedly below the highest level of functioning achieved prior to the disorder.

Cognitive impairment is the hallmark of schizophrenia. Such impairment manifests in a number of ways. Three particularly significant groups of cognitive symptoms are impaired reality testing (sense of reality is affected, e.g., poor judgement and insight), form of thought (thought disorders, e.g., impairment in goal-directed thought, such as problem solving, speech and reasoning), and content of thoughts (delusions - false beliefs that are irrational and resist refutation, such as delusions of reference, grandeur and persecution) (APA, 2000).

Schizophrenia is also characterised by impairment in emotion (inappropriate affect, anhedonia, and flat affect), impairment in behaviour (co-ordination, tremors;
odd, eccentric mannerisms and catatonia), impairment in sensation and perception (hallucination, body image aberration and proprioception) and impairment in motivation (apathy, lack of energy, poor self-care and lack of efforts in work, school or social activities) (APA, 2000).

**Cardiovascular Disease and Mental Illness**

It has been well documented that individuals with mental illness report high levels of mortality and higher physical health problems compared to the general population and other matched control groups (Baxter, 1996; Coghlan et al., 2001; Koran et al., 1989; Lewinsohn, Seeley, Hibbard, Rohde, & Sack, 1996; Mortensen & Juel, 1993).

In a review of mortality and morbidity among psychiatric patients, Felker et al. (1996) reported that people with mental illness experienced two times higher mortality rates from natural and unnatural causes than the general population. Moreover, the most recent and comprehensive study conducted in Western Australia reported that, on average, individuals with severe mental illness live between 25 and 30 years less than people in the general population (Coghlan et al., 2001). Of the physical illnesses, CVD remains the most important cause of death and physical impairment among people with a mental illness (Coghlan et al., 2001).

Collectively, studies have shown that people with psychiatric disabilities report disproportionately high blood pressure, as well as bowel, breathing and heart problems compared to the general population (Berren, Hill, Merikle, Gonzales, & Santiago, 1994; Left, 1996). These findings corroborate those of Lovett Doust (1980), who found that patients with schizophrenia were more likely to have abnormal variations in cardiac rate and were predisposed to obesity and type II diabetes. Similarly, Ruschena et al. (1998) found that individuals with a psychiatric illness died from cardiovascular related illness three times more frequently than the general population. Summary findings on risk of cardiovascular illness for individuals with schizophrenia and MDD compared to individuals from the general population can be seen on Table 3.1.

While the above studies showed significantly higher cardiovascular problems in individuals with mental illness, several important limitations should be noted. Of particular significance is that many of the studies did not have concurrent comparison groups. Results for psychiatric population were generally compared with general
population data from past studies. Consequently, researchers were unable to determine the differences in the prevalence of risk factors between the two populations at a given time, the nature of the relationship between mental illness and physical illness and the underlying reasons for the association (Berren et al., 1994; Coghlan et al., 2001). Furthermore, participants in the above studies were predominantly sampled from hospital settings, so that high numbers of physical illnesses could be expected (Mortensen & Juul, 1993). As a result, obvious limitations in interpretations and generalization of findings to community samples are present. However, findings of high levels of CVD-related health problems have also been found in research conducted in various community and treatment settings (Dixon, Postrado, Delahanty, Fischer, & Lehman 1999, Farnam et al., 1999).

Table 3.1
Summary of Studies on Cardiovascular Illness and Psychiatric Illness

<table>
<thead>
<tr>
<th>Study &amp; Year</th>
<th>N</th>
<th>% or ratio of CVD related illness</th>
<th>Population Sample</th>
<th>Type of study</th>
<th>Control group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ford et al. (1994)</td>
<td>1,198</td>
<td>1.68</td>
<td>Depression</td>
<td>Prospective 35 years</td>
<td>Yes</td>
</tr>
<tr>
<td>Simonsick et al. (1995)</td>
<td>10,294</td>
<td>2.3 - 2.7</td>
<td>Depression</td>
<td>Prospective 22 years</td>
<td>Yes</td>
</tr>
<tr>
<td>Baxter (1996)</td>
<td>6,952</td>
<td>1.47</td>
<td>Schizophrenia and affective disorders</td>
<td>Historical cohort Prospective 18 years</td>
<td>Yes</td>
</tr>
<tr>
<td>Pratt et al. (1995)</td>
<td>1,551</td>
<td>4.2</td>
<td>Depression</td>
<td>Prospective 13 years</td>
<td>Yes</td>
</tr>
<tr>
<td>Rusczena et al. (1998)</td>
<td>987</td>
<td>2.9</td>
<td>Schizophrenia</td>
<td>Cross-sectional Historical cohort</td>
<td>Yes</td>
</tr>
<tr>
<td>Dixon et al. (1999)</td>
<td>719</td>
<td>75%</td>
<td>Schizophrenia</td>
<td>Cross-sectional Historical cohort</td>
<td>No</td>
</tr>
<tr>
<td>Coghlan et al. (2001)</td>
<td>240,000</td>
<td>1.5</td>
<td>All mental illnesses</td>
<td>Historical cohort</td>
<td>Yes</td>
</tr>
<tr>
<td>Jonas &amp; Mussloino (2000)</td>
<td>6095</td>
<td>1.70</td>
<td>Depression</td>
<td>Prospective 22 years</td>
<td>Yes</td>
</tr>
<tr>
<td>Pecninix et al. (2001)</td>
<td>2,847</td>
<td>1.6</td>
<td>Depression</td>
<td>Prospective 4 years</td>
<td>Yes</td>
</tr>
</tbody>
</table>
As more data accumulate on the prevalence of cardiovascular illnesses among individuals with a mental illness, it is increasingly important to understand the underlying factors associated with ill health in individuals with psychiatric disabilities. The reasons for the high mortality rates have been speculative and have yet to be confirmed by systematic research. Certain risk factors for the elevated mortality rates have been identified; of these, behavioural and lifestyle factors appear to be significant contributors. Mental illness is associated with behaviours that carry high health risks, such as smoking, alcohol and other substance abuse, poor diet and lack of exercise (Brown, et al., 1999; Davidson et al., 2001; Farnam et al., 1999).

The following discussion begins with a brief description of protective health behaviour. The discussion then focuses on sedentary lifestyle, poor diet and cigarette smoking among individuals with psychiatric disabilities and the influence of adopting protective health behaviours on cardiovascular health of individuals with psychiatric disabilities.

**Protective Health Behaviours among Individuals with a Psychiatric Disability**

Protective Health Behaviours (PHB), defined as behaviours that people undertake for the purposes of preventing or detecting disease in an asymptomatic stage, have increasingly been recognised as an essential element of health care in developed countries (Kasl & Cobb, 1996). PHBs encompass behaviours ranging from daily activities that require little effort, such as brushing one’s teeth, to more proactive behaviours such as exercise and cancer screening. The significance of these behaviours has been well documented (Bernard & Krupt, 1994; Harris & Gutten, 1979; Kirscht, Janz, & Becker, 1989).

For the purposes of this thesis, three PHBs will be discussed: physical activity, consumption of a low-fat diet and cigarette smoking cessation. These health behaviours were chosen because a sedentary lifestyle, poor diet and high levels of cigarette smoking have been shown unequivocally to be the three most prominent health behaviours contributing to the poor cardiovascular health of individuals with psychiatric disabilities (Farnam et al. 1999; Galuska, Will, Serdula, Earl, & Ford,
1999; McCreadie, 2003). The following sections focus on these three cardiovascular health risk behaviours.

**Physical Inactivity**

Research on exercise patterns among people with psychiatric disabilities has indicated that sedentary behaviours are commonly reported by this population (Brown et al., 1999). Studies have demonstrated that as many as 60% of people with psychiatric disabilities reported below average physical activities (Davidson, Judd, Jolley, Hocking, & Thompson, 2000; Farnam et al., 1999), despite the positive effects of exercise on mental health (Camacho, Roberts, Lazarus, Kaplan & Cohen, 1991; Wyshak, 2001) and physical health (Haskell, 1994; Paffenbarger et al., 1986). For example, in a comprehensive review of the literature on exercise as an adjunct treatment for schizophrenia, Faulkner and Biddle (1999) found that exercise alleviated some of the negative symptoms of schizophrenia. While it is well documented that physical inactivity is common among people with a mental illness, very little is known about the attitudes and motivation towards physical exercise in this population. There is also limited available literature regarding the extent to which persons with a mental illness may be amenable to exercise participation.

Among the psychological factors that have been examined in the general population, self-efficacy (the belief in one’s ability to carry out an action) (Bandura, 1977), self-motivation, belief in the health benefits of exercise and readiness to change have been associated with higher levels of physical activity (Giles-Cortie & Donovan, 2002). However, the extent to which these variables are applicable to individuals with psychiatric disabilities has yet to be determined.

Readiness to change exercise behaviours among this population has been shown to differ dramatically from individuals without a mental illness (Rogers et al., 2001). One possible explanation for this difference is that individuals with a mental illness may be less aware of their need to change and the risks associated with physical inactivity, and thus they remain more entrenched in the pre-contemplation stage. Therefore, it is possible that limited awareness of one’s personal vulnerability to lack of exercise-related illnesses may have led to more ambivalent attitudes about exercise participation among individuals with a mental illness. This potential relationship merits further investigation.
In contrast, recent studies on physical exercise suggest that individuals with schizophrenia, in fact, have levels of knowledge and attitudes about exercise that are similar to those of the general population, but it is their perception of their abilities to exercise and the actual barriers that limits their exercise behaviour (Faulkner & Biddle, 1999; Faulkner & Sparkes, 1999; Pelham, Campagna, Ritvo, & Birnie, 1993). The most often cited barriers in an ethnographic study of schizophrenia and exercise were a lack of confidence, confidence to leave the place of residence and exercise by oneself and low self-esteem to initiate exercise behaviour (Faulkner & Sparkes, 1999).

For individuals with depression, on the other hand, depressive symptoms such as loss of pleasure and fatigue have been hypothesised to contribute to their reluctance to participate in physical activity (O’Neil, Dunn, & Martinsen, 2000). Furthermore, the low level of physical fitness among individuals with depression has been suggested to impact on exercise participation. A study of psychiatric inpatients found that individuals with depression had fitness levels that were significantly lower than patients without depression (Martinsen, Hoffart, & Solberg, 1989).

The inconsistencies in the literature on exercise participation among individuals with a mental illness underscore the need to identify cognitive factors underlying exercise participation in this population. Research is therefore needed, not only to explore levels of exercise among individuals with psychiatric disabilities, but also to explore this population’s perceived vulnerability to health threats and the severity of health threats in relation to physical inactivity, and their self-efficacy to carry out recommended physical activities.

**Diet/Nutrition**

Research has consistently reported that individuals with a mental illness have a poor diet, with food high in fat, salt and sugar (Davidson et al., 2000). Furthermore, this population tends to have little knowledge about nutrition and is eight times more likely to be obese than the general population (Farnam et al., 1999).

In relation to daily living skills, McDougall (1992) concluded that poor diet and nutrition among people with chronic schizophrenia is attributed to individuals’ lack of skills in shopping and cooking rather than to attitudes and intentions. In support of this hypothesis, other studies have found that individuals with psychiatric disabilities report lower scores on nutrition knowledge than those of the general population.
(Osler, Louis, & Ramussen, 1992; Wallace, & Tennant, 1998; Winkleby, Fortmann, & Barrett, 1990). In addition, McCredie (2003) asserted that the poor dietary choices of people with schizophrenia may be as a result of psychiatric symptoms of apathy, which tends to lead to consumption of food that is convenient. Similarly, common symptoms of depression, such as changes in appetite and decreased energy and motivation, may significantly affect food preparation and diet (Laidcrach-Hofmann, Kupferschmid, & Mussgay, 2002).

With few exceptions, the literature on diet and nutrition for individuals with psychiatric disabilities has often focused on individuals’ non-compliance to dietary recommendations, rather than on why these individuals maintain unhealthy dietary practices (Davidson et al., 2000; Farnam et al., 1999). This is surprising, as studies in the general population have consistently found that certain personal characteristics, such as stress, social isolation, low locus of control and lack of knowledge on nutrition, are predictors of high fat diet and poor adherence to a healthy diet (Holm, Nordevang, Ikval, Hallstrom, & Callmer, 1990; Morley & Perry 1991). Therefore, it is important that research clarifies underlying factors and barriers to a healthy diet among individuals with psychiatric disabilities, rather than continuing to document actual dietary intake.

Cigarette Smoking

Cigarette smoking is frequently observed in patients with schizophrenia. One study has reported the rate to be as high as 88% (Hughes, Hatsuakami, Mitchell, & Dahlgern, 1986), nearly three times the rate in the general population and higher than the elevated rates of smoking among patients with other psychiatric illnesses. Lower rates have been reported in more recent studies (Davidson, et al., 2002), but these rates were still substantially higher than for the general population. For example, Kelly and McCreadie (1999) found that the rate of cigarette smoking in 168 schizophrenia patients was more than twice that of a local population sample (58% versus 28%). However, the differences between the two populations narrowed when the study compared subjects who had smoked at some time in their lives (73% versus 53%). Moreover, fewer patients with schizophrenia than participants from the general population reported that they were able to quit (10% versus 53%) (Kelly & McCreadie, 1999). Therefore, individuals with schizophrenia appear to have higher levels of addiction than the general population sample; 68% of patients with
schizophrenia smoked 25 or more cigarettes per day, compared to 11% of general population smokers. Thus, schizophrenia patients' high level of cigarette addiction almost certainly contributes to their reduced life expectancy (Kelly & McCreadie, 1999).

Similarly, the positive association between cigarette smoking and affective disorders, particularly MDD has been well documented (Breslau, Kilbey, & Andreski, 1991, 1993; Fergusson, Lynskey, & Horwood, 1996; Martini, Wagner, & Anthony, 2002). For example, in a 21-year longitudinal study of a community sample, Fergusson, Goodwin, and Horwood (2003) found that adolescents with major depression were two times more likely to smoke cigarettes than young people who did not meet the criteria for MDD. This finding highlighted the possible causal link between smoking and depression. In another prospective study, the Stirling County Study provides a 40-year perspective on the association between depression and smoking between 1952-1992 (Murphy, Horton, Monson, Laird, Sobol, & Leighton, 2003). Even over this extensive period, when increased public awareness of health hazards of smoking and use of nicotine increased and then declined, the findings indicated that participants who became depressed were more likely to initiate smoking, to continue smoking and not to cease smoking than participants who never became depressed. Interestingly, smoking at baseline did not predict the onset of depression, but participants who became depressed at baseline were more likely to start, continue and were less likely to cease smoking compared to individuals who never had depression (Murphy et al., 2003). This result suggests that individuals with MDD may be using nicotine to “self-medicate” to attenuate depressive symptoms (Breslau et al., 1991; Fergusson et al., 1996, 2003)

Although numerous studies continue to document high levels of cigarette smoking rates for Australians living with a psychiatric illness, most research has not investigated reasons for high smoking patterns in this population. In general, determinants of smoking cessation have mainly come from research in the general population and the determinants of smoking cessation among individuals with psychiatric disabilities have yet to be extensively investigated. However, it is plausible that smoker characteristics that are important for success in quitting in the general population, such as perceived severity of smoking-related illnesses/symptoms and perceived ability to quit and readiness/intention to quit, can be applied to people with psychiatric disabilities (Glynn & Sussman, 1990).
Recent literature suggests that individuals with a mental illness have a greater number of smoking cessation attempts compared to the general population, but yet are less successful in maintaining abstinence (Green & Pope, 2000). Although speculative, it is possible that individuals with mental illness may experience unique quitting motives and barriers compared to individuals without a mental illness. For example, Dixon, Hass, Weiden, Sweeney, and Frances, (1991) found that smokers with a mental illness underestimated the “cons” of smoking, especially the personal and general health risks of smoking, and overestimated the “pros”, perceiving smoking to be a more useful stress-control and psychiatric symptom-control tactic than smokers without a mental illness.

Much debate has centred on the “self-medication” theory regarding the association between nicotine and mental illness (de Leon, Tracey, McCann, McGrory, & Diaz, 2002; Kandel & Davies, 1986; Murphy et al., 2003). As indicated in the Stirling County Study and other studies, the findings that participants who became depressed smoked more than those who had never been depressed lends support to the view that nicotine alleviates certain psychiatric symptoms, notably, dysphoric mood (Fergusson et al., 2003).

This nicotine “self-medication” theory also extends to individuals with schizophrenia. Increasing evidence suggests that nicotine enhances dopaminergic functioning, which partially diminishes the negative symptoms of schizophrenia and the negative symptoms caused by traditional antipsychotics, such as haloperidol (de Leon, Diaz, Roger, Browne, & Dinsmore, 2002; Hughes et al., 1986; Forchuk et al., 2002; Kelly & McCredie, 1999; Murphy et al., 2003). As such, low and negative mood may be a major factor contributing to smoking behaviours among individuals with a mental illness. Data also suggest that negative affect may be exacerbated during smoking cessation for smokers with a history of MDD (Hughes et al., 1986). Anda, Williamson, Escobedo, Mast, Giovino, and Remington (1990) found that smokers reporting higher levels of negative mood and depressive symptoms were less likely to quit than were smokers with less mood disturbance. Cigarette smoking may also serve as a relief from boredom and offer opportunities to socialise when many individuals with psychiatric disabilities are unemployed and isolated (Lohr & Flynn, 1992).

Despite these preliminary findings, there remains little understanding about why people with mental illness are more likely to smoke and less likely to quit than people
from the general population. Cognitive factors such as perceived barriers and benefits of smoking, and perceived ability to quit have not been researched, but nevertheless are important elements to be investigated.

Summary

Despite the high prevalence of physical inactivity, poor diet and cigarette smoking among individuals with psychiatric disabilities, little is really known about the ability of individuals with psychiatric disabilities to initiate and maintain health behaviour modifications. Of the limited studies that have explored health behaviours in this population, preliminary findings reveal that the impetus to adopt cardiovascular protective health behaviours is suppressed by a lack of perception of health threats, barriers and low self-efficacy (Farnam et al., 1999).

As increasing evidence supports the contention that modest changes in one or more risk factors can have a large health impact, the emphasis in research needs to be on prevention rather than cure. As a result, disease prevention that aims to achieve community-wide reductions in risk factors by altering behaviour within a population, is a strategy that should be adopted by health professionals and communities working with people with a mental illness. However, for behaviour to be changed, it is imperative to obtain a greater understanding of the reasons underlying PHBs.

Many theories have been proposed to explain and predict PHBs. The three most cited theories are the Health Belief Model (HBM), the Theory of Reasoned Action (TRA), and the Protection Motivation Theory (PMT) (Weinstein, 1993). These three PHB theories are all “value-expectancy” theories (Weinstein, 1993). These theories share the proposition that motivation toward protection results from perceived threat and the desire to avoid anticipated negative health outcomes (Weinstein, 1993). In other words, the individual behaviour is a function of both the subjective value of an outcome and the subjective probability (or expectancy) that a particular health behaviour will decrease a negative health outcome. These models are heavily reliant upon subjective interpretation of reality rather than objective reality. The following chapter provides an overview of three main theoretical approaches in predicting PHBs: HBM, TRA and PMT.
CHAPTER FOUR
Theoretical Approaches to Protective Health Behaviours

Overview of the Chapter
This chapter has five sections. The first provides a brief overview of health behaviour theories, outlining three main theoretical approaches to explain the adoption of protective health behaviours (PHBs): The Health Belief Model, Theory of Reasoned Action and Protection Motivation Theory. The following three sections explain and critically analyse the applicability of each theoretical approach in the investigation of cardiovascular health behaviours among individuals with psychiatric disabilities. The final section examines the importance of psychiatric symptoms and social support in relation to exercise, adherence to low-fat diet and smoking cessation among individuals with psychiatric disabilities.

Health Behaviour Theories: An Overview
Many theories and models have been developed to predict and understand health behaviours. For example, early behavioural theories conceptualised behaviour as a learnt process (Skinner, 1953), while other models emphasised the importance of environmental influences on behaviour (Alonzo, 1984). However, the most cited theories have focused more on human cognitions and emotions for understanding and predicting behaviour (Weinstein, 1993). Although it is not feasible to determine which model is more accurate than others and to develop a model that encapsulates all variables that are influential in health behaviour, Weinstein (1993) argued that it is important to acknowledge that some theories are better developed than others in terms of empirical evidence. Based on sound and supportive research data, Weinstein concluded that the Health Belief Model (HBM), the Theory of Reasoned Action (TRA), and Protection Motivation Theory (PMT) were the most established frameworks and were used more frequently than any other models to explain PHBs.

While many models of PHBs have been developed primarily to explain health behaviours among the general population, research on their applicability to minority populations, such as individuals with psychiatric disabilities, has virtually been nonexistent. Consequently, the literature fails to explain why individuals with psychiatric...
disabilities engage in health-risk behaviours, such as physical inactivity, unhealthy diets and cigarette smoking. Therefore, there is a need for research to address this deficiency in the literature, and there is value in extending the research to consider individuals with psychiatric disabilities.

The adoption of an established social-cognitive framework in the investigation of PHBs among individuals with psychiatric disabilities offers many advantages. First, cognitive variables have been identified as crucial determinants of health behaviours (Schwarzer, 1992). Second, health behaviour models provide a theoretical framework for research, as they determine the selection of variables that can be used to predict PHBs. Third, theoretical models provide factors that can be used to predict health behaviours, which can be targeted in prevention and intervention programs. Fourth, application of theoretical models to different sub-populations allows for comparison and examination of differences, providing valuable information to be incorporated into prevention and intervention programs, so that programs can be developed and tailored specifically to certain populations. Fifth, cognitive factors such as beliefs and attitudes are malleable, providing a vehicle to influence health behaviour change (Armitage & Conner, 2000).

In the subsequent sections, the HMB, TRA, and PMT will be discussed in relation to cigarette smoking, exercise participation and dietary change in the general population, as there has been no research to the author’s knowledge that has utilised these models among individuals with psychiatric disabilities.

**The Health Belief Model (HBM)**

The HBM (Janz & Becker, 1984) is probably the best-known theoretical model in predicting PHBs. The model proposes that the likelihood of protective behaviour is a function of several interacting cognitive processes; these include one’s perception of the susceptibility of getting an illness and the severity of the illness, and the evaluation of the benefits weighted against the barriers of a recommended behaviour.

According to the HBM, three cognitive processes are necessary in predicting people’s behaviour. First, an individual’s perception of susceptibility and severity of the disease needs to be high enough for the person to consider taking preventive action. Second, the individual must believe that the benefits of the preventive action outweigh the costs. Third, cues to action may include internal signals (pain or
discomfort) or external signals (health messages) that make the person aware of potential consequences (Strecher, Champion, & Rosenstock, 1997).

The HBM has been used extensively to predict a variety of health behaviours, including behaviours such as breast self-examination, immunisation, and safe sex behaviour (Kirscht et al., 1989; Weinstein, 1993). However, critics of the HBM have stressed the small amounts of variance explained in reported studies and that this model has only been moderately useful for research in one-off simple preventive behaviours, such as immunization and that its success has varied considerably in relation to lifestyle behaviours requiring more long-term change (Strecher et al., 1998). PHBs, such as exercise, adoption of low-fat diets and smoking cessation, are all difficult behaviours to change that require long-term commitment, and so have not been adequately explained by this model.

Many reasons have been proposed for the HBM’s poor performance to predict long-term behaviours. One notable reason is that the HBM does not make direct reference to self-efficacy, the contention that a given behaviour will be carried out successfully (Bandura, 1977; 1986). Furthermore, the influence of interpersonal, environmental and cultural factors on health behaviour is not addressed in the model (Strecher et al., 1997). Moreover, the HBM does not provide information in relation to the stability of an individual’s health beliefs, that is, how certain beliefs may change over time or in relation to other external variables (Weinstein, 1993). Another criticism of the model is its failure to consider the role of behavioural intentions, which have been shown to be a significant correlate of some health behaviours in previous studies (e.g., cigarette smoking) (Ajzen & Fishbein, 1980), so the absence of behavioural intentions in the model is a weakness of the HBM.

In summary, given the limitations of the HBM as specified above, the model was considered not to be sufficiently comprehensive to explain PHBs among individuals with psychiatric disabilities.

*The Theory of Reasoned Action (TRA)*

The Theory of Reasoned Action (TRA) (Ajzen & Fishbein, 1980), like the HBM, explains behaviours largely on the basis of attitudes and expectancies. However, the TRA differs from the HBM in its inclusion of subjective norms and behavioural intentions.
The TRA posits that intention is the determinant of behaviour. Intention to perform an action is influenced by two factors: an individual’s attitude (general positive/negative evaluation of the behaviour) and their subjective norm (global perception of social pressure) to perform the behaviour. This model assumes that human beings are reasonable, in control of their actions and can cognitively process available information and make decisions in a rational manner (Ajzen & Fishbein, 1980).

The TRA has been applied to most domains of health behaviour, including exercise, weight control and adherence to a medical regimen (Fleury, 1992; Godin & Shephard, 1986; Pender & Pender, 1986). However, several criticisms have been levelled at this model. First, many authors have suggested that the TRA is cumbersome to use, and a clear indication of the impact of individuals’ attitudes in maintaining change over time cannot be determined directly, because many studies have measured behavioural intent and behavioural outcomes concurrently (Weinstein, 1993). Second, the TRA failed to include perceived threat as a predictor of intention or behaviour. Perceived threat as described in the HBM (perceived susceptibility and severity) has received modest support as a significant predictor of health behaviours (Maddux & DuCharme, 1997; Sheeran & Abraham, 1996). As such, an individual needs to feel at risk before they are likely to take preventive action (Sheeran & Abraham, 1996). Third, the theory assumes a one-way linear relationship between attitudes, intentions and behaviour, ignoring the possibility of reciprocal effects such as behaviour affecting attitudes and beliefs (Lierman, Kasprzyk, & Benoliel, 1991). Fourth, the TRA has not been found to be successful at predicting complex behaviours that are not entirely under a person’s control (Madden, Ellen, & Ajzen, 1992). For example, having safe sex, losing weight, exercise participation and trying to quit smoking are all behaviours that are not completely under volitional control and external factors may have some influences (Liska, 1984). Last, the theory does not consider the role of self-efficacy in an individual’s intention to act on behaviours. To account for this shortcoming, Ajzen (1991) proposed the Theory of Planned Behaviour (TPB), an extension of the TRA with the inclusion of perceived behavioural control. Some researchers have argued that perceived behavioural control is a similar concept to Bandura’s (1977) self-efficacy (van Ryn, Lytle, & Kirscht, 1996). However, empirically, studies have indicated that these two concepts are separate constructs and that self-efficacy was a stronger predictor of behavioural
intention (Armitage & Conner, 1999; McCaul, Sandgren, O’Neil, & Hiniz, 1993; Terry & O’Leary, 1995). For example, Armitage and Conner (1999) in their three-month longitudinal study found that self-efficacy was a significant predictor of intention to consume healthy food (β = .37) and actual healthy food choice (β = .20), whereas perceived behavioural control was not a significant predictor of either healthy food choice intentions or consumption. In another longitudinal study, Terry and O’Leary (1995) examined exercise behaviour over a two-week period and found that self-efficacy predicted intention to exercise (β = .62) while perceived behavioural control did not significantly predict intention.

In summary, even though the TRA have been found to be useful in predicting a variety of healthy behaviours, the limitations, notably in relation to the exclusion of perceived threat and self-efficacy, suggest that this model was not the most optimal model to predict PHBs among individuals with psychiatric disabilities.

**Protection Motivation Theory (PMT)**

The PMT was originally developed to explain the role of fear in arousing attitude change and behaviour (Rogers, 1975). According to the theory, when an individual faces a threat, that threat communication (fear appeal) would initiate a corresponding cognitive mediating process. The process would, in turn, influence protection motivation and adoption of the recommended behaviour (Rogers, 1975). In 1983, Rogers revised the theory into a more general theory of cognitive change, due to increasing evidence indicating that fear has a limited role in changing peoples’ health beliefs and behaviour (Arnold, 1970; Lazarus, 1966, 1982).

As a result, the PMT posits two cognitive appraisal processes that mediate the choice of a coping behaviour: a threat appraisal and coping appraisal (Rogers, 1975) (Figure 4.1). The response to a health threat can be viewed as adaptive or maladaptive. The essential assumption of this theory is that a person’s desire or willingness to perform a health behaviour (protection motivation) is determined by the combination of these two appraisals. The threat appraisal involves fear arousal, the perception and evaluation of one’s personal vulnerability to the threat (perceived vulnerability) and the severity of the threat (perceived severity). The coping appraisal involves the perception and evaluation of one’s ability to perform the coping response (self-efficacy) and the effectiveness of the coping response in averting the threat (response-efficacy) (Rogers, 1983). In addition to the threat and coping appraisals,
Rogers (1983) also included barriers to a given behaviour. Barriers include rewards and costs. The revised PMT model proposed that 'threat appraisal' results from subtracting severity and vulnerability from internal/external rewards and that 'coping appraisal' results from subtracting response costs from response-efficacy and self efficacy (Rogers, 1983). Therefore, the model postulates that the higher the rewards of maintaining a maladaptive behaviour, the less threat is perceived, and the more likely the individual is to continue with the maladaptive behaviour. Similarly, the higher the cost of a recommended behaviour, the less likely the individual is to adopt it.

**Figure 4.1.**
Main components of the Protection Motivation Theory

The PMT has been applied to numerous PHBs, and the model has had moderate success in predicting health-related intentions and behaviours (Milne, Sheeran, & Orbell, 2000). Examples of topics include smoking cessation (Maddux & Rogers, 1983), condom use (Abraham, Sheeran, Abram, & Spears, 1994), cancer prevention practices (Hodgkins & Orbell, 1998), and cardiovascular disease risk reduction (Plotnikoff & Higginbotham, 1995). Results of these studies offer modest support for the threat and coping appraisal components of the model in predicting health-related intentions. Coping appraisal was found to be of greater utility than threat appraisal in the prediction of health-related intentions and behaviour. In relation to each PMT variable, self-efficacy showed the strongest and most consistent association with intention and behaviour.
Many strengths of the PMT have been identified. An advantage of the PMT over other health theories is that it has consistently been subjected to experimental evaluation (Weinstein, 1993). A further advantage of the PMT is that it has integrated several important theoretical aspects of other theories, producing a more complete and economical model. For example, the model adopts concepts of perceived vulnerability, severity, costs and rewards similar to those of the HBM and incorporates the predictive value of behavioural intentions as specified in the TRA. Furthermore, the PMT is the only one of the models reviewed by Weinstein (1993) to directly refer to Bandura's concept of self-efficacy (Bandura, 1977). Research on self-efficacy has yielded strong evidence that this variable is an essential component, if not the most important component, in an individual's decision to initiate lifestyle change (Bandura, 1977; Coelho, 1983; Weinburg, Huges, Critelli, England, & Jackson, 1984).

In conclusion, although the PMT has provided evidence for understanding PHBs among the general population, no study to date, to the author's knowledge, has applied the PMT model to individuals with psychiatric disabilities. It would, therefore, seem worthwhile to consider the PMT as an appropriate model to explain PHBs among individuals with psychiatric disabilities. As such, evidence for PMT research will now be considered in relation to cardiovascular PHBs in more detail.

**Empirical Support for PMT**

There are a substantial number of studies which have used the PMT as a framework to understand and predict a wide range of behaviours. The majority of these behaviours are health-related behaviours (Rogers & Prentice-Dunn, 1997). Moreover, results of these studies have found good support for the PMT and its components in predicting PHBs (Rogers & Prentice-Dunn 1997).

There are several features of the PMT that are important in relation to PHBs. Its inclusion of factors that increase or decrease maladaptive responses is applicable to situations where there is an on-going maladaptive behaviour, such as cigarette smoking. For example, Maddux and Rogers (1983), in an experimental study that manipulated the PMT variables, found that variables in the model were able to explain 55% of the variance in smoking cessation intentions. Consistent with this finding, Plotnikoff and Higginbotham (1995, 1998) found that variables of the PMT were able to explain 27% of the variance for low-fat diet behaviour, and 46% of the variance for
intentions to adopt a low-fat diet for both cardiac sufferers and a community population. Likewise, in the same studies, the PMT explained a moderate amount of variance for exercise behaviour (32%-54%) and exercise intentions (29%-53%) for the two populations.

Further support for the PMT is provided by several meta-analytic studies. For example, Sheeran and Orbell's (1998) meta-analysis revealed that average correlations for all components of PMT were small to medium for predicting behavioural intentions (all r's > 0.35). In a more recent meta-analytic review of the PMT, Milne et al. (2000) examined the PMT variables in relation to behavioural intention, concurrent behaviour, and subsequent behaviour across a range of correlational and experimental studies. The review found that all the PMT variables significantly correlated with behavioural intention and concurrent behaviour in the predicted direction. The largest association in the PMT framework was between intention and concurrent behaviour (r = .52) and between intention and subsequent behaviour (r = .42). When comparisons between the two appraisals of the PMT were made to determine which appraisal provided a better prediction of intentions and behaviours, the coping-appraisal component of the model was found to have greater and more consistent predictive validity than the threat-appraisal component. Coping appraisal was positively associated with behavioural intention, concurrent behaviour and subsequent behaviour for various health behaviours, such as breast self-examination, smoking cessation and adopting a healthy diet.

