FACTORS INFLUENCING HEALTH PROMOTION ACTIVITIES IN MIDLIFE AND OLDER AUSTRALIAN WOMEN WITH A CHRONIC DISEASE

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Statement of Original Authorship

The work contained in this thesis has not been previously submitted to meet requirements for an award at this or any other higher education institution. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made.

Signature: ______________________________

Date: ______________________________
Keywords

Perceived barriers

Barriers to Health Promotion among Disabled Person Scale (BHADP)

Chronic disease

Health promotion activities

Health promotion model

Modifiable risk factors

Type 2 diabetes

Women’s health
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Abstract

Background:

Chronic diseases including type 2 diabetes are a leading cause of morbidity and mortality in midlife and older Australian women. There are a number of modifiable risk factors for type 2 diabetes and other chronic diseases including smoking, nutrition, physical activity and overweight and obesity. Little research has been conducted in the Australian context to explore the perceived barriers to health promotion activities in midlife and older Australian women with a chronic disease.

Aims:

The primary aim of this study was to explore women’s perceived barriers to health promotion activities to reduce modifiable risk factors, and the relationship of perceived barriers to smoking behaviour, fruit and vegetable intake, physical activity and body mass index. A secondary aim of this study was to investigate nurses’ perceptions of the barriers to action for women with a chronic disease, and to compare those perceptions with those of the women.

Methods:

The study was divided into two phases where Phase 1 was a cross sectional survey of women, aged over 45 years with type 2 diabetes who were attending Diabetes clinics in the Primary and Community Health Service of the Metro North Health Service District of Queensland Health (N = 22). The women were a sub-sample of women participating in a multi-model lifestyle intervention, the ‘Reducing Chronic Disease among Adult Australian Women’ project. Phase 2 of the study was a cross sectional online survey of nurses working in Primary and Community Health
Service in the Metro North Health Service District of Queensland Health ($N = 46$). Pender’s health promotion model was used as the theoretical framework for this study.

**Results:**

Women in this study had an average total barriers score of 32.18 ($SD = 9.52$) which was similar to average scores reported in the literature for women with a range of physical disabilities and illnesses. The leading five barriers for this group of women were: concern about safety; too tired; not interested; lack of information about what to do; with lack of time and feeling I can’t do things correctly the equal fifth ranked barriers. In this study there was no statistically significant difference in average total barriers scores between women in the intervention group and those in the usual care group of the parent study. There was also no significant relationship between the women’s socio-demographic variables and lifestyle risk factors and their level of perceived barriers.

Nurses in the study had an average total barriers score of 44.48 ($SD = 6.24$) which was higher than all other average scores reported in the literature. The leading five barriers that nurses perceived were an issue for women with a chronic disease were: lack of time and interferes with other responsibilities the leading barriers; embarrassment about appearance; lack of money; too tired and lack of support from family and friends. There was no significant relationship between the nurses’ socio-demographic and nursing variables and the level of perceived barriers.

When comparing the results of women and nurses in the study there was a statistically significant difference in the median total barriers score between the groups ($p < 0.001$), where the nurses perceived the barriers to be higher ($Md = 43$)
than the women ($Md = 33$). There was also a significant difference in the responses to the individual barriers items in fifteen of the eighteen items ($p < 0.002$).

**Conclusion:**

Although this study is limited by a small sample size, it contributes to understanding the perception of midlife and older women with a chronic disease and also the perception of nurses, about the barriers to healthy lifestyle activities that women face. The study provides some evidence that the perceptions of women and nurses may differ and argues that these differences may have significant implications for clinical practice. The study recommends a greater emphasis on assessing and managing perceived barriers to health promotion activities in health education and policy development and proposes a conceptual model for understanding perceived barriers to action.
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List of Abbreviations

AIHW  Australian Institute of Health and Welfare
BHADP  Barriers to Health Promotion Among Disabled Persons Scale
BMI  Body Mass Index
CVD  Cardiovascular disease
DV  Dependant variable
H₀  Null hypothesis
H₁  Alternate hypothesis
HPM  Health promotion model
IV  Independent variable
NHMRC  National Health and Medical Research Council
SF – 36  Short Form 36
SPSS  Statistical Package for Social Sciences
T₁  Time 1
T₂  Time 2
T₃  Time 3
TBS  Total barriers score
WHO  World Health Organization
WWP  Women’s Wellness Program study
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Chapter 1: Introduction

1.1 BACKGROUND

Chronic diseases or ‘non-communicable diseases’ as they are increasingly being called, are diseases of long duration and generally slow progression, and include conditions such as cardiovascular diseases, diabetes, cancers, and chronic respiratory diseases. Type 2 diabetes is a chronic disease which has been increasing globally, and in Australia is one of the fastest growing chronic diseases, estimated to affect 1.5 million people in 2007 (Zimmet, 2007). In women, the prevalence of type 2 diabetes increases markedly after the age of 45 years and was the seventh highest leading cause of death in women aged over 65 years in 2007 (Australian Institute of Health and Welfare, 2010).

There are a number of known risk factors that are associated with type 2 diabetes and other chronic diseases such as cardiovascular disease. Some of these risk factors such as age, gender, family history, ethnicity and genetic factors are not able to be modified. There are other risk factors, often referred to as lifestyle risk factors or modifiable risk factors which include smoking, nutrition, alcohol intake, physical activity, overweight and obesity.

Lifestyle intervention studies have been conducted with midlife and older women for primary and secondary prevention of chronic disease with positive results in risk factor modification (D. Anderson, Mizzari, Kain, & Webster, 2006; Björkelund et al., 2000; Boylan, Renier, Knuths, & Haller, 2003; Lindström et al., 2006; White, Agurto, & Araguas, 2006; Will, Farris, Sanders, Stockmyer, & Finkelstein, 2004). The ‘Reducing Chronic Disease among Adult Australian Women’
project is currently investigating the effects of a lifestyle intervention for women with type 2 diabetes (Australian Research Council Linkage Grant reference number: LP0882338; Chief Investigator: D. Anderson).

Although there is good evidence that lifestyle interventions can change behaviour to reduce risk factors, there is also evidence that not all women in these studies are successful in reducing risk factors. Although the reasons for this are likely to be complex, one issue that appeared important is that women face personal, social and environmental barriers to participating in health promotion activities to reduce modifiable risk factors. A literature review revealed that there has been considerable research particularly in the United States of America, into the perceived barriers that women experience, however there has been no research in the Australian context investigating the perceived barriers to health promotion activities for midlife or older women with a chronic disease.

It is in this context that this Masters study has investigated the factors influencing health promotion activities in a sub-sample of women participating in the ‘Reducing Chronic Disease among Adult Australian Women’ project, particularly the personal, social and environmental barriers that prevent women from participating in behaviours that can reduce their risk factors for disease.

Nurses are key health providers who deliver health promotion education and support to clients to assist them to change behaviour and overcome barriers, yet despite this there has been little international and no Australian research to investigate how nurses perceive the barriers that women face. This study also explored nurses’ perception of the barriers for midlife and older women with a chronic disease.
1.2 RESEARCH AIMS

The primary aim of this research was to identify the factors that influence health promotion activities in midlife and older Australian women with a chronic disease particularly the level and type of personal, social and environmental barriers that prevent women from engaging in healthy lifestyle activities that can reduce their risk factors for chronic disease. The secondary aim of this research was to explore nurses’ perception of the factors that influence midlife and older women’s participation in healthy lifestyle activities.

In order to meet these aims, six research questions were addressed:

1. What is the level and type of perceived barriers to health promotion activities in midlife and older Australian women with a chronic disease?

2. Is there a relationship between the level of perceived barriers to health promotion activities and body mass index, physical activity, smoking behaviour, dietary behaviour and socio-demographic variables?

3. Is there a difference between the level and type of perceived barriers to health promotion activities between women receiving the lifestyle intervention and those receiving usual care?

4. What is the perception of nurses about the level and type of barriers to health promotion activities for midlife and older women with a chronic disease?

5. Is there a relationship between the level of perceived barriers to health promotion activities and different nursing positions, service areas, level of experience and socio-demographic variables?
6. Is there a difference in the level and type of perceived barriers between women and nurses?

1.3 METHODOLOGY AND CONCEPTUAL FRAMEWORK

This Masters study included two phases which reflect the primary and secondary aims: Phase 1 was a cross-sectional study of a sub-sample of women with type 2 diabetes who were participating in the ‘Reducing Chronic Disease among Adult Australian Women’ project ($N = 22$); Phase 2 was a cross-sectional study of a sample of nurses working in Primary and Community Health Services in Metro North District of Queensland Health ($N = 46$).

Data were collected from the sample of women and sample of nurses by questionnaire. Quantitative analysis was undertaken using descriptive and bivariate statistical methods to answer the research questions.

The conceptual framework for this study was Pender’s health promotion model (1982, 2006). In the health promotion model, ‘perceived barriers to action’ is a component of the larger model which posits that individual characteristics and experience, interpersonal and situational influences, self efficacy, activity related affect and perceived benefits and barriers of action all influence an individual’s level of commitment to engaging in positive health behaviours. The health promotion model was chosen for this study as it has been previously used as a framework for research into ‘perceived barriers’, including studies where scales have been developed to measure barriers (H. Becker, Stuifbergen, & Sands, 1991; Sechrist, Walker, & Pender, 1987). One of these instruments was used in this study, the *Barriers to Health Activities among Disabled Persons scale (BHADP)* (H. Becker, et al., 1991).
1.4 SIGNIFICANCE OF THE STUDY

Although limited by the small sample size, this study contributes to understanding the perceptions of midlife and older women with a chronic disease and also the perceptions of nurses, about the barriers to healthy lifestyle activities that women experience. It provides some evidence of a difference in perceptions of women and nurses and argues that these differences may have significant implications in the clinical context. The study proposes an expanded model of perceived barriers that could support identification and goal setting to overcome barriers in a clinical context.

1.5 DEFINITION OF TERMS

*Chronic disease*

Diseases of long duration and slow progression, often incurable, for example type 2 diabetes, cardiovascular disease, and renal disease (World Health Organization, 2008)

*Health activities*

Activities that an individual undertakes to improve their physical and mental health, for example regular exercise, healthy eating, not smoking

*Health promotion*

“The process of enabling people to increase control over the determinants of health and thereby improve their health” (World Health Organization, 1986)

*Goals*

The object or aim of action (Locke, Shaw, Saari, & Latham, 1981)
**Lifestyle intervention**

Research where the intervention is targeted to change ‘modifiable’ or ‘lifestyle’ risk factors for chronic disease, see *Modifiable risk factors*.

**Midlife and older women**

Women over 45 years of age.

**Modifiable risk factors**

Risk factors for disease that can be changed, for example, exercise, nutrition and smoking behaviours.

**Older women**

Women over 65 years of age.

**Perceived barriers**

Barriers to health activities or healthy lifestyle behaviours that are perceived by an individual to be important, and can include personal, social and environmental factors.

**Positive health behaviours**

Behaviours that improve health.

**Primary prevention**

Prevention of the development of illness or disease.
Risk factors

Factors that increase the risk of disease, may include modifiable factors for example exercise, nutrition, smoking; or non-modifiable factors for example age, gender, family history, ethnicity

Secondary prevention

Prevention of progression or complications of illness or disease, after diagnosis

Type 2 diabetes

A chronic disease characterised by high blood glucose levels where the pancreas does not produce enough insulin or the body cannot effectively use insulin which regulates blood glucose (World Health Organization, 2009b)

1.6 THESIS OUTLINE

Chapter 2 of this thesis reviews the relevant current literature around the subjects of chronic disease, type 2 diabetes, modifiable risk factors, and lifestyle interventions for women, perceived barriers for women and the health promotion model. Chapter 3 describes in detail the research methodology and Chapter 4 details the results of the study. Chapter 5 discusses the main findings and implications of the study and proposes a conceptual model for understanding perceived barriers to action. Chapter 6 concludes with a summary of major findings, the implications for clinical practice, policy development and future research and discusses the strengths and limitations of this research.
Chapter 2: Literature Review

2.1 INTRODUCTION

The purpose of this chapter is to discuss the current literature regarding chronic disease and type 2 diabetes, lifestyle interventions for risk factor reduction in women and perceived barriers to health promotion activities. Although participants in this study were women with type 2 diabetes it is important to place type 2 diabetes in the context of chronic diseases in general, as type 2 diabetes is a chronic disease and has modifiable risk factors in common with other chronic diseases such as cardiovascular disease.

In section 2.2 on chronic disease and type 2 diabetes, mortality and burden of disease will be addressed along with some of the modifiable risk factors including smoking, nutrition, alcohol intake, physical activity, overweight and obesity. Lifestyle interventions for primary and secondary prevention of chronic disease and type 2 diabetes in particular will be outlined in section 2.3. This leads to section 2.4 with a review of the literature on perceived barriers to health promotion behaviour to modify risk factors, in well women and women with chronic disease. Health professional’s perception of barriers is discussed in section 2.5.

The theoretical framework for the study, the health promotion model, will also be discussed with a review of the literature and psychometric properties of the primary research instrument used in this study at section 2.6.
2.2 CHRONIC DISEASE AND TYPE 2 DIABETES

2.2.1 DESCRIPTION

The World Health Organization (2008) has defined chronic diseases as being of long duration and generally slow progression, and including a range of conditions such as type 2 diabetes, cardiovascular diseases, cancers, and chronic respiratory diseases (World Health Organization, 2008).

In contrast to type 1 diabetes which usually has a rapid onset and requires administration of insulin, type 2 diabetes often has a slow onset and is usually associated with excess body weight and physical inactivity. In type 2 diabetes chronic high blood glucose (hyperglycaemia) can lead to long term complications from damage to nerves and blood vessels, including cardiovascular disease, renal disease, retinopathy and peripheral neuropathy (World Health Organization, 2009b).

2.2.2 MORTALITY AND BURDEN OF DISEASE

In broad terms, chronic diseases including type 2 diabetes are the leading cause of death and disability worldwide, representing 60% of all deaths (World Health Organization, 2009a). Specifically in regard to diabetes, the World Health Organization (WHO) reports that in 2005 an estimated 1.1 million people died from diabetes and 55% of diabetes deaths are in women (2009b). Further, that of an estimated 220 million people with diabetes worldwide, 90% have Type 2 diabetes (World Health Organization, 2009b). WHO also predicts that diabetes deaths worldwide will double between 2005 and 2030 (2009b).