In another meta-analysis, Floyd, Prentice-Dunn, and Rogers (2000) reviewed similar studies to those of Milne et al. (2000), differing only in the focus of the review and the outcome measures. In this meta-analytic review, the studies analysed both pre- and post-homogeneity adjustments, and the dependent variables were grouped into different stages of behavioural change (initiation, cessation and maintenance) across different health behaviours (cancer prevention, cigarette smoking, diet and exercise). Consistent with Milne et al.'s (2000) findings, coping appraisal was found to be of greater utility than threat appraisal in the prediction of health-related intentions. However, in terms of different stages of behavioural change (initiation, cessation and maintenance), findings indicated that coping appraisal appeared to be more strongly associated with behavioural cessation and maintenance, while threat appraisal was more highly associated with behavioural initiations. These results corroborate past research conclusions, which assert that self-efficacy and response-
efficacy are important aspects of more difficult and long term behavioural changes, such as those seen in behavioural cessation and maintenance, because individuals need to have special skills to adopt complex behaviours (Coelho, 1983; Schwarzer, 1992; Weinstein, 1993). In contrast, threat appraisal is more influential with behavioural initiations, as this variable has been theorised to be important in prompting and activating salient cues that stimulate a decision to act, and not necessarily to maintaining behavioural change (Strecher et al., 1997).

In summary, considerable research on PMT has provided evidence for the utility of all the PMT variables in predicting behavioural intentions and behaviour. These findings are particularly salient for behaviours which are strongly reliant on self-efficacy, such as exercise, smoking cessation and dietary control. Therefore, it was concluded that the PMT is the most comprehensive and appropriate theoretical framework to utilise in the present research proposal. Despite the general support for the PMT, researchers have questioned the completeness of the model (Ho, 1992; Sheeran & Orbell's 1998; Weinstein, 1993). The model precludes the investigation of other individual and environmental factors that are also influential in PHBs.

For people with psychiatric disabilities, intentions and motivation to adopt behavioural change are not just influenced by their perceptions and cognitions. Variables such as psychiatric symptoms and social support have been found to be equally influential to health-related decisions among this population (Cohen & Wills, 1985; Dixon et al., 1991). On this basis, it is proposed that the prediction of PHBs may be improved by adding psychiatric symptoms and social support into the model, as these two variables have been found to be theoretically useful in explaining exercise, smoking cessation and adherence to low-fat diet among individuals with psychiatric disabilities (Farnam et al., 1999; McCreadie, 1982). The specific nature of psychiatric symptoms and social support in relation to PHBs is the topic of discussion in the following section.
Additional Variables Related to Protective Health Behaviours

This section examines other variables pertinent to health behaviours among individuals with psychiatric disabilities. The variables include psychiatric symptoms and social support.

Psychiatric Symptoms and Protective Health Behaviours

Although there is a paucity of literature which has examined how psychiatric symptoms contribute to PHBs, studies have consistently concluded that particular psychiatric symptoms predict poor prognosis in physical health and adoption of PHBs (Holmberg & Kane, 1999). For example, people with chronic psychiatric disabilities often have significant negative symptoms of apathy, social withdrawal, and general lack of motivation, which are not compatible with adequate self-care (Brown et al., 1999). Fruin et al. (1991) found that feelings of hopelessness, as often found in individuals with depression, inhibit protection motivation of behaviour intention and actual behaviour. Active psychotic symptoms, such as hallucinations may also inhibit individuals from seeking and engaging in appropriate health-care activities. Consequently, they may neglect their personal hygiene and health, adopting a lifestyle conducive to physical illnesses. For example, McCreadie (1982) found that severely disabled individuals diagnosed with schizophrenia have high daily living deficits—individuals with schizophrenia were ill-prepared to take care of their basic needs for food, shelter and self-care independently. Finally, cognitive impairments, such as difficulties in information processing, short-term memory deficits and distractibility have been shown to impede the use of standard interventions for smoking cessation (Braff, 1993), adherence to medical regimes (Marshall, Hays & Mazel, 1996), initiation and persistence in goal-directed activities (Green, 1996) and engaging in lifestyle change, such as physical activity (Farnam et al., 1999).

In relation to cigarette smoking, psychiatric symptoms have been implicated in explaining the association between smoking and mental illness (Dixon et al., 1991; Lohr & Flynn, 1992). The ‘self-medication’ hypothesis proposes that stimulant effects of nicotine alleviate negative symptoms of schizophrenia and depression. Consequently, the relief that nicotine provides for negative moods becomes a powerful reinforcer of smoking, and thus contributes to the high rates of smoking and
lack of smoking cessation among individuals with depression and schizophrenia (Lohr & Fynn, 1993).

Although this self-medication theory has gained support following the discovery that certain substances can modify mood through the activation of the mesolimbic dopamine system (Hall, Ricardo, Reus, & Sees, 1993; Pontieri, Tanda, Orzi, & DiChiara, 1996), results remain equivocal. This inconsistency is most evident in studies which have reported that as high as 90% of patients started smoking before the first episode of their psychiatric illness (Glassman, 1993; Kelly, & McCreaddie, 1999). Kelly and McCreaddie (1999) also found that there were no differences between smoking and non-smoking individuals with schizophrenia when levels of symptoms were taken into account. However, Ziedonis, Kosten, Glazer, and Frances (1994) found that among schizophrenia patients, patients who were regular smokers showed reduced negative symptoms in comparison to non-smoking patients.

The relationship between cigarette smoking and psychiatric symptoms can also be explained by the effect of nicotine in alleviating the side effects of antipsychotic medication (Lohr & Flynn, 1992). Nicotine has been found to reduce the side effects of psychotropic drugs primarily in two ways: increase the release of dopamine and increase drug metabolism and therefore reduce the effectiveness of antipsychotic medications (Forchuk et al., 2002). As such, psychiatrists often prescribe more medication to schizophrenia patients who are smokers than non-smokers, because higher dosage of antipsychotic is required to achieve the desired clinical effect. A recent epidemiological study of 1317 patients with schizophrenia supports these proposals, indicating that psychiatrists tend to prescribe higher daily dose of antipsychotics in smokers (de Leon, Dadvand, Canuso, White, Ostanilla, & Simpson, 1995). Other studies show similar results, with smokers receiving a higher dose of antipsychotics (Ziedonis et al., 1994).

Patients taking a high dosage of antipsychotic medications have been shown to be more susceptible to greater weight gain, a risk factor for CVD (Gothelf et al., 2002; Riccitelli & Baker, 2002). Therefore, the tendency to prescribe higher dosage of antipsychotics for individuals who smoke cigarettes in order to manage their psychiatric symptoms, places these people at further risk of CVD.

In summary, on the basis of preliminary findings between psychiatric symptoms and health behaviours, psychiatric symptoms partially explain the underlying reason why individuals with psychiatric disabilities have difficulties
adapting and maintaining PHBs. However, much research is needed to further enhance our understanding of how psychiatric symptoms interact with socio-cognitive factors of health behaviours and how this interaction impacts on the adoption of physical activity, diet change and smoking cessation. For this reason, the inclusion of psychiatric symptoms into the PMT may enhance the explanation and prediction of PHBs and the risk of CVD.

**Social Support and Protective Health Behaviour**

The social environment has been recognised as being important for people’s well being (Cohen & Wills, 1985). House, Landis, and Umberson (1988) reviewed evidence from six large prospective studies found that mortality is higher among more socially isolated individuals. These associations held even after inclusion of standard control variables such as age and initial health status.

Social support is a complicated and multidimensional construct conceptualised and measured in the literature in many ways (House et al., 1988). One conceptualisation describes social support as the social resources that people perceive to be available, or that are actually provided to them by other individuals and groups (Cohen, Gottlieb, & Underwood, 2000).

The fact that social support has been defined and measured in many ways makes research difficult to interpret and integrate (Cohen & Wills, 1985). However, the patterns of results across a range of studies strongly suggest that there is a positive association between social support and mental and physical health (Cohen & Wills, 1985).

In the general population, social support has been found to play an important role in the maintenance of health and the stimulation of health behaviour (Cohen & Wills, 1985; Geertsen, 1997). For example, social support, particularly, emotional support from family and friends has been shown to be a critical factor in the success of an individual’s smoking cessation (Goldberg Ockene, Kristeller, Kalan, Landon, & Hosmer, 1993; Murray et al., 1995). Encouragement from friends and family has also been associated with increase in exercise participation and adherence to dietary change (Allgöwer, Wardle, & Steptoe, 2001; Kelsey, et al., 1996).

People with psychiatric disabilities, however, represent an extremely isolated population. These individuals often report small and weak social networks (Cohen & Sokolovsky, 1978). Reasons for the limited social networks among this group can be
hypothesised to be a result of repeated hospitalisations, disruptive or antagonistic behaviours when actually ill, or loss of employment and social status (Atkinson 1986).

To date, it is not clear whether findings of the positive effects of social support in the general population can apply to individuals with psychiatric disabilities, as there has been limited research in this population and findings have yielded mixed results (Rudnick & Kravetz, 2001). For example, researchers found that patients with schizophrenia who had a larger social network lived on average 25% longer than patients that had little or no social interaction (Farnam et al., 1999). This result contradicts that of past research which emphasised the importance of perceived rather than objective levels of social support (House et al., 1988; Pedlar, Lord, & VanLoo, 1990). Furthermore, Vitaliano, Mauro, Russon, Katon, DeWolfe, & Hall (1990) found that the beneficial effects of social support were not apparent among people with psychiatric disabilities, because these individuals make less use of existing social supports when stressed.

In addition to the inconsistent findings of the effects of social support among people within a psychiatric population, the mechanisms through which social support affects health behaviour are also far from established (Cohen & Wills 1985). One important source of ambiguity in the literature is whether social support has a direct effect on health behaviours (main effect) or acts as a buffer to stress by providing aid or encouraging health behaviours, such as increasing self-esteem and self-efficacy (stress-buffering effect) (House et al., 1988). Both hypotheses have received empirical support (Cohen & Wills, 1985).

The direct effect view of social support proposes that supportive relationships may provide and increase access to useful information regarding healthful behaviours and thus facilitate behavioural intentions directly (Cohen & Wills, 1985). For example, it is much easier to exercise regularly if you have a friend with whom to jog. Alternatively, the buffering effect view of social support proposes that social support can provide individuals with enhanced self-esteem and a sense of personal control that increases intentions for behavioural change (Cohen & Wills, 1985).

Bandura (1986) proposed that self-efficacy serves a mediational role in the relationship between social support and behavioural change. For example, Ducan and McAuley (1993) found that the relationship between social support and exercise adherence for a middle-aged sample was mediated by self-efficacy. Furthermore,
studies have found that when social support was incorporated into health behaviour theoretical frameworks to predict intentions, social support significantly enhanced the prediction of intentions and behaviour by increasing individuals' beliefs regarding perceived capabilities of carrying out a recommended health behaviour (Courneya & McAuley, 1995; Horne, 1994; Winkel, Mummery, Stephens, & Craig, 1994). Taken together, studies reported that social support has a direct effect on intentions as well as an indirect effect on intentions mediated by the degree of efficacy one is perceived to possess.

Generally speaking, individuals with high perceived social support are more likely to engage in health-protecting behaviours, as social support may provide the necessary information that could influence health-related behaviours or increase the perception that one is competent to perform certain behaviours successfully. Among individuals with psychiatric disabilities, who represent a socially isolated population, it may be reasonably expected that limited social support may have a determining effect on the individual’s PHBs. To date, no research has investigated this relationship among individuals with psychiatric disabilities.

Overall, findings from research on the general population and limited research on individuals with psychiatric disabilities, suggest that social support may be influential in health behaviours. However, the extent to which social support influences PHBs in individuals with psychiatric disabilities is not clear. Nevertheless, the literature seems to indicate that social support can influence health behaviour directly or mediate by self-efficacy. Therefore, it is expected that social support will provide a useful addition to the PMT, improving the model’s predictive value for physical activity, dietary change and smoking cessation.

Social support may improve the predictive value of the expanded PMT model in two ways. First, supportive others may encourage PHBs by providing an environment where healthy lifestyle practices are accepted and desirable, which affects behavioural intentions directly. Second, when an individual is under stress, social support may alleviate the impact of the stress and influence one’s expectation that one is competent to perform certain behaviours successfully (self-efficacy). Self-efficacy then influences intentions and behaviour.
Summary

This chapter has argued that the PMT is a useful model for predicting physical activity, dietary change and smoking cessation. It has also been proposed that the predictive power of the PMT can be enhanced by the additional variables of psychiatric symptomatology and social support (see Figure 4.2).

Figure 4.2.
Model of the Expanded Protection Motivation Theory with the Inclusion of Social Support and Psychiatric Symptoms.

Although it is acknowledged that PHBs of individuals with psychiatric disabilities are important to their physical health status, many authors have argued that participation in PHBs does not occur in a vacuum; the influence of external factors, such as health care services are equally influential to health-related decisions (Chou, 2000; Regier, Burke, Manderscheid, & Burns, 1985). An individual’s health, as argued by Labonte (1988), is a result of not only an individual’s health behaviour, but also the interrelationship between the health of their communities, the community’s ability to provide preventive and primary care services, and a multiplicity of related socio-environmental factors that underlie health. For people with a mental illness,
recent research indicated that this population does not tend to seek out or utilise health care services (Beecroft et al., 2001). Even when health care services are sought, this population are not receiving adequate preventive health care services (Davidson et al., 2001).

In order to lead mentally ill patients to more effective paths of both psychiatric and physical treatment and rehabilitation, and to organise more efficient health-care services to meet the needs of mentally ill individuals, it is necessary to understand the patterns and major determinants of health care utilisation among individuals with psychiatric disabilities. It is therefore important that research not only investigates exercise behaviours, poor diet and smoking among individuals with psychiatric disabilities, but also explores this population's barriers to health care access.

In the following chapter, patterns of health care service utilisation by individuals with psychiatric disabilities are discussed, with a particular focus on barriers to access and the quality of health care services.
CHAPTER FIVE
Access, Barriers and Satisfaction with Health Care Services

Overview of the Chapter
This chapter provides a brief literature review of access to, barriers to and satisfaction with primary health care services for individuals with psychiatric disabilities, and the impact this has on the adoption of PHBs and health of individuals with psychiatric disabilities.

Access to Primary Health Care Services
Knowledge of health care needs, access to and utilisation of primary health care for people with a mental illness in Australia is limited (Coghlan et al., 2001). This lack of information is particularly problematic, since a substantial proportion of individuals with psychiatric disabilities have high morbidity and mortality rates, high misdiagnosis, and high under-diagnosis of major physical illnesses (Coghlan et al., 2001; Farnam et al., 1999). Individuals with psychiatric disabilities have been hypothesised to be at especially high risk of inadequate health care. For example, Coghlan et al. (2001) found that people with a mental illness died from physical conditions without being admitted to hospitals. This finding suggests that people with mental illness do not have the same level of hospital admission and/or receive the same level of medical treatment in hospital as the general population.

In contrast, Farnam et al. (1999) found that individuals with psychiatric disabilities were accessing health care services. In fact, individuals with psychiatric disabilities had higher consultation levels with health care services compared to the general population. Similarly, studies from the United States found that people with a mental illness were equally likely to have a primary health care provider compared to individuals from the general population (Druss & Rosenheck, 1998; Green & Pope, 2000). Likewise, in an Australian context, Davidson et al. (2000) found that people with psychiatric disabilities were just as likely as the general population to use health services. Indeed, if people with psychiatric disabilities access health services as often as the general population, it is difficult to understand why individuals with psychiatric disabilities are at high risk of serious physical diseases.
It could be hypothesised that high co-morbidity and premature mortality of this population may have less to do with access to health services and more to do with the pattern of health care seeking and quality of health care services (Davidson et al., 2000). This consideration is important, as the data from the above studies assessed only the quantity of consultations and not the quality (Davidson et al., 2000; Druss & Rosenheck, 1998; Farnam et al., 1999; Green & Pope, 2000). Therefore, the level of services used should not be considered equivalent to participants’ level of satisfaction or the effectiveness of the consultation. As such, it is important to ask whether people with a mental illness are receiving the same services as other people when seeking assistance from health professionals. Evaluating barriers to and satisfaction with health care services, is therefore, critical to quality assessment improvement initiatives.

**Barriers to Primary Health Care Services**

Chou’s (2000) investigation of the utilisation of health care services among people with neurosis demonstrated that many barriers impact on access to and utilisation of health care services. These barriers can be related to a combination of patient, health care provider and health system variables.

**Patient Variables**

Characteristics of patients with psychiatric disabilities have been identified as important factors in influencing utilisation of health care services (Talbot & Linn, 1978). Most notable were patients’ lack of skills and resources to use the health care system, difficulties in keeping appointments, dependency on care-givers, difficulty in following recommended treatment plans and psychiatric patients may be more difficult to ‘process’ by the system, because they are seen as chaotic or difficult (Beecroft et al., 2001; Farnam et al., 1999; Salmon, Stanley, & Milne, 1988).

Difficulty in obtaining health-related information from individuals with psychiatric disabilities also complicates the process of providing medical care to this population. For example, Parry and Barton (1988) found that two years post discharge, 24 out of 28 people with schizophrenia were unable to name at least one of their physical symptoms during a hospital admission. This less than reliable reporting of health symptoms to health professionals is likely to make medical diagnosis and
treatment difficult. Psychiatric illness may also obscure the presentation of physical illnesses. For instance, symptoms of depression, such as headaches, insomnia, and lack of energy may underlie a physical illness (Talbot & Linn, 1978).

Mental illness typically disrupts a person’s ability to perform ordinary role activities, undermining an individual’s everyday functioning, confidence and self-esteem and increasing their levels of anxiety and fear (APA, 2000). Fear of discrimination and negative treatment by health care professionals among individuals with psychiatric disabilities has been found to prevent help-seeking behaviours (Rhi et al., 1995). They were also twice as likely to have delayed seeking care (Druss & Rosenheck 1998). Chou (2000) found that a major barrier to the use of outpatient clinics among individuals with a mental illness was their fear of attracting negative attitude and reactions from others because of their mental illness. Consequently, a problem exists with the fact that individuals with a mental illness commonly avoid or fail to seek help, and come to the attention of health professionals only at times of crisis. Thus, if individuals with psychiatric disabilities are not regularly attending to their general practitioners for check-up and they only access their health care services when something is immediately wrong, this may explain why this population does not seem to be screened as regularly for physical illnesses compared to the general population (Coghlan et al., 2001).

In contrast to the above findings, a study of 182 participants with psychosis found that individuals with psychosis participated at a comparable rate to people without psychosis in cardiovascular risk screening (Osborne & Nazareth, 2003). However, the motivation for uptake of screening lowered when general practice consultation rates and characteristics were included in the analysis. This finding suggests that participation in preventive health behaviour among individuals with psychiatric disabilities is not just dependent on patient’s factors, characteristics of health care providers have an important contributory role.

**Health Care Provider Variables**

Past studies performed at the general population level indicated that doctors may not be promoting and encouraging lifestyle changes. Rosen, Lodgson, and Demak (1984) showed that only 30% of physicians discussed exercise with their patients. More encouragingly, recent findings indicate that the role of health behaviour change in disease prevention is increasingly seen as a high priority in general practice.
(Williford, Barfield, Lazenby, & Olson, 1992). However, doctors may be selective to whom they provide lifestyle counselling. For example, Galuska et al. (1999) found that only 42% of obese patients were counselled about exercise. Of this 42%, the majority were female, middle aged, had higher levels of education and were from a high socio-economic group. In fact, the authors found that physicians were more likely to provide counselling to those people who they believed were most likely to make positive lifestyle changes. In support of this conclusion, Wee, McCarthy, Davis, and Phillips (1999) found that health and demographic characteristics of patients in the general population were also associated with physician counselling on weight loss. Patients who were married, obese or from a higher socio-economic group were more likely to receive exercise counselling than patients who were of lower socio-economic status and who were sedentary. These studies suggest that people of low socio-economic status and who are sedentary, such as individuals with severe mental illness, are least likely to receive preventive counselling. Consequently, physicians' pessimistic attitudes towards the inability of people from certain populations, such as people with mental illness, to make lifestyle changes inadvertently precluded them from accessing advice that had the potential to moderate the high rates of physical illnesses.

The ambivalent attitudes of health professionals in counselling lifestyle changes can also be seen in the context of promoting smoking cessation among individuals with psychotic disorders (Buchanan, Huffman, & Barbour, 1994). Buchanan et al. (1994) found that health care professionals generally held the view that because the lifestyles of individuals with a mental illness are already impoverished, to encourage this population to give up a behaviour that is seen as one of life's few satisfactions was counterproductive and punitive.

Possible reasons for not counselling patients may be related to lack of confidence, lack of insurance reimbursements and lack of education regarding the relationship between medical and psychological aspects of health behaviours (Valente, Sobal, Muncie, & Levine, 1986; Wechsler, Levine, Idelson, Rohman, & Taylor, 1983). For example, Faulkner and Biddle (2001) identified four themes underpinning mental health professionals' resistance to encourage exercise as an adjunctive treatment for mental illness: Inconsistent evidence of the role of exercise to alleviate psychiatric symptoms, practical adherence to a mind-body dichotomy, perceived simplicity of exercise interventions, and incompatibility of exercise with traditional models of
treatment for mental illness. More specifically, primary health care professionals may not have the skills needed to overcome communication difficulties when consulting with individuals with psychiatric disabilities and may not be aware of the need to provide information about health promotion in an accessible form for individuals with psychiatric disabilities. Sternberg’s (1986) study of psychiatric patients in general practice found that physicians generally lacked special expertise for dealing with people with a mental illness.

Similarly, in an investigation of doctors’ attitudes in treating patients with severe mental illness, Kendrick, Burns, Freeling, and Sibball (1994) found that 63% of doctors thought that the long-term mentally ill posed communication problems between doctors and patients. Mentally ill patients were seen as disruptive, and 68% of doctors believed that they created more work for a practice. Feelings of fear, frustration, disgust and guilt can, therefore, lead doctors to withdraw from patients, resulting in negative reactions for both patients and doctors. Subsequently, this behaviour is likely to impact on the quality of service provided to individuals with psychiatric disabilities. Furthermore, evidence from the general population has shown that negative physician-patient interaction is associated with poorer self-reported health status and outcome (Bertakis, Callahan, Helms, Rahman, Robbins, & Miller, 1998). This finding may also be reflected in psychiatric populations.

**Health System Variables**

External factors or health system variables that limit health care service utilisation are those related to issues of the integration of health care services. The division of health services in Australia into primary and secondary care is thought to be very efficient, but poses the problem of where a patient with medical-psychiatric illness might be most appropriately treated. Should the person seek treatment from the GP and primary care team or by the secondary care services, i.e., mental health specialists? This separation of medical care for physical illness from psychiatric care often fragments the total care offered to individuals with psychiatric disabilities (Coghlan et al., 2001). People with physical illness and mental health needs also seem to have been negatively affected by deinstitutionalisation (Groves, 1990; Shephard, 1989). Service provision to this group was reported to be ad hoc, and there seems to be a lack of clarity as to how their physical health needs should be met (Groves, 1990).
In a study of GPs, Kendrick (1992) found that 82% of GPs indicated that discharged long-term mentally ill patients should be managed by a mental health team, and 37% agreed that physical health screening should be conducted by psychiatrists, while 19% disagreed. In another study, Kendrick et al. (1994) found that most contacts with general practitioners by 440 patients with long-term mental illness were for minor physical problems, repeat prescriptions and sickness certificates, and extensive investigation and follow-up of physical complaints did not always occur. As a result, if the symptoms of the medical condition do not have a high profile, it is likely that the individual will not come to the attention of medical services.

Compounding this gap in physical health care, Knutsen and DuRund (1991) found that psychiatrists are not always either interested or skilled in the diagnosis and treatment of physical illnesses. Dolinar (1993) outlined several reasons why psychiatrists are reluctant to treat patients who have more than mild physical problems — psychiatric units lack technical equipment; unfamiliarity with management of unstable vital medical signs; and fear of litigation. Consequently, people with psychiatric disabilities are less likely to receive health services where both physical and mental health problems are evaluated and treated in an integrated manner.

In addition to the fragmentation of the health system, the problem in the diagnosis and treatment of physical health problems among people with a mental illness also lies with the pragmatics of accessing the health services. Health care costs, problems with transportation and location of medical clinics, duration of consultation, and lack of knowledge about the available health services are important barriers to health care for individuals with psychiatric disabilities (Chou, 2000).

**Satisfaction with Primary Health Care Services**

In the general population, empirical findings suggest a positive relationship between satisfaction with care and health outcome (Bertakis et al., 1998; Hall, Milburn, & Epstein, 1990). Patients' satisfaction with health care services have been associated with the effectiveness of care provided and various health related behaviours, such as the adherence to medical regimens (Sherbourne, Hays, Ordway, DiMatto, & Kravitz, 1992), patients' participation in their own medical care (Greenfield, Kaplan, & Ware,
1985), changing health care providers (Marquis, Davies, & Ware, 1983), reported health status (Bertakis et al., 1998) and health outcome (Hays et al., 1994). As a result, satisfaction measurement constitutes an important aspect of service planning and evaluation.

Surprisingly, few studies have reported on the associations between individuals with psychiatric disabilities, health care satisfaction and health behaviours. However, findings from the general population may be extrapolated to explain the relationship between health care satisfaction and health behaviours among individuals with psychiatric disabilities in three ways: First, dissatisfaction with care can contribute to non-adherence to medical recommendations which may, in turn, lead to poorer health status among individuals with a mental illness.

Second, individuals with a mental illness who present with complex and refractory medical conditions may be dissatisfied with their medical care, despite the efforts of their health care providers. In an assessment of what constitutes a ‘difficult’ patient among 22 family physicians. Schwenk, Marquez, Lefver, and Cohen (1989) found, that difficult patients were characterised by two factors: a) ‘medical uncertainty’ characterised by vague, complex and ambiguous problems, and b) ‘interpersonal difficulty’. These two characteristics were associated with low levels of both physician and patient satisfaction. As a result, patients with complex and ambiguous medical problems in combination with a perceived abrasive behavioural style, as commonly seen among individuals with a mental illness (Becccroft et al., 2001; Farnam et al., 1999) may be more likely to report dissatisfaction with medical services. Thus, poor health status may contribute to dissatisfaction with medical care regardless of type or quality of care received.

Third, it can be argued that dissatisfaction with health care may reflect the negative moods and cognitions common in individuals with a mental illness. Psychopathology, especially undetected psychopathology, has been suggested to play an important role in the dissatisfied doctor-patient relationship (Drossman, 1978; Goodwin, Goodwin, & Kellner, 1979). In a study of depressed patients with a chronic physical illness, Marshall, Hays, and Mazel (1996) found that general satisfaction with health services was associated with mental, rather than physical health status. Similarly, in one of the most detailed studies so far available on the relationship between service satisfaction, life satisfaction and self-reported mental health, Rohland, Langbehn, and Rohrer (2000) found that satisfaction with mental health
services varied by psychiatric diagnosis. The study found that patients with schizophrenia reported the highest satisfaction and patients with anxiety disorders reported the lowest satisfaction.

Given the potential impact psychiatric symptoms may have on an individual’s view of health service satisfaction and health care needs, the opinions regarding satisfaction with health care services reported by individuals with psychiatric illness, the general population and health care providers should be compared and contrasted in future research. Any improvement in identifying and minimising discrepancies within the health care service delivery would aid in improving health care services for individuals with a mental illness, and increase their compliance with treatment, engagement, and resource utilisation. Research is therefore needed, to explore the role of health care satisfaction in influencing health seeking behaviour and protective health behaviours among individuals with psychiatric disabilities.

In conclusion, although an extensive body of literature supports the contention that lifestyle behaviours are significant predictors of the high rates of physical health problems among individuals with psychiatric disabilities, emerging research suggests that this population’s poor physical health may also be explained by psychiatric patients’ general pattern of access to health care services, satisfaction with health care services and the questionable quality of the delivery of these services.

**Conclusion and Implications**

The health of Australians has been increasing over the past four decades, but this trend has not been reflected in certain sub-populations. Preventable illnesses remain the most important cause of death and physical impairment among individuals with psychiatric disabilities (Coghlan et al., 2001). There is evidence that individuals with psychiatric disabilities do not practise adequate self-care and PHBs and that this has implications for their higher risk of preventable disease (Davidson et al., 2000; Farnam, et al., 1999). However, while many studies have documented physical inactivity, poor diet and high cigarette smoking among this population, these studies failed to explore the reasons for these less than optimal protective health habits. Some researchers have theorised that certain socio-cognitive factors, psychiatric symptoms, limited social support, and barriers to utilisation of health care services contribute to poor physical health among individuals with psychiatric disabilities but these proposals have yet to be explored empirically.
CHAPTER SIX
Aims and Hypotheses of the Thesis

Previous chapters have argued for the potential value of understanding cardiovascular protective health behaviours and patterns of health care utilisation among individuals with psychiatric disabilities. In this chapter, the main research aims and hypotheses of the two studies of the thesis are presented.

The Proposed Studies

The first aim of this thesis is to assess the utility of the PMT variables to predict exercise participation, dietary change and smoking cessation. Furthermore, the thesis examines other key factors, such as psychiatric symptoms and social support that may contribute to PHBs among people with psychiatric disabilities. In addition, the thesis investigates the health care service needs of people with psychiatric disabilities. Identification of the barriers to and satisfaction with health care services will help in the development of strategies to address current deficiencies in health care service delivery for individuals with psychiatric disabilities. To address the above aims, two studies will be conducted.

Study 1 describes the lifestyle and general PHBs of a representative sample of individuals with psychiatric disabilities (schizophrenia and Major Depressive Disorder) and a comparison sample from the general population. This study employs a questionnaire that measures all the variables of the PMT (fear of cardiovascular illness, severity of CVD, vulnerability to CVD, self-efficacy, response efficacy and barriers) and additional variables (psychiatric symptoms and social support), in relation to specific PHBs (i.e., physical activity, dietary change and cigarette smoking cessation) among individuals with psychiatric disabilities.

Study 2 involves the completion of an open-ended, structured interview. The open-ended interview was designed to explore issues related to access to, barriers to and satisfaction with health care services among individuals with schizophrenia and Major Depressive Disorder, the general population and health care providers.
Hypotheses for Study 1

1. Individuals with schizophrenia and Major Depressive Disorder will report less physical exercise and poorer diets and higher levels of cigarette smoking than the general population.

2. The components of the PMT (fear, perceived severity, perceived vulnerability, self-efficacy, response efficacy and barriers) will predict physical activity, dietary change and cigarette smoking cessation intentions and behaviour.

3. Psychiatric symptoms and social support will enhance the predictive value of the PMT for physical activity, dietary change and cigarette smoking cessation intentions and behaviour.

Research Questions for Study 2

Hypotheses were not developed for Study Two due to the limited literature in this research area. Study Two is therefore exploratory and aims to answer the following questions:

1. What are the issues related to awareness and access to health care services among individuals diagnosed with schizophrenia, Major Depressive Disorder (MDD) and the general population?

2. What types of barriers are related to access of health care services among individuals diagnosed with schizophrenia, MDD and the general population?

3. What are the issues related to levels of satisfaction with health care services among individuals diagnosed with schizophrenia, MDD and the general population?
CHAPTER SEVEN

Method

Study 1

The Rationale for Study 1

It has been argued in the previous chapters that individuals with psychiatric disabilities report two to three times higher cardiovascular related morbidity and mortality rates compared to the general population (Coghlan et al., 2001). It has also been argued that the Protection Motivation Theory (PMT) model provides a useful approach to the study of health behaviours, particularly cardiovascular health behaviours (Plotnikoff & Higginbotham, 1998).

Past research has explored the applicability of PMT with diverse population groups (Rogers & Prentice-Dunn, 1997). However, no study to date has utilised the PMT to explore cardiovascular risk behaviours among individuals with psychiatric disabilities, nor have there been studies that have compared health behaviours of individuals with psychiatric disabilities to those of the general population.

This study, therefore, aims to test the PMT model on a sample of Australian adults diagnosed with either schizophrenia or major depressive disorder.

This chapter describes participants sampled for the study, the questionnaires used and the survey administration procedures.

Participants

The total sample comprised 153 participants diagnosed with either schizophrenia or major depressive disorder aged between 22 and 77 years (M = 38.5). The psychiatric sample was recruited from various psychiatric rehabilitation organisations across metropolitan and regional Melbourne, Australia.

The power of Study 1 using Multivariate Analysis of Variance is assumed to have a moderate effect size of 0.6 and an alpha level of 0.05. Using Cohen’s table of power analysis (Keppel, 1991, p. 72), if the power is set at 0.80, Study 1 must assign 44 participants to each independent group. So a total of $n = 3 \times 44 = 132$ participants, where $a =$ no. of treatment group or independent group and $n =$ no. of participants per group are required for the effect size of 0.6 at power of 0.80 and $a =$
0.05. The total of 300 participants for Study 1 exceeds the minimum number (n = 132) of participants required.

For participants from the general population, the sample comprised 149 participants with no history of a mental illness aged between 18 and 77 years (M = 40.3). The general population sample was recruited across metropolitan and regional Melbourne, Australia. For an overview of additional relevant demographic variables please refer to Chapter eight.

**Materials**

All participants completed the Health Behaviour Questionnaire (Appendix A), a modified version of the Coalfield Heartbeat Community Health Survey (Plotnikoff, 1994) and Body and Mind Project (Davidson, et al., 2000). Two versions of the questionnaire were administered to the two different population samples (psychiatric and general population). The two versions of the questionnaires differ only in the ordering of the question items, with sensitive psychiatric symptoms items being placed at the end of the questionnaire for the psychiatric population, whilst the same items were placed at the beginning of the questionnaire for the general population. The decision to rearrange the ordering of psychiatric symptoms items was done so as to ensure that maximum and valid response rates were obtained from individuals with schizophrenia and MDD, as rapport needs to be established before asking about psychiatric symptoms. Sections of the questionnaire were adapted from questionnaires that have previously been used with people with mental illness (Davidson, et al., 2000). The Health Behaviour Questionnaire was divided into nine sections. These sections are as follows:

**General Information**

This section contained ten questions, which provided general information about participants' backgrounds, such as sex, age, height (m), weight (kg), relationship status, education, employment status and living arrangements. Self-reported weight and height were asked by the interviewer to calculate Body Mass Index (BMI). The National Heart Foundation of Australia (NHFA) (1996) categorises BMI (weight/height?) using the following groups: underweight – less than 20.0; acceptable
weight – 20.0 to 25.0; overweight – greater than 25.0 to 30.0; and obese – greater than 30.0. These categories were employed in this study.

Health Information

This section was adapted from the Body and Mind Project Questionnaire (Davidson et al., 2000). The section comprised four items, two items asked participants if they have a current physical illness; if so, to specify the physical illness(es). One item asked participants to indicate their perception of their current physical health. This item was measured on a five-point scale from excellent (1) to poor (5), with one extra response for “don’t know”. Another item asked participants to rate their current health compared to one year ago on a five-point scale from much better (1) to much worse (5) and one response for “don’t know”.

Knowledge of Heart Disease

The Knowledge of Heart Disease scale (Walker, Heller, Redman, O’Connell & Boulton, 1992) was used to measure a participant’s knowledge of heart disease. The scale contained 21 statements with response options of ‘true’, ‘false’, or ‘unsure’ with a reported Cronbach Alpha of 0.81. The scale comprised five statements about the heart and blood vessels, 12 statements about nutrition, one statement about smoking and three statements about exercise and fitness. Incorrect and unsure responses were scored as zero, while correct responses were scored as one. High scores represent greater knowledge of heart disease. The maximum total knowledge score was 21. Examples of questions include, “Smoking causes lung cancer, but not heart disease”, “Regular exercise can help control blood pressure” and “A diet low in salt may help lower blood pressure”.

Perception of Heart Disease

This section was adapted from the Coalfield Heartbeat Community Health Survey (Plotnikoff, 1994). Four items measured the PMT component of ‘Threat Appraisal’. Items asked participants to rate their level of fear, perceived severity and vulnerability of having heart disease using a ten-point Likert-type scale from not at all (1) to most possible (10). Fear arousal was measured by the item “How frightened do you feel when you think about the possibility of having heart disease?” Severity was measured by two items: “How serious do you think heart disease is?” and “How much
will having heart disease interfere with someone leading a normal life?" Vulnerability to having heart disease was measured by "My chances of having heart disease are very small". High scores indicate a participant's high level of fear and perceived severity. In contrast, high scores for perceived vulnerability to heart disease indicate low perception that one is vulnerable to heart disease. Cronbach’s alpha ranged from 0.53 to 0.72, with an internal consistency of $\alpha = 0.68$ (Plotnikoff & Higginbotham, 1995).

**Physical Activity/Exercise**

This section was also adapted from the Coalfield Heartbeat Community Health Survey (Plotnikoff, 1994). Adequate exercise was defined as activities done for 20 minutes at least three times each week which makes one breathe harder or puff or pant. The section contained six items that measured a participant’s self-reported physical activity for the last two weeks. One item measured a participant’s current level of activity with four response options (no physical activity weekly to vigorous activity for at least 20 minutes three or more times per week). Self-efficacy was measured by asking respondents to rate how confident they feel to motivate themselves to exercise in four situations (e.g., weather is unpleasant), with responses ranging from 1 = not confident to 5 = extremely confident. Response-efficacy was measured by three statements that requested respondents to rate if they think certain things will happen or not if they exercise (e.g., increase quality of life) with responses ranging from 1 = definitely not to 5 = definitely yes and intentions to exercise in the next six months were measured by two statements with responses of 1 = definitely not/very unlikely to 5 = definitely yes/very likely. For example, "Do you plan to get adequate exercise for at least the next six months?" The rewards and costs of engaging in physical activity were globally measured as Barriers. Barriers to exercise were measured with one item which asked participants to tick the options provided or list best reasons for not increasing their level of physical activity. Reported Cronbach’s alphas ranged from 0.83 to 0.93 with test-retest reliability coefficients of 0.71 to 0.77 (Plotnikoff & Higginbotham, 1995).

**Eating Habits**

This section was also adapted from the Coalfield Heartbeat Community Health Survey with (Plotnikoff, 1994). A total of six items comprised this section. One item
measured current eating patterns and another item measured barriers for not changing the amount of fat in one's diet. Self-efficacy in changing eating habits was measured using three statements, another three statements measured response efficacy and two statements measured intentions to follow a low-fat diet. All items used a 5-point Likert scale with 1 = definitely not to 5 = definitely yes. Barriers to not changing the amount of fat in one's diet were measured by asking participants to tick the options provided or specify their own reasons. The test-retest coefficients (Pearson correlation) were 0.93 for self-efficacy, 0.78 for response-efficacy, and 0.69 for intentions (Plotnikoff & Higginbotham, 1995). Cronbach's alphas indicate strong internal consistency for self-efficacy (α = 0.88), response efficacy (α = 0.85) and intentions (α = 0.88) (Plotnikoff & Higginbotham, 1995).

**Smoking**

This section contained ten items adapted from the Coalfield Heartbeat Community Health Survey (Plotnikoff, 1994). The ten items measured current and previous smoking habits. It assessed frequency, types of tobacco smoked and duration of smoking habit. Response-efficacy, self-efficacy, and intention of smoking cessation were measured by 5-point Likert scale with response ranging from 1 = definitely not to 5 = definitely yes. Three statements measured self-efficacy for smoking cessation (e.g. Avoid smoking when you are bored). Another three statements measured response-efficacy of smoking cessation (e.g. Reducing my smoking level will make me live longer). Two statements measured intentions to stop smoking and one item measured barriers to smoking cessation. Cronbach's alpha coefficients for smoking cessation scales are 0.92 for self-efficacy, 0.78 for response-efficacy and 0.85 for intentions to cease smoking (Plotnikoff, 1994).

**Social Support**

The Social Support scale was developed by Schaefer, Coyne, and Lazarus (1981). The six-item scale assessed an individual's perceived emotional social support in the person's immediate interpersonal environment. Participants were asked to nominate a person who provided them with most support over the previous month and to rate this person on a 10-point Likert scale (1 = not at all to 10 = extremely). Examples of items are "How much was this person a source of helpful guidance over the last month?" "How much does this person make you feel he/she cares about you?"
Respondents’ scores were summed to provide an overall perceived social support score. Schaeffer et al. (1981) report good internal consistency for the measure (α = .95). Schaeffer et al. (1981) also reported test-retest reliability for the measure was acceptable (α = .66).

Psychiatric Symptoms

This section of the questionnaire was adapted from the Brief Symptom Inventory (BSI) (Derogatis, 1993). The original BSI contains 53 items, nine primary symptom dimensions and three global indices. For the current study, only five of the nine dimensions were measured, resulting in a total of 26 items measuring psychiatric symptoms. Of these, five items measured depression (e.g. “Feeling no interest in things”), six items measured obsessive-compulsive (e.g. “Trouble remembering things”), five items measured paranoid ideation (e.g. Feeling that most people cannot be trusted”), five items measured phobic anxiety (e.g. “Feeling nervous when you are left alone”) and five items measured psychoticism (e.g. “The idea that someone else can control your thoughts”). For each item, respondents were asked how much a particular problem has distressed or bothered them during the past seven days by circling a response ranging from 0 = Not at all to 4 = Extremely. Possible scores ranged from 0 to 104. High scores indicate higher levels of reported psychiatric symptoms. The BSI is especially appropriate in clinical settings. It has been normed in both the general population and clinical populations. Cronbach’s coefficient Alpha for all nine dimensions ranged from .71 to .85 (Derogatis, 1993). Coefficients for test-retest reliability ranged from .68 to .91 (Derogatis, 1993).

Procedure

Ethics approval to conduct the study was granted by the Deakin University Ethics Committee, one large psychiatric rehabilitation service and one large Melbourne hospital (see Appendices B, C, & D). Following approval, several recruitment methods were utilised to maximise participation rates; twelve sites across Victoria, Australia, affiliated with the two organizations were contacted. Clinic staff (e.g., case managers, psychiatrists and support workers) from the twelve psychiatric services were informed about the study via formal staff meetings and presentations conducted by the researcher. Once staff from the twelve sites were informed, advertisements
about the study were placed in monthly newsletter, reports and notices across the organisations to recruit interested participants. In addition, permission was sought to approach consumers in waiting rooms or attend “drop-in” at rehabilitation centres.

Individuals who indicated an interest in participating in the study were asked to make an appointment for an assessment interview to assess their suitability for the research. The assessment interviews were conducted in the presence of the individual’s case manager, psychiatrist or support worker. Potential participants were excluded from the study if they were unable to focus on the task due to an acute presentation of psychiatric symptoms, did not have a current diagnosis of either schizophrenia or MDD, unable to understand the concept of informed consent or unable to speak English. All participants received a Plain Language Statement that clearly outlined the purpose of the Study and the nature of their involvement in the research (Appendix, E). One staff member from each organisation was asked to witness the signing of participants’ informed consent (Appendix F). All individuals were given the option of either completing the questionnaire in private or completing the questionnaire in an interview format (face to face or telephone). Eighty-two percent of participants chose the face-to-face interview format, 10% of participants chose telephone interviews and 8% chose to complete the questionnaire privately. Response rates varied between 76% to 92% from across each of the centres.

Individuals from the general population were recruited via the researcher’s network of friends, family and acquaintances, and Deakin University School of Psychology’s database of individuals who had provided permission for researchers to contact them for research participation. Interested participants were sent a questionnaire package. The package contained a reply-paid, self-addressed envelope, the questionnaire (Appendix A), a Plain Language Statement (Appendix G) and a consent form (Appendix H).

Study 2

Rationale for Study 2

Previous chapters have described that knowledge of health care needs as well as access to and utilisation of primary health care services for people with mental illness in Australia is limited (Coghlan et al., 2001). This lack of information is significant, because a substantial proportion of individuals with psychiatric disabilities have been
reported to have high morbidity and mortality rates, high misdiagnosis and high under-diagnosis of major physical illnesses (Beecroft et al., 2001).

This study was designed to explore and identify the opinions of individuals with and without psychiatric disabilities and health care providers in order to obtain a more comprehensive understanding of the health care needs for individuals with psychiatric disabilities.

Study 2 is therefore, exploratory and aims to obtain different perspectives about the health care needs of individuals with psychiatric disabilities from various parts of the health system: consumers and health care providers.

**Rationale for Methodology**

Individual interviews were selected as the most appropriate way to explore participants’ views about access to, barriers to and satisfaction with health care services. One advantage of the qualitative approach over that of a quantitative methodology is that it overcomes the quantitative method’s limited flexibility to discover new or unexpected issues. This was particularly important, as ideas and opinions about the health care system held by individuals with psychiatric disabilities and health care providers working with individuals with psychiatric disabilities have not always been documented nor been accessible. Open-ended questions allow participants to respond freely within their own framework, encourage individuals to speak for the first time about previously unspoken subjects and to introduce issues which are salient for them (Silverman, 2000). The interview questions were developed from the limited literature review, discussion with participants during Study 1 and from conversations with people working in the field.

The particular interview method selected was the semi-structured interview. This type of interview is advantageous for several reasons. First, the interview guides the researcher to focus the interview on specific areas of interest. Second, semi-structured interviews provide flexibility for discussion and further exploration of new issues raised by participants. Third, semi-structured interviews provide structure to organise data (Silverman, 2000).
Participants

Study 2 comprised 34 participants from the psychiatric population and general population that participated in Study One. Twenty participants were diagnosed with either schizophrenia or MDD, and 14 participants with no current psychiatric diagnosis. Participants with a psychiatric diagnosis were more likely to be single (95%), have no children (90%), and be unemployed (95%) compared to individuals without a psychiatric diagnosis. In addition, 16 health care service providers who identified as currently or previously having worked with individuals with psychiatric disabilities were interviewed. The average years of experience with working with individuals with psychiatric disabilities was 7.8 years from a range of health disciplines. See Chapter nine for more demographic information.

Materials

Study 2 utilised a semi-structured interview schedule. The interview schedule comprised a combination of 14 open-end questions and 50 items of the Patient satisfaction with medical care (PSQ-III) (Marshall et al., 1993). A copy of the interview schedule is provided in Appendix I. The PSQ-III contains six aspects of satisfaction with care: interpersonal manner (7 items), communication (5 items), technical competence (10 items), time spent with doctor (12 items), financial aspects (8 items), and access to care (12 items) with (Marshall et al., 1993). Each response was measured on a 10-point Likert scale (0 = strongly disagree to 10 = strongly agree). Examples of items are “The medical care I have been receiving is just about perfect?” “It’s hard for me to get medical care on short notice?” Respondents’ scores were summed up to provide an overall score for each of the six satisfaction subscales. High scores indicate high satisfaction. The internal consistency reliability estimates for the PSQ-III subscales are as follows: interpersonal manner (0.82), communication (0.82), technical competence (0.85), time spent with doctor (0.87), financial aspects (0.89), and access to care (0.86) (Marshall et al, 1993). The open-ended interview questions were developed from the literature review, data from Study 1, conversations with participants from Study 1 and health professionals working with individuals with psychiatric disabilities. Topics and issues explored centred on participants’ attitudes towards health care services, level of knowledge of available health care services and their experiences in accessing and utilising health care
services. Some examples of questions are "When was the last time you visited a doctor about your own physical health?", "Where do you go when you feel physically unwell?", "What experiences have you had when you visit your doctor?".

The interview schedule for interviewing health care providers comprised nine open-ended questions (see Appendix K). Examples of questions are "Do you have bad stories/good stories to tell from your experience working with people with a mental illness?", "What are the three main reasons you think would prevent people with a mental illness from seeking help for their physical health concerns?", "Do you have any suggestions to improve health services for individuals with both mental illness and physical illness?".

Procedure
Seventy-seven individuals with a psychiatric diagnosis and 85 individuals from the general population gave consent to be contacted for participation in Study 2 (Appendix J). Only a sub-sample of 20 individuals with a psychiatric diagnosis (10 with schizophrenia and 10 with MDD) and 14 without a psychiatric diagnosis from Study 1 completed the semi-structured interview on their experiences of the health care system. The restrictions imposed by the size of this thesis naturally operated to limit the extent to the widely dispersed health field from which prospective respondents might be drawn. Furthermore, unlike the probability sample and statistical guidelines used in quantitative research, the rationale for sampling in qualitative research is to provide a broad range of variability in information, depth and meaning. The qualitative sample, therefore, involves the purposeful selection of information rich cases for in-depth analysis. Sample size was determined when data saturation was achieved, that is, when no new information was yielded from new cases sampled (Mays & Pope, 1995; Patton, 1990).

Individuals who approached and who indicated an interest in being interviewed were contacted by telephone and an interview time was made. Participants were informed that the interview would be audio-taped, however, if participants expressed objections to being recorded, tape recording did not take place (Appendix L and Appendix M). Three participants from the psychiatric population and one from the general population objected to the tape recording. These participants’ responses were
written by hand. The same interview questions were asked of all participants in the research.

Health care providers from various health care organisations that work or had worked closely with individuals with psychiatric disabilities were approached by the researcher and were invited to participate in the interview at a place and time that was most convenient for the worker. Plain Language Statement and consent forms can be seen in Appendices N and O, respectively. All the interviews were conducted where the health care provider worked.
CHAPTER EIGHT

Results

Study 1

This chapter presents the results related to the investigation of the following hypotheses.

1. Individuals diagnosed with schizophrenia and Major Depressive Disorder (MDD) will report lower physical activity, a diet high in fat and higher levels of cigarette smoking than the general population.

2. Components of the Protection Motivation Theory (PMT) (fear, perceived vulnerability, and severity of cardiovascular disease, self-efficacy, response-efficacy and barriers) will predict physical activity intentions and behaviour, low-fat diet intentions and behaviour, and intention to cease cigarette smoking.

3. Perceived social support and psychiatric symptoms will increase the predictive value of the PMT for physical activity intentions and behaviour, low-fat diet intentions and behaviour, and intention to cease cigarette smoking.

The above hypotheses were evaluated using a series of Chi-square tests, multivariate analysis of variance (MANOVA), hierarchical multiple regression analyses and hierarchical logistic regression analyses.

Preliminary Analyses

Preliminary analyses were conducted on the responses of 302 adults (149 without a current psychiatric diagnosis, 83 diagnosed with schizophrenia and 70 diagnosed with major depressive disorder) who completed the questionnaires. The data were examined through SPSS for Window (Version 11.0) for accuracy of data entry, missing values, extreme values and the assumptions necessary for multivariate analyses.

Although missing data were spurious among specific demographic items, in particular items regarding current weight, there was no discernible pattern to those missing data. Missing values were replaced by the means for the variable (Tabachnick & Fidell, 1996). Utilising the mean for missing data provides a
conservative response which offers the best possible guess for such questions (Tabachnick & Fidell, 1996).

Normality was tested using skewness and kurtosis indices and the quotient of division by their respective standard errors. Mild positive skewness was identified for the following variables: BMI and Knowledge of heart disease for the general population; Total response-efficacy to follow a diet low in fat, and Perceived social support for individuals diagnosed with schizophrenia; and Perceived severity of heart disease; Response-efficacy to exercise, Response-efficacy to follow a diet low in fat, and Perceived social support, for individuals diagnosed with MMD. Square root transformations were performed to correct these variables (Tabachnick & Fidell, 1996, p.82). Analyses were re-run using these transformed variables and were not found to be substantially different. Therefore, the untransformed variables were used in all subsequent analyses and skewness was considered to reflect the intrinsic nature of the variables.

Univariate outliers using z-scores that did not fall between -3 and +3 were identified and corrected by converting them to values three standard deviations from the mean for each variable. Using Mahalanobis distance with \( p < .001 \), multivariate outliers (case nos. 91 and 149) were identified and deleted from the analysis. Given the large number of variables in the data set, examination of all pairwise scatterplots for the presence of non-linearity was considered to be impractical. Therefore, random spot checks of several pairwise scatterplots were undertaken. These checks indicated that there was no gross violation of linearity. Furthermore, there was no evidence of multicollinearity or singularity in the data, as evidenced by the absence of strong correlations (\( r \geq .80 \)) between any of the variables used in the analyses.

A total of 300 cases (147 without a current psychiatric diagnosis, 83 diagnosed with schizophrenia and 70 diagnosed with MDD) remained for analyses.

**Homogeneity of groups**

Prior to the main analyses, examination of homogeneity for Schizophrenia and MDD groups was conducted to determine if differences exist between individuals residing in the community, Community Care Units (CCU) and psychiatric hospital inpatients. Variations in clinical settings such as community, CCU and in-patient may influence health behavioural intentions and behaviour (Burch, 1997).
Separate MANOVAs were conducted for the Schizophrenia and MDD population to determine the effects of type of residence (Community, CCU, and Hospital in-patient) on cardiovascular risk factors: Knowledge of cardiovascular diseases; Perceived vulnerability and severity of CVD; Social support; Psychiatric symptoms; Current physical activity, Physical activity self-efficacy, response-efficacy, intention and Barriers; Current diet consumption, Self-efficacy, Response-efficacy, Intention and Barriers to follow a low-fat diet; Self-efficacy, Response-efficacy, Intention and Barriers to cease cigarette smoking. A Post Hoc Scheffe test was used to determine the direction of significant differences. For multivariate tests and variables that violated Box's M test for multivariate homogeneity and univariate homogeneity, a conservative significance level of .01 was used.

For the schizophrenia population, a non significant Pillai's Trace for differences between the groups on the combined dependent variables was found, F (24,138) = 1.90, p > .01. Similarly, a non significant Pillai's Trace was found for the MDD population, F (24, 112) = 1.63, p > .01. These results indicated that no significant differences were found between individuals residing in the community, CCU, and hospital in-patient in relation to cardiovascular risk factors. These findings support the rationale to combine individuals across the three types of residence to form two population groups: Schizophrenia and MDD populations.

**Descriptive Statistics**

Descriptive statistics are reported in four sections. The first section presents the internal consistency of the major scales utilised. The second section provides a profile of the demographic characteristics of the respondents: Sex, relationship status, children, educational attainment, employment status, source of income and place of residence. The third section presents cardiovascular health characteristics of the respondents: Current physical health, smoking status, physical activity, type of eating pattern and type of social support received. Chi-square analyses were calculated to ascertain whether there were differences in the demographic characteristics and cardiovascular health characteristics across the three sample populations (General, Schizophrenia and MDD population). The fourth section presents the means and standard deviations for cardiovascular disease health knowledge, social support, psychiatric symptoms and PMT variables for the three PHBs across the three groups.
**Internal Consistency for the Scales**

The internal consistency of all the scales was examined and all of the items for each scale showed acceptable item-total correlations. All Cronbach alphas were adequate to very good (between .65 and .97), as demonstrated in Table 8.1 (Coakes & Steed, 1999). A summary of the means and standard deviations for all of the scales is also given in Table 8.1.

**Table 8.1**
Internal Consistency, Means, and Standard Deviations for the Protection Motivational Theory and Additional Measures

<table>
<thead>
<tr>
<th>Measures</th>
<th>Number of Items</th>
<th>Cronbach Alpha</th>
<th>( M )</th>
<th>( SD )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge of CVD</td>
<td>21</td>
<td>.82</td>
<td>14.31</td>
<td>4.3</td>
</tr>
<tr>
<td>Fear of CVD</td>
<td>1</td>
<td>N/A*</td>
<td>3.01</td>
<td>1.09</td>
</tr>
<tr>
<td>Vulnerability to CVD</td>
<td>1</td>
<td>N/A*</td>
<td>6.65</td>
<td>2.73</td>
</tr>
<tr>
<td>Severity of CVD</td>
<td>2</td>
<td>.65</td>
<td>16.57</td>
<td>3.08</td>
</tr>
<tr>
<td>Exercise self efficacy</td>
<td>4</td>
<td>.92</td>
<td>11.29</td>
<td>4.69</td>
</tr>
<tr>
<td>Exercise response-efficacy</td>
<td>3</td>
<td>.78</td>
<td>12.64</td>
<td>2.08</td>
</tr>
<tr>
<td>Exercise intention</td>
<td>2</td>
<td>.88</td>
<td>7.62</td>
<td>2.11</td>
</tr>
<tr>
<td>Low-fat diet self-efficacy</td>
<td>3</td>
<td>.89</td>
<td>8.27</td>
<td>3.70</td>
</tr>
<tr>
<td>Low-fat diet response-efficacy</td>
<td>3</td>
<td>.89</td>
<td>12.39</td>
<td>2.56</td>
</tr>
<tr>
<td>Low-fat diet intention</td>
<td>2</td>
<td>.91</td>
<td>6.90</td>
<td>2.24</td>
</tr>
<tr>
<td>Smoking cessation self-efficacy</td>
<td>4</td>
<td>.97</td>
<td>14.65</td>
<td>7.08</td>
</tr>
<tr>
<td>Smoking cessation response-efficacy</td>
<td>3</td>
<td>.91</td>
<td>13.67</td>
<td>2.70</td>
</tr>
<tr>
<td>Smoking cessation intention</td>
<td>2</td>
<td>.95</td>
<td>8.31</td>
<td>2.65</td>
</tr>
<tr>
<td>Social support</td>
<td>5</td>
<td>.95</td>
<td>38.79</td>
<td>12.50</td>
</tr>
<tr>
<td>Psychiatric symptoms</td>
<td>26</td>
<td>.96</td>
<td>25.20</td>
<td>23.10</td>
</tr>
</tbody>
</table>

*Single item scale*
Demographic Characteristics

Sex of Participants

One hundred and nineteen males and 181 females, with a mean age of 39.5 years (S.D. = 12.2) comprised the sample of 300 participants. Sex by diagnosis is shown in Table 8.2. Chi-squared analysis found that, overall, the sex differences between the groups were significant [$\chi^2 (2) = 139, p < .001$]. The sex distribution was similar for the general population and the MDD population, females were disproportionately higher in both groups, 66% and 72.9% respectively. In contrast, males were higher in the schizophrenia population (62.2%).

Table 8.2
Sex of Participants

<table>
<thead>
<tr>
<th></th>
<th>General Population</th>
<th>Schizophrenia Population</th>
<th>MDD Population</th>
<th>Total Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>50</td>
<td>34</td>
<td>50</td>
<td>62.2</td>
</tr>
<tr>
<td>Females</td>
<td>97</td>
<td>66</td>
<td>33</td>
<td>39.8</td>
</tr>
</tbody>
</table>

Relationship Status

Table 8.3 provides a profile of the relationship status of the three population groups. Compared to individuals without a psychiatric diagnosis, individuals with a psychiatric diagnosis were significantly more likely to be single and divorced or separated [$\chi^2 (4) = 75.8, p < .001$].

70
### Table 8.3
Relationship Status

<table>
<thead>
<tr>
<th></th>
<th>General Population</th>
<th>Schizophrenia Population</th>
<th>MDD Population</th>
<th>Total Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$N$</td>
<td>%</td>
<td>$N$</td>
<td>%</td>
</tr>
<tr>
<td><strong>Single</strong></td>
<td>47</td>
<td>32.9</td>
<td>65</td>
<td>80.2</td>
</tr>
<tr>
<td><strong>Married/de facto</strong></td>
<td>86</td>
<td>60.1</td>
<td>9</td>
<td>11.1</td>
</tr>
<tr>
<td><strong>Divorced/separated</strong></td>
<td>10</td>
<td>7</td>
<td>7</td>
<td>8.6</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td>4</td>
<td>2.7</td>
<td>2</td>
<td>2.4</td>
</tr>
</tbody>
</table>

*Not included in Chi square analysis due to small cell size

### Children Status
Consistent with the relationship status, individuals with a psychiatric diagnosis were significantly less likely to have children compared to individuals without a psychiatric diagnosis [$\chi^2(2) = 15, p < .001$].

### Table 8.4
Children Status

<table>
<thead>
<tr>
<th></th>
<th>General Population</th>
<th>Schizophrenia Population</th>
<th>MDD Population</th>
<th>Total Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$N$</td>
<td>%</td>
<td>$N$</td>
<td>%</td>
</tr>
<tr>
<td><strong>Children</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>78</td>
<td>53.1</td>
<td>22</td>
<td>26.5</td>
</tr>
<tr>
<td>No</td>
<td>69</td>
<td>46.9</td>
<td>61</td>
<td>73.5</td>
</tr>
</tbody>
</table>

### Education Attainment
Table 8.5 displays the three groups' self-reported highest level of educational attainment. Overall, individuals without a psychiatric diagnosis reported a higher level of educational attainment. Chi-squared analysis found that these differences were significant [$\chi^2(6) = 62.3, p < .001$]. Over 97% of the general population completed high school or higher compared to 50.7% for individuals with schizophrenia and 55.7% for individuals with MDD.
Table 8.5
Educational Attainment

<table>
<thead>
<tr>
<th>Education Attainment</th>
<th>General Population</th>
<th>Schizophrenia Population</th>
<th>MDD Population</th>
<th>Total Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Primary</td>
<td>4</td>
<td>2.7</td>
<td>41</td>
<td>49.4</td>
</tr>
<tr>
<td>Secondary</td>
<td>39</td>
<td>26.5</td>
<td>15</td>
<td>18.1</td>
</tr>
<tr>
<td>Tafe</td>
<td>15</td>
<td>10.2</td>
<td>12</td>
<td>14.5</td>
</tr>
<tr>
<td>Tertiary</td>
<td>89</td>
<td>60.5</td>
<td>15</td>
<td>18.1</td>
</tr>
</tbody>
</table>

**Employment Status**

Table 8.6 provides an employment profile for the three populations. Overall, individuals with schizophrenia and MDD reported a higher level of unemployment than individuals without a psychiatric diagnosis. Chi-squared analysis found that these differences were significant [$\chi^2 (6) = 139, p < .001$]. Paid employment (full or part-time) was reported by 68% of the general population compared to 14.4% of individuals diagnosed with schizophrenia and 17.2% of individuals diagnosed with MDD.

Table 8.6
Employment Status

<table>
<thead>
<tr>
<th>Employment Status</th>
<th>General Population</th>
<th>Schizophrenia Population</th>
<th>MDD Population</th>
<th>Total Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Unemployed</td>
<td>11</td>
<td>7.5</td>
<td>64</td>
<td>77.1</td>
</tr>
<tr>
<td>Employed full-time</td>
<td>67</td>
<td>45.6</td>
<td>4</td>
<td>4.8</td>
</tr>
<tr>
<td>Employed part-time</td>
<td>33</td>
<td>22.4</td>
<td>8</td>
<td>9.6</td>
</tr>
<tr>
<td>Other</td>
<td>36</td>
<td>24.5</td>
<td>7</td>
<td>8.4</td>
</tr>
</tbody>
</table>

**Source of Income**

Table 8.7 displays source of income for the three groups. Overall, individuals with schizophrenia or MMD were significantly more likely to be receiving government benefits/disability benefits than individuals without a psychiatric
diagnosis. Chi-squared analysis revealed these differences were significant [$\chi^2(4) = 173.8, p < .001$].

**Table 8.7**
Source of Income

<table>
<thead>
<tr>
<th>Source of Income</th>
<th>General Population</th>
<th>Schizophrenia Population</th>
<th>MDD Population</th>
<th>Total Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$N$</td>
<td>%</td>
<td>$N$</td>
<td>%</td>
</tr>
<tr>
<td>Government pension</td>
<td>16</td>
<td>10.9</td>
<td>73</td>
<td>88</td>
</tr>
<tr>
<td>Wage/Salary</td>
<td>106</td>
<td>72.1</td>
<td>9</td>
<td>10.8</td>
</tr>
<tr>
<td>Other</td>
<td>25</td>
<td>17</td>
<td>25</td>
<td>1.2</td>
</tr>
</tbody>
</table>

**Type of Residence**

Table 8.8 lists the type of residence reported by participants. Individuals without a psychiatric diagnosis were more likely to report they resided in a house or a flat. In contrast, individuals diagnosed with schizophrenia and MDD, reported they resided in community care units and hospital in-patient in addition to houses and flats. As such, chi square analysis was performed only for houses and flats. This difference was significant [$\chi^2 (2) = 23.7, p < .001$].

**Table 8.8**
Type of Residence

<table>
<thead>
<tr>
<th>Type of Residence</th>
<th>General Population</th>
<th>Schizophrenia Population</th>
<th>MDD Population</th>
<th>Total Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$N$</td>
<td>%</td>
<td>$N$</td>
<td>%</td>
</tr>
<tr>
<td>House</td>
<td>115</td>
<td>78.8</td>
<td>23</td>
<td>27.7</td>
</tr>
<tr>
<td>Flat</td>
<td>31</td>
<td>21.2</td>
<td>29</td>
<td>34.9</td>
</tr>
<tr>
<td>Community Care Unit*</td>
<td>0</td>
<td>0</td>
<td>15</td>
<td>18.1</td>
</tr>
<tr>
<td>Hospital/Inpatient*</td>
<td>0</td>
<td>0</td>
<td>9</td>
<td>10.8</td>
</tr>
<tr>
<td>Other*</td>
<td>1</td>
<td>0.7</td>
<td>7</td>
<td>8.4</td>
</tr>
</tbody>
</table>

*Not included in Chi square analysis due to small cell size
Summary

Tables 8.2 to 8.8 show that individuals with a psychiatric diagnosis were more likely to be single, have no children, were more likely to be unemployed, received less tertiary education and live in a range of accommodations compared to individuals without a psychiatric diagnosis.

Physical and cardiovascular health behavioural characteristics

Current Physical Illness

One hundred and two individuals of the 300 participants reported a current physical illness. Of the MDD population, 61.4% reported they had a current physical illness, followed by 37.3% of the schizophrenia population, compared to 19% of the general population. The difference in frequency of physical illness between the groups was significant [$\chi^2 (2) = 38.5$, $p < .001$]. Overall, individuals with a psychiatric disability reported they had a current physical illness twice to three times more frequently than individuals without a psychiatric illness. Physical illnesses included back problems, arthritis and diabetes.

Table 8.9

<table>
<thead>
<tr>
<th>Current Physical Illness</th>
<th>General Population</th>
<th>Schizophrenia Population</th>
<th>MDD Population</th>
<th>Total Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$N$</td>
<td>$%$</td>
<td>$N$</td>
<td>$%$</td>
</tr>
<tr>
<td>Yes</td>
<td>28</td>
<td>19</td>
<td>31</td>
<td>37.3</td>
</tr>
<tr>
<td>No</td>
<td>119</td>
<td>81</td>
<td>52</td>
<td>26.3</td>
</tr>
</tbody>
</table>

Body Mass Index

Table 8.10 shows the body mass index (BMI) according to the National Heart Foundation of Australia (NHFA) (1990) categories (weight/height$^2$: underweight, acceptable, overweight and obese). Overweight and obesity was reported by 37.4% of the general population compared to 68.7% of the schizophrenia population and 68.5% of individuals with MDD. Overall, Chi-square analysis found that these differences were significant [$\chi^2 (6) = 8.1$, $p < .001$].

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Table 8.10
Body Mass Index

<table>
<thead>
<tr>
<th>Body Mass Index</th>
<th>General Population</th>
<th>Schizophrenia Population</th>
<th>MDD Population</th>
<th>Total Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Underweight</td>
<td>10</td>
<td>6.8</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Acceptable</td>
<td>82</td>
<td>55.8</td>
<td>21</td>
<td>25.3</td>
</tr>
<tr>
<td>Overweight</td>
<td>40</td>
<td>27.2</td>
<td>23</td>
<td>27.7</td>
</tr>
<tr>
<td>Obese</td>
<td>15</td>
<td>10.2</td>
<td>34</td>
<td>41.0</td>
</tr>
</tbody>
</table>

*Smoking Status*

Table 8.11 provides a profile for smoking status for the three groups. Individuals diagnosed with schizophrenia were significantly more likely to smoke cigarettes, followed by individuals diagnosed with MDD, followed by individuals without a psychiatric diagnosis. These differences were significant [$\chi^2 (4) = 69.1, p < .001$].