In Australia, a total of 13,101 or 9.5% of all deaths in 2007 were attributable in some degree to diabetes (Australian Institute of Health and Welfare, 2010). Diabetes as an underlying cause of death is strongly associated with other causes of death
including coronary heart disease, kidney disease, heart failure and stroke (Australian Institute of Health and Welfare, 2010). In the 2007-08 National Health Survey an estimated 818,200 people, or 4% of the population had diagnosed diabetes, with 88% of people reporting type 2 diabetes (Australian Bureau of Statistics, 2009). The prevalence of diabetes in Australia has trebled since 1989–90, but it is likely that current figures do not represent the true prevalence of diabetes as the illness often remains undiagnosed (Australian Institute of Health and Welfare, 2010). The Australian Institute of Health and Welfare also predicts that type 2 diabetes will be the leading cause of disease burden by 2023 partly due to the increasing rates of overweight and obesity (2010).

Type 2 diabetes is a complex condition which is strongly associated with other serious illnesses such as cardiovascular disease and renal failure. Compared to people without diabetes, people with diabetes have 5 times the rate of stroke, 10 times the rate of heart attack and 3 times the rate of angina (Australian Institute of Health and Welfare, 2010). Diabetes is the most common cause of renal failure, with diabetic nephropathy being the main reason (31% of all new cases) for starting dialysis or being listed for kidney transplant (Australian Institute of Health and Welfare, 2010).

In order to manage the condition and prevent these serious complications, people with type 1 and type 2 diabetes require complex health care from a variety of services including general practitioners, nurse consultants, allied health professionals, specialist medical services and pathology services. In Australia, people with diabetes, particularly type 2 diabetes, account for a large and increasing proportion of total hospitalisations, with an average length of stay of 4.8 days in 2007-08 compared to the overall average of 3.3 days (Australian Institute of Health
and Welfare, 2010). The economic cost of type 2 diabetes in Australia in 2008, has been estimated to be 8.3 billion dollars, which includes 3 billion in financial costs including health system costs, and 5.3 billion in net cost of lost wellbeing (Access Economics Pty Limited, 2008).

In women, the prevalence of type 2 diabetes increases markedly after the age of 45 years (Australian Institute of Health and Welfare, 2008) and was the seventh highest leading cause of death in women aged over 65 years in 2007 (Australian Institute of Health and Welfare, 2010).

There is clear evidence that type 2 diabetes poses a significant health issue for the international and Australian communities and one that has been identified as a priority area for prevention and management policies and strategies by the World Health Organization and in Australia by the National Health Priority Action Council (National Health Priority Action Council, 2006). Priorities include effective medical management and self management of symptoms and medication, and also lifestyle or risk factor modification not only to prevent the occurrence of type 2 diabetes but to prevent the onset of complications such as cardiovascular and renal disease.

2.2.3 MODIFIABLE LIFESTYLE RISK FACTORS

There are a number of known risk factors that are associated with chronic diseases such as type 2 diabetes and cardiovascular disease. Some of these risk factors such as age, gender, family history, ethnicity and genetic factors are not able to be modified. There are other risk factors, often referred to as lifestyle risk factors or modifiable risk factors including smoking, nutrition, alcohol, physical activity, and overweight and obesity. The WHO (2009c) estimates that 80% of type 2
diabetes, premature heart disease and stroke is preventable through a healthy diet, regular moderate exercise and avoidance of smoking.

Public health programs often aim to target modifiable risk factors to prevent the development of disease in individuals and the population, often referred to as ‘primary prevention’. There is also evidence indicating that in people who have already developed a chronic health condition such as type 2 diabetes, secondary prevention through modifying health behaviours can improve health, slow the progress of disease and prevent complications (Diabetes Australia, 2009). The *Diabetes Management in General Practice Guidelines for Type 2 Diabetes* refer to the assessment of “SNAP risk factors (Smoking, Nutrition, Alcohol and Physical Activity)” and the establishment of a lifestyle plan being an important part of counselling a person with type 2 diabetes (Diabetes Australia, 2009).

**Smoking**

The AIHW has reported that tobacco smoking is the single most preventable cause of illness and death in Australia and is a major risk factor for coronary heart disease, stroke, peripheral vascular disease, respiratory disease and cancer (Australian Institute of Health and Welfare, 2010). There is extensive evidence that cigarette smoking is a risk factor for the development of type 2 diabetes (Willi, Bodenmann, Ghali, Faris, & Cornuz, 2007) and smoking cessation is recommended for people with type 2 diabetes after diagnosis (Diabetes Australia, 2009).
**Nutrition - fruit and vegetable intake**

Diet is linked to the development of chronic diseases such as type 2 diabetes and cardiovascular disease, and dietary modification is an important aspect of disease management and prevention (Diabetes Australia, 2009). There is strong evidence of that a diet rich in fruit and vegetables with nutrients such as folate, antioxidant vitamins, potassium and dietary fibre is associated with a lower risk of cardiovascular disease, and growing evidence of a lower risk of developing type 2 diabetes (Bazzano, 2005). In Australia there is evidence that a large proportion of women aged 50 – 55 years are not meeting dietary guidelines for fruit and vegetable intake (Australian Institute of Health and Welfare, 2010). It is interesting to note that the recommended diet for a person with type 2 diabetes is no different from the Australian Dietary Guidelines recommended for all people (Diabetes Australia, 2009).

Much work has been done at an international and local level to develop policies and guidelines about fruit and vegetable intake in an effort to improve population and individual health. Current *Dietary Guidelines for Australians* recommend that adults eat at least five serves of vegetables a day and at least two serves of fresh fruit each day (National Health and Medical Research Council, 2003). A ‘serve’ of vegetables is 75g or approximately one medium potato or half a cup of dark green leafy vegetables or one cup of salad vegetables; a ‘serve’ of fruit is 150g which is the equivalent of one piece of larger fruit or two pieces of smaller fruit (National Health and Medical Research Council, 2003).

**Alcohol intake**

Excessive alcohol consumption is a major risk factor for a number of health problems including coronary heart disease, stroke, high blood pressure and some
cancers (Australian Institute of Health and Welfare, 2010). The current *Australian Guidelines to Reduce Health Risks from Drinking Alcohol* (National Health and Medical Research Council, 2009) recommend that for healthy men and women consuming no more than two standard drinks on any day reduces the risk of harm from alcohol.

While alcohol intake is a risk factor that is being measured in the ‘Reducing Chronic Disease among Adult Australian Women’ study, it was not a variable included in this Master’s study. Limitations in the study time frame and predicted sample size required that variables for selected for inclusion be limited to smoking, diet, physical activity and BMI. However it is relevant to note that it is one of the lifestyle risk factors that people with type 2 diabetes may need to modify given that many people with type 2 diabetes are overweight or obese, and current guidelines recommend that alcohol consumption be minimised (Diabetes Australia, 2009).

**Physical activity**

A relatively recent meta-analysis of physical activity and health in women (Brown, Burton, & Rowan, 2007) provides clear and strong evidence that physical activity has an important role in prevention of type 2 diabetes, cardiovascular disease and some cancers in women. Brown and colleagues (2007) reported significant reductions in risk of type 2 diabetes in seven of the eight studies included in the analysis. In the Australian context, lower levels of physical activity in mid-aged and older women is an important risk factor for type 2 diabetes and other chronic conditions such as heart disease, hypertension and asthma (Lucke et al., 2007). The AIHW (2010) recently reported that in 2007-08 only 35.5% of adult females participated in sufficient physical activity to benefit their health.
The Australian government has published *National Physical Activity Guidelines for Adults* (Department of Health and Ageing, 1999) and more recently *Recommendations on physical activity for health for older Australians* (Department of Health and Ageing, 2009). Both these guidelines recommend “at least 30 minutes of moderate intensity physical activity on most, preferably all, days”. Moderate physical activity includes activities that increase breathing and heart rate such as brisk walking, medium paced cycling or swimming. Moderate physical activity does not have to be continuous for 30 minutes at a time but can be accumulated throughout the day (Department of Health and Ageing, 1999, 2009).

**Overweight and obesity**

Overweight and obesity are risk factors for chronic disease and are also a consequence of lack of physical activity and unhealthy diet. An imbalance between calories consumed in food and calories expended through physical activity causes excessive fat accumulation in the body leading to overweight and obesity. There is very strong evidence that overweight and obesity increases the risk of developing cardiovascular disease, type 2 diabetes, musculoskeletal disorders and some cancers, and that the risk increases as BMI increases (Diabetes Australia, 2009; World Health Organization, 2006). Obesity is a serious and increasing health issue not only in high income countries like Australia but also in urban communities in low and middle income countries; the World Health Organization estimates that in 2005 approximately 1.6 billion people over aged 15 years were overweight and 400 million obese (2006). In Australia, the AIHW recently reported that 70.5% of adults over 65 years were overweight or obese, with 64.7% of women over 65 years being overweight or obese (Australian Institute of Health and Welfare, 2010). In Australia, being overweight or obese is the most important risk factor for chronic diseases in
women of all ages, with overweight women more likely to have hypertension, heart disease, type 2 diabetes, asthma and arthritis (Lucke, et al., 2007).

Overweight and obesity is commonly measured using body mass index (BMI) which is body weight in kilograms divided by the square of the height in metres (kg/m²) (World Health Organization, 2006). “Overweight” has been defined by WHO as a BMI equal to or more than 25, and “obesity” as a BMI equal to or more than 30 (2006).

2.3 LIFESTYLE INTERVENTIONS FOR WOMEN

‘Lifestyle interventions’ are studies that aim to reduce modifiable risk factors to reduce the likelihood of chronic disease developing by measuring the effectiveness of a health intervention. Some studies have been targeted at women who have not yet developed a chronic disease, and others aim to reduce modifiable risk factors in women who have a diagnosed chronic disease.

2.3.1 PRIMARY PREVENTION OF CHRONIC DISEASE

Women at risk of developing cardiovascular disease have been the subject of a number of lifestyle interventions to reduce their risk. In Sweden, Bjorkelund and colleagues (2000) demonstrated a sustained and significant reduction in blood pressure, and no increase in mean body weight or serum cholesterol 8 years post intervention in a primary health care setting. Education and personalised follow up decreased risk factors for disease in American women who participated in a multicentre randomised trial of community based primary prevention program (Boylan, et al., 2003). The ‘WISEWOMAN’ projects have focused on financially disadvantaged middle-aged American women with risk factors for CVD including high cholesterol, high blood pressure, obesity and smoking (Will, et al., 2004). These
12 projects conducted across America have targeted women between the ages of 40-64 years, providing risk factor screening, lifestyle interventions and referral services with significant reductions in blood pressure, cholesterol, smoking and CVD risk (Finkelstein, Khavjou, & Will, 2006).

In contrast, the ‘Women’s Health Initiative Dietary Modification Trial’ which randomly assigned 48,835 women to an intervention or comparison group to test the effectiveness of a low fat, high fruit vegetable and grain diet found that it did not significantly reduce the risk of heart disease or stroke in postmenopausal women over the 8 years of the study (Howard et al., 2006). In this study modification to diet was the only intervention, and it did not include other lifestyle factors such as exercise or smoking. The results of this large study would suggest that risk factor interventions need to target not only diet but other lifestyle behaviours.

Lifestyle interventions for diabetes prevention have been found to be effective in high risk groups of middle aged men and women. The ‘Finnish Diabetes Prevention Study’ demonstrated a 43% reduction in relative risk of diabetes related to the intervention goals of weight loss, improved diet and increased physical activity (Lindström, et al., 2006). In the ‘Good Ageing in Lahti Region (GOAL)’ program 20% of participants met the lifestyle objectives of the study and at one year follow-up several risk factors had decreased significantly with a stronger effect for men (Absetz et al., 2007).

The ‘Women as Agents of Change’ project in Panama and Trinidad and Tobago, focused on low income middle aged women with 6 week lifestyle intervention to prevent chronic disease by promoting health eating and increased physical activity (White, et al., 2006). On 6 month follow up most participants had continued or intensified behaviour change they undertook during the project.
Other randomised trials have used lifestyle interventions to prevent weight gain during menopause (Simkin-Silverman, Wing, Boraz, & Kuller, 2003) and promote weight loss in overweight African American women, with significant results.

In Australia, Anderson and colleagues (D. Anderson, et al., 2006) demonstrated a significant increase in aerobic exercise activity and decreased smoking in menopausal and post-menopausal women in the ‘Women’s Wellness Program’ with significant decreases in waist-to-hip ratio, body mass index and blood pressure in the intervention group.

### 2.3.2 SECONDARY PREVENTION OF CHRONIC DISEASE

A number of lifestyle intervention studies have been conducted with midlife and older women who have been diagnosed with one or more chronic disease. Most of these have targeted a particular chronic disease such as diabetes or cardiovascular disease. Interventions have usually targeted exercise and healthy eating habits, with support often provided by health professionals through health education and personalised goal setting.

Evidence from studies on women with diagnosed cardiovascular disease has confirmed the benefits of increased physical activity and improved diet. Older women with heart disease were the subjects of the ‘Women take PRIDE’ project, where women in the intervention group had significantly less cardiac symptoms than the control group, a change which was sustained at 12 month follow-up (Janz et al., 1999). A small sample of 28 women with heart disease, participated in a randomised controlled trial of a low-fat diet, exercise, stress management training and smoking cessation program, with significant improvements in body mass index, symptoms and quality of life (Toobert, Glasgow, & Radcliffe, 2000).
Non-pharmacological lifestyle interventions have had positive results for women with diabetes, with increased physical activity, reduction in body mass index and improved blood glucose control (Gilis-Januszewska et al., 2001; K. Z. Walker, Piers, Putt, Jones, & O'Dea, 1999; Whittemore, Melkus, & Grey, 2005).

It is in this context that the ‘Reducing Chronic Disease among Adult Australian Women’ project currently in progress, is examining the effects of a non-pharmacological lifestyle intervention for risk factor reduction in women who have type 2 diabetes.