Table 8.11
Smoking Status

<table>
<thead>
<tr>
<th>Smoking Status</th>
<th>General Population</th>
<th>Schizophrenia Population</th>
<th>MDD Population</th>
<th>Total Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Current smoker</td>
<td>23</td>
<td>15.6</td>
<td>65</td>
<td>78.3</td>
</tr>
<tr>
<td>Ex-smoker</td>
<td>17</td>
<td>11.6</td>
<td>4</td>
<td>4.8</td>
</tr>
<tr>
<td>Non-smoker</td>
<td>107</td>
<td>72.8</td>
<td>14</td>
<td>16.9</td>
</tr>
</tbody>
</table>

*Barriers to Smoking Cessation*

Barriers to smoking cessation for the three groups are displayed in Table 8.12. Chi-square analysis was not conducted because the assumption of independent observations was violated (Coakes & Steed, 1999). The categories were not mutually exclusive.
Table 8.12
Barriers to Smoking Cessation

<table>
<thead>
<tr>
<th>Barriers</th>
<th>General Population</th>
<th></th>
<th>Schizophrenia Population</th>
<th></th>
<th>MDD Population</th>
<th></th>
<th>Total Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>Too hard</td>
<td>9</td>
<td>6.1</td>
<td>37</td>
<td>44.6</td>
<td>20</td>
<td>28.6</td>
<td>66</td>
</tr>
<tr>
<td>Tastes good</td>
<td>4</td>
<td>2.7</td>
<td>17</td>
<td>20.5</td>
<td>5</td>
<td>7.1</td>
<td>26</td>
</tr>
<tr>
<td>Boredom</td>
<td>4</td>
<td>2.7</td>
<td>37</td>
<td>44.6</td>
<td>16</td>
<td>22.9</td>
<td>57</td>
</tr>
<tr>
<td>Habit</td>
<td>14</td>
<td>9.5</td>
<td>43</td>
<td>51.8</td>
<td>24</td>
<td>34.3</td>
<td>81</td>
</tr>
<tr>
<td>Enjoy smoking</td>
<td>9</td>
<td>5.4</td>
<td>27</td>
<td>32.5</td>
<td>19</td>
<td>27.1</td>
<td>55</td>
</tr>
<tr>
<td>Inconvenience</td>
<td>0</td>
<td>0</td>
<td>12</td>
<td>14.5</td>
<td>4</td>
<td>5.7</td>
<td>16</td>
</tr>
<tr>
<td>Alleviate negative</td>
<td>0</td>
<td>0</td>
<td>11</td>
<td>13.3</td>
<td>5</td>
<td>7.1</td>
<td>16</td>
</tr>
</tbody>
</table>

Physical Activity

Table 8.13 displays the three groups’ current physical activity. Chi-squared analysis found significant differences between the groups \[\chi^2 (6) = 23.7, p < .001\]. Overall, the general population reported higher levels of physical activity. Ninety-one per cent of individuals without a psychiatric diagnosis reported light physical activity or higher compared to 73.5% of individuals with schizophrenia and 88.5% of individuals with MDD.

Barriers to Physical Activity

Barriers to physical activity for the three groups are displayed in Table 8.14. Similar to barriers to smoking cessation, Chi-square analysis for barriers to physical activity was not conducted because the assumption of independent observations was violated (Coakes & Steed, 1999). The categories were not mutually exclusive.
Table 8.13
Physical Activity

<table>
<thead>
<tr>
<th></th>
<th>General Population</th>
<th>Schizophrenia Population</th>
<th>MDD Population</th>
<th>Total Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td><strong>Physical Activity</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>12</td>
<td>8.2</td>
<td>22</td>
<td>26.5</td>
</tr>
<tr>
<td>Light physical activity</td>
<td>62</td>
<td>42.2</td>
<td>29</td>
<td>34.9</td>
</tr>
<tr>
<td>Vigorous 1-2/week</td>
<td>38</td>
<td>25.9</td>
<td>15</td>
<td>18.1</td>
</tr>
<tr>
<td>Vigorous 3+/week</td>
<td>35</td>
<td>23.8</td>
<td>17</td>
<td>20.5</td>
</tr>
</tbody>
</table>

Table 8.14.
Barriers to Physical Activity

<table>
<thead>
<tr>
<th></th>
<th>General Population</th>
<th>Schizophrenia Population</th>
<th>MDD Population</th>
<th>Total Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td><strong>Barriers</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Costs</td>
<td>33</td>
<td>22.4</td>
<td>30</td>
<td>36.1</td>
</tr>
<tr>
<td>Busy</td>
<td>94</td>
<td>63.9</td>
<td>15</td>
<td>18.1</td>
</tr>
<tr>
<td>Pain</td>
<td>19</td>
<td>12.9</td>
<td>24</td>
<td>28.9</td>
</tr>
<tr>
<td>Physical Disability</td>
<td>8</td>
<td>5.4</td>
<td>18</td>
<td>21.7</td>
</tr>
<tr>
<td>Inconvenience</td>
<td>22</td>
<td>15.0</td>
<td>31</td>
<td>37.3</td>
</tr>
<tr>
<td>Embarrassment</td>
<td>7</td>
<td>4.8</td>
<td>11</td>
<td>13.3</td>
</tr>
<tr>
<td>Improve health</td>
<td>114</td>
<td>77.6</td>
<td>20</td>
<td>23.8</td>
</tr>
<tr>
<td>Weight loss</td>
<td>54</td>
<td>36.7</td>
<td>36</td>
<td>42.9</td>
</tr>
<tr>
<td>Social activity</td>
<td>33</td>
<td>39.4</td>
<td>15</td>
<td>18.1</td>
</tr>
</tbody>
</table>

**Eating Patterns**

Table 8.15 provides eating patterns of the three populations. Of individuals without a psychiatric diagnosis, 36.7% reported having a diet that was low in fat, compared to 26.5% of individuals with schizophrenia, and 25.7% of individuals with MDD. Chi-squared found that these differences were not significant [$\chi^2 (96) = 8.1, p = .23]$. 

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### Table 8.15
Eating Patterns

<table>
<thead>
<tr>
<th>Type of eating pattern</th>
<th>General Population</th>
<th>Schizophrenia Population</th>
<th>MDD Population</th>
<th>Total Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>No special way</td>
<td>70</td>
<td>47.6</td>
<td>50</td>
<td>60.2</td>
</tr>
<tr>
<td>Vegetarian</td>
<td>16</td>
<td>10.9</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Low in fat</td>
<td>54</td>
<td>36.7</td>
<td>22</td>
<td>26.5</td>
</tr>
<tr>
<td>Other</td>
<td>7</td>
<td>4.8</td>
<td>6</td>
<td>7.2</td>
</tr>
</tbody>
</table>

### Barriers to eat a low-fat diet

Table 8.16 displays barriers to eating a low-fat diet for the three groups. Similar to barriers to smoking cessation and physical activity, Chi-square analysis for barriers to eat a low-fat diet was not conducted because the assumption of independent observations was violated (Coakes & Steed, 1999). The categories were not mutually exclusive.

### Table 8.16
Barriers to Eating Low-fat Diet

<table>
<thead>
<tr>
<th>Barriers</th>
<th>General Population</th>
<th>Schizophrenia Population</th>
<th>MDD Population</th>
<th>Total Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Tastes</td>
<td>27</td>
<td>18.4</td>
<td>25</td>
<td>30.1</td>
</tr>
<tr>
<td>Costs</td>
<td>12</td>
<td>8.2</td>
<td>20</td>
<td>24.1</td>
</tr>
<tr>
<td>Eat out too much</td>
<td>13</td>
<td>8.8</td>
<td>11</td>
<td>13.3</td>
</tr>
<tr>
<td>Time</td>
<td>29</td>
<td>19.7</td>
<td>6</td>
<td>7.2</td>
</tr>
<tr>
<td>Storage</td>
<td>5</td>
<td>3.4</td>
<td>10</td>
<td>12.0</td>
</tr>
<tr>
<td>Availability</td>
<td>14</td>
<td>9.5</td>
<td>8</td>
<td>9.6</td>
</tr>
<tr>
<td>Inconvenience</td>
<td>12</td>
<td>8.2</td>
<td>10</td>
<td>12.0</td>
</tr>
<tr>
<td>Difficulty shopping</td>
<td>5</td>
<td>3.4</td>
<td>11</td>
<td>13.3</td>
</tr>
<tr>
<td>Don’t prepare meals</td>
<td>21</td>
<td>14.3</td>
<td>29</td>
<td>34.9</td>
</tr>
</tbody>
</table>
**Social Support**

Table 8.17 provides a profile of the source of social support perceived to be received by the three population groups. Of the types of social support that were analysed, the differences were significant between the three groups [$\chi^2 (8) = 48.9, p < .001$]. Compared to the general population, individuals with a psychiatric diagnosis were less likely to report that they received social support from a partner. Furthermore, although social support from support workers/health professionals was not included in the Chi-squared analysis, a large proportion of individuals with schizophrenia and MDD reported that their support workers and other health professionals were their main source of social support.

**Table 8.17**

Type of Social Support

<table>
<thead>
<tr>
<th></th>
<th>General Population</th>
<th>Schizophrenia Population</th>
<th>MDD Population</th>
<th>Total Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$N$</td>
<td>$%$</td>
<td>$N$</td>
<td>$%$</td>
</tr>
<tr>
<td><strong>Social Support</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No One</td>
<td>10</td>
<td>6.8</td>
<td>8</td>
<td>9.6</td>
</tr>
<tr>
<td>Mother</td>
<td>12</td>
<td>8.2</td>
<td>14</td>
<td>16.9</td>
</tr>
<tr>
<td>Partner</td>
<td>82</td>
<td>55.8</td>
<td>7</td>
<td>8.4</td>
</tr>
<tr>
<td>Other relations</td>
<td>12</td>
<td>8.2</td>
<td>15</td>
<td>18.1</td>
</tr>
<tr>
<td>Friend</td>
<td>31</td>
<td>21.1</td>
<td>16</td>
<td>19.3</td>
</tr>
<tr>
<td>Support worker/health providers*</td>
<td>0</td>
<td>0</td>
<td>19</td>
<td>22.9</td>
</tr>
<tr>
<td>Other*</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>4.8</td>
</tr>
</tbody>
</table>

*Not included in Chi square analysis due to small cell size

**Summary**

Tables 8.9 to 8.17 present participants’ physical and cardiovascular health risk characteristics and types of social support. Overall, individuals with a psychiatric illness reported higher levels of a current physical illness, had higher levels of cigarette smoking, engaged in less physical activity and received more social support from health professionals than from friends and families compared to individuals without a psychiatric diagnosis.
Comparison of the General, Schizophrenia and MDD Population on CVD Risks Factors and PMT Variables

In the following sections, separate MANOVA results for cardiovascular disease risk factors, social support, psychiatric symptoms and PMT variables for physical activity, low-fat diet and smoking cessation between the general population, schizophrenia population and MDD population are reported. Post Hoc Scheffe tests were used to determine the direction of significant differences. For those variables that violated univariate homogeneity, a conservative significance level of .01 was used (Tabachnick & Fidell, 1996).

A one-way between-groups MANOVA was performed to investigate population differences on cardiovascular risk factors (see Table 8.18). Eight dependent variables were used: Body mass index, Perceived physical health, Cardiovascular knowledge, Social support, Psychiatric symptoms, Fear of CVD, Vulnerability to CVD, Severity of CVD. The independent variable was Population (General, Schizophrenia and Depression). The Box's M test for multivariate homogeneity was significant, $F = 3.19, p < .001$, indicating a violation of the multivariate homogeneity of variance-covariance matrices. However, violation of this assumption is considered to be common with a large sample size and thus has negligible impact on multivariate analyses (Tabachnick & Fidell, 1996).

There was a statistically significant Pillai's Trace on the combined dependent variables, $F(44, 554) = 6.55, p < .001, \eta^2 = .34$. When the results for the dependent variables were considered separately, the variables that reached statistical significance were: Body mass index, Perceived physical health, Cardiovascular knowledge, Social support, Psychiatric symptoms and Vulnerability to CVD. These significant findings are discussed in the following sections.
Table 8.18

<table>
<thead>
<tr>
<th>Variable</th>
<th>General Population n = 147</th>
<th>Schizophrenia Population n = 83</th>
<th>MDD Population n = 70</th>
<th>F (2, 297)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Body mass index</td>
<td>24.8a</td>
<td>4.8</td>
<td>28.6b</td>
<td>6.1</td>
</tr>
<tr>
<td>Perceived physical health</td>
<td>3.3a</td>
<td>.97</td>
<td>2.7b</td>
<td>1.1</td>
</tr>
<tr>
<td>Cardiovascular knowledge</td>
<td>15.6a</td>
<td>4.0</td>
<td>12.9b</td>
<td>4.0</td>
</tr>
<tr>
<td>Social support</td>
<td>41.7a</td>
<td>11.0</td>
<td>34.8b</td>
<td>12.4</td>
</tr>
<tr>
<td>Psychiatric symptoms</td>
<td>10.2a</td>
<td>9.5</td>
<td>39.5b</td>
<td>23.0</td>
</tr>
<tr>
<td>Threat of Heart Disease</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fear</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vulnerability*</td>
<td>6.4</td>
<td>2.5</td>
<td>7.1</td>
<td>2.8</td>
</tr>
<tr>
<td>Severity</td>
<td>3.1a</td>
<td>1.0</td>
<td>3.2a</td>
<td>1.2</td>
</tr>
<tr>
<td>Physical Activity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current physical activity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Response–efficacy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self–efficacy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intentions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barriers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low-fat Diet</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Response–Efficacy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self–efficacy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intentions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barriers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smoking Cessation*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Response–Efficacy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self–efficacy</td>
<td></td>
<td></td>
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Note. *Only current smokers were included in analysis, * Negative worded item

Means in the same row that do not share the same subscripts differ at p < .05 in the Scheffe
significance difference comparison.

*p < .05, **p < .01, ***p < .001
**Body Mass Index**

Univariate analyses revealed significant differences between the populations on body mass index, $F(2,297) = 20.12, p < .001, \eta^2 = .12$. Examination of Post hoc Scheffe tests demonstrated that individuals with a diagnosis of schizophrenia and MDD reported significantly higher body mass indexes than individuals without a psychiatric diagnosis. There were no significant differences between schizophrenia and MDD individuals on body mass index. Means and standard deviation are displayed in Table 8.18.

**Perceived Physical Health**

Univariate analyses revealed significant effects between population and perception of current physical health, $F(2,297) = 22.87, p < .001, \eta^2 = .13$. Post hoc Scheffe tests revealed that individuals without a psychiatric diagnosis significantly reported better physical health than individuals diagnosed with schizophrenia and depression. Means and standard deviations are displayed in Table 8.18.

**Cardiovascular knowledge, Social Support and Psychiatric Symptoms**

Univariate analyses found significant effects of perceived level of social support, $F(2,297) = 9.04, p < .001, \eta^2 = .14$, psychiatric symptoms, $F(2,297) = 101.16, p < .001, \eta^2 = .42$ and knowledge of cardiovascular disease $F(2,297) = 13.55, p < .001, \eta^2 = .08$. Post hoc Scheffe tests revealed that individuals without a psychiatric diagnosis reported significantly higher levels of social support, higher levels of cardiovascular knowledge and had significantly less psychiatric symptoms than individuals diagnosed with schizophrenia and MDD. No significant differences were found between individuals with schizophrenia and MDD for social support, cardiovascular knowledge and psychiatric symptoms. Means and standard deviations are displayed in Table 8.18.

**Vulnerability to Cardiovascular Disease**

Univariate analyses found significant effects of vulnerability to cardiovascular disease between the three populations, $F(2,297) = 4.03, p < .05, \eta^2 = .03$. Post hoc Scheffe tests revealed that individuals diagnosed with MDD perceived themselves to be significantly more vulnerable to cardiovascular disease than individuals diagnosed with schizophrenia and individuals without a psychiatric diagnosis. No differences were found between individuals without a psychiatric diagnosis and individuals with schizophrenia. Means and standard deviations are displayed in Table 8.18.
Group Differences on Levels of Physical Activity and PMT Variables of Physical Activity

A one-way between-groups MANOVA was performed to investigate population differences in physical activity and factors influencing physical activity. Five dependent variables were examined: Current level of physical activity, Physical activity response-efficacy, Physical activity self-efficacy, Physical activity intention and Barriers to physical activity. The independent variable was Population (General, Schizophrenia and MDD). The analysis revealed a significant Pillai’s value on the combined dependent variables, $F (10, 588) = 3.02, p < .001, \eta^2 = .98$. Univariate analyses for the dependent variables revealed significant differences for Current physical activity, Self-efficacy, Physical activity intention and Barriers to physical activity.

Univariate analysis revealed a significant effect of current physical activity between the three populations, $F (2, 297) = 6.68, p < .01, \eta^2 = .04$. Similarly, a global difference between the three populations was found for intention to increase levels of physical exercise, $F (2, 297) = 2.86, p < .05, \eta^2 = .02$. Examination of the means and Post hoc Scheffe demonstrated that individuals without a psychiatric diagnosis reported significantly higher levels of current physical activity and intention to increase physical activity in the next six months compared to individuals diagnosed with schizophrenia and MDD. Means and standard deviations are displayed in Table 8.18.

Univariate analysis also revealed a significant effect of physical activity self-efficacy $F (2, 297) = 8.10, p < .001, \eta^2 = .05$ and barriers to physical activity $F (2, 297) = 7.34, p < .01, \eta^2 = .05$. Post hoc Scheffe tests revealed that individuals without a psychiatric diagnosis reported significantly higher levels of self-efficacy for physical activity and significantly lower levels of barriers to physical activity than individuals diagnosed with schizophrenia and MDD. However, no significant differences were found between individuals with schizophrenia and MDD on exercise self-efficacy and barriers to physical activity. Both groups reported equally high levels of barriers to physical activity and difficulties initiating and maintaining adequate level of physical activity. Means and standard deviations are displayed in Table 8.18.
Group Differences on Consumption of Low-Fat Foods and PMT
Variables of Following a Low-Fat Diet

A one-way between-groups MANOVA was performed to investigate population differences in factors influencing consumption of low-fat foods. Four dependent variables were examined: Response-efficacy to eat low-fat foods, Self-efficacy to eat low-fat diet, Intention to follow a low-fat diet and Barriers to eating low-fat foods. The analysis revealed a significant Pillai's value on the combined dependent variables, $F(8, 590) = 4.16, p < .001, \eta^2 = .05$.

Univariate analyses for the dependent variables revealed significant differences for Self-efficacy to eat low-fat foods, $F(2, 297) = 12.04, p < .001, \eta^2 = .08$ and Barriers to eating low-fat foods, $F(2, 297) = 4.6, p < .05, \eta^2 = .03$.

Examination of the means and post hoc tests demonstrated that individuals without a psychiatric diagnosis reported higher Self-efficacy to follow a low-fat diet for the next six months than individuals with a diagnosis of schizophrenia and MDD. No significant differences were found between individuals with schizophrenia and MDD for Self-efficacy to follow a low-fat diet. Similarly, a global difference between the three populations was found for Barriers to follow a low-fat diet. Individuals without a psychiatric diagnosis reported fewer Barriers to follow a low-fat diet compared to individuals diagnosed with schizophrenia and MDD. However, individuals with schizophrenia and MDD reported similar amounts of Barriers to follow a low-fat diet. Means and standard deviations are displayed in Table 8.18.

Group Differences on Levels of Smoking Cessation and PMT
Variables of Smoking Cessation

A one-way between-groups MANOVA was performed to investigate population differences in factors influencing smoking cessation. The analysis only included current smoking participants ($n = 137$). Four dependent variables were used: Response-efficacy to cease smoking, Self-efficacy to cease smoking, Intention to cease smoking and Barriers to cease smoking. The independent variable was Population (General, Schizophrenia and Depression). The analysis revealed a
significant Pillai's value on the combined dependent variables, $F(8, 218) = 3.15, p < .01, \eta^2 = .11$.

Univariate analyses for the dependent variables revealed significant differences for two dependent variables: Self-efficacy to smoking cessation, $F(2, 134) = 4.83, p < .01$, and Barriers to smoking cessation $F(2, 134) = 9.40, p < .001, \eta^2 = .15$.

Post hoc Scheffe's test found that individuals without a psychiatric diagnosis reported significantly higher Self-efficacy to cease smoking compared to individuals with schizophrenia and MDD. Means and standard deviations are displayed in Table 8.18. However, individuals without a psychiatric diagnosis had significantly lower levels of Barriers to cease smoking compared to individuals with schizophrenia but not individuals with MDD. No significant differences were found between individuals with MDD and individuals with schizophrenia for Self-efficacy and Barriers to cease smoking (see Table 8.18). More interestingly, no significant differences were found between individuals with and without a psychiatric diagnosis for Response-efficacy and Intention to cease smoking. These findings indicate individuals with a psychiatric diagnosis have similar attitudes to the benefits of quitting smoking and have similar levels of intention to cease smoking when compared to individuals from the general population.

**Summary**

The findings indicated that in general, individuals without a psychiatric diagnosis had lower BMI, perceived themselves to have better physical health, higher levels of cardiovascular knowledge, and perceived greater social support than individuals with schizophrenia and MDD. Furthermore, individuals without a psychiatric diagnosis reported higher self-efficacy and intention to exercise, and fewer barriers to exercise compared to individuals with a diagnosis of schizophrenia or MDD. Individuals without a psychiatric diagnosis also reported higher levels of self-efficacy to follow a low-fat diet and fewer barriers to follow a low-fat diet compared to individuals with schizophrenia.

Individuals without a psychiatric diagnosis also reported higher self-efficacy to cease smoking compared to individuals with a psychiatric diagnosis. However, individuals with schizophrenia reported more barriers to cease smoking compared to individuals without a psychiatric diagnosis, but not for individuals with MDD.
No significant differences were found between individuals without a psychiatric diagnosis and individuals with a psychiatric diagnosis for intention to follow a low-fat diet and to cease smoking. Moreover, levels of response-efficacy were the same for individuals with and without a psychiatric diagnosis for all three health behaviours. All respondents reported similar beliefs of the benefits of engaging in physical activity, eating a low-fat diet and stopping smoking.

The only significant difference found between the two psychiatric populations was perceived vulnerability to cardiovascular disease. Individuals with MDD reported higher perceived vulnerability of having cardiovascular disease than individuals with schizophrenia.

Overall, there were more significant differences than similarities between individuals without a psychiatric diagnosis and individuals with psychiatric diagnosis. The similarities include: Perceived fear, Perceived severity, Response efficacy for physical activity, low-fat diet and smoking cessation, and intention to follow a low-fat diet and to cease smoking.
Predicting Physical Activity, Consumption of a Low-fat Diet and Intention to Cease Smoking

A series of hierarchical multiple regressions were performed to predict current levels of physical activity, intention to increase physical activity and intention to follow a low-fat diet for the general population and psychiatric population separately. Smoking cessation behaviour was not examined due to the conceptual difficulty of assessing current smoking cessation behaviour. Furthermore, the questionnaire did not measure past or future smoking cessation behaviour. Moreover, multiple regression was performed to predict intention to cease smoking only for individuals with a psychiatric diagnosis, due to a low ratio of cases to independent variables for current smokers from the general population (n = 23).

A hierarchical logistic regression was performed to predict current consumption of low-fat food for the general population and psychiatric population.

In order to meet the assumption of the ratio of cases of independent variables for multiple regression and logistic regression (Tabachnick & Fidell, 1996) the two psychiatric populations (schizophrenia and MDD) were combined. With 153 viable cases and nine independent variables examined, the number of cases was above the minimum requirement of 113 (104 + 9) for testing individual predictors in multiple and logistic regression (Tabachnick & Fidell, 1996). Furthermore, due to the limited significant differences between individuals with schizophrenia and MDD, it seemed empirically valid to investigate the predictors for physical activity Intention and Behaviour, Current diet and Intention to follow a low-fat diet, and Intention to cease smoking for the two population groups in combination.

Six hierarchical multiple regressions were conducted to predict: Current physical activity, Intention of physical activity, and Intention to follow a low-fat diet for individuals with and without a psychiatric diagnosis, separately. A hierarchical multiple regression was also conducted to predict Intention to cease smoking only for people with a psychiatric diagnosis. Two hierarchical logistic regressions were conducted to examine current consumption of low-fat food for individuals without a psychiatric diagnosis and individuals with a psychiatric diagnosis.
**Physical Activity**

The first set of hierarchical multiple regression analyses examined Current Physical Activity. The independent variables were entered in two steps in order to predict Current Physical Activity. The Protection Motivation Theory (PMT) variables were entered at step 1 (Fear, Vulnerability, Severity, Response-efficacy, Self-efficacy Intention and Barriers). Social support and Psychiatric symptoms were entered at step 2. The results of these regressions can be seen in Tables 8.19 to 8.20.

As shown in Table 8.19, $R$ was significantly different from zero at step 1. At the first step, the PMT variables explained 58% of the variance in current physical activity, $F (7, 139) = 32.37, p < .001$. The significant predictors were Self-efficacy and Intention of physical activity. The addition of Social support and Psychiatric symptoms did not add to the predictive power of the equation, Change in $R^2 = .00$, $F_{Change} (2, 136) = .22, p > .05$.

Similarly, as shown in Table 8.20, $R$ was significantly different from zero at step 1 for individuals with psychiatric diagnosis. At the end of step 1, the PMT variables explained 25% of the variance in current physical activity, $F (7, 145) = 7.9, p < .001$. However, the addition of Social support and Psychiatric symptoms at the end of step 2 did not reliably improve $R^2$, Change in $R^2 = .01$, $F_{Change} (2, 142) = .60, p > .61$. Intention of physical activity was the only significant predictor of current physical activity.
### Table 8.19
Hierarchical Multiple Regression of Current Physical Activity in the General Population

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<th>$sr^2$</th>
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**Note:** Knowledge = Knowledge of cardiovascular disease; Vulnerability = Perceived vulnerability to cardiovascular disease; Fear = Fear of having cardiovascular disease; Severity = Perceived severity of cardiovascular disease impacting on daily activities.

* $p < .05$. ** $p < .01$. *** $p < .001$
Table 8.20

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<tr>
<th>Step</th>
<th>Predictor Variables</th>
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<th>R²</th>
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Note: Knowledge = Knowledge of cardiovascular disease; Vulnerability = Perceived vulnerability to cardiovascular disease; Fear = Fear of having cardiovascular disease; Severity = Perceived severity of cardiovascular disease impacting on daily activities.

*p < .05, **p < .01, ***p < .001
The second set of analyses examined intention to engage in physical activity. The PMT variables were entered at step 1 (Fear, Vulnerability, Severity, Response-efficacy, Self-efficacy and Barriers). Social support and Psychiatric symptoms were entered at step 2. The results of these regressions are summarised in Tables 8.21 to 8.22.

**Table 8.21**
Hierarchical Multiple Regression of Intention of Physical Activity in the General Population.

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**Note:** Knowledge = Knowledge of cardiovascular disease; Vulnerability = Perceived vulnerability to cardiovascular disease; Fear = Fear of having cardiovascular disease; Severity = Perceived severity of cardiovascular disease impacting on daily activities.

* p < .05, ** p < .01, *** p < .001
Table 8.22
Hierarchical Multiple Regression of Intention of Physical Activity in the Psychiatric Population

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<td>Psychiatric symptoms</td>
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</table>

Note: Knowledge = Knowledge of cardiovascular disease; Vulnerability = Perceived vulnerability to cardiovascular disease; Fear = Fear of having cardiovascular disease; Severity = Perceived severity of cardiovascular disease impacting on daily activities.

* p < .05, ** p < .01, *** p < .001
As shown in Table 8.21, R was significantly different from zero at step 1, indicating that the PMT variables predicted intention to increase physical activity for the general population. The PMT variables explained 52% of the variance of intention to engage in physical activity, \( F(6, 140) = 30.83, p < .001 \). The significant predictors were Vulnerability of CVD, Response-efficacy and Self-efficacy of physical activity. However, the addition of Social support and Psychiatric symptoms did not add to the predictive power of the equation, Change in \( R^2 = .01, F_{\text{Change}}(2, 137) = 1.12, p > .05 \).

For individuals with a psychiatric diagnosis, Table 8.22 demonstrated that R was significantly different from zero, indicating that the PMT variables predicted intention to engage in physical activity among individuals with schizophrenia and depression. At step 1, the PMT variables explained 68% of the variance in intention to engage in physical activity, \( F(6, 146) = 61.48, p < .001 \). The significant predictors were Response-efficacy and Self-efficacy of physical activity. However, the addition of Social support and Psychiatric symptoms did not add to the predictive power of the equation, Change in \( R^2 = .01, F_{\text{Change}}(2, 143) = .92, p > .05 \).

**Eating Patterns**

The third set of analyses examined intentions to eat low-fat foods. The predictors were entered in two steps in order to predict intention to follow a low-fat diet. The PMT variables were entered at step 1 (Fear, Vulnerability, Severity, Response-efficacy, Self-efficacy, Intention and Barriers). Social support and psychiatric symptoms were entered at step 2. The results of these regressions can be seen in Tables 8.23 to 8.24.

From Table 8.23, R was significantly different from zero at the end of step 1, indicating that the PMT variables predicted intention to follow a low-fat diet for the general population, with the PMT variables explaining 54% of the variance for intention to eat low-fat foods, \( F(6, 140) = 32.91, p < .001 \). Of the PMT variables, only Response-efficacy and Self-efficacy to diet contributed unique variance, with Self-efficacy for intention to follow a low fat diet being stronger of the two predictors. The addition of Social support and Psychiatric symptoms did not add to the predictive power of the equation, Change in \( R^2 = .02, F_{\text{Change}}(2, 137) = 1.54, p > .21 \).
Table 8.23
Hierarchical Multiple Regression of Intention to Eat Low-fat Foods in the General population

<table>
<thead>
<tr>
<th>Step</th>
<th>Predictor Variables</th>
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<th>$R^2$</th>
<th>Change in $R^2$</th>
<th>Correlate with Intention of Low-fat diet</th>
<th>$\beta$</th>
<th>$sr^2$</th>
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Note: Knowledge = Knowledge of cardiovascular disease; Vulnerability = Perceived vulnerability to cardiovascular disease; Fear = Fear of having cardiovascular disease; Severity = Perceived severity of cardiovascular disease impacting on daily activities.

* $p < .05$, ** $p < .01$, *** $p < .001$
### Table 8.24
Hierarchical Multiple Regression of Intention to Eat Low-fat Food in the Psychiatric Population

<table>
<thead>
<tr>
<th>Step</th>
<th>Predictor Variables</th>
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<th>$R^2$</th>
<th>Change in $R^2$</th>
<th>Correlate with Intention of Low-fat Diet</th>
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</tbody>
</table>

Note: Knowledge = Knowledge of cardiovascular disease; Vulnerability = Perceived vulnerability to cardiovascular disease; Fear = Fear of having cardiovascular disease; Severity = Perceived severity of cardiovascular disease impacting on daily activities.  
* $p < .05$, ** $p < .01$, *** $p < .001$

For the psychiatric population, $R$ for regression differed significantly from zero at step 1, indicating that the PMT explained 48% of the variance to eat low-fat foods, $F (6, 146) = 26.82$, $p < .001$. The predictors Severity of CVD and Self-efficacy contributed significantly to the variance. The addition of Social support and Psychiatric symptoms at Step 2, improved the prediction of intention, $\text{Change in } R^2 =$
.03, $F_{\text{Change}} (2, 143) = 3.48$, $p < .05$. The significant predictors of intention to follow a low-fat diet among individuals with a psychiatric diagnosis were Fear, Severity, Self-efficacy and Social support. The strongest predictor of these variables was Self-efficacy ($\beta = .56$, $sr^2 = .21$, $p < .001$) and the other three variables contributed an equal amount of variance ($sr^2 = .02$). Therefore, higher scores on perceived Severity, Self-efficacy and Social support, predicted intention to follow a low-fat diet in the next 6 months for individuals with a psychiatric illness. However, the higher perceived Fear of CVD, the less likely individuals with schizophrenia and MDD had an intention of following a low-fat diet (see Table 8.24).

For the assessment of current eating patterns, hierarchical logistic regression analyses were performed to examine direct and indirect relationships between the categorical dependent variables of current consumption of low-fat diet and the PMT variables, Social support and Psychiatric symptoms for individuals with and without a psychiatric diagnosis. The PMT variables (Fear, Vulnerability, Severity, Response efficacy, Self-efficacy, Intention and Barriers to follow a low-fat diet) were entered at Step 1 of the equation. Social support and Psychiatric symptoms were entered at Step 2 of the equation.

Table 8.25 shows the results of the hierarchical logistic regression in predicting current consumption of low-fat food for the general population. Overall, the PMT variables entered at step 1 significantly predicted consumption of low-fat food, $\chi^2 (7) = 46.93$ ($p < .001$). The addition of Social support and Psychiatric symptoms did not significantly improve the prediction of the model at step 2, $\chi^2 (2) = 4.47$ ($p > .05$). Although only two variables significantly predicted consumption of low-fat diet (Self-efficacy, OR = 1.35, $p < .01$; Intention, OR = 1.23, $p < .05$) the number of respondents who were correctly classified was modest (73.5%). Self-efficacy to follow a low-fat diet was the strongest predictor. Thus, individuals from the general population who perceive their ability to follow a low-fat diet and have an intention of following a low-fat diet in the next six months are more likely to currently consume low-fat diets.
Table 8.25
Hierarchical Logistic Regression of Current Consumption of Low-Fat Diet in the General Population

<table>
<thead>
<tr>
<th>Step</th>
<th>Predictors</th>
<th>Step 1 B</th>
<th>Odds Ratio</th>
<th>Step 2 B</th>
<th>Odds Ratio</th>
<th>Improvement in Model $\chi^2$</th>
<th>Correctly Classified</th>
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<td>-.23</td>
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<td>.16</td>
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<tr>
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<td>Barriers</td>
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</table>

Note: Knowledge = Knowledge of cardiovascular disease; Vulnerability = Perceived vulnerability to cardiovascular disease; Fear = Fear of having cardiovascular disease; Severity = Perceived severity of cardiovascular disease impacting on daily activities.

*p < .05, ** p < .01, *** p < .001

Table 8.26 show the hierarchical logistic regression used to predict consumption of low-fat food for individuals with a psychiatric diagnosis. The PMT variables entered at step 1 significantly predicted current low-fat food consumption, $\chi^2 (7) = 49.88$ ($p < .001$). The addition of Social support and Psychiatric symptoms did not significantly improve the prediction of the model at step 2, $\chi^2 (2) = .61$ ($p = .89$). The overall model was able to correctly classify 75.2% with Intention (OR = 1.65, $p < .01$) as a significant predictor of current consumption of low-fat diet among individuals with schizophrenia and MDD. Thus, individuals who currently consume low-fat diets have a higher intention of following a low-fat diet in the next six months.
Table 8.26
Hierarchical Logistic Regression of Current Consumption of Low-Fat Diet in the Psychiatric Population

<table>
<thead>
<tr>
<th>Step</th>
<th>Predictors</th>
<th>Step 1 B</th>
<th>Odds Ratio</th>
<th>Step 2 B</th>
<th>Odds Ratio</th>
<th>Improvement in Model $\chi^2$</th>
<th>Correctly Classified</th>
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</table>

**Note:** Knowledge = Knowledge of cardiovascular disease; Vulnerability = Perceived vulnerability to cardiovascular disease; Fear = Fear of having cardiovascular disease; Severity = Perceived severity of cardiovascular disease impacting on daily activities.

*p < .05, **p < .01, ***p < .001

**Smoking Cessation**

The following hierarchical multiple regression examined Intention to cease cigarette smoking among current smokers with a psychiatric diagnosis. The predictors were entered in two steps in order to predict intention to cease smoking. The PMT variables were entered at step 1 (Fear, Vulnerability, Severity, Response-efficacy, Self-efficacy and Barriers). Social support and Psychiatric symptoms were entered at step 2. The results of this regression can be seen in Table 8.27.
Table 8.27
Hierarchical Multiple Regression of Intention to Cease Smoking in the Psychiatric Population

<table>
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<th>Step</th>
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<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Barriers</td>
<td>-.19**</td>
<td>.06</td>
<td>.04</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Social support</td>
<td>.22*</td>
<td>.05</td>
<td>.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Psychiatric</td>
<td>-.03</td>
<td>-.21</td>
<td>.02*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>symptoms</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Knowledge = Knowledge of cardiovascular disease; Vulnerability = Perceived vulnerability to cardiovascular disease; Fear = Fear of having cardiovascular disease; Severity = Perceived severity of cardiovascular disease impacting on daily activities.

* $p < .05$, ** $p < .01$, *** $p < .001$

As shown in Table 8.27, $R^2$ was significantly different from zero after step 1 and step 2. At the first step, the PMT variables explained 40% of the variance for intention to cease smoking, $F (6, 107) = 11.37$, $p < .001$. The significant predictors were Response-efficacy and Self-efficacy to cease smoking.
The addition of Social support and Psychiatric symptoms at step 2, improved the prediction of intention, Change in $R^2 = .05$, $F_{\text{Change}}(2, 104) = .36$, $p < .05$. The significant predictors of intention to cease smoking among individuals with a psychiatric diagnosis were Vulnerability, Response-efficacy, Self-efficacy and Psychiatric symptoms. The strongest predictor of these variables was Self-efficacy ($\beta = .44$, $sr^2 = .15$, $p < .001$), followed by Response-efficacy ($\beta = .31$, $sr^2 = .08$, $p < .01$), and the perceived Vulnerability to CVD and Psychiatric symptoms contributed equal amount of variance ($sr^2 = .02$). Therefore, higher scores on perceived Response-efficacy and Self-efficacy predicted intention to cease smoking in the next 6 months for individuals with a psychiatric illness. However, the higher perceived Vulnerability to CVD and psychiatric symptoms, the less likely individuals with schizophrenia and MDD have the intention to cease smoking.

**Summary**

Overall, the hierarchical multiple regressions to predict actual levels of physical activity and intention to engage in physical activity, intention to follow a diet low in fat and intention to cease smoking for the general population and psychiatric population all departed significantly from zero. Similarly, the two hierarchical logistic regressions to predict current consumption of low-fat food among individuals with and without a psychiatric diagnosis departed significantly from zero.

In relation to individuals without a psychiatric diagnosis, the coping components of the PMT (Self-efficacy and Response-efficacy) were the best predictors of current engagement in physical activity and intention to consume a low fat diet. Behavioural intention was also a strong predictor of current physical activity and consumption of a low-fat diet among individuals without a psychiatric diagnosis. Vulnerability to CVD provided limited predictive utility for intention to engage in physical activity.

In contrast, for individuals with schizophrenia and MDD, in addition to the coping components of the PMT and behavioural intention, variables that were related to the threat components of the PMT (fear, vulnerability and severity of cardiovascular disease) were predictive of intention and actual health behaviours. The inclusion of social support and psychiatric symptoms added predictive value for intention to consume low-fat food and to cease smoking among individuals with a psychiatric diagnosis. This may indicate that individuals with schizophrenia and MDD may
require more extensive education and support to assist them to adopt health protective behaviours.
CHAPTER NINE

Results

Study 2

This chapter presents the results related to the investigation of the following questions.

1. What are the issues related to awareness and access to health care services among individuals diagnosed with schizophrenia, Major Depressive Disorder (MDD) and the general population?

2. What types of barriers are related to access of health care services among individuals diagnosed with schizophrenia, MDD and the general population?

3. What are the issues related to levels of satisfaction with health care services among individuals diagnosed with schizophrenia, MDD and the general population?

The interview sample comprised 50 participants (14 without a current psychiatric diagnosis, 10 diagnosed with schizophrenia, 10 diagnosed with MDD and 16 health care providers).

Data analysis

The above questions were evaluated using qualitative data analysis. The analysis aimed to identify major issues relevant to individuals’ access to, barriers to and satisfaction with physical health care services. Thematic analysis was used to investigate the responses of the participants. An advantage of thematic analysis is that it allows both the identification of the common patterns and the development of conceptual categories for data sorting as they emerged from the data (Lee & Peterson, 1997). For the current study, two procedures were conducted: First, familiarisation with the raw material, then the second step involved the development of broader research categories, which were in turn, broken down into smaller categories and labelling of these smaller categories. The latter procedure has been defined as “coding” themes (Lee & Peterson, 1997). The results from the interviews are presented according to the appropriate coding categories. To minimise miscoding and ensure reliability, original transcripts were given to a colleague for scrutiny,
comments and rating. Inter-rater reliability of 85% was established by calculating the percentage of agreement between the two raters. The interview data were then explored using principles of grounded theory (Patton, 1990) in order to allow meaning to emerge from the data and to develop understanding about the data. The codes were continually revised, refined and reshaped as themes emerged. The results are organised under two sections: Perspectives from the general and psychiatric populations and perspectives from health care professionals.

**Perspectives from the General and Psychiatric Populations**

*Demographic Characteristics of Participants:*

Table 9.1 provides information on the demographic characteristics of participants.

**Table 9.1**

Demographic Characteristics of Participants from the General and Psychiatric Population

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Schizophrenia</th>
<th>MDD</th>
<th>General Population</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Female (n = 5)</td>
<td>Male (n = 5)</td>
<td>Female (n = 7)</td>
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<tr>
<td>Age (mean)</td>
<td>36</td>
<td>34</td>
<td>40</td>
</tr>
<tr>
<td>Marital Status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Married/Defacto</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sep/divorced</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Widow</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Children</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>No</td>
<td>4</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Australian born</td>
<td>5</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Born ESB</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NESB parents</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>NESB</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employment</td>
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<td>Full-time</td>
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<td>0</td>
</tr>
<tr>
<td>Part-time</td>
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<td>2</td>
<td>2</td>
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<td>Casual</td>
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<td>5</td>
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<tr>
<td>Residence</td>
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<tr>
<td>Metropolitan</td>
<td>4</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Regional</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note: ESB = English Speaking Background, NESB = Non English Speaking Background.*
Table 9.1 shows that compared to the general population, individuals with either a diagnosis of schizophrenia or MDD were more likely to be unmarried, have no dependent children, be unemployed and be receiving a government pension. Area of residence and ethnicity were similar across the groups, as the researcher ensured that these two demographic variables were matched due to their potential impact on patterns of health care services access and utilisation.

The following sections discuss the themes that emerged from the semi-structured interviews. Table 9.2 presents a summary of the themes.

**Table 9.2**
Themes Derived from Content Analysis of Qualitative Data

- Awareness and Access to Health Care Services
- Barriers and Quality of Health Care Services
  - Technical Quality of Health Care Providers
  - Interpersonal Aspects of Health Care Providers
  - Communication with Health Care Providers
  - Time Spent with Doctors
  - Financial Aspects of Health Care Services
  - Financial Aspects of Health Care Services
- General Satisfaction with Health Care Services
- Improvement of Health Care Services

**Awareness and Access to Health Care Services**

Overall, participants reported similar levels of awareness to the range of health care services that are available in the community and all participants across the three groups reported that they were able to access medical care when required. General practitioners (GPs) were reported to be the first port-of-call for physical health concerns by all the participants interviewed. In fact, individuals without a mental illness tended to report only using their GPs when they had physical health concerns. In contrast, utilisation of health care services among individuals with schizophrenia and MDD was not limited to GPs, as they were more likely to access a wider variety of health care services than individuals without a mental illness. Individuals with a
mental illness reported that they used an average of three or more different types of health care services. These services included primary health care services, as well as allied health, such as physiotherapy.

"I usually go to my doctor, but when he is not available, sometimes I see a homeopath or acupuncturist, because I have a health care card." (Jane, 37yrs, diagnosed with MDD).

Although individuals with a mental illness reported easy access to medical care generally, responses relating to access to medical care on short notice provided a different picture. Nearly three-quarters of individuals with a mental illness reported difficulties getting access to medical care on short notice because the majority do not have personal transport (e.g., car), they are often isolated and are reliant on carers or support workers. One participant from rural Melbourne felt acutely the limitations imposed by social isolation:

"When I get sick it's really hard to go to my doctor because I have no car and I can't travel by public transport, because usually I get very confused about what's around me and am not able to ask for help. I only see the doctor if my support worker has made the appointment and will be going with me." (Jack, 55yrs, diagnosed with schizophrenia).

In addition to the practical issues, many participants with a mental illness expressed fear of attending medical appointments alone, difficulties articulating health concerns, and difficulties organising and planning medical appointments during an emergency. Consequently, individuals with either schizophrenia or MDD identified more barriers to accessing immediate health care than individuals without a mental illness. Participants further suggested that provision of health care for people with mental illness in the community should aim to have services co-located locally for easy access and have social support to assist with travelling and attending appointments.

**Barriers and Quality of Health Care Services**

In general, individuals without a mental illness reported fewer barriers to primary health care services compared to individuals with a mental illness. The differences between individuals with and without a mental illness were most pronounced among
responses relating to interpersonal aspects of the relationship between patients and doctors.

1. Technical Quality of Health Care Providers

All participants were asked whether they thought their physical health care providers had technical skills and knowledge. There did not appear to be group differences regarding participants’ opinions about doctors’ skills or knowledge, but there was a difference in the way the question was answered. Individuals without a mental illness appeared more positive and expressed trust towards their GP’s ability to diagnoses and treat them comprehensively. On the contrary, individuals with a mental illness tended to provide responses that their health care providers are competent and well trained, but at the same time they expressed a sense of frustration that their physical health concerns were often not taken seriously.

“*My contacts with my doctor have been useful since I changed doctors. But before, my doctor did not read his file properly and even though I was not progressing physically, he did not review his treatment. He continued to put me on these medications until my health deteriorated to the point that I requested for another opinion.*” (David, 31yrs, diagnosed with MDD).

Several other participants expressed similar views reflecting doubts about whether doctors really know about their physical health, particularly in circumstances involving mental illness, comorbidity and polydrug use.

2. Interpersonal Aspects of Health Care Providers

Over half the participants with mental illness (55%) gave instances of when they had been in situations in which they felt that the treating doctors were businesslike and impersonal towards them. The instances ranged from the little attention doctors provide to the patient, to doctors making patients feel foolish. For example, one participant described:

“*I feel that health care professionals should be more understanding and empathetic towards people with a mental illness. Many of them do not understand how to relate to you when they know that you have schizophrenia.*” (Laura, 35years, diagnosed with schizophrenia).
Similarly, another participant commented:

"More research should be done with people with mental illness. This will inform doctors about the cultural gap between doctors and patients. Doctors have little training in relating to people with mental illness and as a result there is always a power differential and patients often feel very disempowered." (Mary, 37 years, diagnosed with MDD).

In addition to the limited interpersonal skills that treating health professionals demonstrated in relating to individuals with mental illness, participants also encountered numerous experiences whereby other staff at medical clinics showed limited skills relating to patients with mental illness. Participants expressed fear of being looked at and been perceived negatively by staff at medical clinics. This is clearly demonstrated by one participant’s fear of going to a medical clinic:

"When I go to my doctor, I really need my support worker with me, because I don’t want people at the clinic just to see me. If my support worker is not there, I will avoid going." (Adam, 29 years, diagnosed with schizophrenia).

In contrast, the other 45% of individuals with mental illness and 70% of individuals without a mental illness gave instances in which they felt that their treating doctors treated them with genuine interest, with a friendly and courteous manner.

3. Communication with Health Care Providers

There were two issues about communication with health care providers that were raised by respondents. The first, was related to health care providers’ ability to communicate complex medical terms and explain the reasons for medical tests to patients. Respondents with and without a psychiatric diagnosis all expressed that health care providers were very good at explaining technical medical jargons and that this aspect of health care providers’ communication skills was not an issue. However, many respondents from the general population expressed their concern about been allowed time and opportunity to voice their health concerns and express everything
that they felt was important. Similarly, individuals with a mental illness (35%) expressed concerns about the need to be listened to and taken seriously. For example, a male participant expressed frustration that he was not always heard and felt he had limited ability to express his needs.

"When I’m at the doctor’s office, particularly when I am mentally unwell, I find it very hard to explain what I am going through." (Tony, 35 years, diagnosed with schizophrenia).

It therefore appears that individuals with and without a psychiatric diagnosis held similar views that they are not given adequate opportunity to express their health concerns when visiting health care providers.

4. **Time Spent with Doctors**

All participants with and without mental illness answered “yes” that doctors do not spend enough time during consultations. The consensus seems to be that doctors are overwhelmed by high patient demand and long-waiting lists. One patient commented:

"I just go in and get out of my doctor’s clinic. It’s like a revolving door." (Nancy, 43 years, no diagnosis)

Another patient stated:

"I feel like a number and often doctors treat you like a number, not a person, because their time is just too valuable." (Jerry, 29 years, no diagnosis).

Furthermore, the majority (85%) felt that medical clinics should open for more hours than at present and that patients with an appointment should not be made to wait for a long time.

5. **Financial Aspects of Health Care Services**

More individuals without a mental illness (45%) indicated that they are not confident that they can get the medical care they need without being set back financially compared to individuals with a psychiatric diagnosis (27%). Medical costs
concerns expressed by individuals without a mental illness was largely based on financial worries about obtaining private health insurance. This was in contrast to the majority of individuals with a mental illness who did not have private health insurance and all received health care services at a reduced rate either via health care cards or links with community organisations and community health centres. As such, individuals with a mental illness expressed less concern about medical costs.

Furthermore, individuals without a mental illness were likely to have dependent children and families, and so, medical costs would be expected to be more expensive compared to medical costs for individuals who are single, as is the case for many individuals with a mental illness. As one woman, a mother of two children with a partner who had recently been diagnosed with cancer, commented:

"I am always worrying about whether I can cover my share of the costs for medical care visits. Even though I have private health insurance, I do not feel protected financially against all possible medical problems." (Nancy, 43 years, no diagnosis)

Although individuals without a mental illness reported that the amount they pay to cover medical care needs is reasonable, they still experience concerns about the financial aspects of their medical care. Several participants mentioned that often they have to travel outside of their local area of residence to go to doctors who bulk billed, or sometimes go without medical care because the hours for bulk billing had passed.

General Satisfaction with Health Care Services

General satisfaction with health care services varied across the groups. Table 9.3 shows the means and standard deviations of the seven components of the Patient Satisfaction Questionnaire (Marshall et al., 1993) for individuals without a psychiatric diagnosis and individuals with schizophrenia and MDD.
Table 9.3

<table>
<thead>
<tr>
<th>Variables</th>
<th>General Population</th>
<th>Schizophrenia Population</th>
<th>MDD Population</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>General Satisfaction</td>
<td>36.9</td>
<td>9.9</td>
<td>26.1</td>
</tr>
<tr>
<td>Technical Quality</td>
<td>71.0</td>
<td>16.9</td>
<td>52.8</td>
</tr>
<tr>
<td>Interpersonal Aspects</td>
<td>50.6</td>
<td>10.7</td>
<td>29.7</td>
</tr>
<tr>
<td>Communication</td>
<td>37.7</td>
<td>8.1</td>
<td>20.2</td>
</tr>
<tr>
<td>Financial aspects</td>
<td>52.1</td>
<td>16.9</td>
<td>39.0</td>
</tr>
<tr>
<td>Time spent with doctor</td>
<td>11.2</td>
<td>4.5</td>
<td>3.7</td>
</tr>
<tr>
<td>Accessibility and</td>
<td>70.4</td>
<td>16.8</td>
<td>45.2</td>
</tr>
</tbody>
</table>

In relation to the interview responses, individuals (48%) with a mental illness were more likely to report that they were dissatisfied with the health care services that they accessed. The predominant reasons given for the dissatisfaction was that health care providers tended to place too much emphasis on the symptoms of their mental illness and overlooked their physical health concerns. As one participant commented:

"My contacts with my GP and my psychiatrist have not been very useful. Both these doctors focus too much on medication and keep on relating my worries about my physical health to my mental illness. They only focus on my physical health when I make a fuss or when I am really really sick." (Tracey, 33 years, diagnosed with MDD).

Or, in the words of another participant, the dissatisfaction about her GP is that:

"his work is only maintenance. He provides no suggestions nor any attempts to increase my quality of life." (Emma, 53 years, diagnosed with MDD).

The importance of health care providers treating individuals with mental illness holistically, whereby the physical and mental aspects of health are investigated, was
strongly expressed by individuals with schizophrenia and MDD. Many individuals with a psychiatric diagnosis maintained that their physical health concerns are overshadowed by their psychiatric diagnosis. Furthermore, many respondents with a psychiatric diagnosis (32%) felt that primary health care professionals, such as GPs and psychiatrists, should provide patients with information regarding ways to avoid illness and stay healthy. One participant eloquently expressed this view:

"It would be extremely useful if my GP took the time to provide me with information that I can use to make informed choices about my health. I would have been in much better physical health now if I had known that my diet can influence my dental health as well as my mental health. I found out this information far too late.” (Laura, 35 years, diagnosed with schizophrenia).

In contrast, the majority of individuals without a mental illness (85%) reported that they were very satisfied with the quality of health care they have and are receiving. Their answers mostly focused on the importance of the GP’s experience and familiarity with their family medical histories. One participant stated:

"My GP is fantastic; he has been looking after my family for three generations. When I go to him, I know that I will get complete care, as he warns me about my risk of getting particular disorders because he treats my father, mother, grandfather and grandmother.” (David, 49 years, with no diagnosis).

The above statement highlights one significant difference that emerged from the interviews. Many individuals without a mental illness reported going to see the same GP for many years, whilst individuals with a mental illness reported higher levels of doctor shopping and disengagement with GPs.

**Improvement of Health Care Services**

In relation to the questions regarding suggestions to improve health services, over 80% of all participants were unsure, did not know and expressed views reflecting doubts about whether change or improvement could happen. Their uncertainty was expressed by saying “cannot really do much, it’s a matter of funding and resources”, “These things are hard to change overnight”, and “it is especially hard for individuals with mental illness because society looks at us differently”. These statements implied
to the researcher that individuals with or without mental illness had given up, as they saw the provision of health services as being too difficult, or as someone else’s responsibility. Despite the majority of responses lacking any hope, there were a few participants who were strong advocates of improvements in health services and expressed an interest in changing health services or a desire to ‘have a say’. One participant recounted her experience of the health system:

"I have been in the mental health system for a long time. I have a deep mistrust in the majority of the health professionals that have treated me. However, I still feel that there are some good ones out there. It may be that before health services employ health professionals that will work with people with a mental illness, health services need to have some sort of consumer involvement. Consumers need to be involved in the process of recruiting health professionals. This will not only increase effective practice but also provide consumers with a sense of empowerment and contribution to the health system." (Laura, 35 years, diagnosed with schizophrenia).

**Summary**

Overall, it appears that individuals with a mental illness have equal levels of health care access, and at times are accessing a wider variety of health care services than individuals without a mental illness. However, perceived barriers, quality and satisfaction with primary health care services reported by individuals with a mental illness are distinctly different from individuals from the general population. For individuals with a mental illness, quality of care, quality of relationships with health care providers, communication, immediacy of access and perception of being listened to and validated were clearly more important than issues of costs and expertise of health care providers. For individuals without a mental illness, costs and immediacy of access to health care were the two most prominent issues.
Perspectives from Health Care Providers

In this section, perspectives of 16 health care providers concerning health care needs and services for individuals with a mental illness will be presented. The perspectives from health care professionals provide a more comprehensive understanding of the experiences and challenges faced by individuals with a mental illness when accessing primary health care services.

The following sections present 16 health care providers' views on:

- Major health problems experienced by individuals with a mental illness
- Barriers to accessing health care services or adopting health behaviour change among individuals with a mental illness
- Satisfaction with health care services as experienced by individuals with a mental illness
- Recommendations for improvement of health care services to meet the needs of individuals with a mental illness

Demographics of Characteristics of Participants

Participants were 16 health care providers with interests, skills and experience working with individuals with mental illness. Table 9.4 provides information on the demographic characteristics of participants.

The majority of participants were females (62.5%); this is expected as it reflects the high proportion of females in health care professions. The participants were drawn from a wide range of work experience and health disciplines. One third of the participants currently work in community mental health and psychiatric rehabilitation centres and two-thirds of participants were in hospital settings, working with out-patient and in-patient clients.

Data Analysis

The data analysis was guided by a thematic approach, as discussed previously, and empirical reports from the literature regarding help-seeking behaviour and socio-cultural influences of health care services. The results from the interviews are presented under four broad headings as shown in Table 9.5.
<table>
<thead>
<tr>
<th>Characteristics</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex:</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>6</td>
</tr>
<tr>
<td>Female</td>
<td>10</td>
</tr>
<tr>
<td>Profession:</td>
<td></td>
</tr>
<tr>
<td>Counsellor</td>
<td>2</td>
</tr>
<tr>
<td>Dietitian/Nutritionist</td>
<td>1</td>
</tr>
<tr>
<td>Mental health support worker</td>
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</tr>
<tr>
<td>Occupational therapist</td>
<td>1</td>
</tr>
<tr>
<td>Psychiatrist</td>
<td>2</td>
</tr>
<tr>
<td>Psychiatric nurse</td>
<td>1</td>
</tr>
<tr>
<td>Psychologist</td>
<td>2</td>
</tr>
<tr>
<td>Social work</td>
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<tr>
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<td>1-5yrs</td>
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<td>6-10yrs</td>
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<td>10yrs+</td>
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<td>Regional</td>
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</tr>
<tr>
<td>Metropolitan</td>
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</table>
Table 9.5
Themes Derived from Content Analysis of Qualitative Data

- Common health problems/health risk behaviours
- Awareness and Access to health care services
- Barriers to health care services
  - Fear and stigma
  - Psychiatric symptoms and medication
  - Interpersonal skills
  - Social support
  - Financial aspects
  - Physical health versus mental health
- General satisfaction with health care services

Common health problems/health risk behaviours

All health care providers interviewed listed lifestyle illnesses as the most common physical health concerns and problems among individuals with mental illness. These illnesses included heart disease, diabetes, lung impairments, kidney and liver damage and obesity. All participants identified that smoking was the most significant health risk behaviour among individuals with a mental illness. Over half of the respondents (55%) reported that individuals with mental illness had significant psychiatric medication side effects, and alcohol and drug-related health problems. Similarly, 58% of participants indicated that many individuals with mental illness had weight problems and significantly poor diet and nutrition. As one participant expressed:

"People with mental illness seem to be at much greater risk of lifestyle diseases, such as heart disease and diabetes. As a dietitian, I would love to change people's smoking. Smoking is one of the major risk factors for heart disease. Particularly if people are on the pension and they are spending a large proportion of their income on cigarettes, and by the time they pay rent, there is not much left over to buy good, healthy food." (Joan, dietitian)
Another participant said:

"The major concern or health problem that individuals with mental illness face is high levels of smoking. Even though individuals with mental illness do not express their health concerns that regularly, but when they do it is usually related to smoking." (Anne, psychologist).

In addition to smoking and diet-related illnesses, 17% of participants reported that individuals with mental illness, particularly women, have sexual health concerns. Women with mental illness do not go for regular pap-smear examinations, do not have breast examinations and have very limited knowledge about safe sex and preventive sexual health behaviours.

"Too many people with mental illness do not go and have regular pap tests or practise breast-self-examination, and often these women are at risk of a sexually transmitted infection or worse, cervical cancer." (Helen, social worker).

Overall, the responses appeared consistent among all participants. There was a general consensus that the physical illnesses reported among individuals with mental illness are usually related to lifestyle factors that are to a large extent preventable. These findings highlight the necessity for individuals with mental illness to consider significant health behaviour change if their physical health is to improve.

Awareness and access to health care services

There was some disagreement in the responses as to whether individuals with a mental illness were aware of available health services in the community. Forty-five per cent of respondents stated that there was a general awareness of health care services among individuals with mental illness, while 55% of respondents claimed that people with mental illness lacked knowledge about which services they can access to address physical health concerns. For example:

"I think they are aware of the services available in the community. A lot of clients I have worked with in the past know which doctors to go to in order to get benzodiazepine with no questions asked, so they all share information: Who is a good doctor and which service to avoid." (Donna, psychologist)
In relation to knowledge about healthy lifestyle and strategies to prevent physical health illnesses, there appeared to be a general agreement that individuals with a mental illness have limited knowledge about nutrition, food preparation, benefits of exercise and the harmful effects of alcohol and drug use. All the participants commented that most individuals with a mental illness do not have the knowledge nor skills regarding nutrition and food preparation. This was particularly the case if individuals had been diagnosed with a mental illness early in life. As one support worker commented:

"Many people with mental illness do not have the knowledge about nutrition and how to prepare simple healthy meals." (Carol, support worker).

Similarly, a dietitian expressed:

"Knowledge about nutrition and food varies enormously; it depends on when the person was diagnosed with the mental illness and how long they have had the mental illness. If the person has had the mental illness early in life, such as pre-adulthood, the person may not have had the opportunity to learn those life skills, such as cooking. However, when people are diagnosed well into adulthood many have gained some of those life skills, then those people are in a slightly better state." (Joan, dietitian).

Individuals with mental illness are also perceived to lack knowledge in areas of budgeting, shopping and general problem-solving skills. Again, the limited knowledge and skills is reflective of the limited opportunity to learn, either because of early mental illness diagnosis or lack of access to information and support. For example:

"I guess a lot of the time when people are first diagnosed with a mental illness, they are usually in their teenage years and have limited knowledge about money and budgeting or missed out on that. I find that people in their 30s and 40s don't have basic knowledge of how to save money or prioritise their spending." (David, counsellor).

From a different perspective, another psychologist concluded that lack of knowledge stems from the poor education of individuals with mental illness.
“Lifestyle choices and information about improving health is often not gained from primary health care providers, it is usually ad hoc from other types of services in which people with mental illness are expected to fend for themselves.” (Anna, psychologist)

Although there was some ambiguity about people’s knowledge about health care services, all health care professionals indicated that access to health care in general was very difficult, it was even more problematic for individuals with a mental illness. This was in part due to systemic reasons, such as long waiting lists, lack of health funding and overwhelming demand. The other reason may be individuals’ experience and active avoidance of accessing health services. These factors will be discussed below.

**Barriers to health care services**

1. **Fear and Stigma**

   It appears that the community still needs to change its attitudes towards people with a mental illness. The general concern expressed by the majority of health care providers (88%) was that stigma significantly affects individuals’ help-seeking behaviour.

   “Many consumers have expressed that they do not reveal their mental illness to health professionals for fear of being misunderstood and not taken seriously.” (Cindy, support worker)

Moreover, a female psychologist asserted that:

   “I think that people with mental illness are aware of the lack of respect they get in the community and they generally know where they are not welcomed. And they are aware how other people perceive them, so they don’t like waiting in doctors’ waiting rooms. So it makes it really difficult for them to seek medical help.” (Donna, psychologist)

In addition to the stigma, many health care professionals (42%) reported that individuals’ fear about the outcome of their own health also prevented them from engaging in health screening and medical check-ups. A female social worker stated:
"Consumers have said that they are fearful of knowing their own poor physical health if they seek help. So, it’s easier to be in denial and avoid investigating health problems." (Mary, social worker).

2. Psychiatric Symptoms and Personal Factors

Apathy and lack of motivation were reported to be common psychiatric symptoms. It is therefore not surprising that all health care providers reported that lack of motivation was the most significant barrier to health care seeking behaviour and adoption of early health intervention among individuals with a mental illness. This response was overwhelming and consistent across all the interviews conducted.

"Depression tends to rob people of their motivation and vitality. So they tend not to want to exercise, give up smoking or take care of themselves." (David, support worker)

This was further acknowledged by a female occupational therapist:

"It’s one thing to initiate behaviour change, but it’s another thing when you are trying to maintain behaviour change. Many consumers are able to stop smoking for a few days, but many cannot continue abstinence, which requires an enormous amount of motivation, of which many individuals with a mental problems do not have." (Mia, occupational therapist).

A large proportion of health service providers (70%) also reported that other psychiatric symptoms prevent individuals from accessing health care services. These included: difficulties with self-care and difficulties with organisational skills and meeting responsibilities. As reflected by a female psychiatrist:

"Patients have different needs and different levels of functioning. Individuals with lower levels of functioning with severe psychiatric symptoms, in particular cognitive deficits, will find it harder to make appointments and meet responsibilities." (Alice, psychiatrist)

Side effects of medication also contributed to the health promoting behaviour of individuals with mental illness. A majority of responses by health care providers (63%) argued that for many individuals with mental illness, side effects of psychiatric medications such as obesity cause considerable concern.
"Lots of consumers I have spoken to said that a lot of the time they are aware of the side effects of their medication, but they accept the side effects of things like obesity, rather than trying a different medication that can possibly bring on other side-effects of which they have little awareness.” (Paul, support worker)

The problem with psychotropic medications and weight presents an enormous dilemma for individuals with mental illness. The main struggle, as reported by the majority of health care providers, appears to be individuals’ general acceptance of weight gain as a result of taking psychiatric medications. Consequently, people with mental illness often expressed an inability and unwillingness to address weight issues.

Another concern expressed by health care professionals (77%) was that individuals with mental illness conveyed a general level of disempowerment, helplessness and low self-esteem in controlling their lives. In the words of one male psychiatrist:

"Many of the consumers have been institutionalized for so long, that they are accustomed to being told what to do. They learn to wait for people to tell them what to do. There is a great reliance on the medical system and other people for support. They are very disempowered." (Steven, psychiatrist).

The emergence of a deep sense of hopelessness and perceived lack of control as described by the majority of health care professionals, highlighted the importance of self-efficacy and response-efficacy for health behaviour change among individuals with a mental illness. Expanding on the above statement, another male counsellor stated:

"There is an immense sense of hopelessness. They often see no light at the end of the tunnel. In relation to adopting health promoting behaviour or taking care of their physical health, there is a level of awareness about the impact of their behaviour on their health, but they choose to continue to adopt self-harming behaviour, such as smoking and drug-taking, because these behaviours give them pleasure and it is often used as a coping mechanism: A way of blocking out pain and hopelessness.” (Jim, counsellor).

In relation to hopelessness, low self-esteem also emerged as having a negative effect on healthy behaviour among individuals with a mental illness as perceived by
health care providers. A comment by a female support worker serves to sum up the responses of other participants:

"Consumers have very low self-confidence and low self-esteem to seek help. They either don't believe that they deserve the help or that their physical concerns are not as important as others or important enough to seek help." (Mary, support worker)

3. Social Support

Given the impact of low self-esteem on patterns of health behaviour change among individuals with a mental illness, social support and health advocacy by health care providers on behalf of individuals with a mental illness were seen as an important health promotion strategy. All but one of the health care providers interviewed stated that individuals with mental illness need significant social support to increase their physical health help-seeking behaviour.