2.4 PERCEIVED BARRIERS FOR WOMEN

Although there is good evidence that lifestyle interventions can change behaviour and that behaviour change can reduce risk factors, there is also evidence that interventions do not work for all women as not all women in lifestyle studies are successful in reducing risk factors. Although the reasons for this are likely to be complex, one issue that would appear to be important is that women face barriers to participating in health promotion activities like exercise. A review of the ‘barriers’ literature was undertaken to explore what was known about the barriers that women face that impact on their ability to lead a healthy lifestyle (see Appendix A: Matrix Table - Barriers).

In the following review of studies, the majority have explored the issues and barriers for well women in engaging in health promotion activities, with a smaller proportion focusing on women with an illness or disability. A small number of studies examine the perception of staff delivering health promotion education.
2.4.1 BARRIERS FOR WELL WOMEN

African American women have been the subjects of quite a large body of research exploring the barriers to healthy lifestyle activities with the majority being cross sectional descriptive studies.

Jones and Nies (1996) explored the relationship between perceived benefits and barriers to exercise in older African American women and found a significant relationship between current exercise level and perceived benefits and barriers. African American women perceive the barriers of time, fatigue, family responsibilities, physical exertion and motivation to be significant (Jones & Nies, 1996; Wilcox, Bopp, Oberrecht, Kammermann, & McElmurray, 2003; Wilcox, Oberrecht, Bopp, Kammermann, & McElmurray, 2005; Wilcox, Richter, Henderson, Greaney, & Ainsworth, 2002; Williams, Bezner, Chesbro, & Leavitt, 2006). A recent study described findings from a small sample of African American women who participated in focus groups and interviews, investigating the influence of social and cultural issues and physical activity; lack of exposure to physical activity, norms and beliefs about physical activity and ‘hair maintenance’ were the main themes identified (Harley, Odoms-Young, Beard, Katz, & Heaney, 2009).

Wilcox and colleagues (2003; 2005) conducted comparative studies of African American and European American women providing evidence that personal barriers to exercise, such as health problems, fatigue, boredom and motivation are factors that are significantly higher for African American women when compared to European women.

Other cross sectional studies have looked at the barriers to exercise in other minority group women such as Latina and American Indian, in the United States of America. Similar themes emerged from these studies with the most common barriers
being time, fatigue, lack of energy, role responsibilities and personal health factors (Heesch, Brown, & Blanton, 2000; Juarbe, Turok, & Perez-Stable, 2002).

Focus groups conducted with White, African American, Latina and American Indian women of all ages has revealed that cultural barriers vary between groups but that family priorities were the main barrier to physical activity in all groups (Eyler et al., 2002). A sample of lesbian and bisexual women who participated in focus groups exploring healthy eating, exercise and weight, identified barriers such as time, confusion about goals, lack of motivation, weather and influence of family and friends as being important (Bowen, Balsam, Diergaard, Russo, & Escamilla, 2006).

Barriers to smoking cessation in pregnancy have been studied in interviews and in an online survey finding themes of influence of family and friends, belief system, available services to assist (Tod, 2003) and fear of disappointment if not able to stop smoking and not seeking help as the top barriers (Ussher, Etter, & West, 2006).

Research on exercise participation in nurses in Thailand has found that perceived barriers to exercise and perceived social support were significant predictors of exercise participation (Kaewthummanukul, Brown, Weaver, & Thomas, 2006). Ansari and Lovell (2009) investigated barriers to exercise in 100 women in the United Kingdom, and found that older women had significantly more barriers and that family responsibilities and motherhood affected exercise participation the most.

Rural women have been the subjects of studies that have explored perceived personal and environmental barriers to physical activity and health promoting activity (Osuji, Lovegreen, Elliott, & Brownson, 2006; Paluck, Allerdings, Kealy, & Dorgan, 2006). In rural American women the most frequently reported barriers were fatigue, lack of time, bad weather, no energy, no motivation, dislike of exercise, traffic, work involved exercise, no one to exercise with and fear of injury; women
with high barriers were also less likely to meet activity recommendations (Osuji, et al., 2006). A small study of rural women with risk factors for coronary heart disease found that barriers for the women participating in a walking program included balancing family and self, chronic illness and injury breaking routine, were the most common barriers (Perry, Rosenfeld, & Kendall, 2008). Rural Canadian women have described lack of facilities and resources, family commitments, cold weather, travel distance, lack of food variety and social isolation as barriers to staying healthy (Paluck, et al., 2006).

Barriers to risk factor modification in women without a history of coronary heart disease have been explored with a sub-sample of women in the ‘WISEWOMAN’ project, with women who fully participated in a health promotion program having significantly fewer barriers to attendance than other participants who had minimum or no program participation (Gatewood et al., 2008). Perceived barriers to health promotion, smoking history, family history of coronary heart disease and knowledge of coronary heart disease were predictors of health promotion behaviour in a group of women who had low risk factors for coronary heart disease (Thanavaro, Moore, Anthony, Narsavage, & Delicath, 2006). Women with access to a nurse practitioner have been found to have decreased perceived barriers to coronary heart disease risk factor modification (Thanavaro, 2005).

In Australia, some research has been undertaken looking at exercise in older women. A telephone survey about exercise patterns was undertaken with urban and rural women, which found a significant difference in perception of practical barriers between women who were exercising and those who were not, however the barriers scale used was reported to have low internal consistency for potential barriers (Lee, 1993). The types of barriers perceived by women in this study were not clearly
described and having been conducted in the early 1990’s this study may be of limited relevance as it was conducted some time ago. Perceived barriers to physical activity were explored in a 1997 study of a sample Australian adults with the most frequently cited barriers being lack of time and lack of motivation to exercise (Booth, Bauman, Owen, & Gore, 1997). Obesity was also identified as a barrier to physical activity by Australian adults who participated in the ‘Fitness of Australians’ pilot study (Ball, Crawford, & Owen, 2000).

A recent study in Queensland used a questionnaire and interviews to investigate exercise and dietary behaviour change in rural and urban midlife women (R. L. Anderson, 2008). While the focus of this research was on self-efficacy, there was some exploration of the facilitators and obstacles to change through in-depth interviews with 29 of the women. Facilitators of change included having positive role models, more time with retirement and support from significant others; obstacles to change included work, care giving, illness and injury (R. L. Anderson, 2008).

In summary, much of the research focusing on perceived barriers for well women has been conducted in the United States of America predominantly with African American women. In these studies there would appear to be similar barriers that are observed for women in many of these studies including: lack of time, family responsibilities, fatigue and lack of energy, lack of motivation, lack of social support, bad weather lack of adequate facilities or money. There has only been one recent study in the Australian context where obstacles to change were described in a mixed method study of midlife rural and urban women in Queensland.
2.4.2 BARRIERS FOR WOMEN WITH CHRONIC DISEASE

There has also been research investigating the barriers to health promotion activities in women with chronic illness or disability. This information, although limited may be relevant to understanding the barriers that women with type 2 diabetes face.

Work by Becker and colleagues in the early 1990’s led to the development of a scale to measure barriers to health promotion activities in people with disabilities (H. Becker, et al., 1991; Stuifbergen & Becker, 1994). Following on from this work, research has been conducted to investigate perceived barriers to health promotion activities in women with multiple sclerosis, polio, post-polio syndrome and fibromyalgia (Beal, Stuifbergen, & Brown, 2009; H. Becker & Stuifbergen, 2004; Stuifbergen, Becker, Blozis, Timmerman, & Kullberg, 2003; Stuifbergen, Seraphine, & Roberts, 2000). A number of these studies used perceived barriers in structural equation modelling; perceived barriers were a significant predictor of health promotion behaviour.

Mosca and colleagues (Mosca, McGillen, & Rubenfire, 1998) surveyed men and women attending a preventive cardiology clinic about barriers to lifestyle change. They found significant gender differences in barriers, with self-esteem, stress and time rated as the most important barriers for women. Physicians were rated as the most important source of support for both genders, with women compared to men, rating support from nurses, allied health and family members as more important. A Canadian study of men and women and the factors influencing cardiac rehabilitation participation, found that encouragement from adult children and other medical illnesses were more significant factors for women (Lieberman, Meana, & Stewart, 1998).
African American women with illness and disability such as arthritis, stroke, multiple sclerosis, diabetes and heart disease and respiratory illness, described the most common barriers as the cost of joining a fitness centre, lack of energy and lack of transportation, although 82% of the respondents stated they liked to exercise (Perry, et al., 2008).

Barriers to osteoporosis prevention in older women, particularly exercise and dietary calcium intake, was the subject of two studies by Ali and Twibell (1994). Barriers were not well reported in the first article, and the second described a significant relationship between some health promotion variables and calcium intake and exercise participation. Shin and colleagues (2006) investigated exercise self-efficacy and benefits and barriers in a sample of older Korean women with osteoporosis or osteoarthritis, and found that pain was a more significant barrier for women with osteoarthritis.

A study of older women with a diagnosis of myocardial infarction who were not participating in a cardiac rehabilitation program, found a number of facilitators and barriers to lifestyle change (Crane & McSweeney, 2003). Facilitators to change included support of family and friends, spiritual support and financial support; barriers included cultural issues such as food preference, and lack of support and financial support, fear of falling, weather, safety, other illnesses and transportation.

Moore and colleagues (2003) found that in a group of older women post myocardial infarction or coronary artery bypass surgery, that the main predictors of exercise frequency were co-morbidity and social support and that social support was the only predictor of exercise persistence; perceived benefits and barriers were the only significant predictor of total amount of exercise. Another study of older rural women with heart failure and diabetes provided showed that women are more likely
to undertake health promotion behaviours when they have less cardiac symptoms and have received diabetes self-management education; although social support was not significant in predicting health promotion behaviour in this sample (Pierce, 2005).

In summary, studies that have explored the perceived barriers for women with a chronic disease are fewer in number than those exploring barriers in well women. There are some similarities in the reported barriers between women with and without a chronic illness such as time, cost, lack of energy, safety and social support. Some other barriers that are reported by women with a chronic disease relate to specific conditions such as osteoarthritis, multiple sclerosis and cardiovascular disease and include: pain, other medical illnesses, fear of falling and cardiac symptoms.

In Australia, it would appear that there has been no research investigating the barriers for midlife and older women with chronic disease, which prevent them from engaging in healthy behaviours and lifestyle improvement activities. This gap in existing research provides the basis for Phase 1 of this research, where perceived barriers to health promotion activities will be investigated in a sample of midlife and older women with type 2 diabetes.

2.5 HEALTH PROFESSIONALS’ PERCEPTIONS OF BARRIERS

To inform the approach to Question 4 of this thesis, a literature review on the perceptions of health professionals about the barriers that women face was conducted. The search indicated that only been a small amount of research has been conducted in this area.

Jilcott and colleagues (2004) explored staff attitudes, beliefs and barriers in implementing the ‘WISEWOMAN’ Program in the United States. The staff who delivered the program were nurses, health educators and nutritionists and were
surveyed at baseline and 12 months. Most of the survey referred to institutional barriers to implementation and personal barriers for the counsellors. There was some information gathered about counsellors’ beliefs about patients’ motivation and attitudes, which revealed that counsellors were sceptical about patients’ motivation to improve lifestyle.

Ali and colleagues have recently published results of two qualitative studies exploring barriers to weight management in Emirati women (2010; 2009). The perception of health professionals; physicians, dieticians and nurses about the barriers to weight management in women was explored in 29 in-depth interviews (H. I. Ali, et al., 2009). There were ten barriers identified which were grouped into the themes of personal, health care system and community/policy barriers. Perceived barriers to weight loss in women were lifestyle behaviours, perceptions/attitudes, low health awareness, competing demands, limited health awareness programs/resources, dietician availability, cultural and social norms, lack of facilities, low social support, and weather conditions. The later study with 75 Emirati women used focus groups to explore their perceptions about barriers and facilitators to weight loss (H. I. Ali, et al., 2010). Women were reported to have similar perceptions about barriers to health professionals, although little detail was provided about any differences in perceptions. Participants in the study were aware of the health problems associated with overweight and obesity but most were not engaged in regular physical activity or health eating.

It would appear that although nurses are key health service providers who deliver health promotion education and support to clients to assist them to change behaviour and overcome barriers, there has been little research specifically exploring how nurses perceive the barriers to health promotion behaviours for people with a
chronic disease. This gap in research provides the basis for Phase 2 of this Masters project, where the perception of nurses about the level and type of barriers that midlife and older women with a chronic disease experience, will be explored.

2.6 THEORETICAL FRAMEWORK

There are a number of theories and models that have been developed to understand health behaviour and health behaviour change. One such model is Pender’s health promotion model (HPM) (Pender, 1982, 2006) which provides the conceptual framework for this Master’s study. The HPM has been chosen for a number of reasons, one of which is that it has provided the theoretical basis for a substantial number of studies on health promotion behaviour and perceived barriers to action. Another reason the model has been chosen is that it integrates nursing and behavioural science theory to promote health and well-being rather than disease management or prevention. The HPM incorporates not only personal and psychological influences on health behaviour but also social and community dimensions of health behaviour. Finally the HPM seemed to be a good fit with aims of this study, which are to explore the perceptions of women and nurses about the barriers to healthy lifestyle activities in women with a chronic disease. To understand the development and constructs of the health promotion model it is important to put it in context with other behavioural models and theories.

2.6.1 PSYCHOSOCIAL MODELS OF HEALTH BEHAVIOUR

There are a number of other models and theories that have been developed and refined over a number of decades to explain health behaviour and support health promotion research and practice. Well known theories include Bandura’s self efficacy and social learning theory (1977), the health belief model (M. Becker,
1974), the theory of reasoned action/theory of planned behaviour (Fishbein & Ajzen, 1975) and the transtheoretical model and stages of change (Prochaska & DiClemente, 1983). Two of these theories, the health belief model and self-efficacy and social cognitive theory include the concept of perceived barriers or a similar concept of impediments/obstacles. The health promotion model also draws on these other theories to explain health promotion behaviour.

**Health Belief Model**

Prior to the health promotion model, perceived barriers was first clearly described in the health belief model (M. Becker, 1974) which had originally been developed in the 1950’s and 1960’s by social psychologists to explain the failure of people to participate in public health programs such as immunisation and tuberculosis screening in the United States of America. Glanz, Rimer and Viswanath (2008) have described the evolution of the model and its current constructs, the key constructs being perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action and self efficacy. Self efficacy was not in the original model but was added to the model in 1988 as a separate construct (Glanz, et al., 2008).