"Consumers do not have people to advocate for their health needs. They are a population that tends to be unable to advocate for themselves, therefore they have difficulties verbalizing their health needs." (Mary, support worker).

The most common type of social support requested by individuals with a mental illness, as reported by health care providers was for support workers to arrange and attend medical appointments with consumers. The reasons seem to be associated with fear of not been listened to by doctors and difficulties with transportation.

"When people have a physical illness, at least they are still mentally intact to make decisions and seek out information. When you have a mental illness, you cannot do that. Other people need to intervene on your behalf. If you have support around, whether it be a health team or your family, then issues such as physical health concerns will not be neglected." (Joan, dietician).

4. Financial aspects

Income influences life choices and impacts on health in many ways. In general, health care providers articulated that income was an area requiring change. They indicated that the association of poverty and ill health is always in their minds when working with individuals with a mental illness.
"Financial limitations are a huge barrier. Most of their money goes into rent and what is left over is so little, that it is hard to buy good food or take care of themselves. Often I hear people are sitting on things simply because they can't afford them, particularly dental problems. They put up with very very bad things, because of the cost of health care." (David, counsellor).

Although poverty is a problem for individuals with a mental illness and dramatically limits their choices in life, one female support worker expressed that often it may be the perception of costs that limits people more than actual poverty. She expanded this through one example,

"There is a perception that good food is expensive. I hear from clients that it is really expensive to buy fruit and vegetables. So I went out and bought these things one day and kept the receipts. The clients were very surprised that good foods do not require that much money. So, there is a perception that good food is expensive and therefore prevents people from actually buying healthy foods." (Mary, support worker).

5. Physical health versus mental health

Half of the interviewees felt strongly that physical health concerns are often overlooked by medical professionals when a person is diagnosed with mental illness. In particular, some health care providers emphasised the claim that GPs and, at times, psychiatrists focus primarily on medication and mental health issues, rather than making a conscious effort to examine physical health complaints. One psychologist recounted her experience in a public hospital,

"I think, often in my experience that clients turn up to health practitioners or emergency department who as soon as they say they have a mental illness, the mental illness is taken into account rather than the physical health or how the physical health might be mediating the mental health. For example, six months ago, in a major Melbourne Hospital, I had a referral of a woman who was described as confused, agitated and had a history of depression. I went through her file and this woman had recently had a stroke. Nowhere was the stroke written on the referral, only depression. What made it worse was that the depression happened some 20 years ago, but it was still following her around." (Donna, psychologist).

It appeared that greater emphasis may be placed upon mental health issues rather than physical health among medical professionals treating individuals with a mental illness. Moreover, the preoccupation of mental health issues compared to physical
health, however, was not confined only to medical professionals. Health care providers felt that individuals with a mental illness were also preoccupied with their mental health over their physical health. Fifty-eight per cent of health professionals reported that individuals with a mental illness had greater concerns about their mental illness rather than their physical illness. A statement given by a male occupational therapist provided a representative view of the responses:

"People do not necessarily value their physical health. There is a strong focus on their mental health and being mentally well. As a result this often gets in the way of addressing physical health concerns." (John, occupational therapist)

Compounding this issue is fear and doubts, as explained by another participant who stated:

"The lack of confidence that their physical health needs will be met prevents and delays consumers from seeking help until their physical health reaches a crisis point." (Cindy, support worker).

These results suggest that physical health concerns are often overlooked not only among health professionals working with people with a mental illness, but among individuals with a mental illness themselves. It may be that physical health concerns have a lower profile or are considered less important when psychiatric symptoms are causing an instant and direct impact on people's functioning and daily lives.

**General satisfaction with health care services**

Most health care providers thought that individuals with a mental illness were dissatisfied with the health care services they received. Over half of health care providers interviewed (66%) expressed that their clients have made more negative than positive comments about primary health care services. A female support worker summed up many people's concerns when she said:
“Often people’s physical complaints are blamed on their mental illness, and physical health concerns are not taken seriously. Clients report that they do not get the same amount of help compared to people without a mental illness. They are less likely to be investigated than the general population.” (Sue, support worker).

Similarly, a male support worker stated:

“The general perception I received about the health care system is quite poor. I think that when you have an illness you are very vulnerable and when you are in a vulnerable state and experience a negative interaction with your doctor, you feel very helpless and intimidated and, of course, you would tend to generalise this experience to all doctors.” (Paul, support worker)

Although, all health service providers reported that individuals with mental illness have expressed more negative views than positive views towards health care services, there was a reluctance among health care providers to support the validity of consumers’ views. This was frequently attributed to the fact that it was unclear whether individuals with a mental illness based their opinions on actual experience of health care services or on a stereotypical view of the health care system. As argued by one participant:

“Satisfaction with general practitioners (GPs) and psychiatrists is generally not great. However, people with mental illness have a reputation to view things negatively and tend to be dissatisfied.” (Kim, support worker)

In contrast, a male participant emphasized:

“There is a general dissatisfaction with health care services, but at the same time there is a general acceptance with what they have been offered. Many consumers believe that the health system is not designed for them and does not care for them.” (Paul, support worker)

Summary

The treatment of individuals with mental illness in the Australian health system as reported by health care providers presents a complex and bleak picture. Many health providers felt that the physical illnesses that are most common among individuals with mental illness can be prevented. However, many reasons were outlined to
explain why individuals with a mental illness are reluctant to adopt health promoting behaviours and access health care services. Many health care providers felt that the obstacles that individuals with mental illness face include: limited knowledge of and about health, restricted financial resources, fear and stigma, lack of social support, feelings of disempowerment and hopelessness. There were also a number of health care providers who believed that physical health concerns are treated differently and seen as secondary to mental health issues among individuals with mental illness.

**General Summary of Study 2**

In general, there appeared to be few differences in the perspectives held by individuals with a mental illness and those held by health care providers about health care services. Both consumers and health care providers believed that health care access and satisfaction are influenced by the quality of relationships between patients and doctors, fear, feelings of disempowerment and hopelessness, lack of focus on preventive health and too much emphasis placed on mental health rather than physical health. These issues will be discussed further in the Discussion of the thesis.
CHAPTER TEN

Discussion

Past research has indicated that people with a mental illness report higher morbidity and mortality from cardiovascular diseases compared to the general population (Coghlan et al., 2001; Koran et al., 1989). The reasons for this cardiovascular health disparity have been speculative, with behavioural and lifestyle factors appearing to be significant contributors. The aim of this thesis was to examine the prevalence of the three most widely accepted behaviours linked to cardiovascular diseases: Lack of physical activity, consumption of a high fat diet and cigarette smoking among people with a mental illness. These three health behaviours were examined among a sample of individuals diagnosed with schizophrenia, Major Depressive Disorder (MDD) and people from the general population who did not have a diagnosis of a mental illness.

A further aim of the thesis was to examine the applicability of the Protection Motivation Theory (PMT) (Rogers, 1983) to predict current behaviour and intention to engage in physical activity, consumption and intention of following a low-fat diet and intention to cease smoking among individuals diagnosed with schizophrenia and MDD. Although the PMT has been moderately successful in predicting health behaviours, past research has applied the model only in relation to people without a mental illness. Consequently, psychosocial factors predicting these behaviours among individuals with a mental illness have received little attention. This thesis aimed to extend the relatively limited literature currently available on the PMT and health behaviours among individuals with a mental illness. An expanded PMT model was developed for people with a mental illness and evaluated. Social support and psychiatric symptoms were two important factors that were included, as these were proposed to influence the health behaviours of individuals with a mental illness.

In addition to the intrapersonal dimensions of health behaviour, the interpersonal dimensions of health behaviours, such as access to and experience of health care services were considered to be influential to health-related decisions and health outcome among individuals with a mental illness (Regier et al., 1985). Labonte (1988) argued that the health of individuals is intertwined with the health of their communities, the community’s ability to provide preventive and primary care services, and the socioenvironmental factors that underlie health. To address this dimension of health and gain a clearer understanding of the problems and issues
impacting on the health of individuals with a mental illness, the current thesis also explored consumers’ perception of their needs and concerns regarding access to, barriers to and satisfaction with health care services.

The first section of the Discussion presents the findings of Study 1 that examined the differences and similarities between people who did not have a diagnosis of a mental illness and people with schizophrenia and MDD in relation to physical activity, consumption of a low-fat diet and cigarette smoking. This is followed by a discussion of the extent to which the expanded PMT model with the inclusion of social support and psychiatric symptoms predicted health behaviours among individuals diagnosed with schizophrenia and MDD.

The second section of the Discussion presents the findings of Study 2 that explored the issues related to health care access, barriers and satisfaction among individuals with and without a mental illness, and health care providers.

Study 1

Hypothesis One

*Individuals diagnosed with schizophrenia and MMD will report lower levels of physical activity, a diet high in fat and higher levels of cigarette smoking than the general population.*

The first hypothesis was partially supported. Individuals with schizophrenia and MDD reported less physical activity and higher levels of cigarette smoking compared to the general population. However, all respondents in the study reported that they consumed similar types of diets. These findings were in general accord with the results of past studies, which showed that individuals with a mental illness report substantially higher levels of cigarette smoking and are less physically active than individuals without a mental illness (Davidson et al., 2002).

Physical Activity

In general, the findings on levels of physical activity were supportive of other research that has found that individuals with a mental illness demonstrate high levels of physical inactivity and sedentary behaviour (Brown et al., 1999; Farnam et al., 1999). For individuals without a mental illness, their reasons for exercising were not related to their weight, but heart health was an issue of particular importance. Results
indicated that, as would be expected, there were many reasons for individuals without a mental illness to adhere to regular exercise. The motivators ranged from weight loss, social activity and physical health and fitness. In contrast, individuals with schizophrenia and MDD reported their main reason for exercising was related to weight loss. In addition, individuals with a mental illness also identified a number of barriers to engaging in exercise. Lack of motivation was among the most common of these perceived barriers for individuals with schizophrenia. The lack of motivation may be indicative of psychiatric symptoms or that individuals taking psychotropic medications may experience more lethargy. For people with MDD, somatic pain was reported to be the main barrier to engaging in physical activity. This is consistent with the higher levels of physical illness reported by individuals with MDD.

_Eating Patterns and Weight_

As expected, the results of this study show that there is a high percentage of people with schizophrenia and MDD who were overweight and/or obese. These respondents also reported that they had less knowledge of correct dietary principles compared to individuals without a mental illness. This finding supports previous studies that have found a high prevalence of overweight and obesity among individuals with a mental illness (Gopaslaswamy & Morgan, 1985; Wallace & Tennant, 1998). Contrary to expectations, there were no significant differences between the three populations for types of diet consumed. As individuals with a mental illness reported less knowledge of what constituted a balanced diet and the risk factors for cardiovascular disease, one would expect their diets to be high in fat. However, this was not reported.

There are at least three possible explanations for this finding: First, the diets of individuals with a mental illness may be similar to those without a mental illness because many of the people with mental illness (at least one-third of the sample) were interviewed at the time when they were an in-patient or living in community care units, in which case their meals were prepared by others. Similarly, for those individuals living in the community, many reported receiving regular “meals on wheels” – a free service to assist people to obtain food and meals. Second, the diets for all three populations may all have been harmful, but the differences in overweight and obesity levels may be a result of differing levels of physical activity rather than types of food consumed. The higher level of obesity in individuals with
schizophrenia and MDD may be linked to low physical activity, as indicated by the current research or possible side-effects of certain medication used to treat mental illness (Coghlan et al., 2001). Third, whilst types of diet were reported, the amount of food consumption was not recorded during interviews. Individuals with a mental illness may be eating similar foods to those without a mental illness, but people with schizophrenia and MDD may be over-eating.

Gopalan et al. (1985) surveyed 190 individuals with chronic mental illness and found that among the contributors to this population’s obesity, overeating and under-activity were the most significant. The lifestyle of people with a mental illness may lack the level of satisfaction available to people without a mental illness, and for many people with schizophrenia and MDD the only pleasures left are eating, sleeping and smoking. This explanation seems plausible and consistent with LaPorte’s (1990) findings which showed that depressed individuals eat in an attempt to manage their negative affect.

Cigarette Smoking

Individuals with schizophrenia and MDD were four to five times more likely than individuals from the general population to smoke cigarettes daily. On average, people with schizophrenia smoked 15 cigarettes per day compared to 8 cigarettes per day for individuals with MDD and 5 cigarettes per day for individuals without a mental illness. Enjoyment of smoking was also reported to be higher among those diagnosed with a mental illness compared to those without a mental illness diagnosis.

These findings are consistent with other research, in which as high as 88% of people with schizophrenia have been reported to be current smokers (Davidson et al., 2002; Hughes et al., 1986). Similarly, the research supports previous findings that individuals with MDD are more than two times likely to be current smokers (Breslau et al., 1991; Kandel & Davies, 1986; Fergusson et al., 1996; 2003). Some authors have argued that differences in smoking rates between individuals with a mental illness and the general population can be explained by the association of severe mental illness to low level of education and social class (de Leon, et al., 2002; Lohr & Flynn, 1992). From the smoking literature it has been consistently reported that members of the more disadvantaged class have higher rates of smoking, have less access to smoking cessation programs and information about the negative effects of smoking (Kirsch et al., 1989; Owen & Halford, 1988). It is, therefore, not
unexpected that less-educated and less-affluent individuals, who comprise the majority of patients with schizophrenia and MDD, were also more likely to be smokers (Escobeda, Anda, Smith, Remington, & Mast, 1990). As such, it could be argued that results of smoking behaviour among individuals with a mental illness are similar to findings with populations who are typically poor and disenfranchised.

A study by Hughes et al. (1986), however, did not support the differentiation of socio-economic status among people who smoke. In a study of individuals with a mental illness, no differences related to socio-economic status were found between smokers and non-smokers. Therefore, smoking as a result of low socio-economic status does not fully explain why individuals with a mental illness have high rates of smoking levels.

Increasing evidence suggests that individuals with a mental illness smoke because their psychiatric illness heightens the vulnerability to nicotine dependence (Glynn & Sussman, 1990). Smoking may be used as a strategy to alleviate stress and depression. From the current study, individuals with a mental illness reported that they smoked primarily for the sedative effects of nicotine and to aid in concentration. This result supports McCreadie’s (2003) findings that factors contributing to cigarette smoking include the use of tobacco as a stimulant, a coping mechanism to deal with stress, and a facilitator of relaxation. Furthermore, the possible effects of nicotine on negative symptoms of schizophrenia and MDD and its interaction with psychotropic drugs has been the subject of much discussion, with mixed findings reported in the literature (de Leon, et al., 2002; Kelly & McCreadie, 1999). Individuals with a mental illness may use smoking to ameliorate the cognitive dysfunction and negative symptoms associated with mental illness and medications (Forchuk et al. 2002; Fergusson et al., 2003).

The current findings provide partial support for this hypothesis. Participants with MDD in the present study reported that the stimulant effects of nicotine alleviate some of the symptoms of depression. These included lethargy, apathy and poor concentration. In contrast, many respondents with schizophrenia reported they smoked out of habit, and that they experience greater barriers to cease smoking, such as peer influence, medication and boredom. Therefore, the use of nicotine to relieve some of the chronically unpleasant symptoms and the presence of greater barriers to cease smoking, may help explain why individuals diagnosed with schizophrenia and MDD smoke heavily.
Hypothesis Two & Three

Components of the Protection Motivation Theory (PMT), Perceived Social Support and Psychiatric Symptoms will predict physical activity and low-fat diet intentions and behaviour and intention to cease cigarette smoking.

In the current study, the PMT model provided modest power to predict health behaviour intentions and behaviour change for physical activity (26-68%), low-fat diet (51-55%) and behavioural intention to cease smoking (45%). This is consistent with the findings of Plotnikoff and Higginbotham (1998) who found that the PMT model predicted a moderate amount of variance for exercise behaviour and intention (29-54%) and low-fat diet intention and behaviour (27-46%) among cardiac sufferers and a community population. The following sections discuss the components of the PMT that predicted physical activity, dietary change and smoking cessation for individuals without a psychiatric diagnosis and individuals with a psychiatric diagnosis.

Physical Activity

Overall, the results provide partial support for the usefulness of the PMT in predicting physical activity for individuals with and without a psychiatric diagnosis. The coping components of the PMT (Self-efficacy and Response-efficacy) were the strongest predictors of intention to increase levels of physical activity and current physical activity for individuals with and without a psychiatric diagnosis. Several studies have provided support for the role of the coping appraisals of the PMT on intention to engage in physical exercise and performance of regular exercise in the general population (Sallis et al., 1989; Standley & Maddux, 1986). Standley and Maddux (1986) found that self-efficacy was the single most important variable in determining intention to participate in an exercise program. Similarly, Wurtele and Maddux (1987) and Fruin et al. (1991) reported that self-efficacy significantly predicted exercise intentions. These previous studies were conducted among people from the general population. The present study extends the previous research by demonstrating that these relationships also occur among people with psychiatric illness. Findings from the current study support the argument that individuals who feel able to carry out a behaviour and perceive a positive outcome from the behaviour
are more likely to have the intention of adopting the behaviour (see Figures 11.1 and 11.2).

**Figure 11.1**
PMT Path Model of Standardised Beta Coefficients for Intention and Current Physical Activity for the General Population.

(Note: Only variables with significant loading to predict target variables are included in diagrams. For full diagram of the PMT model please refer to Figure 4.2).

**Figure 11.2**

Contrary to expectations, the threat appraisal components of the PMT (Vulnerability and Severity) showed limited power to predict intention and concurrent physical activity for individuals without a psychiatric diagnosis and had no predictive value among individuals with a psychiatric diagnosis. This finding is unexpected, since individuals with a psychiatric diagnosis, particularly for individuals with MDD, reported significantly higher levels of perceived Vulnerability of CVD compared to
respondents from the general population (see Table 8.18). Thus, awareness of one’s personal vulnerability to CVD would be expected to increase the level of physical activity reported among individuals with a mental illness. It may be that perceived vulnerability to a health threat is a necessary requirement before an individual will think about behaviour change, but, perceived vulnerability is not sufficient by itself to actually induce people to change their behaviour (van der Plight, 1998). The influence of self-efficacy and perceived barrier are important.

Examination of the means for Self-efficacy and Barriers indicate that the perception of respondents with schizophrenia and MDD’s ability to exercise were significantly lower, and barriers to exercise were greater, than those of the general population. However, perceived level of positive outcome from physical activity (Response-efficacy) was similar across the populations. These results suggest that, despite individuals with a mental illness reporting higher perceived vulnerability to CVD and attitudes toward exercise similar to people from the general population, it is their lower sense of self-efficacy and greater perceived barriers that contribute to their low levels of intention to engage in physical activity and their low levels of current physical activity. This is consistent with previous findings of exercise behaviour among individuals with schizophrenia (Faulkner & Biddle, 1999; Pelham et al., 1993).

**Eating Patterns**

Although the present results indicate that people with and without a mental illness consumed similar diets, the factors that contribute to intention of and consumption of low-fat diets differ between the two populations. For respondents from the general population, Self-efficacy, Response-efficacy and Intention predicted intention to follow a low-fat diet and consumption of a low-fat diet. However, for individuals with a psychiatric diagnosis, perceived Fear of CVD, Severity of CVD, Self-efficacy, Intention and Social support contributed significantly to low-fat diet intention and consumption (see Figures 11.3 and 11.4).
Figure 11.3
PMT Path Model of Standardised Beta Coefficients for Intention and Consumption of a Low-fat Diet for the General Population.

![Diagram](image)

Figure 11.4

![Diagram](image)

In general, the current findings are supportive of previous research which found that intention to perform a behaviour positively predicts that behaviour (Ajzen & Fishbein, 1980; Orbell et al., 1997). Sheeran and Orbell (1998) found correlations of .45 in their meta-analyses of the relationship between intention and behaviour. Furthermore, the finding that the perception of one's ability to follow a low-fat diet contributed to intention to consume a low fat diet is also consistent with past research (Miller, Wikoff, McMahon, Garrett, & Ringle, 1985; Plotnikoff & Higginbotham, 1995).

For individuals from the general population, perception of one's ability to follow a low-fat diet and perceived positive consequences from following a low-fat diet were
sufficient to motivate low-fat food consumption. However, for individuals with schizophrenia and MDD, motivation to eat a low-fat diet extended beyond the perception of one's ability to follow a low-fat diet. Perceived fear, severity of CVD and social support were also influential in motivation to consume a low-fat diet.

Rogers (1984) theorised that the effects of fear arousal on intention and/or behaviour can be direct or mediated by the perceived severity of a threat. The present study revealed such an effect for individuals with a psychiatric diagnosis in relation to intention to follow a low-fat diet. However, the perception of fear is not always predictive of protective behavioural changes, but is also associated with a greater degree of health risk behaviour (Leventhal, 1970). As suggested by Rippetoe and Rogers (1987), maladaptive coping is triggered by fear. In their study, fear stimulated the maladaptive coping of avoidant thinking. Avoidant thinking about the danger, in turn, reduced fear of it and weakened intentions to practise adaptive coping responses (Rippetoe & Rogers, 1987). The current result supports this research. The negative influence of fear on intention to follow a low-fat diet for individuals with a mental illness suggests that the greater the fear of having cardiovascular disease, the less the intention an individual has of adopting a low-fat diet. This finding lends further support to the view that high levels of fear may produce denial and consequently ineffective coping responses (Plotnikoff & Higginbotham, 1995).

Perceived severity of having CVD also contributed to the prediction of intention to eat a low-fat diet among individuals diagnosed with schizophrenia and MDD. This finding, however, is in contrast to many studies which have found perceived severity to be a poor predictor of behavioural intention (Harrison, Hopkins, MacFarlane, & Worsley, 1992; Janz & Becker, 1984).

For example, Wurtele and Maddux (1987) reported no significant effect of severity of lack of exercise related illnesses on behavioural intention. In contrast, Ronis and Harel (1989) found that the effects of severity of breast cancer predicted intention of breast self-examination among women from the general population. The current findings therefore add to the inconsistencies among research outcomes regarding the importance of severity of a threat on behavioural intention and change. It is possible that the association between perceived severity and intention and behaviour is more common for some people but not for others. For example, individuals who are more ambivalent or "uncertainty-oriented" have been found to obtain higher levels of perceived threat of an illness and their perceived threat had
greater effect on intention and behaviour compared to “certainty-orientated people” (Brouwers & Sorrentino, 1993). Thus, individuals with a psychiatric illness may have heightened levels of “uncertainty”, such as catastrophizing events, where perceived severity of an illness is likely to trigger an intention to change behaviour. This finding presents a mixed picture of the influence of perceived threat on behavioural intention to consume a low-fat diet among individuals with a mental illness. As indicated, on the one hand, fear of CVD posed a negative influence upon behavioural intention and on the other, perceived severity of CVD increases behavioural intention. Thus, the ambiguous influence of the threat variables of the PMT on behavioural intention and behaviour among individuals with schizophrenia and MDD may reflect the complexity and contradictory attitudes of many individuals with a mental illness. It may be, for this population, other factors are required to influence health behavioural intention and behaviour change, to compensate for the confusing role of perceived threat. Perceived social support may be one of these factors.

Perceived social support significantly predicted intention to adhere to a low-fat diet among individuals with MDD. This finding is consistent with research from the social support literature. Social support has been proposed to account for the protective effect on morbidity: enhanced access to health care and health practices, social regulation of health behaviour; provision of information, tangible and appraisal resources (Cohen et al., 2000; Cohen & Wills, 1985). The current finding therefore suggests that individuals with a psychiatric diagnosis who report higher levels of social support, in fact, are more likely to have an intention to follow a low-fat diet. This is particularly important, when one of the main sources of social support for individuals with a psychiatric diagnosis is reported to be mental health support workers and health professionals (refer to Table 8.17). The reliance upon social support to increase intention of low-fat diet consumption among individuals with a psychiatric diagnosis supports earlier hypotheses that individuals’ consumption of a low-fat diet is not entirely based upon internal factors such as self-efficacy, but also external factors such as “meals-on-wheels” services as discussed earlier.

**Smoking Cessation**

As expected, the coping appraisals of PMT (Self-efficacy and Response-efficacy) were found to be significant predictors of intention to cease smoking for individuals with schizophrenia and MDD (see Figure 11.5). This result supports Maddux and
Rogers' (1983) finding that self-efficacy and response-efficacy were the most powerful predictors of smoking cessation intentions in the general population. In studies of people's self-efficacy following a structured treatment program, self-efficacy evaluations for maintenance of smoking cessation have been shown to correlate significantly with smoking rates of respondents from one to six months following treatment (McKenna & Higgins, 1997). The present study extends these findings to individuals with a psychiatric diagnosis by showing that the relationship between Self-efficacy and Response-efficacy and intention to cease smoking also occurs among individuals with schizophrenia and MDD.

**Figure 11.5**

PMT Path Model of Standardised Beta Coefficients for Intention to Cease Smoking for the Psychiatric Population.

![Diagram of PMT Path Model](image)

Recent research indicates that individuals with a mental illness have a greater number of smoking cessation attempts compared to the general population, but are less successful in maintaining abstinence (Green & Popc, 2000). De Leon et al. (2002) reported that only 45% of individuals with schizophrenia were successful at quitting smoking compared to 85% of the general United States population. Furthermore, some research has found that people with a mental illness underestimated the positive consequences of smoking cessation compared to individuals without a mental illness (Dixon et al., 1991). However, in the present study the perception of positive outcomes of smoking cessations (Response-efficacy) and intention to cease smoking was similar between individuals with and without a psychiatric diagnosis (see Table 8.18). Thus, individuals with a psychiatric diagnosis in the present study held similar beliefs that smoking cessation would increase their physical health and reduce their risk of CVD, and had similar levels of intention to
cease smoking to those of individuals without a mental illness. Despite this encouraging finding, cigarette smoking was disproportionately higher among individuals with a mental illness. One explanation for this finding is that individuals with a mental illness are less likely to express confidence in their ability to stop smoking. Indeed, the significantly lower level of self-efficacy to cease smoking and more perceived barriers to cease smoking reported among individuals with schizophrenia and MDD compared to the general population in the current study supports this explanation. Individuals’ perception of their ability to quit smoking influences their attempts because they expect to fail, and do not wish to risk the loss of self-esteem associated with failure. This is consistent with Bandura’s (1977) self-efficacy theory and provides some insight as to why individuals with a mental illness are less successful in quitting smoking.

Furthermore, the efficacy of interventions for smoking cessation is related to the stage of readiness to change and intention for behaviour change. In this respect, results from the current study found that many of the respondents from the psychiatric population reported a high number of rewards of not ceasing smoking and reported more barriers to cease smoking compared to the general population. Smoking was reported to serve as a form of relief from boredom (68%) and was enjoyable. According to the PMT, the higher the rewards of not adopting a protective behaviour (e.g., cease smoking), the less likely the individual is to adopt a protective behaviour (Rogers, 1983). The implication of this finding is significant, as many smoking intervention programs require participants to be at the “contemplation stage” of behaviour change. This highlights the inappropriateness of these programs for the many individuals with a psychiatric diagnosis, who enjoys smoking and perceives high barriers to cut down on their cigarette smoking.

In addition to the coping appraisal components of PMT, psychiatric symptoms were found to be predictive of smoking cessation. Individuals with a psychiatric illness reported a negative association between psychiatric symptoms and intention to cease smoking. That is, as respondents experienced an increase in psychiatric symptoms they were less likely to have an intention to cease smoking. This finding provides some support to the “self-medication” theory, which proposes that nicotine enhances dopaminergic functioning via cigarette smoking, resulting in partially diminished negative symptoms (e.g., blunted affect, alogia, avolition and anhedonia) (Breslau et al., 1986; Hughes et al., 1986). The association between high psychiatric
symptoms and less intention to quit smoking suggests that individuals with a psychiatric illness in the current study may be using smoking to modify their mood. For individuals with schizophrenia, nicotine may reduce the negative symptoms and for individuals with MDD, nicotine may counterbalance or relieve their dysphoric mood.

Contrary to expectations, the current study found that severity of CVD had no predictive power for predicting intention to cease smoking and that vulnerability of CVD negatively predicted intention to cease smoking. This finding is in contrast to the findings of Maddux and Rogers (1983) and Ho (1992) who found a significant positive relationship for severity and smoking cessation intentions among individuals from the general population.

However, the negative association between vulnerability of CVD and the intention to cease smoking is in general accord with results demonstrating a negative relationship between fear and intention to adopt a low-fat diet previously discussed. Similar to the relationship between fear and intention to eat a low-fat diet, high levels of perceived CVD vulnerability may have an adverse effect on health behaviour adoption rather than being a positive motivator among people with a psychiatric illness. The influence of perceived vulnerability to CVD may result in maladaptive coping responses, such as denial, avoidance and feelings of hopelessness, all of which have been found to inhibit protection motivation (intention and behaviour) (Fruin et al., 1991; Rippetoe & Rogers, 1987). Hopelessness and helplessness are key features of severe psychiatric illness, such as depression (APA, 2000). It is possible that the vulnerability of having a cardiovascular disease heightens a sense of hopelessness and helplessness among individuals with a mental illness. This, in turn, may decrease the individual’s motivation to adopt or adhere to lifestyle changes such as stopping smoking. As such, the negative relationship between perceived vulnerability and intention to cease smoking is a unique finding and may be limited to individuals with a psychiatric diagnosis. This hypothesis is consistent with the results of past studies, which showed that depressed patients are less compliant with treatment regimes, are more likely to leave cardiac rehabilitation programs prior to completion, and are less likely to alter health risk behaviours (Everson et al., 1996).

In sum, motivation to cease smoking for the two psychiatric populations appears to be mainly influenced by the individual’s self-efficacy and response-efficacy. That is, individuals who attribute a positive outcome to quitting smoking, or perceive that
they can cease smoking in the next six months, are more likely to have the intention to
cease smoking. In addition, for individuals with a psychiatric diagnosis, there appears
to be great ambivalence towards intention to cease smoking. Whilst the benefits of
smoking cessation are acknowledged on the one hand, smoking is also seen as a
useful stress-control and psychiatric symptom control strategy on the other. Overall,
the current study provides tentative findings that smoking may be used as an aid to
relieve negative symptoms and that perceived vulnerability to CVD decreases an
individual's intention to adopt health behaviour change.

**Conclusion for Study 1**

Overall, the findings from Study 1 demonstrated that individuals with
schizophrenia and MDD reported engaging in less physical activity and higher levels
of cigarette smoking compared to individuals without a mental illness. However, no
differences were found between individuals with a psychiatric diagnosis and the
general population in terms of eating habits, in particular a low-fat diet.

In relation to the PMT variables in predicting health behaviours, the impact of
perceived fear, vulnerability and severity of cardiovascular diseases to predict health
behaviour had mixed support. For example, the role of vulnerability positively
predicted intention to engage in physical activity only for individuals without a
psychiatric diagnosis, while an increase in perceived vulnerability of CVD among
individuals with schizophrenia and MDD decreased the likelihood of an intention to
cease smoking. These findings suggest that the role of fear, vulnerability, and
severity in influencing attitudes and behavioural intentions is ambiguous and
strengthens the argument emerging in the literature that perceived fear, vulnerability
and severity of cardiovascular disease has a limited role in motivating behaviour
change (Hodgkins & Orbell, 1998; Milne et al., 200; Stanley & Maddux, 1986).

One explanation for these findings is that the threat of cardiovascular disease may
not generate enough motivation to influence intention to and adoption of behaviour
change. Furthermore, the vulnerability to CVD and perceived fear of having CVD
may in fact have a negative effect for individuals with a psychiatric diagnosis. Threat
appraisal and fear of an illness may be effective in initiating anxiety for a short period
of time. However, to inspire intention and adoption of health behaviour, there needs
to be perceived positive consequences of adopting the given health behaviour and perceived ability of carrying out the given health behaviour.

The strong and consistent influence of self-efficacy and response-efficacy on health-related intentions and health behaviour in the present study is congruent with results of past studies, despite the fact that past research has been exclusively conducted among individuals from the general population (Sallis et al., 1989; Standley & Maddux, 1986). For example, Standley and Maddux (1986) found that self-efficacy was the single most important variable in determining intention to participate in an exercise program. Similarly, Wurtele and Maddux (1987) and Fruin et al. (1991) reported that self-efficacy significantly predicted exercise intentions. These findings are supportive of the self-efficacy theory (Bandura, 1977, 1986, 1991), in that confidence in one's ability to perform a particular behaviour is strongly related to behaviour intentions and actual behaviour.

Given the strong influence of self-efficacy on health behaviour intentions and adoption, it is therefore not unexpected that levels of physical activity and intention to cease smoking were substantially lower among individuals with a psychiatric illness compared to the general population, as the level of self-efficacy to engage in physical activity and smoking cessation were significantly lower among respondents with a psychiatric diagnosis than among the general population. In general, self-efficacy may reflect the fact that knowledge and skills for behaviour change are often acquired through life experiences. For many individuals with a mental illness, particularly those who were diagnosed during early adolescence, as commonly seen in patients with schizophrenia and MDD, the opportunity to learn and acquire life skills, such as cooking, nutrition, etc., are limited, which then results in low levels of self-efficacy to adopt health behaviour change.

In relation to response-efficacy, the perception of the positive outcome to adopt a health behaviour was similar among individuals with and without a psychiatric diagnosis. That is, individuals with a psychiatric diagnosis had similar attitudes regarding the health benefits of engaging in physical activity, consuming a low-fat diet and stopping smoking compared to that of respondents from the general population. This similarity may be indicative that mass health campaigns and public health messages are effective in reaching people with mental illness. Modifying attitudes alone, however, is not sufficient for behaviour change: barriers to behaviour change also need to be addressed. For individuals with a psychiatric diagnosis, the
barriers appear to be greater and both internal factors (e.g., low self-efficacy) and external factors (e.g., social isolation) are important for health-related intentions and adoption of health behaviour.