In the model, perceived susceptibility refers to an individual’s beliefs about how likely they are to get an illness or disease, for example type 2 diabetes. Perceived severity includes beliefs about the personal and social consequences or severity of an illness, these two factors combine to be the perceived threat to the individual. A person’s response to the threat of an illness such as type 2 diabetes will be influenced by the perceived benefits of taking preventive action to reduce the threat such as eating healthy food and exercising regularly. The perceived barriers are obstacles or impediments to taking action in response to a perceived threat of
illness. For example, although an individual may believe eating healthy food will benefit them, they may also perceive that it will be inconvenient and unpleasant to do so. These perceptions will influence whether or not action is taken.

In a critical review of health belief model (HBM) studies conducted in the 1970’s and 80’s, of all the HBM concepts, perceived barriers was reported to be the single most powerful predictor across all studies and behaviours (Janz & Becker, 1984).

**Self efficacy and social cognitive theory**

Bandura (2004) has described the concept of health promotion using social cognitive theory as comprising a group of core determinants which include: *knowledge* of health risks and benefits; *perceived self-efficacy* or belief about one’s control over health behaviour; *outcome expectations* about the benefits and costs of health behaviours; *health goals* and plans for realising them and *perceived facilitators and impediments* to changing behaviour.

Bandura (2004) asserts that self-efficacy beliefs are a crucial determinant of health behaviour, influencing an individual’s goals and aspirations and also the outcomes that a person expects their efforts to produce. People with high self-efficacy expect to realise positive outcomes while those with low self-efficacy expect poor outcomes. These outcome expectations include physical outcomes, social outcomes such as approval or disapproval and positive and negative self-evaluative reactions (A. Bandura, 2004). Self-efficacy beliefs also influence how obstacles or impediments are viewed; obstacles and impediments include personal factors, social and economic factors and health system factors. People with low self-efficacy will easily become discouraged by obstacles and difficulties and give up efforts to change behaviour (A. Bandura, 2004). Bandura also posits that goals and aspirations for
personal health are also influenced by self-efficacy beliefs, where people with stronger perceived self-efficacy beliefs are more likely to set higher goals and have a stronger commitment to achieving them (2004).

There is extensive evidence from decades of research, that the self-efficacy construct is one of the most important predictors of health behaviours and health behaviour change (A. Bandura, 2004; Pender, Murdaugh, & Parsons, 2010). Self efficacy and social cognitive theory has been incorporated into both the health belief model previously described and the health promotion model, which will be discussed in more detail in the following section.

2.6.2 THE HEALTH PROMOTION MODEL

The concept of health promotion was defined by the WHO in the *Ottawa Charter for Health Promotion* as “the process of enabling people to increase control over the determinants of health and thereby improve their health” (1986). Since that time the WHO has produced many strategic and policy documents to foster and support health promotion efforts at a global and local level. For example, in an effort to address the growing incidence of chronic diseases largely caused by modifiable risk factors, WHO has developed a *Global Strategy on Diet, Physical Activity and Health* (World Health Organization, 2005) which emphasises that health promotion activities and strategies need to focus not only on social and environmental factors but also individual behaviour change.

Pender’s health promotion model was developed in the early 1980’s with the aim of integrating nursing and behavioural science theory to promote high level personal health and well being and has undergone a number of revisions since that time (Pender, 1982, 2006; Pender, et al., 2010). The model is multidimensional and
reflects WHO principles of health promotion and also incorporates constructs from social-cognitive theory such as self-efficacy, and from the health belief model the concepts of perceived benefits and perceived barriers.

The model has been described by Pender as:

“a competence or approach orientated model … unlike prevention models … the HPM does not include ‘fear’ or ‘threat’ as a source of motivation for health behaviour” (2010, p. 44).

The 2006 model has three main dimensions which include: individual characteristics and experience; behaviour specific cognitions and affect, and behavioural outcome. Within these three dimensions of the model there are a number of variables which influence an individual’s commitment to a plan of action and health promoting behaviour. Figure 2.1 is a simple diagrammatic representation of the components of the health promotion model.
The first dimension of the model *individual characteristics and experience* incorporates two factors those of: *prior related behaviour* and *personal factors* which are biological, psychological and socio-cultural. The model proposes that prior related behaviour has “direct and indirect” effects on whether an individual undertakes health promoting behaviour and that personal factors such as age, BMI, menopausal status, strength, agility, self esteem, motivation, ethnicity, gender, education and socioeconomic status can be predictive of health behaviour (Pender, et al., 2010).

The second dimension of the model includes *behaviour specific cognitions and affect* which Pender and colleagues describe as critical variables that have a major significance for any health interventions, as they are able to be modified (2010). These variables include; *perceived benefits of action* and *perceived barriers to action; perceived self-efficacy; activity related affect; interpersonal influences; situational influences* and *competing demands and preferences*. Perceived benefits, barriers and self efficacy are linked together in the model and will be discussed in more detail.

The third dimension of the model is *behavioural outcome* which is an outcome of individual characteristics and experiences and behaviour specific cognitions and affect which all influence an individual’s *commitment to a plan of action* and *health promoting behaviour* (Pender, et al., 2010).

**Perceived benefits of action**

The variable of *perceived benefits to action* is described as perceptions of the positive consequences of behaviour where an individual’s expectations are influenced by anticipated intrinsic or extrinsic benefits which can directly and indirectly motivate behaviour (Pender, et al., 2010). Pender and colleagues draw
from expectancy-value theory to explain that anticipated benefits can affect motivation based on outcomes from personal prior experience of a behaviour or from vicariously observing the behaviour of others (2010).

**Perceived barriers to action**

*Perceived barriers to action* is defined by Pender and colleagues as:

“real or imagined…perceptions concerning the unavailability, inconvenience, expense, difficulty, or time consuming nature of a particular action…often viewed as mental blocks, hurdles, and personal costs of undertaking a given behaviour…loss of satisfaction from giving up health-damaging behaviours…may also constitute a barrier” (Pender, 2006, p. 53).

The definition of *perceived barriers* in the health promotion model would appear to be expanded from the health belief model, where perceived barriers has been described by Glanz and colleagues as “belief about the tangible and psychological costs of the advised action” (Glanz, et al., 2008, p. 48). In the HPM, perceived barriers can include personal and psychological factors such as time, energy and motivation; social factors such as family support and family obligations; and environmental factors such as weather conditions, and resource issues such as money or transport (Pender, et al., 2010). Perceived barriers in the HPM, affect intention and commitment to engaging in health promoting behaviour (Pender, et al., 2010), concepts which would seem to be drawn from expectancy value theory.

Of 27 studies cited by Pender and colleagues as using the HPM as a theoretical construct, 79% provided evidence that perceived barriers are important determinants of health promoting behaviour (Pender, 2006). In particular there are a number of
studies of women, where barriers to action have been found to be significant predictors of health promotion behaviour especially exercise behaviour (Jones & Nies, 1996; Kaewthummanukul, et al., 2006; Moore, et al., 2003; Osuji, et al., 2006; Stuifbergen, et al., 2000).

**Perceived self efficacy**

The HPM includes the concept of self-efficacy as one of a number of social cognitive factors that influence health promoting behaviour. In the HPM prior behaviour indirectly influences health promoting behaviour through perceptions of self-efficacy (Pender, et al., 2010). Perceived self-efficacy then influences the perception of barriers and also the perception of the anticipated benefits of engaging in a particular behaviour. This would seem to be similar to Bandura’s (A. Bandura, 2004) concept of health promotion where perceived self-efficacy affects behaviour through its influence on goals, outcome expectations and socio-structural facilitators and impediments.

**Strategies to overcome perceived barriers to action**

In *Health Promotion in Nursing Practice* (Pender, et al., 2010) Pender and colleagues make a link between *barriers to action* and *barriers to change*, describing the role of the nurse to facilitate behaviour change in order to reduce the barriers to action. They draw on the transtheoretical model stages of change of Prochaska and Diclemente (1983) to propose a list of four general nursing interventions for an individual based on whether the level of readiness is high or low and whether the barriers to action are high or low (Pender, et al., 2010, p. 58):
1. Where an individual has a high level of readiness to change and barriers are low, support and encouragement may be sufficient to change behaviour;

2. Where readiness is high and barrier to action are high, client must be assisted to lower barriers;

3. When both readiness to act and barriers are low, readiness to act should be increased to initiate action;

4. When readiness to act is low and barriers high, both readiness and barriers should be addressed.

While this general approach may be a useful, there is no indication as to how perceived barriers to action should be assessed or measured. Chapter 4 Assessing Health and Health Behaviours (Pender, et al., 2010) describes assessment of physical fitness, nutrition, life stress, spiritual health, social support systems and lifestyle of an individual but does not give an indication about how perceived barriers to action might be assessed in a practical sense.

A search for scales that measured the variable of perceived barriers to action led to the discovery of an instrument that will now be described.

### 2.6.3 PERCEIVED BARRIERS TO HEALTH PROMOTION INSTRUMENT

Using the conceptual framework of the health promotion model, a scale was developed by Becker and colleagues (1991) to measure the subjective perception of the factors that prevent a person with a disability participating in health promotion activities. The *Barriers to Health Activities among Disabled Persons* scale (BHADP) evolved from the *Exercise Benefits/Barriers Scale* that had been previously developed and tested (Sechrist, et al., 1987).
Psychometric properties of BHADP scale

The BHADP scale in its current form contains eighteen items which include personal, social and environmental factors that are barriers to health promotion activities. Personal factors include lack of energy and fatigue, impairment from illness, lack of interest, feeling cannot do things correctly, lack of information, concerns about appearance and communication difficulties. Social factors include lack of money, no one to help, lack of support from family or friends, other responsibilities and lack of time. Environmental factors include lack of convenient facilities, lack of transportation, lack of help from health care professionals, concern about safety and bad weather. There is also an item rating support from health care professionals, and one open ended response other reasons. Scale items are scored with a likert-type scale with four response categories, with item scores being summed to obtain a total barriers score for the individual.

The BHADP scale was tested in the context of a larger project which studied health promotion behaviours and attitudes of adults with a range of illnesses and disabilities living in the community. The original sixteen item scale was developed following literature review and analysis of interviews with 18 disabled university students, and also review by four rehabilitation and health promotion experts (H. Becker, et al., 1991).

Following development, the psychometric properties of the instrument were field-tested with a sample of 135 adults, with an average age of 36. The participants were men (56%) and women and were predominantly Anglo-American (62%). Participants reported a range of 23 different disabling conditions, most commonly head injury, cerebral palsy and visual impairments (H. Becker, et al., 1991).
Analysis of the tool had a number of steps. The 16 item ratings were summed to give a mean barriers score of 31.38 where the range of possible scores was 16 to 58, with a slightly positively skewed normal distribution reported (H. Becker, et al., 1991). Internal consistency reliability was computed with a reported Cronbach alpha of .82 and item-total correlations ranging from .25 to .59 (H. Becker, et al., 1991). Factor analysis using a Varimax rotation found a three factor solution accounted for 48 per cent of variance, with all items loaded on one of three factors at .38 or above. The three factors were described as 1) motivation 2) impairment and 3) external factors.

To test whether the three factors could be used as subscales Cronbach alpha coefficients were computed for the seven item motivation subscale (.80), the five item impairment subscale (.71) and four item external subscale (.53). The impairment subscale and external subscale were then combined into a nine item external barriers subscale that yielded a Cronbach alpha coefficient of .69 (H. Becker, et al., 1991).

Scale validity was tested in a number of ways. Firstly, social desirability response set bias was assessed using the Marlowe-Crowne Social Desirability Scale (Strahan & Gerbasi, 1972) with low correlations for total BHADP ($r = -.21$), motivation subscale ($r = -.24$) and external subscale ($r = -.15$) all indicating that response patterns were not due to response set bias. Secondly, BHADP total scores were correlated with other benchmark tests, being most highly correlated with Sherer’s General Self Efficacy measure (1982) ($r = -.48$) and moderately correlated with the Stress Management ($r = -.33$) and Self-Actualisation Scales ($r = -.36$) from the health promotion lifestyle profile (S. Walker, Sechrist, & Pender, 1987).
To further investigate the validity of the BHADP scale, the scale was used with a comparison group of 144 non-disabled adults with an average age of 37 years (H. Becker, et al., 1991). Total scores for the comparison group ranged between 16 to 40. Mean total barriers scores for each group were compared with a t-test showing significantly lower mean score for the non-disabled group ($t = 8.45$, $df = 269$, $p < 0.001$). Internal consistency reliability was reported as Cronbach alpha of .74 for the total scale, .71 for the motivation subscale and .56 for the external barriers subscale (H. Becker, et al., 1991).

In a subsequent study of predictors of health-promoting lifestyles in people with disabilities, Stuifbergen and Becker (1994) added an additional two items to the BHADP instrument – bad weather and lack of support from health professionals, with a alpha coefficient of .87 reported.

The BHADP scale has been used in other health promotion studies with good internal consistency reliability reported, including women with multiple sclerosis ($\alpha = .85 - .87$) (Stuifbergen, et al., 2003) adults with post-polio syndrome ($\alpha = .84$) (Stuifbergen, Seraphine, Harrison, & Adachi, 2005) and women with fibromyalgia ($\alpha = .81$) (Beal, et al., 2009). This instrument was also used in a study of health promotion behaviours of rural women with heart failure (Pierce, 2005); however the Cronbach alpha was not separately reported.

Although originally designed for use with disabled adults, the BHADP tool was chosen for use in this study for a number of reasons. Firstly, the instrument was based on Pender’s Health promotion model so was a good fit with the theoretical framework. Secondly, adults with a chronic illness may have physical limitations from their illness such as reduced exercise capacity and fatigue, similar to people with some physical disabilities like multiple sclerosis or post-polio syndrome; it is
estimated that 56% of people with diabetes in Australia have a disability, particularly at older ages (Australian Institute of Health and Welfare, 2010). Finally, the BHADP appeared to be a valid and reliable instrument which has been used in a number of health promotion studies conducted in the last two decades and would allow the level and different types of barriers to be quantified.

One limitation of the instrument is that calculation of the sub-scales of Internal motivation and External factors in the original study used a scale with 16 items. It does not appear that subsequent studies with the 18 item instrument have used or validated the subscales, which in this study will not be used. Another issue and possible limitation in this study, is that the instrument has only been used to measure self-perceptions of barriers, and in this study it is planned that it be modified slightly to measure the perception of nurses about the barriers for women.