Another important finding from the present study, is the strong predictive value of behavioural intention on behaviour. For the two health behaviours investigated (physical activity and consumption of a low diet), intention of adopting the behaviour predicted concurrent behaviour among individuals with and without a psychiatric diagnosis. These findings support and extend previous research showing that behavioural intention predicts concurrent behaviour (Ajzen & Fishbein, 1980; Conner, Sheeran, Norman, & Armitage, 2000).

Psychiatric symptoms and social support contributed significantly to consumption of a low-fat diet intention and smoking cessation intention among individuals with schizophrenia. This finding is in accord with past research which demonstrated that supportive relationships provide and increase access to useful information regarding healthful behaviours and thus facilitate behavioural intentions directly (Cohen & Wills, 1985). Furthermore, the negative association of psychiatric symptoms on smoking cessation intention lends further support to the “self-medication” theory. It could be argued that cigarette smoking among individuals with a psychiatric diagnosis serve to alleviate negative mood and offer opportunities to socialise when many of these people are unemployed and feel isolated. Therefore, it appears that individuals with a mental illness experience have unique quitting motives and barriers compared to individuals without a mental illness.

Overall, the present study provides partial support for the PMT in the prediction of health intentions and behaviours among individuals with a mental illness. The expanded PMT model with the inclusion of social support and psychiatric symptoms provided more predictive power among individuals with schizophrenia and MDD for intention to adopt a low-fat diet and to cease smoking. More specifically, for individuals without a psychiatric illness, self-efficacy was the strongest predictor variable for behaviour change. For individuals with a mental illness other factors such as social support and psychiatric symptoms were also important in predicting behaviour intentions to adopt protective health behaviours. Furthermore, the differential factor that separated individuals with a mental illness and individuals without a mental illness is the effect of fear and vulnerability of having CVD. Fear and vulnerability of CVD negatively influenced intention to adopt health behaviours.
among individuals with a psychiatric diagnosis. As such, different and unique interventions may be needed for those diagnosed with a psychiatric illness. For individuals with a psychiatric diagnosis, not only is enhancing knowledge and skills and perception of one’s ability to perform certain behaviour important, but more comprehensive interventions are required, targeting psychiatric symptoms, increasing social support and alleviating fear.

**Study 2**

Analysis of data from Study 2 revealed a range of interpersonal and social influences associated with primary health care utilisation and satisfaction among respondents. Importantly, there were differences in the perception and satisfaction with primary health care services between the psychiatric group and the general population group. Furthermore, many concerns expressed by individuals with a mental illness were consistent with those expressed by health care providers.

In this section, key findings from Study 2 will be discussed according to the research questions from Chapter 1: Access to, barriers to and satisfaction with primary health care services. Where possible results related to the attitudes to health care services held by health care providers and individuals’ with and without psychiatric illness are presented together in order to draw comparison between them. A diagrammatic interplay of factors in consumers' access to, barriers to and satisfaction with primary health care services can also be referred to during this discussion in Figure 11.6. The diagram was developed based on responses from Study 2. Four main factors were identified to have contributed to consumers’ access to, barriers to and satisfaction with primary health care services. Each factor is made up of a number of dimensions. The extent to which each dimension contributes to health care services access, barriers and satisfaction will be discussed in the following sections.
Question One

What are the issues related to awareness and access to health care services among individuals diagnosed with schizophrenia, Major Depressive Disorder (MDD) and the general population?

Findings from this study revealed that participants with a psychiatric diagnosis have a general awareness about primary health care services, and the level of health services access were similar to those reported by individuals from the general population. Individuals with a mental illness not only accessed primary health care services, they also reported that they accessed a range of allied health professionals whenever they feel sick. This finding is consistent with finding by Druss and Rosenheck (1998), who found that people with a mental illness were equally likely to have a primary care provider compared to individuals without a mental illness. Indeed, results from past studies have found that individuals with a mental illness have higher health needs than individuals without a mental illness (Hall, Gardner,
Pokin, Lecann, & Stickney; 1981; Harris & Barraclough, 1998). The wider range of health care services utilisation by individuals with a mental illness may be due to higher rates of physical illness among individuals with a mental illness, a high level of underlying fear of physical illness, such as hypochondriasis, or a lack of confidence in relying on one health professional.

Although individuals with a mental illness were equally likely to have a primary care provider, mortality rates from physical illnesses remains higher for individuals with a mental illness than for the general population (Coghlan et al., 2001; Koran et al., 1989). Individuals with a mental illness are more likely to have delayed seeking care or to have been unable to obtain needed medical care (Hall et al., 1981). Explanations for these findings can be related to patient as well as health care provider variables (see Figure 11.6). Findings from the current study suggest that a major contributor to the differences in health care services received by individuals with a mental illness compared to individuals without a psychiatric diagnosis concern the extent to which preventive health care is sought by consumers and provided by health care providers (see Figure 11.6). In the current study, many respondents with a mental illness did not attempt to seek out and access health services unless they were sick. They did not see preventive health care as part of the health system. This finding was consistent with the opinions of health care providers who indicated that individuals with a mental illness have limited awareness about healthy lifestyle behaviours and strategies, in particular nutrition and preventive healthy behaviours.

This finding lends support to the findings by Kendrick et al. (1994) which found that in a study of general practitioners (GPs), patients with long-term mental illness come to the attention of GPs only at times of crisis. The lack of motivation or attempts to consult a doctor to prevent illness made health screening and early treatment difficult (Osborn, King, & Nazareth, 2003). Even when they do present, individuals with a mental illness may be less reliable in reporting health symptoms because of the severity of their psychiatric illness (Iverson, Fielding, Crow, & Christenson, 1985).

Another issue of concern was whether GPs are promoting and encouraging lifestyle changes for patients with a mental illness. Rosen et al. (1984) found that only 30% of physicians discussed exercise with their patients. Similarly, Wee et al. (1999), in a study of the general population, found that physicians counsel patients about exercise as a form of secondary prevention not primary prevention, as
evidenced by higher counselling rates in patients who were already obese and have cardiac disease and diabetes. Moreover, physicians were less likely to counsel individuals who were single, used tobacco, and were of lower socio-economic status.

Doctors may not have the skills needed to overcome communication difficulties within a consultation and may not be aware of the need to provide information about health promotion in an accessible form. Nevertheless, the lower rates of counselling for patients with lower education and income levels are concerning, because many individuals with a mental illness are members of the lower socio-economic groups, heavy cigarette smokers and have poorer health outcomes. Thus, the limited knowledge and skills that individuals with a mental illness have in relation to preventing physical illnesses may be reflective of not only the limited opportunity to learn due to early mental illness diagnosis, but also the important missed opportunities of primary prevention and access to information when they visit their primary health care professionals.

**Question Two**

*What types of barriers are related to access of health care services among individuals diagnosed with schizophrenia, MDD and the general population?*

Discrimination and stigma, lack of transportation, length of time before one could obtain an appointment, over-prescription of medication, the short period of time allocated to consultation, fear of being judged, and inconvenient office hours were major barriers to physical health care reported among individuals with a mental illness (see Figure 11.6). The current findings support Chou’s (2000) findings that fear of the negative attitude associated with having a mental illness, a lack of accessibility after hours, long waiting time for consultation and the over-prescription of medication by practitioners were significant barriers to seeking health care among individuals with mood disorders. In the current study, factors which positively contributed to health seeking behaviour were freedom of choice, respect, listening, thoroughness and empowerment. Speed of access and absence of discrimination were also important factors that contributed to an increase in health-seeking behaviour among individuals with a mental illness.

The health care providers interviewed in the study also reported that consumers with a mental illness faced the following barriers in accessing health care services:
attitudes of doctors as perceived by consumers, lack of transportation, mistrust of the medical system, previous negative contacts with health professionals and consumers’ feelings of disempowerment.

Rotter’s (1966) theory on locus of control theory appears most relevant in the current finding. Many respondents from the psychiatric population expressed a sense of not being in control of their health and feeling disempowered. Consumers in the current study generally wished to be treated as partners in their care. For instance, they wanted to be notified, to be listened to, have their opinions considered, and have clear instructions provided. Consequently, this has implications for the promotion of lifestyle changes and help seeking behaviours among this population, because if one has always felt disempowered and has no control over one’s health, it is difficult to feel that one now has choices over one’s health.

The literature specifically relating to health locus of control in psychiatric population is very scant. However, in the general population, health locus of control has had a significant correlation with health-related behaviour (Norman, 1995). As such, it is not surprising that many individuals with a mental illness indicated that prior unpleasant experiences with hospitalisation as well as the experience of dismissive attitude by doctors contributed to feelings of disempowerment and low levels of health behaviour change. Health locus of control, therefore, appears to have some influence on the health behaviours of individuals with a mental illness. The extent of this influence requires further evaluation.

Furthermore, the strong influence of the stigma associated with having a mental illness in determining the pattern of health-care behaviour found in the current study is in general accord with the results of past studies. These studies demonstrated that a perception of negative reactions from society usually discouraged patients with a mental illness from seeking care (Rhi et al., 1995; Tally, 1988).

In addition to the stigma of a mental illness and the associated anxiety of accessing health services, there were also the problems with the pragmatics of accessing health services. Physically presenting themselves to medical clinics or hospitals without assistance was a major barrier for individuals with a mental illness. Many people with a mental illness do not own a car or have access to private transport. Furthermore, many respondents required social support to lower their levels of anxiety in accessing health services.
Economic burden did not have a strong influence on basic-health care seeking patterns among individuals with a mental illness. The health care services were primarily limited to bulk-billing medical clinics or allied health with health-care cardholders discount. While cost as a barrier to health care is small as a result of the almost universal coverage of Medicare, substantial out-of-pocket expenses meant that health care was not equally accessible to all. This burden appears to fall more heavily on those in more disadvantaged financial positions, as those with a mental illness are increasingly reporting that they are delaying care due to the decreasing availability of bulk-billing doctors. This finding indicates that Medicare does not appear to eliminate all costs, especially among individuals with a mental illness.

**Question Three**

**What are the issues related to levels of satisfaction with health care services among individuals diagnosed with schizophrenia, MDD and the general population?**

It can be argued that dissatisfaction with health care may reflect the negative moods and cognitions common in individuals with a mental illness. Marshall et al. (1996) examined patients with symptoms of depression and patients with a chronic physical condition. They found that general satisfaction with health services was associated with mental, rather than physical health status. These results would suggest that there would be a different relationship between health status and satisfaction for patients with a mental illness relative to patients without a mental illness. This proposal was partially supported in the current study, with responses from health care providers indicating that they were unclear about the validity of individuals with a mental illness’s views about doctors suggesting that dissatisfaction with health care may be a manifestation of either general life dissatisfaction or psychological distress.

Despite the possible implication of a general negative view held by individuals with a mental illness, the strong and consistent responses by consumers and health care providers regarding the interpersonal skills of health professionals as influential to consumers’ health care satisfaction level, cannot be ignored (see Figure 11.6). Individuals with schizophrenia and MDD often felt that they were unable to form any kind of empathetic bond with their GP. They were of the view that doctors were uncaring and that they adopted a distant manner. They indicated that there was a lack
of explanation and opportunity for consumers to ask questions. These factors made it difficult for individuals with a mental illness to describe their symptoms and seek health care. Another notable finding relating to communication with doctors was that individuals with a mental illness felt that their GPs did not listen to them and they had great difficulty communicating their health concerns. Their requests for further examination and referrals to specialists were generally ignored and their physical health concerns were attributed to their mental illness.

This view was also expressed by the health care providers interviewed in the current study. Many health care providers reported that physical health concerns are often overlooked by GPs, whilst mental issues are considered more important because of the direct and instant impact of psychiatric symptoms on daily functioning.

It is also possible that the results in this study are influenced by the fact that GPs without psychiatric training may find severely ill psychiatric patients difficult to examine and interview, whereas psychiatrically trained professionals may find physical examinations and health screening a lesser priority in their practice (Beecroft, et al., 2001). Consequently, it is possible that fragmentation of care and services are inherent in the current health care system, particularly for patients with physical illness and severe mental illness. To some degree, fragmentation is inevitable because patients’ needs extend across the boundaries of different service sectors and funding streams.

**Conclusion for Study 2**

In conclusion, the primary health care system relies heavily on a person’s ability to recognise and report symptoms of ill health, which may be difficult for people with a mental illness. Primary care physicians are the “gatekeepers” to health care and make an important contribution to the care of people with a chronic mental illness in the community. However, from the perspectives of individuals with a mental illness and health care providers, it would be advantageous if more general practitioners increase screening for physical impairment to prevent deterioration and chronicity (primary prevention). Improvements in the recognition of highly preventable illnesses, such as cardiovascular disease before impairment develops would initiate prompt treatment or referral and address some of the health issues faced by individuals with a mental illness.
Fragmentation of services is a persistent difficulty in our present health system. This difficulty is heightened for individuals with a mental illness, who are often not confident in advocating their physical symptoms or needs. As a result, they may be overlooked, and doctors may attribute the presentation to their mental condition rather than a physical condition. No single strategy can address the complex factors contributing to the fragmentation of care for people with mental illness. However, changing attitudes of health care providers and consumers may be a useful strategy to address some of the concerns identified by respondents in the current study.
CHAPTER ELEVEN

Overall Conclusion

This chapter provides a general discussion and conclusion of the findings of this thesis. The limitations of this thesis and future research directions are then discussed, followed by recommendations for policy and practice, from the current study and future research suggestions.

Although past research has indicated that lifestyle factors among individuals with a mental illness contribute to their higher morbidity and mortality rates from preventable illnesses, such as cardiovascular diseases, few studies to date, have investigated the reasons underlying the less than optimal lifestyle among individuals with mental illness. The present study sought to expand this line of research by evaluating both cognitive and socio-environmental factors that may predict health behaviours and health care services utilisation among individuals with a mental illness.

In Study 1, the expanded PMT model was tested cross-sectionally with a sample of 300 adults, of which 151 were diagnosed with either schizophrenia or major depressive disorder and 149 individuals without psychiatric diagnosis. Study 1 is the first study, to the author's knowledge, to demonstrate that the PMT variables predict health-related intentions and behaviour of physical activity, consumption of a low-fat diet and smoking cessation among individuals with a psychiatric diagnosis. This study showed the strong influence of self-efficacy on health-related intentions and behaviour. Other variables, such as perceived fear and vulnerability to CVD, response-efficacy, social support and psychiatric symptoms also uniquely contributed to health-related intention and behaviour among individuals with schizophrenia and MDD. Although these factors were influential in intention and adoption of health behaviours, perceptions of a limited control of their own health, fear, psychiatric symptoms, and social support were also important variables in the pattern of health care service utilisation and satisfaction among individuals with schizophrenia and MDD, as indicated in Study 2.

In Study 2, the qualitative exploration of factors related to access, barriers to and satisfaction with primary health care services provided a more comprehensive understanding of the problems and issues impacting on the health service utilisation and health outcome among individuals with a psychiatric diagnosis. The issues that
were most influential were the attitudes of health care providers and consumers. The attitudes of consumers included feelings of disempowerment, fear, and the greater emphasis placed on curative health over preventive health.

Taken together, the results from both Study 1 and Study 2 suggest that individual’s perception and attitude are crucial determinants of health behaviour and health care service utilisation among individuals with schizophrenia and MDD. As such, an important implication of these findings is that prevention and intervention programs targeting cognitive and attitudinal factors are worthwhile. Given, that cognitive and attitudinal factors are malleable, providing a vehicle to influence health behaviour change, and improvements in health outcome for individuals with a mental illness can therefore be viewed as achievable.

In conclusion, the current study made several important contributions to the body of research in predicting cardiovascular health behaviours and health care services needs among individuals with a mental illness:

1. Extended the PMT in predicting cardiovascular health behaviours among individuals with schizophrenia and MDD.

2. Expanded the utility of the PMT with the inclusion of social support and psychiatric symptoms to predict cardiovascular health behaviours among individuals with schizophrenia and MDD.

3. Identified several factors that contributed to health care needs of individuals with schizophrenia and MDD.

**Limitations and Future Research**

The strengths of the present study included a large sample size and the inclusion of individuals diagnosed with schizophrenia and MDD from both hospitals and community settings. The study also included participants without a mental illness. However, several limitations must also be noted. The cross-sectional nature of the study precludes us making statements of causality, and cannot provide information about the way in which health behaviour intentions may alter over time or whether intentions to adopt a behaviour will lead to an actual behaviour. Moreover, smoking cessation behaviour was not measured, which was an obvious gap in the research. As such, prospective studies that measure concurrent and subsequent smoking cessation behaviours would be of value. Furthermore, the selective nature of our sample of
psychiatric disorders limits the extent to which the findings can be generalised to other types of psychiatric disorders. Appropriate reservations should also be exercised in the findings regarding the applicability of the PMT model to individuals with schizophrenia and MDD separately, as differences may exist between individuals with schizophrenia and MDD, which were not explored.

Obtaining valid answers is dependent on the social context in which the questions are asked, the perceived role of the researcher and the accuracy of information recall by respondents. Although many researchers continue to use self-report research design, reliance on individuals to supply accurate information remains problematic. In the case of individuals with a mental illness, there is the additional difficulty that emotional and cognitive impairment may influence responses. Ideally, corroborating evidence, such as objective medical and psychiatric screening and an examination of previous medical records should be included in the study. In addition, psychiatric medication was crudely measured in the current study, based solely on individuals reporting of the type of medication, dose and duration of use. Analysis of the interaction effects between medication and cigarette smoking was not examined. Future research needs to thoroughly and systematically investigate the influence of psychotropic medication on health behaviours.

Moreover, even though many of the instruments used in this study have demonstrated good reliability and validity among individuals from the general population, limited psychometric research has been conducted among individuals with psychiatric illness (Davidson et al., 2000). The current study is exploratory and is the first study to investigate the PMT variables among individuals diagnosed with schizophrenia and MDD. It was beyond the scope of this thesis to thoroughly investigate the psychometric status of the instruments with the present psychiatric sample. However, Cronbach alpha obtained for each of the measures used in the studies appeared to be satisfactory. Nevertheless, given that the validity of the instruments in relation to psychiatric population has not yet been established, interpretation of the present results should be undertaken with caution.

In addition to the conceptual and methodological issues described above, there are also a number of limitations associated with convenience sample in the current study. First, all the participants from the psychiatric population were all in contact with a health service and may therefore tend to either have a greater awareness of health issues or are presenting with higher rates of health needs. Second, research with
disadvantaged people is particularly difficult due to limited transport, lack of a stable residence, consistent telephone number and the absence of a consistent daily schedule or routine, this may preclude a significant number of people from being included when a convenience sample is selected from people attending health services. Third, many of the issues raised (e.g. psychiatric symptoms, types of food consumed) may be emotionally and socially sensitive for the participants, thereby decreasing participation and response rates. Fourth, whilst much effort was made to match demographic characteristics of individuals (sex, age) from the psychiatric population to that of participants from the general population, convenience sampling is fraught with many uncontrollable internal and external confounding variables.

Consequently, many of the participants in this study were obtained through convenience, and do not represent a random sample. Only those who live in a particular area, who utilise psychiatric disability health services and are considered high functioning (e.g. absence of severe psychiatric symptoms) were recruited. Thus, the sample is not necessarily representative of the entire target population. Furthermore, there will likely to be self-selection within such opportunity samples, in that certain individuals will be more likely to participate in the study, for example, individuals who are motivated and have an awareness of cardiovascular health issues.

In relation to Study 2, a major limitation was that health professionals’ attitudes and beliefs about physical activity, consumption of diet low in fat and smoking cessation was not explored. Health professionals’ values about health behaviours may likely impact on their role in promoting healthy lifestyle or could hinder such provision.

Further research is needed in relation to the limited support for the role of social relationships in enhancing health behaviours for individuals with mental illness. One reason for this result may be due to the social support instrument that was utilised in the current research. The social support questions did not measure specific elements of social support relevant to the health behaviour under study (e.g., smoking cessation). Rather, the social support questions measured global social support and satisfaction with social support. If the questionnaire on social support used in the current study had been more specific, for example, asking respondents to report how frequently others encouraged them to participate in physical activity, the study may have been better able to detect stronger associations between specific elements of social support and the outcome variables.
In general, future research on health behaviour and behaviour change among individuals with schizophrenia and MDD would benefit from utilising instruments that have been validated among individuals with a psychiatric disability. This will increase predictive power of PMT variables and improve generalisability.

Furthermore, future studies on predicting variables of behaviour change among individuals with a mental illness and the general population will benefit from using a more powerful statistical analysis such as multiple group modelling methods to test the equality of model coefficients. This will allow predictors of poor eating, sedentary behaviour and cigarette smoking to be made between different populations.

Finally, research on behaviour change among individuals with mental illness may benefit from a whole-system approach to improve the physical health of this population. The Precede-Proceed health promotion model described by Green and Kreuter (2005) offers a comprehensive framework for health program planning, implementation and evaluation. The precede-proceed framework encompasses individual, social, environmental and political factors of health and health care. Therefore, research and application of the Precede-Proceed model among individuals with a psychiatric illness provides a more comprehensive framework to address cardiovascular illness in this population."

Overall, the findings in this study are exploratory, and it is hoped that future research will focus on replicating the study with larger samples, a greater variety of psychiatric illnesses, and a thorough and systematic measurement of the effects of psychotropic medications on health behaviour intentions and behaviour.

**Recommendations for Policy and Practice**

There are four main sets of recommendations drawn from this study: Recommendations for increasing physical activity, consumption of low-fat diet and smoking cessation among individuals with a mental illness, and recommendations for improving health care services to meet the needs of individuals with a mental illness.

**Physical Activity**

1. One of the key findings from this study suggests that high costs and low motivation was a major barrier to increase physical activity among individuals with schizophrenia and MDD. Therefore, motivational enhancement
approaches would appear to be useful. Group social activities would not only increase social skills and expand social networks, it would also provide opportunities for positive modelling, enhance exercise participation and motivation. Furthermore, brief education around less costly types of physical activities (e.g., running, walking) is likely to increase interest in and willingness to commit to a regular physical exercise program.

2. Programs with a focus on increasing skills and knowledge may address the low self-efficacy and response-efficacy to engage in physical activity found among individuals with schizophrenia and MDD. Skills training programs such as time management and education about various benefits of physical activity may increase the belief that one is capable of participating in physical activity and that the activity will provide positive outcome. This, in turn, will increase the likelihood of engaging in physical activity.

Low-fat Diet

3. The significant influence of low self-efficacy on intention to consume a diet low in fat among individuals with a mental illness suggests that cardiovascular health education may be beneficial. Education that focuses on providing information on correct dietary principles, training in shopping, and demonstrating meal preparation may all increase an individual’s self-efficacy and life skills. These types of education are particularly important after hospital discharge or cessation of community services, such as “meals on wheels.”

4. The finding that fear arousal had a negative impact on behavioural intention and actual behaviour, particularly for individuals with a psychiatric diagnosis, indicates that threat appeals are not successful in motivating people with a psychiatric diagnosis to change their health beliefs and practices. Rather, it may be more beneficial to focus on the individual’s maladaptive coping attitudes and behaviours and highlight coping strategies that are effective and adaptive. This aspect could be addressed in peer education programs, where consumers are trained to be leaders and have the opportunity to share and learn skills with individuals in similar circumstances. This method of program implementation has provided substantial success in other areas of health
education, notably, HIV/AIDS (Dawsett, Bollen, McInnes, Couch, & Edwards, 2001).

**Smoking Cessation**

5. Findings from this study indicate that individuals with schizophrenia and MDD report smoking provides relief for negative symptoms and so is highly reinforcing. As a result, it may be beneficial for intervention programs to focus on substituting cigarette smoking with replacement behaviours that are more reinforcing than cigarette smoking. Therefore, individuals with schizophrenia and MDD may benefit from cognitive-behavioural therapy based interventions that focus on the recognition and management of negative affect as part of cessation treatment (Hass, Munoz, Humfleet, Reus, & Hall, 2004).

6. Stress management programs may also provide relief that nicotine provides for the negative symptoms. However, many smoking intervention programs employ relaxation strategies as part of stress-management components for smoking cessation. Although relaxation techniques have an important role, the present data suggest that individuals with a psychiatric illness do not smoke to relax, but to increase cognitive stimulation and reduce the negative symptoms associated with schizophrenia and MDD. Such findings give rise to questions as to whether individuals with schizophrenia and MDD benefit from relaxation-based smoking intervention programs. Smoking intervention programs for individuals with a psychiatric illness with a focus on incorporating activities that enhance physical and mental stimulation may be more beneficial.

7. To address the low levels of response-efficacy related to smoking cessation, education programs need to focus on the health benefits of ceasing smoking and emphasise that smoking cessation is “never too late”. The harmful effects of long-term cigarette smoking can be reduced and reversed with smoking abstinence. As indicated in several studies, the excess risk of coronary heart disease with smoking is reduced by about half after one year of smoking abstinence and coronary heart disease patients who quit smoking reduce their
risk for recurrence of myocardial infarction or death by as much as 50% (Becker, 1994).

8. Another important factor that needs to be considered relates to the potential interaction between nicotine and psychotropic medication. Nicotine has been reported to interact with psychotropic medication in many studies (Desai, Scabolt, & Jann, 2001; McChargue, Gulliver, & Hitsman, 2002). For example, nicotine may serve to relieve the worsening of negative symptoms caused by traditional antipsychotics, such as haloperidol (Geersch & Larsen, 1999). As such, sudden cessation of smoking (quitting “cold turkey”) may be an ineffective or detrimental method for people who are on psychotropic medications. Individuals with a psychiatric diagnosis will require gradual reduction in smoking levels and professional support to stop smoking. In addition, “small steps” in the reduction of smoking may also increase an individual’s self-confidence and eventual success in giving up this health injurious behaviour.

**Health Care Services**

9. There is a need for more information and training to enhance health professionals’ communication skills with consumers with a mental illness. Education on understanding mental illness in the community as a whole should also be promoted to build a sensitive community.

10. To alleviate some of the fear and anxiety associated with health care utilisation among individuals with a mental illness, education about different health services and the procedures in accessing health care would be one important strategy. Individuals with a mental illness need to know what services are available to assist them to make informed decisions and adopt proactive health choices.

11. Greater collaborative work, links and liaison with services in the community and allied health will support health care providers to assist consumers to initiate the first step to behaviour change.

12. Findings from the study revealed that many people with a mental illness have special health needs that are not well addressed by the existing services. There was a high demand for health care services that are responsive to their special
needs. In particular, the professional service providers, such as GPs, should be sensitive and attentive, with an emphasis on building trust with the patients. Also, an emphasis should be placed on doing routine physical health screening.

13. Findings from the study suggest that individuals with a mental illness reported a sense of disempowerment in the control of their health. Although they wanted to participate in their health care, a high level of external locus of control was a major constraint. As such, health care providers need to design practice models to empower consumers to provide input into the processes of problems and solution identification. Ensuring participation of consumers in health care decisions increases consumers’ internal locus of control which will lead to greater health care satisfaction, proactive health behaviours and adherence to medical regimes (Hall et al., 1982; Norman, 1995; Rotter, 1966).
Concluding Reflections

Individuals with a mental illness face many barriers in life. The high rates of physical health problems experienced by individuals with a mental illness further compound this population's difficulties. There are many reasons why this population report higher physical health problems. One reason relates to the individual's perception, attitudes and health behaviours. In reflecting back to where this study began, I hope that the findings from this research will expand our understanding of the health behaviours and patterns of health care service utilisation among individuals with a mental illness. I hope that a better understanding of the socio-cognitive factors underlying health behaviours and health care service utilisation will encourage prevention and early recognition of physical illness by health providers and that this recognition will translate into the development of programs and activities that are both sensitive and appropriate, and in turn, result in improved physical health outcome for individuals with a mental illness.
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APPENDIX A

Health Behaviour Questionnaire
Confidential

Health Behaviour Questionnaire

Loriane Leas
Deakin University

Professor Marita McCabe
Deakin University
Thank you for agreeing to complete this questionnaire. This questionnaire has been designed to learn about your health beliefs and habits. Your thoughts are very valuable to us. Please read each question carefully. Answer every question as best as you can. This is not a test. There are no right or wrong answers to these questions. I'm interested in your own thoughts. Please answer each question by ticking or circling the responses that most apply to you. Remember that this is confidential and you will not be required to write your name on the questionnaire.

**Example**

For the following statement, please circle the response which matches your answer.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Neither disagree/agree</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apples are too expensive to eat every day.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
Section A – General Information

What year were you born? □□□□
Age: □□□□ years old
Sex: Male □ Female □

Height: □□□□ feet/inches or centimetres
Weight: □□□□ stones/pounds or kilograms

1. What is your relationship status? (Tick a box)
   - Single - not in a relationship
   - Single - in a relationship
   - Casual
   - Married/De facto
   - Divorced or separated
   - Widowed

2. Do you have any children (tick a box)
   Yes □ No □

3. Which one of these best describes your current employment status? (tick a box)
   - Unemployed
   - Employed full-time
   - Employed part-time
   - Employed casual
   - Home duties

4. What is your highest level of formal education?
   - Primary
   - TAFE
   - Secondary
   - University/Tertiary
   - Postgraduate

5. What is your main source of income? (tick a box)
   - Government pension or benefit?
   - Wages or salary
   - Income from own business or property
   - Superannuation
   - Insurance
   - Interest or dividends
   - Other

6. What kind of place do you live in?
   - House
   - Flat/Unit
   - Private hotel/Boarding house
   - Community Care Unit (CCU)
   - No fixed address
   - Other (specify)
Section B - Health Information

7. Do you have a current physical illness? (tick one)
   Yes                                      No

8. If yes, please list your current physical illness (es).

9. In general, would you say that your physical health is...(please circle one)

   Excellent  Very good  Good  Fair  Poor  Don’t know
   1           2           3      4      5      6

10. Compared to one year ago, how would you rate your health in general now? (please circle one)

   Much better  Somewhat better  About the same  Somewhat worse  Much worse  Don’t know
   1            2               3                 4                   5               6
Section C – Psychiatric Symptoms

11. Do you have a current psychiatric disorder? (please circle one)
   Yes
   No (go to Q. 13)

12. What is your primary psychiatric diagnosis? (circle one or more boxes)
   Schizophrenia
   Psychotic/Paranoid disorders
   Major depression
   Bipolar depression
   Personality disorder
   Substance abuse
   Psychosis: alcohol/drug induced
   Anxiety disorder
   Adjustment disorder/stress
   reaction
   Neurotic/sexual disorders
   Organic mental/brain disorder
   Other mental disorders

13. Below is a list of problems people sometimes have. Please read each one carefully, and circle the response that best describes how much that problem has distressed or bothered you during the past 7 days including today.

<table>
<thead>
<tr>
<th>Problem</th>
<th>Not at all</th>
<th>A little bit</th>
<th>Moderately</th>
<th>Quite a bit</th>
<th>Extremely</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trouble remembering things</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Feeling blocked in getting things done</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Having to check and double-check what you do</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Difficulty making decisions</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Your mind going blank</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Trouble concentrating</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Thoughts of ending your life</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Feeling lonely</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Feeling blue</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Feeling no interest in things</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Feeling worthlessness</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Feeling afraid in open spaces or on the streets</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Feeling afraid to travel on buses, subways, or trains</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Having to avoid certain things, places, or activities because they frighten you</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Feeling uneasy in crowds, such as shopping or at a movie</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Feeling nervous when you are left alone</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Feeling</td>
<td>Not at all</td>
<td>A little bit</td>
<td>Moderately</td>
<td>Quite a bit</td>
<td>Extremely</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>------------</td>
<td>--------------</td>
<td>------------</td>
<td>-------------</td>
<td>-----------</td>
</tr>
<tr>
<td>Feeling others are to blame for most of your troubles</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Feeling that most people cannot be trusted</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Feeling that you are watched or talked about by others</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Others not giving you proper credit for your achievements</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Feeling that people will take advantage of you if you let them</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>The idea that someone else can control your thoughts</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Feeling lonely even when you are with people</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>The idea that you should be punished for your sins</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Never feeling close to other person</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>The idea that something is wrong with your mind</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
Section D - Knowledge of Heart Disease

14. On this page there are a number of questions about what you know about the heart, heart disease, smoking, nutrition and exercise. Please read statement carefully. Answer every statement as best as you can. (Please tick one response for each statement).