2.7 SUMMARY

Chronic diseases such as cardiovascular disease and type 2 diabetes are a leading cause of morbidity and mortality in Australian women. There are known risk factors for chronic diseases such as smoking, poor dietary habits, excessive alcohol intake, lack of physical activity and overweight and obesity. There is good evidence that non-pharmacological lifestyle interventions that target these risk factors can prevent the development of disease. There is also some evidence that these interventions can be effective with women with a chronic disease.

Well women and women with chronic disease face barriers that prevent them from participating in healthy lifestyle activities. Perceived barriers for women have been the topic of research in quite a number of international studies, particularly in the United States, with some common themes emerging of lack of time, fatigue,
family responsibilities, lack of energy, social support and money as being significant factors. What has not been studied in any detail in the Australian context is the factors that prevent midlife and older women with a chronic disease, from participating in health promotion activities and behaviours. There is also little international or Australian evidence about how nurses’ perceive the barriers for older women with a chronic disease. This study will explore these questions with the sample of women participating in the ‘Reducing Chronic Disease among Adult Australian Women’ project, and a sample of nurses who are working in Primary and Community Health Services in Metro North District of Queensland Health.

Pender’s health promotion model provides the theoretical framework for this study, with perceived barriers to action being one of a number of social-cognitive factors that influence an individual’s health promotion behaviour. Perceived barriers has been found to be a significant predictor of health promoting behaviour and forms the basis of the research questions and methodology described in the following chapter.
Chapter 3: Research Design

This chapter describes the methods used in this research. An observational, cross-sectional design was used. The study was divided into two parts: the first phase was a cross-sectional survey of women participating in the ‘Reducing Chronic Disease among Adult Australian Women’ project; the second phase was a cross-sectional survey of nurses working in Primary and Community Health Services in the Metro North District of Queensland Health. Detailed description of each phase of the study will follow.

3.1 METHODOLOGY AND RESEARCH DESIGN PHASE 1

3.1.1 METHODOLOGY

Phase 1 of the research is a cross-sectional study of women participating in the ‘Reducing Chronic Disease among Adult Australian Women’ project (Australian Research Council Linkage Grant reference number: LP0882338; Chief Investigator: D. Anderson). The ‘parent’ project is a randomised non-pharmacological behavioural intervention for decreasing morbidity in women with a chronic disease. It is a 12 week multi-modal intervention using cognitive strategies, health education, and nursing consultation which aims to help participants achieve behaviour change and lifestyle improvement to achieve risk factor modification.

Phase 1 of this Masters study involved data collection and analysis of information from women at 6 months after completing the intervention.

3.1.2 RESEARCH QUESTIONS AND HYPOTHESES

Phase 1 of this research aimed to answer the following research questions and hypotheses:
Research question 1:

What is the level and type of perceived barriers to health promotion activities in midlife and older Australian women with a chronic disease?

Research question 2:

Is there a relationship between the level of perceived barriers to health promotion activities and body mass index, physical activity, smoking behaviour, dietary behaviour and socio-demographic variables?

H$_1$ There is a linear relationship between the level of perceived barriers to health promotion and BMI, physical activity, smoking behaviour, dietary behaviour and socio-demographic variables.

Research question 3:

Is there a difference between the level and type of perceived barriers to health promotion activities between women receiving the lifestyle intervention and those receiving usual care?

H$_1$ There is a difference in the level and type of perceived barriers between intervention and usual care group.

3.1.3 PARTICIPANTS

Participants were women aged 45 years or older with type 2 diabetes, who attended Primary and Community Health Service clinics within the Metro North District of Queensland Health which included Chermside, Redcliffe, Caboolture, Pine Rivers and North Lakes Primary and Community Health clinics. Exclusion criteria included not being able to read and understand English, receiving palliative
care or having other contraindications to participation in the program such as an inability to exercise.

Using Cohen’s (1988) calculation, it was calculated that the minimum sample size to detect a medium to large effect with four independent variables included multiple linear regression modelling was $N = 82$. For other parametric tests it was calculated that a sample size of $N = 60+$ would give 96% power at an alpha level of 0.05.

### 3.1.4 PROCEDURE AND TIMELINE

The ‘Reducing Chronic Disease among Adult Australian Women’ project commenced recruiting participants in October 2008 and final data collection will be completed in early 2011. As at 31 July 2010, 83 women had been recruited to participate. Twenty two had completed the 6 month (Time 3) follow-up and questionnaire. The sample for the Masters project included those who had completed the Time 3 follow up by 31 July 2010, with a final sample size of $N = 22$. An outline of the recruitment and research procedure for the ‘parent’ study follows.

Women who consented to participate in the ‘Reducing Chronic Disease among Adult Australian Women’ study and returned a signed consent, were then posted a Time 1 Questionnaire and envelope. On return of the questionnaire, participants were randomised to either the intervention group or control group. Randomisation was undertaken by an independent assessor using a previously generated random number table (see Appendix B: Flowchart for ‘Reducing Chronic Disease among Adult Australian Women’ study). The women randomised to the control group received usual care provided by clinical staff.
Women allocated to the intervention group received three one-hour consultations at baseline, 6 and 12 weeks with a registered nurse. The nurses delivering the intervention were trained by the Chief Investigator and Project Manager to enhance quality control in the delivery of the intervention.

At the initial consultation the nurse outlined the 12-week program and undertook individual health education and goal setting. Women received an exercise and diet program based on the Australian exercise and dietary guidelines and specifically adapted for midlife and older women. Women undertook realistic goal setting, received written health education and also received a Program Journal. Further consultation with a registered nurse occurred at 6 and 12 weeks, where biophysical measures were recorded and diet and exercise records collected (see Appendix B: Flowchart for RCT ‘Reducing Chronic Disease among Adult Australian Women’ study).

To evaluate the intervention, data were collected from three sources which included a journal completed by the women, biophysical measures and a series of questionnaires. Women in both intervention and usual care group were assessed at:

1. Time 1 (T1) prior to the intervention
2. Time 2 (T2) at 12 weeks from commencement of intervention
3. Time 3 (T3) at 6 months post-intervention.

3.1.5 INSTRUMENTS

There was a large battery of test data collected by questionnaire at Time 1, Time 2 and Time 3 (see Appendices C and D: Time 1 and Time 3 Questionnaires – relevant sections for Master’s study).
Of relevance to the Masters study, the following data were collected:

- Socio-demographic information  Time 1
- Years since diabetes diagnosis  Time 1
- Self reported weight and height  Time 3
- General daily activity  Time 3
- Weekly aerobic exercise  Time 3
- Current level of physical activity  Time 3
- Daily fruit and vegetable intake  Time 3
- Smoking behaviour  Time 3
- Intervention or usual care group  Study database
- Barriers to health promotion activities  Time 3.

**Socio-demographic information**

The following data were collected at baseline: age, marital status, country of birth, identity as Aboriginal, Torres Strait or South Sea Islander, language other than English, highest qualification, employment status, gross annual household income. These items were included to identify whether any socio-demographic variables were confounding factors.

**Years since diabetes diagnosis**

Information about co-morbidities was also collected at baseline. Women were asked if they had been diagnosed with any health conditions and also the year of diagnosis. Of particular relevance was the year of diagnosis with diabetes. From this information the number of years with diabetes was calculated. This information was used as a continuous and categorical independent variable.
Self reported weight and height

At baseline participants were asked their weight and height. From this information Body Mass Index (BMI) was calculated by dividing the weight in kilograms by the height in metres squared (kg/m²). BMI was used as a continuous independent variable in parametric tests. BMI was also stratified into underweight, normal weight, overweight and obese and used as a categorical independent variable.

General daily activity

Question 45 on the Time 3 questionnaire asks women about general daily activity which includes activities such as housework, caring for children, shopping, gardening or activity at work, but not including exercise. The response options were: very active, moderately active, and mildly active (some walking/stair climbing), sedentary. General daily activity was used as a categorical independent variable. This item and the following two items were used in the ‘Seattle Mid-life Study’, University of Washington (Kathy Smith-Di Julio, via personal communication) and in the original ‘Women’s Wellness Program’ (D. Anderson, et al., 2006).

Weekly aerobic exercise

On the Time 3 questionnaire Question 46 asked participants about how many times they exercised for 15 minutes at a time in the past month, with exercise being described as “activities including calisthenics, jogging, racquet sports, team sports, dance classes, brisk walking, lifting weights, yoga, tai chi etc” – response options were: daily, 5-6 times a week, 3-4 times a week, 1-2 times a week, none. Weekly exercise time was used as a categorical independent variable.
**Current level of physical activity**

Question 47 asks women to rate their current level of physical activity, which included general activity and exercise, on a scale of zero to ten. A rating of (00) indicated *not at all active* to (10) *extremely active*. Physical activity level was used as a continuous independent variable.

**Daily fruit and vegetable intake**

Question 51 on the Time 3 questionnaire asked participants whether they ate fruit and vegetables on a daily basis with a *yes/no* response. This question was used to analyse the percentage of women who were eating fruit and vegetables daily. Question 52 asked how many servings of fruit and vegetables women typically ate per day. One serving was described as equalling one piece of fruit or half a cup of chopped vegetables. Information about fruit and vegetable intake reflects whether a participant is meeting recommended dietary guidelines (National Health and Medical Research Council, 2003). This information was used as a continuous independent variable.

**Smoking behaviour**

Question 58 on the Time 3 questionnaire asked whether they were currently smoking with a *yes/no* response. This information was used to calculate the percentage of the sample that was current smokers. Question 59 asked approximately how many cigarettes they smoked per week. This data were used as a continuous independent variable.

**Intervention or usual care group**

Information was obtained from the study database about which group the participants had been randomised to, either intervention or usual care groups. This
information was used as an independent variable to compare the mean barriers scores between intervention and usual care group.

*Perceived barriers to health promotion activities*

Participant’s perception of the barriers to health promotion activities was measured using the *Barriers to Health Activities among Disabled Persons* scale (BHADP) developed by Becker et al (2004; 1989; 1991). After obtaining permission to use the scale from the principal author (see Appendix E), this was added to the Time 3 questionnaire in October 2009. This scale was specific to this Master’s study.

The instrument uses a modified forced response Likert type scale, which asked participants to indicate how much each of the 18 items listed prevents them from taking care of their health. There are four response categories: *1 – never, 2 – sometimes, 3 – often, 4 – routinely*. Information gathered from this scale was used to calculate a total barriers score for each participant, where the 18 item scores were summed. The possible range of scores for each participant was between 18 and 72, with higher scores indicating higher perceived barriers. These scores were used as the continuous dependent variable.

Information from aggregate item scores were analysed descriptively, to identify the highest to lowest ranked items. Participant’s comments from the one open ended response “other reasons” were listed and analysed for themes.

Table 3.1 summarises all the variables and measurement information gathered from participants in Phase 1 of the study.
<table>
<thead>
<tr>
<th>Domain</th>
<th>Variable</th>
<th>Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Socio-demographic (8 items)</td>
<td>Age</td>
<td>Age in years</td>
</tr>
<tr>
<td></td>
<td>Marital status</td>
<td>Married, de facto, separated, divorced, widowed, single/never married</td>
</tr>
<tr>
<td></td>
<td>Country of birth</td>
<td>Australia, other (specify)</td>
</tr>
<tr>
<td></td>
<td>Aboriginal, Torres Strait or South Sea Islander</td>
<td>Yes/No</td>
</tr>
<tr>
<td></td>
<td>Language other than English</td>
<td>Yes/No</td>
</tr>
<tr>
<td></td>
<td>Highest level of education</td>
<td>No schooling, primary school, junior school, senior school, trade/technical certificate/diploma, degree, post-graduate</td>
</tr>
<tr>
<td></td>
<td>Employment status</td>
<td>Full-time, part-time, casual, home duties, unemployed, full-time student, part-time student, retired, permanently ill/unable to work</td>
</tr>
<tr>
<td></td>
<td>Gross annual household income</td>
<td>Less than $10,000, $10,001-$20,000, $20,001-$40,000, $40,001-$60,000, $60,001-$80,000, over $80,000, don’t know</td>
</tr>
<tr>
<td></td>
<td>Diabetes (1 item)</td>
<td>Years since diagnosis Self reported year of diagnosis used to calculate years since diagnosis</td>
</tr>
<tr>
<td></td>
<td>Body mass index (2 items)</td>
<td>Weight and height Self-reported weight and height used to calculate BMI</td>
</tr>
<tr>
<td></td>
<td>Physical activity (3 items)</td>
<td>General daily activity Very active, moderately active, mildly active, sedentary</td>
</tr>
<tr>
<td></td>
<td>Weekly aerobic exercise</td>
<td>Exercise in the past month for at least 15 minutes at a time (Exercise includes callisthenics, jogging, racquet sports, team sports, dance classes, brisk walking, lifting weights, yoga, tai chi etc) Daily, 5-6 times a week, 3-4 times/week , 1-2 times/ week, none</td>
</tr>
<tr>
<td></td>
<td>Overall physical activity</td>
<td>11 item scale 00 to 10</td>
</tr>
<tr>
<td></td>
<td>Dietary behaviour (2 items)</td>
<td>Daily fruit and vegetable consumption Yes/No</td>
</tr>
<tr>
<td></td>
<td>Serves fruit and vegetable per day</td>
<td>Self report of servings per day - number (1 serving equals 1 piece of fruit or half a cup of chopped vegetables)</td>
</tr>
<tr>
<td></td>
<td>Smoking</td>
<td>Smoking Yes/No</td>
</tr>
<tr>
<td></td>
<td>Cigarettes per week</td>
<td>Self-reported number</td>
</tr>
<tr>
<td></td>
<td>Study group</td>
<td>Information obtained from study database retrospectively</td>
</tr>
<tr>
<td>Perceived barriers to health promotion activities (18 items &amp; 1 free text item)</td>
<td>Facilities</td>
<td>Forced response Likert type scale for each item</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>Fatigue</td>
<td>Never, sometimes, often, routinely</td>
</tr>
<tr>
<td></td>
<td>Transportation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Doesn’t help</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Money</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Impairment</td>
<td></td>
</tr>
<tr>
<td></td>
<td>No one to help</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lack of interest</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Information</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Embarrassment</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Safety</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Support family/friends</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Other responsibilities</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Time</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Can’t do things correctly</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Communication</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Weather</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Health professionals</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>Free text response</td>
</tr>
</tbody>
</table>

3.1.6 ANALYSIS

**Preparation of data**

Survey data were coded and entered into SPSS version 18 by the researcher. Following data entry, data cleaning was undertaken checking for data entry errors, missing data or unusual values with cross-checking against the relevant questionnaire as necessary. A random 10% of data were double checked by an independent person to check for errors.

Some consideration was given to how to manage missing data from the 18 item barriers scale as no guidance was provided by the original publication reporting the psychometric properties of the instrument. There were six participants with some missing items and to exclude all of those participants would have reduced the sample size to \( N = 16 \). Missing scale data in the parent study was managed using principles described for missing SF-36 data (Ware, Snow, Kosinski, & Gandek, 2002) – where there are at least 50% of items scored, the average score of completed items was calculated, and then that average score was substituted for the missing item values. This methodology was also used for the missing BHADP items.
Data analysis

Statistical analysis included the use of descriptive statistics for univariate and bivariate analysis in both table and graphical format. Statistical tests were used to test for significant correlation between variables and significant differences in mean and median scores between groups, including Pearson’s correlation coefficients, *t*-tests, ANOVA, chi-square and non-parametric equivalents. The alpha level used was 0.05, except for multiple tests where a Bonferroni correction was done.

Descriptive analysis of categorical data included frequency tables with counts and percentages. Descriptive analysis of continuous data included tables with mean, median, mode, standard deviation, minimum, maximum, skewness, and kurtosis values. Box plots and scatter plots and histograms were also generated for continuous data. Analysis of continuous data included checking criteria for normal distribution such as median within 10% of the mean, minimum and maximum values within three standard deviations of the mean and skewness and kurtosis -2.0 to 2.0. Parametric tests were used for normally distributed data; non-parametric statistical tests were used where data were skewed.

The statistical analysis used to answer each of the Phase 1 research questions is outlined in Table 3.2
Table 3.2
Research Questions and Analysis Phase 1

<table>
<thead>
<tr>
<th>Research Question</th>
<th>Statistical Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. What is the level and type of perceived barriers to health promotion activities in midlife and older Australian women with a chronic disease?</td>
<td>Univariate statistics barriers items – categorical data – frequency and percentages Descriptive statistics for total barriers scores – continuous data – central measures and distribution</td>
</tr>
<tr>
<td>2. Is there a relationship between the level of perceived barriers to health promotion activities and body mass index, physical activity, smoking behaviour, dietary behaviour and socio-demographic variables?</td>
<td>Univariate statistics – continuous data - central measures and distribution Statistical tests – Pearson correlations, checking assumptions, ANOVA DV: total barriers scores IV’s: BMI, physical activity, smoking, diet, age, marital status, country of birth, ATSI, language other than English, education, employment, household income</td>
</tr>
<tr>
<td>3. Is there a difference in the level and type of perceived barriers to health promotion activities between women receiving the lifestyle intervention and those receiving usual care?</td>
<td>Bivariate statistics – box plots and tables Statistical tests – unpaired t-test, checking of assumptions, Mann-Whitney for skewed data, chi-square DV: total barriers scores IV’s: intervention/usual care group, barriers items</td>
</tr>
</tbody>
</table>

3.1.7 ETHICS PROCESS AND ETHICAL ISSUES

The ‘Reducing Chronic Disease among Adult Australian Women’ study obtained ethical clearance from three Human Research Ethics Committees: Queensland University of Technology; The Prince Charles Hospital, Metro North District, Queensland Health; Redcliffe-Caboolture Health Service, Metro North District, Queensland Health. (See Appendix F: HREC approvals for ‘Reducing Chronic Disease among Adult Australian Women’ study).

Participants were provided with a verbal explanation of the project, written information and also signed a consent form prior to randomisation. To encourage participation and thank women for their time, women were provided with an incentive of a $10 Coles-Myer voucher with the completion of each questionnaire.
3.2 METHODOLOGY AND RESEARCH DESIGN PHASE 2

3.2.1 METHODOLOGY

Phase 2 of this study was a cross sectional on-line survey of registered nurses working in Primary and Community Health Services of the Metro North District of Queensland Health.

3.2.2 RESEARCH QUESTIONS AND HYPOTHESES

This research aimed to complement Phase 1 by exploring the perception of nurses about the frequency of barriers to health promotion activities that older women with a chronic disease experience.

Phase 2 of this research specifically aimed to answer the following research questions and hypotheses:

Research question 4:

What is the perception of nurses about the level and type of barriers to health promotion activities for midlife and older women with a chronic disease?

Research question 5:

Is there a relationship between the level of perceived barriers to health promotion activities and different nursing positions, service areas, levels of experience and socio-demographic variables?

H₁ There is a relationship between the level of perceived barriers to health promotion activities and nursing position, service area, level of experience and socio-demographic variables.
Research question 6:

Is there a difference between the level and type of perceived barriers between women and nurses?

$H_1$ There is a difference in the level and type of perceived barriers between nurses and women.

3.2.3 PARTICIPANTS

Participants were registered nurses working in Primary and Community Health Service of the Metro North District of Queensland Health. It was calculated that a sample size of $N = 60+$ would give 96% power at an alpha level of 0.05.

There were approximately 280 nurses invited to participate 46 nurses consented and completed the on-line questionnaire. The response rate was 16.4%.

3.2.4 PROCEDURE AND TIMELINE

An approach email inviting participation in the research was forwarded to potential participants by the Nursing Director, Rehabilitation and Consultation Services, Primary and Community Health Services in early June 2010. The approach email included a Participate in Research information sheet. The information sheet outlined the purpose of the research, risk and benefits and expected commitment for prospective participants. Nurses who were interested, then clicked on a link to the Survey Monkey© web-site which opened with the detailed Participant Information and consent page. Having read this page, those who decided to participate continued to the next page and completed the questionnaire; those who decided not to participate were advised to exit or close the webpage (see Appendix G: Approach email; Participate in Research Information; Appendix H: Participant Information
and online survey questions). Two further approach emails were sent to potential participants during the data collection period to try to maximise recruitment.

Data collection commenced 22 June 2010 and was completed by 23 July 2010 with 46 on-line responses received. This data collection period was limited by time delays in processing of ethics applications required from three separate committees and the need to complete the analysis and write up of results in preparation for thesis submission by the end of September 2010.

3.2.5 INSTRUMENTS

The following data were collected from nurses participating in this study:

- Socio-demographic information
- Nursing role and experience
- Area of work
- Perceived barriers to health promotion activities of women with chronic disease.

Socio-demographic information

Questions 1 – 6 and 9 on the online questionnaire collected the following socio-demographic information: gender, age, marital status, country of birth, language other than English, highest qualification, employment status, gross annual household income. These items were included to identify whether any socio-demographic variables were confounding factors.

Nursing role and experience

Participants were asked about their current nursing position and how many years experience as a Registered Nurse they had in Question 7 and 8. This
information was collected for descriptive analysis of this sample of nurses, and was also used as the independent variable in analysis of the mean barriers score between categories.

**Area of work**

Question 10 asked nurses in which area of Primary and Community Health Service they work. There were eight response categories: *alcohol and drug, community post acute care, children and families, indigenous health, palliative care, primary health, rehabilitation and consultation* and *sexual health/HIV*. As with information about nursing role and experience, this information was collected for descriptive analysis of this sample of nurses, and was also used as the independent variable in analysis of the mean barriers score between categories.

**Perceived barriers to health promotion activities**

Data were collected from the nurses using the BHADP scale which was also used in Phase 1 of this project. The BHADP scale was slightly modified for use by nurses, with the permission of the author (see Appendix E). Item content was not changed, but some minor wording change was necessary as nurses were being asked to rate their perception of how much each barrier prevents women older than 45, with a chronic health condition from taking care of their health. For example, item 4 “Feeling what I do doesn’t help” was modified to read “Feeling what they do does not help”. The psychometric properties of the instrument have been described in detail at 2.6.3 and 3.1.5.

Table 3.3 summarises the variables and measurement strategies for the Phase 2 nurses questionnaire.
Table 3.3

Variables and Measurement Phase 2

<table>
<thead>
<tr>
<th>Domain</th>
<th>Variable</th>
<th>Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Socio-demographic (8 items)</td>
<td>Gender</td>
<td>Female/Male</td>
</tr>
<tr>
<td></td>
<td>Age</td>
<td>Age in years</td>
</tr>
<tr>
<td></td>
<td>Country of birth</td>
<td>Australia, other (specify)</td>
</tr>
<tr>
<td></td>
<td>Language other than English</td>
<td>Yes/No</td>
</tr>
<tr>
<td></td>
<td>Highest level of education</td>
<td>Primary school, junior school, senior school, trade/technical certificate/diploma, degree, post-graduate</td>
</tr>
<tr>
<td></td>
<td>Employment status</td>
<td>Full-time, part-time, casual</td>
</tr>
<tr>
<td></td>
<td>Gross annual household income</td>
<td>Less than $10,000, $10,001-$20,000, $20,001-$40,000, $40,001-$60,000, $60,001-$80,000, over $80,000, don’t know</td>
</tr>
<tr>
<td>Nursing position</td>
<td>Current nursing position</td>
<td>Registered nurse, clinical nurse, clinical nurse consultant, nurse manager, nurse practitioner, other</td>
</tr>
<tr>
<td>Nursing experience</td>
<td>Years as registered nurse</td>
<td>Less than 5 years, 5-10 years, 10-15 years, 15-20 years, more than 20 years</td>
</tr>
<tr>
<td>Area of work</td>
<td>Service area</td>
<td>Alcohol and drug, community acute post acute, healthier children and families, indigenous health, palliative care, primary health and care coordination, rehabilitation and consultation, sexual health and HIV, other</td>
</tr>
<tr>
<td>Perceived barriers to health promotion activities (18 items, one open ended response)</td>
<td>Facilities</td>
<td>Forced response Likert type scale for each item</td>
</tr>
<tr>
<td></td>
<td>Fatigue</td>
<td>Never, sometimes, often, routinely</td>
</tr>
<tr>
<td></td>
<td>Transportation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Doesn’t help</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Money</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Impairment</td>
<td></td>
</tr>
<tr>
<td></td>
<td>No one to help</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lack of interest</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Information</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Embarrassment</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Safety</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Support family/friends</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Other responsibilities</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Time</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Can’t do things correctly</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Communication</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Weather</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Health professionals</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Other reasons</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Free text response</td>
</tr>
</tbody>
</table>
3.2.6 ANALYSIS

Preparation of data

Survey data were downloaded from the Survey Monkey© website into an Excel spreadsheet and then coded and entered into SPSS version 18 by the researcher. Following data entry, data cleaning was undertaken checking for data entry errors, missing data or unusual values with cross-checking against the relevant online survey as necessary. A random 10% of data entry was double checked by an independent person to check for errors.

Missing data from the eighteen item barriers scale was not an issue in Phase 2, as the online questionnaire design forced a response to each of the items prior to submission.

Data analysis

Statistical analysis included the use of descriptive statistics for univariate and bivariate analysis in both table and graphical format. Statistical tests were used to test for significant correlation between variables and significant differences in mean scores between groups, including Pearson’s correlation coefficients, t-tests, ANOVA and chi-square. The alpha level used was 0.05, except for multiple tests where a Bonferroni correction was done.

Descriptive analysis of categorical data included frequency tables with counts and percentages. Descriptive analysis of continuous data included tables with mean, median, mode, standard deviation, minimum, maximum, skewness, and kurtosis values. Box plots and scatter plots and histograms were also generated for continuous data. Analysis of continuous data included checking criteria for normal distribution such as median within 10% of the mean, minimum and maximum values within three
standard deviations of the mean and skewness and kurtosis -2.0 to 2.0. Parametric tests were used for normally distributed data; non-parametric statistical tests were used where data were skewed.

Statistical analysis used to answer each of the Phase 2 research questions is outlined in Table 3.4.

Table 3.4
Research Questions and Analysis Phase 2

<table>
<thead>
<tr>
<th>Research Question</th>
<th>Statistical analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. What is the perception of nurses about the level and type of barriers to health promotion activities for midlife and older women with a chronic disease?</td>
<td>Univariate statistics for individual scale items – categorical data – frequency and percentages, Descriptive statistics for total barriers scores – continuous data – central measures and distribution</td>
</tr>
<tr>
<td>5. Is there a relationship between the level of perceived barriers to health promotion activities and different nursing positions, service areas, levels of experience and socio-demographic variables?</td>
<td>Univariate statistics – continuous data - central measures and distribution, Statistical tests – unpaired t-tests, ANOVA, checking assumptions, DV: total barriers scores, IV’s: position, experience, service area, gender, age, marital status, country of birth, level of education, employment status, household income</td>
</tr>
<tr>
<td>6. Is there a difference in the level and type of perceived barriers between women and nurses?</td>
<td>Bivariate statistics – graphs, box plots and tables, Statistical tests – Mann-Whitney test, Pearson chi-square, Fisher’s exact test where &lt; 5 items in categories, general linear model, checking of assumptions, DV’s: total barriers score, barriers items B1 – B18 (4 response categories), IV: nurses/women</td>
</tr>
</tbody>
</table>

3.2.7 ETHICS PROCESS AND ETHICAL ISSUES

Ethical approval to conduct the Phase 2 research with the nurses was obtained from three Human Research Ethics Committees: Queensland University of Technology; The Prince Charles Hospital, Metro North District, Queensland Health; Redcliffe-Caboolture Health Service, Metro North District, Queensland Health (see Appendix I). Prior to completing the survey, potential participants were informed that completion of the survey was accepted as an indication of consent to participate.
Chapter 4: Results

This Chapter presents the results of the study and is divided into two sections. The first section 4.1 present results from data collected from women \( N = 22 \) who participated in Phase 1 of the study. In the second section 4.2, results from data collected from nurses \( N = 46 \) participating in Phase 2 of the study are presented. In Section 4.3, combined results comparing women and nurses are presented.