<table>
<thead>
<tr>
<th><strong>Statements about the Heart and Blood Vessels</strong></th>
<th>True</th>
<th>False</th>
<th>Unsure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heart disease tends to run in families</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Your ideal weight depends on your height</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lowering high blood pressure will reduce the risk of heart disease</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males are more likely than females to have a heart attack before the age of forty-five</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If you have a parent, grandparent, brother or sister who has had a heart attack you may be more likely to develop heart disease when you are an adult</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Statement about Smoking</strong></th>
<th>True</th>
<th>False</th>
<th>Unsure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smoking can causes cancer, but not heart disease</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Statements about Exercise and Fitness</strong></th>
<th>True</th>
<th>False</th>
<th>Unsure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regular exercise can help control blood pressure</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>You have to do more exercise to burn off a meal of steak and chips than to burn off a salad</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If you take in more energy than you burn up in a day, you will gain weight</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Statements about Nutrition</strong></th>
<th>True</th>
<th>False</th>
<th>Unsure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Animal foods contain cholesterol and vegetables do not</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Being overweight does not increase the risk of heart attack</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complex carbohydrates or starches are low in fat</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Saturated fats are better for your health than polyunsaturated one</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The most important way to lower your blood cholesterol is to eat less fat</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If you are overweight your blood pressure may be too high</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The more kilojoules a food contains, the less energy it provides the body</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All vegetable oils are polyunsaturated</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All animal fats are saturated</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lowering blood cholesterol will not lower the danger of heart disease</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A diet low in salt may help lower blood pressure</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Table margarine and vegetable oils contain less saturated fat than butter and dripping</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Section E – Perception of Heart Disease

15. My chances of having heart disease are very small. (please circle one response)

<table>
<thead>
<tr>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Neither disagree/agree</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

16. How serious do you think heart disease is? (Please circle one response)

0 1 2 3 4 5 6 7 8 9 10
Not at all serious
Very serious

17. How much will having heart disease interfere with someone leading a normal life?

0 1 2 3 4 5 6 7 8 9 10
Not interfere at all
Will interfere the most possible

18. How frightened do you feel when you think about the possibility of having heart disease?

0 1 2 3 4 5 6 7 8 9 100
Not at all frightened
The most frightened possible
Section F - Physical activity/exercise

19. In the past two weeks, which one of the following (four phrases) best describes your present level of activity? (Please circle one response)

No physical activity weekly

Only light physical activity in most weeks (but did not make me breathe harder or puff or pant).

Vigorous physical activity at least 20 minutes once or twice a week (vigorous activity causes you to breathe harder, puff and pant)

Vigorous physical activity for a least 20 minutes three or more times per week.

20. For the following statements, please rate how confident you feel to motivate yourself to do the following things for at least the next six months? (Please circle one response for each statement)

<table>
<thead>
<tr>
<th>Statement</th>
<th>Not confident</th>
<th>Slightly confident</th>
<th>Somewhat confident</th>
<th>Very confident</th>
<th>Extremely confident</th>
</tr>
</thead>
<tbody>
<tr>
<td>Be able to have adequate exercise even when the weather is a little unpleasant</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Be able to have adequate exercise even if I have to do it by myself</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Be able to have adequate exercise even when I become bored with the activity or activities</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Be able to have adequate exercise even when I feel a little tired</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

21. The next set of questions ask you things, that may or may not happen to you if you have regular exercise. Using the scale provided, please tell me if you think these things will happen or not.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Definitely no</th>
<th>Most probably no</th>
<th>Maybe</th>
<th>Most probably yes</th>
<th>Definitely yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regular exercise will keep my body trim</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Regular exercise will improve the quality of my life</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Regular exercise will improve my chances of living longer</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
22. Do you plan to get adequate exercise for at least the next six months? (please circle one response)

<table>
<thead>
<tr>
<th>Definitely not</th>
<th>Most probably not</th>
<th>Maybe</th>
<th>Most probably yes</th>
<th>Definitely yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

23. How likely or unlikely is it that you will get adequate exercise during the next six months? (please circle one response)

<table>
<thead>
<tr>
<th>Very unlikely</th>
<th>Unlikely</th>
<th>Neutral</th>
<th>Likely</th>
<th>Very likely</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

24. Which of the following best describe your reasons for not increasing your level of physical activity? (please circle one or more response)

- Already have an adequate level of physical activity
- Gymnasium/sport club membership costs too much
- Not enough time/too busy
- Pain
- Physical disability
- Inconvenience
- Embarrassment
- Don’t know
- Other (please specify):
Section G - Eating habits

I am interested in the high-fat food that you might have in your diet. Examples of **high-fat foods** (also called fatty or fried foods) are:

- Foods cooked in fat or oil (e.g. chips, take-away)
- Crumbed and battered foods (e.g. battered fish, chicken)
- Fatty meat
- Chicken with skin
- Gravies
- Cream sauces
- Salad dressing (oil-based)
- Creamed cheeses and hard cheeses
- Cream
- Whole cream milk
- Butter
- Pizza
- Cakes
- Biscuits
- Pastries
- Chocolates

Examples of **low-fat foods** are:

- Vegetables
- Fruits
- Breads
- Pasta or noodles
- Rice
- Lentils
- Fish not fried
- Meat trimmed of fat
- Chicken without the skin

Please refer to these food groups to answer questions 25 to 30
25. Which one of the following best describes your usual way of eating? (please circle one response)

   No special way
   Vegetarian
   Weight Reduction
   Diabetic diet
   Cholesterol lowering diet
   Don’t know
   Other (please specify)

26. Which of the following best describe your reasons for not changing the amount of fat you eat? (please tick one or more response)

   Already eat low in fat
   Lower fat foods do not taste good
   Lower fat foods cost too much
   I eat out too much to eat lower in fat
   Not enough time
   Storage
   Availability
   Quality
   Do not like foods less in fat
   I enjoy what I eat and do not want to change
   Inconvenience
   Other people
   Difficulty shopping
   Don’t prepare own food
   Don’t know
   Other (please specify): ____________________________

27. Whether or not you are trying to change your eating habits, please rate how confident you are about making yourself do the following things regularly. This would be for the period of at least the next six months.

<table>
<thead>
<tr>
<th></th>
<th>Not confident</th>
<th>Slightly confident</th>
<th>Somewhat confident</th>
<th>Very confident</th>
<th>Extremely confident</th>
</tr>
</thead>
<tbody>
<tr>
<td>I will choose mainly low-fat foods even when I feel too lazy to</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>prepare a meal.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I will stick to low-fat foods even when someone eats high fat-</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>fat foods right in front of me</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I will go out of my way to find another store or eating place</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>to get low-fat foods.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
28. The next set of questions list things that may or may not happen to you if you do eat less fatty or fried foods. Using the scale provided, please tell me if you think these things will happen or not.

<table>
<thead>
<tr>
<th></th>
<th>Definitely no</th>
<th>Most probably no</th>
<th>Maybe</th>
<th>Most probably yes</th>
<th>Definitely yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>My general health will improve if I eat less fatty or fried foods</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Eating less fatty or fried foods will increase my changes of living longer</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Eating less fatty or fried foods will lower my changes of getting heart disease</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

29. Do you plan to follow a low-fat diet for at least the next six month?

<table>
<thead>
<tr>
<th></th>
<th>Definitely not</th>
<th>Most probably not</th>
<th>Maybe</th>
<th>Most probably yes</th>
<th>Definitely yes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

30. How likely is it that you will follow a low-fat diet during the next six month?

<table>
<thead>
<tr>
<th></th>
<th>Very unlikely</th>
<th>Unlikely</th>
<th>Neutral</th>
<th>Likely</th>
<th>Very likely</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
Section H - Smoking

31. Do you (currently) smoke cigarettes, cigars, pipes or any other tobacco products?
   Daily
   At least weekly
   Less often than weekly

   A non-smoker (please continue from Q. 40)
   An ex-smoker (please answer Q. 32 & 33, then continue from Q. 40)

32. If you are an ex-smoker, when (how long ago) did you stop smoking daily? (NB: Refers to most recent stop smoking date)

   Moths/Years ___

33. If you are an ex-smoker, have you ever been a daily smoker?
   Yes
   No

34. If you are a current smoker, below is a list of the names or some tobacco products, please provide either the number of cigarette or cigars or filled pipe you smoke in the last week.

   Manufactured cigarette ___ number of cigarette
   Roll your own ___ number of cigarette
   Cigars ___ number of cigars
   Pipes ___ number of time smoke a filled pipe

35. Please rate how confident you are that you could really motivate yourself to avoid smoking in the following situations. This is over a period of at least six months.

<table>
<thead>
<tr>
<th></th>
<th>Not confident</th>
<th>Slightly confident</th>
<th>Somewhat confident</th>
<th>Very confident</th>
<th>Extremely confident</th>
</tr>
</thead>
<tbody>
<tr>
<td>If a person smokes in front of you, how confident are you that you would not smoke?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Avoid smoking when you are bored.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Avoid smoking when you are alone and feeling depressed.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Avoid smoking when you are feeling stressed.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
36. The following questions list things that may or may not happen to you if you gave up smoking. Using the scale provided, please tell me if you think these things will happen or not.

<table>
<thead>
<tr>
<th></th>
<th>Definitely no</th>
<th>Most probably no</th>
<th>Maybe</th>
<th>Most probably yes</th>
<th>Definitely yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quitting smoking will make me feel better physically</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Reducing my smoking level will make me live longer.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Reducing my smoking will improve the quality of my life</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

37. Over the next 6 months, do you plan to reduce your level of smoking? (please circle one response)

<table>
<thead>
<tr>
<th></th>
<th>Definitely yes</th>
<th>Probably yes</th>
<th>Maybe</th>
<th>Probably no</th>
<th>Definitely no</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

38. How likely or unlikely is it that you will reduce your smoking level during the next 6 months? (please circle one response)

<table>
<thead>
<tr>
<th></th>
<th>Very unlikely</th>
<th>Unlikely</th>
<th>Neutral</th>
<th>Likely</th>
<th>Very likely</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

39. Which of the following best describe your reasons for not quitting cigarette smoking? (please tick one or more response)

- Too hard
- Taste good
- Helps with boredom
- Habit
- I enjoy smoking and do not want to change
- Inconvenience
- Other people
- Don't know
- Other (please specify):
Section I – Social Support

Now I am going to ask you to think of the person who has provided most support of you over the last month.

40. Who is this person (please circle one box)

- No-one
- Mother
- Father
- Brother
- Sister
- Other relation
- Friend
- Partner/Spouse
- Other (please specify) __________________________

41. How much was this person a source of helpful guidance over the last month? (please circle one response)

1 2 3 4 5 6 7 8 9 10
Not at all  Extremely

42. How reliable is this person?

1 2 3 4 5 6 7 8 9 10
Not at all  Extremely

43. How much does this person boost your spirits when you feel low?

1 2 3 4 5 6 7 8 9 10
Not at all  Extremely

44. How much does this person make you feel he/she cares about you?

1 2 3 4 5 6 7 8 9 10
Not at all  Extremely

45. How much do you feel you can confide in this person?

1 2 3 4 5 6 7 8 9 10
Not at all  Extremely

201
Section J – Your Comments

If you want to make any additional comment on the topics raised in the questionnaire please feel free to record your thoughts and feelings in the space provided below. The information you provide in this section is particularly important because it will help us focus future research on areas in preventing and understanding heart disease.

Thank you for your participation
APPENDIX B

Deakin University Ethics Approval
MEMORANDUM

TO: Ms Lorany Leas
    Psychology
    Melbourne

FROM: Secretary, Deakin University Human Research Ethics Committee (DU-HREC)

DATE: 6 December 2002

SUBJECT: PROJECT: EC 189-2002 (Please quote this project number in future communication.)

PROTECTIVE HEALTH BEHAVIOURS AMONG PEOPLE WITH A PSYCHIATRIC DISABILITY

This application was considered at the DU-HREC meeting held on 21 October 2002.

APPROVAL HAS BEEN GIVEN FOR MS LORANY LEAS, UNDER THE SUPERVISION OF PROF MARITA MCCABE, PSYCHOLOGY, TO UNDERTAKE THIS PROJECT FROM 6 DECEMBER 2002 TO 31 DECEMBER 2003.

The approval given by the Deakin University Human Research Ethics Committee is given only for the project and for the period as stated in the application and approval. It is your responsibility to contact the Secretary immediately should any of the following occur:

- Serious or unexpected adverse effects on the participants
- Any proposed changes in the protocol, including extensions of time.
- Any events which might affect the continuing ethical acceptability of the project.
- The project is discontinued before the expected date of completion.

In addition you will be required to report on the progress of your project at least once every year and at the conclusion of the project. Failure to report as required will result in suspension of your approval to proceed with the project.

Signature Redacted by Library

Victoria Emery
Secretary, DU-HREC
(03) 9251 7123
APPENDIX C

Hospital Ethics Approval
24 October 2003

Ms L Leas
4 Kepple Court
DANDENONG, VIC. 3175

Dear Loranic,

R03/26W
Protective health behaviours among people with psychiatric disabilities

I am in receipt of your amendments to the above research proposal and I am pleased to advise that these amendments meet the requirements of the Research Ethics Committee meeting of 12 August 2003, and as such you may now proceed with the study. The Research Ethics Committee is constituted and functions in accordance with the National Health and Medical Research Council National Statement on Ethical Research Involving Humans (1999).

Approval by the Mercy Health and Aged Care Board of Governance is valid for up to 3 years from the date of this letter. That is, the project should be completed within 3 years. Should it become apparent that an extension of the 3-year period is required, the principal researcher should apply, in writing, through the Secretary of the Research Ethics Committee. Please note that the research project should be commenced within 12 months from the date of this letter. Would you kindly advise me the date that you commence your research.

In accordance with the NHMRC Guidelines, please keep the Research Ethics Committee appraised of your progress, by forwarding a progress report (attached) at six months and then annually, for the duration of the project. A final report of research findings is to be submitted upon completion of the project.

I wish you well with your study and please do not hesitate to contact this office if you have any queries.

Yours sincerely,

Vicky Karitinos
Secretary, Research Ethics Committee
APPENDIX D

Psychiatric Disability Service Approval
10 July 2003

Ms Lorianie Leas
4 Keppel Court
DANDENONG Vic 3175

Dear Ms Leas

Your research proposal was considered by the EACH Ethics Committee at its meeting on 19 March 2003, and was given approval.

Project Title: The Application of the Protection Motivation Theory to Health Behaviours Among individuals with Psychiatric Disabilities

Chief Investigator: Lorianie Leas
Supervisor: Professor Marita McCabe

EACH Approval No: RP25

Approval Period: 1 April 2003 to 120 March 2006

You are required to immediately report anything that may require review of ethics approval of the proposal, including:
- Adverse effects on research participants
- Proposed changes in the proposal/protocol
- Unforeseen events that might affect continued ethical acceptability of the project
- Changes in researchers

When the research has been completed, you are required to submit a final report to the Ethics Committee:

If the research project is discontinued before the expected date of completion, the Ethics Committee must be informed, in writing, of the reasons.
APPENDIX E

Plain Language Statement
(Psychiatric Population)
Plain Language Statement

Survey of Beliefs and Behaviours about Diet, Exercise and Smoking

My name is Loranie Leas. I am currently completing the course of Doctor of Psychology (Health) at Deakin University. My research examines smoking, diet, physical exercise and physical health among people with psychiatric disabilities. This research is important because it will help us understand the factors involved in general physical health among people with psychiatric disabilities. I am inviting you to participate in my project to be conducted under the supervision of Professor Marita McCabe.

If you participate, you will complete a questionnaire about your health, level of physical activity, diet/nutrition and level of cigarette smoking. Examples of the questions are as follows: “Compared to one year ago, how would you rate your health in general now?”, “In the past two weeks, did you walk for recreation or exercise?”, “Do you normally eat your meals at home or away from home?”

Please sign the consent form if you agree to take you agree to take part in it. By signing the consent form, this will mean that you understand the information and that you give your consent to participate in the research study.

The entire questionnaire will take approximately 15 to 30 minutes to complete. There are three ways you can participate in this research: a) interview style with me (face-to-face) at a place and time that is convenient for you, b) interview style with me over the telephone at a place and time that is convenient for you, c) complete the questionnaire in your own time by yourself and after you have completed the questionnaire please post the completed questionnaire to Deakin University by using the pre-paid envelope provided. No stamp is required.

You will not have to put your names or address on the questionnaire, so you cannot be identified. The information that you provide will be kept for a minimum of six years in a secure storage facility and only group data will be reported in writing up the research.

You are free to withdraw your participation at any time. If you have concerns or if you find answering the questions about your health slightly stressful, you should not participate in the study or you should talk to your doctor or support worker. You can also contact me, Loranie Leas, on 92517182 and I will locate an appropriate service in your area. Alternatively, you can contact Lifeline (Tollfree) 131114, or the Crisis Line 136169 (Tollfree), or my supervisor, Professor Marita McCabe on 9244 6856. You can also contact the Deakin University Human Research Ethics Committee on 9251 7123. In addition, if you have an ethical concern, you can contact the Secretary Research Ethics Committee on 9270 2837 for referral of this concern to the Research Ethics Committee.

If you are interested in a summary of the results I would be pleased to send one to you. Similarly, if you would like further information regarding the study, please contact me, Loranie Leas or Professor Marita McCabe. Your participation in this research is greatly appreciated.

Thank you

Loranie Leas
APPENDIX F

Consent Form
(Psychiatric Population)
Consent Form

Survey of Beliefs and Behaviours about Diet, Exercise and Smoking

1. The Participant:

I, ........................................, have been asked to participate in the health beliefs and behaviour survey and give my consent by signing this form.

I understand that:

a. The purpose of the survey is to learn about people with psychiatric disabilities beliefs and habits on health issues such as food, exercise and smoking.
b. The results of the survey will be used to help plan health programs for people with psychiatric disabilities in the community
c. The survey will take about 15 to 30 minutes to complete
d. I am not required to put my name on the survey.
e. Publication of results will be in general terms and will not allow identification of individuals
f. My consent to participate is voluntary. I can stop filling out the survey at any time and I do not have to give a reason for the withdrawal of my consent
g. My signature on this consent form will be kept separate from my survey

Participant’s Signature:.......................... Date:..................

2. Researcher:

I, Loranie Leas, have fully explained the aims and procedures of the research project to the above participant.

Researcher’s Signature:.......................... Date:..................

3. Witness:

I, ........................................, have witnessed the researcher Loranie Leas who has fully explained the research to the above participant and the participant has agreed to take part in the research.

Witness Signature:.......................... Date:..................
APPENDIX G

Plain Language Statement
(General Population)
Survey of Beliefs and Behaviours about Diet, Exercise and Smoking

My name is Loriane Leas. I am currently completing the course of Doctor of Psychology (Health) at Deakin University. My research examines smoking, diet, physical exercise and physical health among people in the community. This research is important because it will help us understand the factors involved in general physical health and cardiovascular health. I am inviting you to participate in my project to be conducted under the supervision of Professor Marita McCabe.

If you participate, you will complete a questionnaire about your health, level of physical activity, diet/nutrition and level of cigarette smoking. Examples of the questions are as follows: “Compared to one year ago, how would you rate your health in general now?”, “In the past two weeks, did you walk for recreation or exercise?”, “Do you normally eat your meals at home or away from home?”

The entire questionnaire will take approximately 15 to 30 minutes to complete. After you have completed the questionnaire please post the completed questionnaire to Deakin University by using the pre-paid envelope provided. No stamp is required.

By completing this questionnaire, this will mean that you have given your informed consent in this study.

You will not have to put your names or address on the questionnaire, so you cannot be identified. The information that you provide will be kept for a minimum of six years in a secure storage facility and only group data will be reported in writing up the research.

You are free to withdraw your participation at any time. If you have concerns or if you find answering the questions about your health slightly stressful, you should not participate in the study or you should talk to your doctor. You can also contact me, Loriane Leas, on 92517182 and I will locate an appropriate service in your area. Alternatively, you can contact Lifeline (Tollfree) 131114, or the Crisis Line 136169 (Tollfree), or my supervisor, Professor Marita McCabe on 9244 6856. You can also contact the Deakin University Human Research Ethics Committee on 9251 7123.

If you are interested in a summary of the results I would be pleased to send one to you. Similarly, if you would like further information regarding the study, please contact me, Loriane Leas or Professor Marita McCabe. Your participation in this research is greatly appreciated.

Thank you

Loriane Leas
APPENDIX H

Consent Form
(General Population)
Consent Form

Survey of Beliefs and Behaviours about Diet, Exercise and Smoking

I, ........................................, have been asked to participate in the health beliefs and behaviour survey and give my consent by signing this form.

I understand that:

1. The purpose of the survey is to learn about people's beliefs and habits on health issues such as food, exercise and smoking.
2. The results of the survey will be used to help plan health programs for people in the community.
3. The survey will take about 15 to 30 minutes to complete.
4. I am not required to put my name on the survey.
5. Publication of results will be in general terms and will not allow identification of individuals.
6. My consent to participate is voluntary. I can stop filling out the survey at any time and I do not have to give a reason for the withdrawal of my consent.
7. My signature on this consent form will be kept separate from my survey.

Participant's Signature:.......................... Date:......................
APPENDIX I

Semi-structured Interview Schedule
(Psychiatric and General Population)
Semi-Structured Interview

1. Briefly introduce the research project and provide participant with Plain Language Statement and consent form.
2. If participant agree to participate in the study, the participant will be asked for permission to record the session.

Demographic data:
   Age
   Marital status
   Children

No. of years living in Australia:
Employment status
Area of residence (metropolitan, rural or region)

Attendance of any local PDSS services in the region?
No. of visits to health professionals per week

Knowledge of and Access to Health Care Services

a. When you have concerns about your physical health do you try to seek assistance? If you do, how do you it?
b. Where do you go when you feel physically unwell? (e.g. doctors, psychiatrist, nurses, case managers etc).
c. When was the last time you visited a doctor or a health professional about your own physical health?
d. What are the major problems that would prevent you seeking help for your physical concerns from health care professionals.
e. Can you tell me what best describe your reasons for not seeking help for your physical concerns from your health care professionals?
f. Describe what makes it easy for you to seek a health care professional about your physical health?
g. Please indicate whether or not you would use the following services for physical health problems.

<table>
<thead>
<tr>
<th>Services</th>
<th>Would use</th>
<th>Would not use</th>
<th>I don’t know about this service</th>
</tr>
</thead>
<tbody>
<tr>
<td>Your doctor (GP)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Your psychiatrist</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General Hospital</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Community Mental Health Centre</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Community health centre</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acupuncturist, Naturopath, Herbalist</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dietician/Nutritionist</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other (specify)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

h. In the last year have you used any of these health services?

<table>
<thead>
<tr>
<th>Services</th>
<th>Yes</th>
<th>No</th>
<th>Level of Satisfaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Your doctor (GP)</td>
<td></td>
<td></td>
<td>Not Satisfied 1 Slightly Satisfied 2 Somewhat Satisfied 3 Very Satisfied 4 Extremely Satisfied 5</td>
</tr>
<tr>
<td>Your psychiatrist</td>
<td></td>
<td></td>
<td>Not Satisfied 1 Slightly Satisfied 2 Somewhat Satisfied 3 Very Satisfied 4 Extremely Satisfied 5</td>
</tr>
<tr>
<td>General Hospital</td>
<td></td>
<td></td>
<td>Not Satisfied 1 Slightly Satisfied 2 Somewhat Satisfied 3 Very Satisfied 4 Extremely Satisfied 5</td>
</tr>
<tr>
<td>Community Mental Health Centre</td>
<td></td>
<td></td>
<td>Not Satisfied 1 Slightly Satisfied 2 Somewhat Satisfied 3 Very Satisfied 4 Extremely Satisfied 5</td>
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<td>Acupuncturist, Naturopath, Herbalist</td>
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<td>Other (specify)</td>
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i. Patient Satisfaction Questionnaire Items.

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<tbody>
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<td>1. If I need hospital care, I can get admitted without any trouble</td>
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<td>2. Doctors need to be more thorough in treating and examining me</td>
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<td>3. I am very satisfied with the medical care I receive</td>
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<td>4. I worry sometimes about having to pay large medical bills</td>
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<td>5. It is easy for me to get medical care in an emergency</td>
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<td>6. Doctors are good about explaining the reason for medical tests</td>
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<td>7. I am usually kept waiting for a long time when I am at the doctor's office</td>
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<td>8. I think my doctor's office has everything needed to provide complete care</td>
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<td>9. The doctors who treat me should give me more respect</td>
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<td>10. Sometimes it is a problem to cover my share of the cost for medical care visit</td>
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<td>11. The medical care I have been receiving is just about perfect</td>
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<td>12. Sometimes doctors make me wonder if their diagnosis is correct</td>
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<td>13. During my medical visits, I am always allowed to say everything that I think is important</td>
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<td>14. I feel confident that I can get the medical care I need without being set back financially</td>
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<td>15. When I go for medical care, they are careful to check everything when treating and examining me</td>
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<td>16. It's hard for me to get medical care on short notice</td>
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<td>17. The doctors who treat me have a genuine interest in me as a person</td>
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<td>18. Sometimes doctors use medical terms without explaining what they mean</td>
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<td>19. Sometimes I go without the medical care I need because it is too expensive</td>
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<td>20. The office hours when I can get medical care are convenient</td>
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<td>21. There are things about the medical system I receive my care from that need to be improved</td>
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<td>32. There are some things about the medical care I</td>
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<td>33. My doctors treat me in a very friendly and</td>
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<td>34. Those who provide my medical care sometimes hurry</td>
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<td>35. Some of the doctors I have seen lack experience</td>
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<td>36. Places where I can get medical care are very</td>
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<td>37. Doctors sometimes ignore what I tell them</td>
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<td>38. When I am receiving medical care, they should</td>
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<td>39. If I have a medical question, I can reach a doctor</td>
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<td>41. All things considered, the medical care I receive</td>
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<td>42. Doctors listen carefully to what I have say</td>
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<td>45. Doctors usually spend plenty of time with me</td>
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<td>46. Doctors always do their best to keep me from</td>
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<td>47. I find it hard to get an appointment for medical</td>
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<td>48. I am dissatisfied with some things about the</td>
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</tbody>
</table>
Quality of Health Care Service Consultation

j. How useful is your contact with health care professionals?

k. What experiences have you had when you visit your health care professionals?

l. Do you see the same person all the time? If not, why?

m. Do you have good stories/bad stories to share about your experiences with health professionals?

n. Describe the most recent experience you have had with a health care professional in relation to problems with your physical health?

o. How can health services be improved for individuals with similar circumstances and problems as you?

p. Do you have any suggestions to improve health services for individuals with a psychiatric disability?

q. Anything else you would like to share about your experiences of the health care services or health professionals?
APPENDIX J

Permission to be Contacted for Study 2 Form
Please complete this form if you would like a summary of the research findings sent to you and/or you would like to be involved in Study Two: Barriers to Health Care Services.

Please tick (✓) the appropriate box/boxes

☐ Please send me a summary of the research findings

☐ I give permission for the researcher to contact me about taking part in Study Two: Barriers to Health Care Services.

Please complete your contact details:

Name: ____________________________________________

Postal Address: ________________________________

________________________ State ___________ Postcode ________

Telephone Number/s: ____________________________

Email Address (if applicable): _______________________

Please circle the best time when you can be contacted by telephone:

Days: Mon Tues Wed Thurs Fri Sat Sun

Time: 9-12 am 12-3 pm 3-6 pm 6-8 pm

Please post the completed consent form and this form together, but separate from the completed questionnaire to Deakin University by using the small pre-paid envelope provided. No stamp is required.
APPENDIX K

Semi-structured Interview Schedule
(Health Care Providers)
Guidelines for Consultation with Health Care Providers

Briefly introduce the research project and provide participant with Plain Language State and consent form.
If participant agree to participate in the study, the participant will be ask for permission to record the session.
1. Demographic data:
   a. Age; Gender
   b. Area of Profession:
   c. Nos. of years working in the profession:
   d. Location of Employment
   e. Percentage of clients/patients with mental illness:

2. What do you think are the main health concerns/major health problems face by individuals with a mental illness/
3. What are your major concerns/problems when working with patients/clients who have a mental illness and a physical illness?
4. How can these concerns/problems be decreased or eliminated?
5. What can help health professionals handle these concerns/problems better?
6. Do you have bad stories/good stories to tell from your experiences working with people with mental illness?
7. What are the three major problems you think would prevent people with mental illness from seeking help for their physical concerns?
8. What is the immediate reaction you get when you see client/patients with mental illness?
9. Do you have any suggestions to improve health services for individuals with both mental illness and physical illness?
10. Anything else you would like to share about your experiences working with individuals with both mental illness and physical illness?
APPENDIX L

Plain Language Statement
(Health Consumers)
Interview about Barriers to Health Care Services

My name is Loranie Leas. I am currently completing the course of Doctor of Psychology (Health) at Deakin University. My research examines the relationship between smoking, diet, physical exercise and physical health. This research is important because it will add to our understanding of the factors involved in general physical health. I am inviting you to participate in my project to be conducted under the supervision of Professor Marita McCabe.

If you agree to participate in this study you will be asked to participate in an interview. The interview will be audio-taped so that I can help me remember the information you have given me. The interview will focus on your opinions about health care services. For example you will be asked about what types of health care services do you use, how often you see a doctor about physical health problems, and what was your experience when visiting a doctor. The entire interview will take approximately 15 to 30 minutes to complete.

You will be asked to sign a consent form that contains your name and address. By signing the consent form, this will mean that you understand the aims of the study and that you give your consent to participate in the research study.

The information that you give me will remain confidential. As I will not put your names or address on the interview sheet. So you can not be identified. Your consent form will be kept in a separate and secure place from your interview sheet and tape. The information that you provide will be kept for a minimum of six years in a secure storage facility and only group data will be reported in writing up the research.

Please feel free to withdraw you participation at any time. If you have concerns or if the questions make you feel uneasy or cause you distress of which you had previously been unaware please contact your doctor. You can also contact me. Loranie Leas, on 92517182 and I will locate an appropriate service in your area. Alternatively, you can contact Lifeline (Tollfree) 131114 or Crisis Line 136109 (Tollfree), or my supervisor, Professor Marita McCabe on 9244 6856. You can also contact the Deakin University Human Research Ethics Committee on 9251 7123. In addition, if you have an ethical concern, you can also contact the Secretary Research Ethics Committee on 9270 2837 for referral of this concern to the Research Ethics Committee.

If you are interested in a summary of the results I would be pleased to send one to you. Similarly, if you would like further information regarding the study, please contact me. Loranie Leas on 92517182 or Professor Marita McCabe. Your participation in this research is greatly appreciated.

Thank you

Loranie Leas

Should you have any concerns about the conduct of this research project, please contact the Secretary, Ethics Committee, Research Services, Deakin University, 221 Burwood Highway, BURWOOD VIC 3125. Tel (03) 9251 7123 (International +61 3 9251 7123).
APPENDIX M

Consent Form
(Health Consumers)
HEREBY CONSENT to be a subject of a human research study to be undertaken.

By:  [Name]

and I understand that the purpose of the research is to examine my experiences relating to accessing and utilising health care services.

I acknowledge that:

1. Upon receipt, my questionnaire will be coded and my name and address kept separately from it.
2. Any information that I provide will not be made public in any form that could reveal my identity to an outside party i.e. that I will remain fully anonymous.
3. Aggregated results will be used for research purposes and may be reported in scientific and academic journals.
4. Individual results will not be released to any person except at my request and on my authorisation.
5. That I am free to withdraw my consent at any time during the study in which event my participation in the research study will immediately cease and any information obtained from me will not be used.

Signature: __________________________ Date: __________________________

NOTE:
In the event of a minor's consent, or person under legal liability, please complete the Ethics Committee's "Form of Consent on Behalf of a Minor or Dependent Person".
APPENDIX N

Plain Language Statement
(Health Care Providers)
Interview about Barriers to Health Care Services

My name is Loranie Leas. I am currently completing the course of Doctor of Psychology at Deakin University. My research examines the relationship between smoking, diet, physical exercise and physical health. This research is important because it will add to our understanding of the factors involved in general physical health. I am inviting you to participate in my project to be conducted under the supervision of Professor Marita McCabe.

If you agree to participate in this study you will be asked to participate in an interview. The interview will focus on your opinions about your experiences in working with individuals with a psychiatric disability and their experiences with health care services. For example you will be asked about what are some of your concerns when working with patients who have a mental illness and a physical illness? What are the three major problems you think would prevent people with a mental illness from seeking help for their physical concerns? The entire interview will take approximately 15 to 30 minutes to complete.

You will be asked to sign a consent form that contains your name and signature. By signing the consent form, this will mean that you understand the aims of the study and that you give your consent to participate in the research study.

The information that you give me will remain confidential, as I will not put your name on the interview sheet. Your consent form will be kept in a separate and secure place from your interview sheet. The information that you provide will be kept for a minimum of six years in a secure storage facility and only group data will be reported in writing up the research.

Please feel free to withdraw your participation at any time. If you have concerns or if the questions make you feel uneasy or cause you distress of which you had previously been unaware please contact me, Loranie Leas, on 92517182 or my supervisor, Professor Marita McCabe on 9244 6856. You can also contact the Deakin University Human Research Ethics Committee on 9251 7123. In addition, if you have an ethical concern, you can also contact the Secretary Research Ethics Committee on 9270 2837 for referral of this concern to the Research Ethics Committee.

If you are interested in a summary of the results I would be pleased to send one to you. Your participation in this research is greatly appreciated.

Thank you

Loranie Leas

Should you have any concerns about the conduct of this research project, please contact the Secretary, Ethics Committee, Research Services, Deakin University, 221 Burwood Highway, BURWOOD VIC 3125. Tel (03) 9251 7123 (International +61 3 9251 7123).
APPENDIX O

Consent Form
(Health Care Providers)
DEAKIN UNIVERSITY HUMAN RESEARCH ETHICS COMMITTEE
CONSENT FORM:
Study Two: Interview Study
Health Care Professionals

I hereby consent to be a subject of a human research study to be undertaken

By Loranie Leas

and I understand that the purpose of the research is to examine my experiences with working with individuals with a psychiatric disability and issues relating to accessing and utilising health care services.

I acknowledge

1. That the aims, methods, and anticipated benefits, and possible risks/hazards of the research study, have been explained to me.

2. That I voluntarily and freely give my consent to my participation in such research study.

3. I understand that aggregated results will be used for research purposes and may be reported in scientific and academic journals.

4. Individual results will not be released to any person except at my request and on my authorisation.

5. That I am free to withdraw my consent at any time during the study, in which event my participation in the research study will immediately cease and any information obtained from me will not be used.

Signature: ____________________________  Date: ____________________________