4.1 RESULTS PHASE 1 - WOMEN

4.1.1 SOCIO-DEMOGRAPHIC INFORMATION

Age

The age of women in Phase 1 of the study ranged between 51 to 84 years. The mean age was 65.57 \((SD = 8.795)\) and the median age was 65 years. One participant did not provide her age. Age was stratified into three groups with 14.3% being aged 45 – 55 years, 42.9% aged 56 – 65 years and 42.9% aged over 65 years old.

Marital status

Nearly half of the women were married (45.5%) with nearly a third of women widowed (31.8%) the remaining women were separated, divorced or single/never married (22.6%).

Country of birth

Nearly three quarters of participants were born in Australia (72.7%) with most of the remaining participants being born in the United Kingdom and one in Italy and one in New Zealand.
Aboriginal, Torres Strait or South Sea Islander

Only one participant identified as Aboriginal, Torres Strait or South Sea Islander.

Language other than English

The majority of participants (86.4%) spoke English in the home, with three participants (13.6%) speaking a language other than English at home.

Highest level of education

Over a third of women (36.4%) had a trade, certificate or diploma, with slightly less than a third (31.8%) the highest level of education was year 10 of high school. Nearly one fifth of participants (18.2%) had a highest level of education of primary school. A further 9.1% of participants had completed senior school and 4.5% a degree.

Employment status

The majority of participants were retired (68.2%) with 27.2% still working full time or part time. This was not surprising given that 81.8% of participants were over the age of 55 years.

Gross annual household income

Nearly half of participants (45%) had a gross annual household income of less than $20 000, with 40% of participants with an income of $20 000 to $40 000 annually. Only 15% of women had a household income of over $60 000. Two participants did not provide their income.
Year since diabetes diagnosis

Over half the women (56.3%) had been diagnosed with diabetes greater than 5 years, with a quarter diagnosed less than one year (25%) and the remaining women (18.8%) had been diagnosed between one to five years ago.

Case/control

Seven of the women (31.8%) had been randomised to the intervention group and fifteen women (68.2%) to the control group in the ‘Reducing Chronic Disease among Adult Australian Women’ study.

Table 4.1 presents the socio-demographic variables for women participating in Phase 1 of the study.
Table 4.1
Frequency Distribution of Socio-demographic Variables of Women (N=22)

<table>
<thead>
<tr>
<th>Socio-demographic variables - women</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (^{(N = 21)})</td>
<td></td>
<td></td>
</tr>
<tr>
<td>45 – 55 years</td>
<td>3</td>
<td>14.3</td>
</tr>
<tr>
<td>55 – 65 years</td>
<td>9</td>
<td>42.9</td>
</tr>
<tr>
<td>Over 65 years</td>
<td>9</td>
<td>42.9</td>
</tr>
<tr>
<td>Missing</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>10</td>
<td>45.5</td>
</tr>
<tr>
<td>Separated</td>
<td>1</td>
<td>4.5</td>
</tr>
<tr>
<td>Divorced</td>
<td>1</td>
<td>4.5</td>
</tr>
<tr>
<td>Widowed</td>
<td>7</td>
<td>31.8</td>
</tr>
<tr>
<td>Single/never married</td>
<td>3</td>
<td>13.6</td>
</tr>
<tr>
<td>Country of birth</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Australia</td>
<td>16</td>
<td>72.7</td>
</tr>
<tr>
<td>Other</td>
<td>6</td>
<td>27.3</td>
</tr>
<tr>
<td>Aboriginal, Torres Strait or South Sea Islander</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>1</td>
<td>4.5</td>
</tr>
<tr>
<td>No</td>
<td>21</td>
<td>95.5</td>
</tr>
<tr>
<td>Language other than English</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>3</td>
<td>13.6</td>
</tr>
<tr>
<td>No</td>
<td>19</td>
<td>86.4</td>
</tr>
<tr>
<td>Education level obtained</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Completed primary school</td>
<td>4</td>
<td>18.2</td>
</tr>
<tr>
<td>Junior high school (&lt;10)</td>
<td>7</td>
<td>31.8</td>
</tr>
<tr>
<td>Senior school (11 - 12)</td>
<td>2</td>
<td>9.1</td>
</tr>
<tr>
<td>Trade, technical certificate, diploma</td>
<td>8</td>
<td>36.4</td>
</tr>
<tr>
<td>University or college degree</td>
<td>1</td>
<td>4.5</td>
</tr>
<tr>
<td>Employment status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full time</td>
<td>5</td>
<td>22.7</td>
</tr>
<tr>
<td>Part time</td>
<td>1</td>
<td>4.5</td>
</tr>
<tr>
<td>Home duties</td>
<td>1</td>
<td>4.5</td>
</tr>
<tr>
<td>Retired</td>
<td>15</td>
<td>68.2</td>
</tr>
<tr>
<td>Gross annual household income ((N = 20))</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; $10 000</td>
<td>1</td>
<td>5.0</td>
</tr>
<tr>
<td>$10 001 - $20 000</td>
<td>8</td>
<td>40.0</td>
</tr>
<tr>
<td>$20 001 - $40 000</td>
<td>4</td>
<td>20.0</td>
</tr>
<tr>
<td>$40 001 - $60 000</td>
<td>4</td>
<td>20.0</td>
</tr>
<tr>
<td>$60 001 - $80 000</td>
<td>2</td>
<td>10.0</td>
</tr>
<tr>
<td>&gt; $80 000</td>
<td>1</td>
<td>5.0</td>
</tr>
<tr>
<td>Missing</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Years since diabetes diagnosis ((N = 16))</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 1 year</td>
<td>4</td>
<td>25.0</td>
</tr>
<tr>
<td>1 – 5 years</td>
<td>3</td>
<td>18.8</td>
</tr>
<tr>
<td>&gt; 5 years</td>
<td>9</td>
<td>56.3</td>
</tr>
<tr>
<td>Missing</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Intervention or control group</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Case</td>
<td>7</td>
<td>31.8</td>
</tr>
<tr>
<td>Control</td>
<td>15</td>
<td>68.2</td>
</tr>
</tbody>
</table>
4.1.2 MODIFIABLE LIFESTYLE RISK FACTORS

*Body Mass Index (BMI)*

Mean BMI for the sample was 33.03 ($SD = 6.64$) with a range of 20.28 to 46.31. BMI was also categorised into underweight, normal weight, overweight and obese, with the majority of participants being in the overweight (18.2%) or obese category (68.2%). Only 13.6% of participants were normal weight with none being underweight. The proportion of obese women in this sample was much higher than the wider population of Australian women, where in 2008 29.2% of women aged 45 - 54 were obese; 35.6% of women aged 55 – 64 were obese; and 31.9% of women aged 65 to 74 years were obese (Access Economics Pty Limited, 2008).

*General daily activity*

Participants rated their general activity with most being mildly active (40.9%), and approximately a quarter (27.3%) being sedentary. Another 27.3% of women were moderately active with only 4.5% or one participant being very active.

*Weekly aerobic exercise*

A large proportion of participants (40.9%) did not exercise at all with a further 9.1% only exercising 1 – 2 times per week. Of the remaining women 22.5% exercised 3 – 4 time per week; 13.6% 5 – 6 times per week and 13.6% daily. This would indicate that only a small proportion of participants were meeting the recommended level of physical activity of 30 minutes on most days of the week (Department of Health and Ageing, 1999, 2009).

*Current level of physical activity*

On a scale of 0 – 10, mean current level of physical activity was 3.31 ($SD = 2.51$).
**Fruit and vegetable intake**

Nearly all participants (95.5%) reported eating fruit and vegetables on a daily basis. The mean combined serves of fruit and vegetables consumed per day was 4.2 (SD = 2.1). This indicates that on average, women in the sample were not consuming the recommended daily intake of fruit and vegetables which combined would be 7 serves daily (National Health and Medical Research Council, 2003).

**Current smoking behaviour**

All of the participants (100%) were currently non-smokers. Table 4.2 presents the lifestyle variables for women participating in Phase 1 of the study.

Table 4.2

*Frequency Distribution of Modifiable Risk Factor Variables (N=22)*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean/No.</th>
<th>SD/ %</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMI</td>
<td>33.03</td>
<td>6.64</td>
</tr>
<tr>
<td>BMI M (SD)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Underweight &lt; 18.5</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Normal weight 18.5 – 24.9</td>
<td>3</td>
<td>13.6</td>
</tr>
<tr>
<td>Overweight 25 – 29.9</td>
<td>4</td>
<td>18.2</td>
</tr>
<tr>
<td>Obese &gt; 30</td>
<td>15</td>
<td>68.2</td>
</tr>
<tr>
<td>General daily activity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very active</td>
<td>1</td>
<td>4.5</td>
</tr>
<tr>
<td>Moderately active</td>
<td>6</td>
<td>27.3</td>
</tr>
<tr>
<td>Mildly active</td>
<td>9</td>
<td>40.9</td>
</tr>
<tr>
<td>Sedentary</td>
<td>6</td>
<td>27.3</td>
</tr>
<tr>
<td>Weekly aerobic exercise</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daily</td>
<td>3</td>
<td>13.6</td>
</tr>
<tr>
<td>5 – 6 times/week</td>
<td>3</td>
<td>13.6</td>
</tr>
<tr>
<td>3 – 4 times/week</td>
<td>5</td>
<td>22.7</td>
</tr>
<tr>
<td>1 – 2 times/week</td>
<td>2</td>
<td>9.1</td>
</tr>
<tr>
<td>None</td>
<td>9</td>
<td>40.9</td>
</tr>
<tr>
<td>Physical activity, scale 0 – 10 M (SD)</td>
<td>3.73</td>
<td>2.51</td>
</tr>
<tr>
<td>Daily fruit and vegetable consumption</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>21</td>
<td>95.5</td>
</tr>
<tr>
<td>No</td>
<td>1</td>
<td>4.5</td>
</tr>
<tr>
<td>Missing</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Fruit and vegetable – serves/day (N = 20) M (SD)</td>
<td>4.2</td>
<td>2.1</td>
</tr>
<tr>
<td>Currently smoking</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>No</td>
<td>22</td>
<td>100.0</td>
</tr>
</tbody>
</table>
4.1.3 Research Question 1:

What is the level and type of perceived barriers to health promotion activities in midlife and older Australian women with a chronic disease?

Mean Barriers Score

The mean was calculated on the total barriers scores (TBS) for all participants. The mean was 32.18 ($SD = 9.52$). The median score was 33.00 with the range of scores being 18 to 53.

In other studies using the 18 item BHADP scale, mean TBS were: 33.5 for adults with a range of disabilities (Stuifbergen & Becker, 1994); 32.54 in adults with multiple sclerosis and 33.12 adults with post-polio syndrome (H. Becker & Stuifbergen, 2004); 36.74 in women with fibromyalgia (Beal, et al., 2009).

Distribution of Scores

Total barriers scores for the sample of women were slightly positively skewed with a slight negative kurtosis.

Item Analysis

All 22 participants item scores were summed with number and proportion of responses for each item calculated. Table 4.3 presents the number and proportion of responses for the 18 perceived barriers item. The highest proportion of responses fell in the ‘never’ and ‘sometimes’ categories for all 18 items.
### Table 4.3
Perceived Barriers Items – Number and Proportion of Responses of Women (N=22)

<table>
<thead>
<tr>
<th>Barriers Items</th>
<th>Never</th>
<th>Sometimes</th>
<th>Often</th>
<th>Routinely</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. (%)</td>
<td>No. (%)</td>
<td>No. (%)</td>
<td>No. (%)</td>
</tr>
<tr>
<td>1. Lack of convenient facilities</td>
<td>11 (50.0)*</td>
<td>10 (45.5)</td>
<td>1 (4.5)</td>
<td>0 (0.0)</td>
</tr>
<tr>
<td>2. Too tired</td>
<td>4 (18.2)</td>
<td>13 (59.1)*</td>
<td>4 (18.2)</td>
<td>1 (4.5)</td>
</tr>
<tr>
<td>3. Lack of transportation</td>
<td>17 (77.3)*</td>
<td>1 (4.5)</td>
<td>3 (13.6)</td>
<td>1 (4.5)</td>
</tr>
<tr>
<td>4. Feeling what I do doesn’t help</td>
<td>11 (50.0)*</td>
<td>7 (31.8)</td>
<td>3 (13.6)</td>
<td>1 (4.5)</td>
</tr>
<tr>
<td>5. Lack of money</td>
<td>9 (40.9)*</td>
<td>8 (36.4)</td>
<td>4 (18.2)</td>
<td>1 (4.5)</td>
</tr>
<tr>
<td>6. Impairment</td>
<td>13 (59.1)*</td>
<td>9 (40.9)</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
</tr>
<tr>
<td>7. No one to help me</td>
<td>10 (45.5)*</td>
<td>9 (40.9)</td>
<td>1 (4.5)</td>
<td>2 (9.1)</td>
</tr>
<tr>
<td>8. Not interested</td>
<td>6 (27.35)</td>
<td>10 (45.5)*</td>
<td>5 (22.7)</td>
<td>1 (4.5)</td>
</tr>
<tr>
<td>9. Lack of information about what to do</td>
<td>8 (36.4)*</td>
<td>8 (36.4)*</td>
<td>5 (22.7)</td>
<td>1 (4.5)</td>
</tr>
<tr>
<td>10. Embarrassment about appearance</td>
<td>13 (59.1)*</td>
<td>3 (13.6)</td>
<td>5 (22.7)</td>
<td>1 (4.5)</td>
</tr>
<tr>
<td>11. Concern about safety</td>
<td>7 (31.8)*</td>
<td>7 (31.8)*</td>
<td>5 (22.7)</td>
<td>3 (13.6)</td>
</tr>
<tr>
<td>12. Lack of support from family and friends</td>
<td>11 (50.0)*</td>
<td>7 (31.8)</td>
<td>2 (9.1)</td>
<td>2 (9.1)</td>
</tr>
<tr>
<td>13. Interferes with other responsibilities</td>
<td>10 (45.5)</td>
<td>11 (50.0)*</td>
<td>1 (4.5)</td>
<td>0 (0.0)</td>
</tr>
<tr>
<td>14. Lack of time</td>
<td>7 (31.8)</td>
<td>11 (50.0)*</td>
<td>3 (13.6)</td>
<td>1 (4.5)</td>
</tr>
<tr>
<td>15. Feeling I can’t do things correctly</td>
<td>8 (36.4)</td>
<td>9 (40.9)*</td>
<td>4 (18.2)</td>
<td>1 (4.5)</td>
</tr>
<tr>
<td>16. Difficulty with communication</td>
<td>10 (45.5)*</td>
<td>7 (31.8)</td>
<td>3 (13.6)</td>
<td>2 (9.1)</td>
</tr>
<tr>
<td>17. Bad weather</td>
<td>10 (45.5)</td>
<td>11 (50.0)*</td>
<td>1 (4.5)</td>
<td>0 (0.0)</td>
</tr>
<tr>
<td>18. Lack of help from health care professionals</td>
<td>10 (45.5)*</td>
<td>9 (40.9)</td>
<td>1 (4.5)</td>
<td>2 (9.1)</td>
</tr>
</tbody>
</table>

* Category with the highest proportion of responses.

Scores for each barrier item were also summed in order to analyse which of the items were ranked the highest. A response of never = 0, sometimes = 1, often = 2, and routinely = 3. A rank order of sum item scores is presented in Table 4.5, illustrating that the top five ranked barriers items were: concern about safety; too tired; not interested; lack of information about what to do and lack of time. The five lowest ranked barriers items were: interferes with other responsibilities; bad weather; lack of convenient facilities; lack of transportation and impairment.
### Table 4.4

_Rank of Sum Barriers Item Scores – Women (N=22)_

<table>
<thead>
<tr>
<th>Barriers items</th>
<th>Sum item score</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concern about safety</td>
<td>26</td>
<td>1</td>
</tr>
<tr>
<td>Too tired</td>
<td>24</td>
<td>2</td>
</tr>
<tr>
<td>Not interested</td>
<td>23</td>
<td>3</td>
</tr>
<tr>
<td>Lack of information about what to do</td>
<td>21</td>
<td>4</td>
</tr>
<tr>
<td>Lack of time</td>
<td>20</td>
<td>5</td>
</tr>
<tr>
<td>Feeling I can’t do things correctly</td>
<td>20</td>
<td>5</td>
</tr>
<tr>
<td>Lack of money</td>
<td>19</td>
<td>6</td>
</tr>
<tr>
<td>Difficulty with communication</td>
<td>19</td>
<td>6</td>
</tr>
<tr>
<td>Lack of support from family/friends</td>
<td>17</td>
<td>7</td>
</tr>
<tr>
<td>No one to help me</td>
<td>17</td>
<td>7</td>
</tr>
<tr>
<td>Lack of help from health care professionals</td>
<td>17</td>
<td>7</td>
</tr>
<tr>
<td>Feeling what I do doesn’t help</td>
<td>16</td>
<td>8</td>
</tr>
<tr>
<td>Embarrassment about appearance</td>
<td>16</td>
<td>8</td>
</tr>
<tr>
<td>Interferes with other responsibilities</td>
<td>13</td>
<td>9</td>
</tr>
<tr>
<td>Bad weather</td>
<td>13</td>
<td>9</td>
</tr>
<tr>
<td>Lack of convenient facilities</td>
<td>12</td>
<td>10</td>
</tr>
<tr>
<td>Lack of transportation</td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td>Impairment</td>
<td>9</td>
<td>12</td>
</tr>
</tbody>
</table>

### Other reasons

Four participants answered the open ended question “Other reasons”. The main theme was physical injuries or disabilities that prevented exercise, for example a recent knee replacement, fracture from a fall and arthritis in hands and feet. The heat of summer was mentioned as was the need for more education about managing diabetes.

### Internal consistency reliability of scale

Internal consistency reliability of the 18 item barriers scale with this sample of women was calculated with a Cronbach’s alpha of .906, indicating a high level of internal consistency.
4.1.4 RESEARCH QUESTION 2:

*Is there a relationship between the level of perceived barriers to health promotion activities and body mass index, physical activity, smoking behaviour, dietary behaviour and socio-demographic variables?*

**Modifiable lifestyle factors**

The relationship between mean total barriers score and mean body mass index, mean physical activity and mean fruit and vegetable intake was investigated using Pearson product-moment correlation coefficient. Correlation was not undertaken with the independent variable of smoking as 100% of the sample was non-smokers; all values were ‘0’ for number of cigarettes smoked per week.

A preliminary analysis of each independent variable was performed with histograms and scatter plots, to ensure no violation of the assumptions of normality, linearity and homogeneity of variance. The following Table 4.6 illustrates that there was no significant correlation demonstrated between mean total barriers score and continuous lifestyle variables.

Table 4.5

*Correlation Between Mean Total Barriers Score and Continuous Lifestyle Variables (N=22)*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Total barriers score</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMI (mean 33.03, SD 6.64)</td>
<td>Pearson correlation</td>
</tr>
<tr>
<td></td>
<td>Sig.</td>
</tr>
<tr>
<td></td>
<td>.06</td>
</tr>
<tr>
<td></td>
<td>.79</td>
</tr>
<tr>
<td>Self rating current level of physical activity</td>
<td>Pearson correlation</td>
</tr>
<tr>
<td>(mean 3.73, SD 2.51)</td>
<td>Sig.</td>
</tr>
<tr>
<td></td>
<td>-.29</td>
</tr>
<tr>
<td></td>
<td>.19</td>
</tr>
<tr>
<td>Servings of fruit and vegetables per day</td>
<td>Pearson correlation</td>
</tr>
<tr>
<td>(mean 4.2, SD 2.12)</td>
<td>Sig.</td>
</tr>
<tr>
<td></td>
<td>-.374</td>
</tr>
<tr>
<td></td>
<td>.104</td>
</tr>
</tbody>
</table>

*Note.* Two tailed significance level reported.

*p < .05*
The relationship of the mean total barriers score and categorical variables of BMI, general daily activity and weekly aerobic exercise was also investigated with one way analysis of variance (ANOVA). Because of the small sample size of women and consequent small numbers in categories, general daily activity was collapsed to three categories. There was no statistically significant difference in mean TBS between categories of BMI, general daily activity and aerobic exercise variables. There was a trend within categories of General activity where mean TBS increased between the very/moderately active group and the mildly active and sedentary group. Despite this trend, for this part of Question 2, the null hypothesis was accepted. Results are presented in Table 4.6.

Table 4.6
Relationship Between Mean Total Barriers Score and Categorical Lifestyle Variables (N=22)

<table>
<thead>
<tr>
<th>Variable</th>
<th>No.</th>
<th>M TBS</th>
<th>SD</th>
<th>ANOVA</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMI</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Normal weight</td>
<td>3</td>
<td>31.33</td>
<td>9.02</td>
<td>.02</td>
<td>.98</td>
</tr>
<tr>
<td>Overweight</td>
<td>4</td>
<td>31.75</td>
<td>16.64</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obese</td>
<td>15</td>
<td>32.47</td>
<td>2.08</td>
<td></td>
<td></td>
</tr>
<tr>
<td>General daily activity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very/mod active</td>
<td>7</td>
<td>26.00</td>
<td>2.67</td>
<td>2.82</td>
<td>.08</td>
</tr>
<tr>
<td>Mildly active</td>
<td>9</td>
<td>33.67</td>
<td>2.42</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sedentary</td>
<td>6</td>
<td>37.17</td>
<td>4.98</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aerobic exercise</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daily</td>
<td>3</td>
<td>39.33</td>
<td>7.02</td>
<td>1.17</td>
<td>.36</td>
</tr>
<tr>
<td>5-6 times/week</td>
<td>3</td>
<td>26.33</td>
<td>7.64</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3-4 times/week</td>
<td>5</td>
<td>27.60</td>
<td>9.45</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-2 times/week</td>
<td>2</td>
<td>36.50</td>
<td>4.95</td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>9</td>
<td>33.33</td>
<td>10.59</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note. Two tailed significance level reported.
*p < .05

**Socio-demographic variables**

The relationship between mean TBS and women’s socio-demographic variables was explored with independent *t*-tests and ANOVA. Again, because of the small sample size, response categories were collapsed where possible. Results of
statistical tests showed no significant difference in mean TBS between categories of age, marital status, country of birth, language other than English, education level, employment, income and years since diabetes diagnosis. For research Question 3, the null hypothesis was accepted.

Table 4.7

Relationship Between Socio-demographic Variables and Mean Total Barriers Score (N=22)

<table>
<thead>
<tr>
<th>Variable</th>
<th>No.</th>
<th>M</th>
<th>SD</th>
<th>T-test</th>
<th>ANOVA</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>45 – 55</td>
<td>3</td>
<td>32.00</td>
<td>9.54</td>
<td>.80</td>
<td>.46</td>
<td></td>
</tr>
<tr>
<td>55 – 65</td>
<td>9</td>
<td>35.11</td>
<td>11.10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Over 65</td>
<td>9</td>
<td>29.22</td>
<td>8.53</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>10</td>
<td>31.90</td>
<td>10.95</td>
<td>-.12</td>
<td>.90</td>
<td></td>
</tr>
<tr>
<td>Not married</td>
<td>12</td>
<td>32.42</td>
<td>8.66</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Country of birth</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Australia</td>
<td>16</td>
<td>32.50</td>
<td>9.51</td>
<td>-.25</td>
<td>.80</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>6</td>
<td>31.33</td>
<td>10.42</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Language other than English</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>3</td>
<td>30.00</td>
<td>6.64</td>
<td>-.42</td>
<td>.68</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>19</td>
<td>32.53</td>
<td>9.73</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education (highest level)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Junior school</td>
<td>11</td>
<td>35.64</td>
<td>8.04</td>
<td>1.70</td>
<td>.21</td>
<td></td>
</tr>
<tr>
<td>Senior school</td>
<td>2</td>
<td>32.00</td>
<td>1.41</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uni/technical</td>
<td>9</td>
<td>28.00</td>
<td>11.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working</td>
<td>16</td>
<td>30.06</td>
<td>8.54</td>
<td>-1.79</td>
<td>.088</td>
<td></td>
</tr>
<tr>
<td>Not working</td>
<td>6</td>
<td>37.83</td>
<td>10.48</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Income</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; $40 000</td>
<td>13</td>
<td>32.62</td>
<td>8.50</td>
<td>.60</td>
<td>.56</td>
<td></td>
</tr>
<tr>
<td>&gt; $40 000</td>
<td>7</td>
<td>29.71</td>
<td>8.90</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does not know</td>
<td>2</td>
<td>38.00</td>
<td>21.21</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Years diabetes diagnosed</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 1 year</td>
<td>4</td>
<td>30.00</td>
<td>11.66</td>
<td>.40</td>
<td>.68</td>
<td></td>
</tr>
<tr>
<td>1 – 5 years</td>
<td>3</td>
<td>28.33</td>
<td>8.08</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt; 5 years</td>
<td>9</td>
<td>33.44</td>
<td>8.99</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Two tailed significance level reported.
* p < .05
4.1.5 RESEARCH QUESTION 3:

Is there a difference between the level and type of perceived barriers to health promotion activities between women receiving the lifestyle intervention and those receiving usual care?

Descriptive statistics

The mean TBS of the intervention group was 37.86 (SD = 7.13), with a median of 35 and a range of 33 to 53. The mean TBS of the control group was 29.53 (SD = 9.52), with a median score of 28 and a range of 18 to 46.

Figure 4.1 provides a box plot comparing TBS for the intervention and usual care group.

![Box plot comparing total barriers scores Intervention (n=7) and Control (n=15) group](image)

Figure 4.1. *Box plot comparing total barriers scores Intervention (n=7) and Control (n=15) group*

Distribution of scores

Total barriers scores for women in the intervention group were positively skewed and with a positive kurtosis, while total barriers scores for the control group were normally distributed.
**Homogeneity of variance**

The assumption of homogeneity of variance was checked using Levene’s Test. This test indicated that the variance was equal between the intervention group and control group $F(1, 20) = 2.103, p = .163$.

**Statistical test**

When comparing the median total barriers score between the group of women and group of nurses, a Mann-Whitney test revealed there was no statistically significant difference between the scores ($Z = -1.48, N = 21, p = .15$).

**Item analysis**

To investigate the differences between item scores between the women in the intervention group and women in the usual care group, chi-square tests including Fisher’s exact tests were performed on each of the 18 barriers items. A Bonferroni correction was done for multiple comparisons set the significance level at .0027 (See 4.3.1). For the 18 barriers items, there was no significant difference between the intervention and usual care groups.

For research question 3 the null hypothesis was accepted.
4.2 RESULTS PHASE 2 – NURSES

This section presents results of data collected from nurses \((N = 46)\) participating in Phase 2 of the study. Results will be presented in a similar format to the previous section 4.1.

4.2.1 SOCIO-DEMOGRAPHIC INFORMATION

Age

The age of nurses in Phase 2 of the study ranged between 31 to 64 years. The mean age was 48.42 \((SD = 8.441)\) and the median age was 46 years. One participant did not provide their age. Age was stratified into four groups with 37.8\% aged less than 45 years, 33.3\% aged 45 – 55 years and 28.9\% aged 55 – 65 years. There were no nurses aged over 65 years old.

Gender

Of the 46 participants, only one participant was male.

Country of birth

Over two thirds (69.6\%) of participants were born in Australia with most of the remaining participants being born in the United Kingdom and fewer from other countries - New Zealand, Africa, Netherlands and Hong Kong.

Language other than English

The majority of participants (71.7\%) spoke English in the home, with thirteen participants (28.3\%) speaking a language other than English at home.
Highest level of education

The majority of nurses (56.6%) had a post-graduate diploma or degree. Nearly twenty per cent (19.6%) had a trade, certificate or diploma, with 23.9% having a university or college degree.

Employment status

The majority of participants (80.4%) were working full time with the remaining 19.6% working part time.

Gross annual household income

All of the nurses had a gross annual household income of more than $40 000, with 4.3% $40 000 to $60 000, 32.6% $60 000 to $80 000, and over half (54.3%) earning over $80 000. Four participants did not know or did not report their income.

Nursing position

Over half of the nurse participants (58.7%) were in clinical nurse positions, with one participant in a registered nurse position. Nearly 20% were in nurse manager positions and another 13% in clinical nurse consultant positions. Of the nurses in other positions (6.5%) two were nursing directors and one a midwife.

Years of nursing experience

The nurses had a high level of nursing experience with nearly three quarters (71.7%) having more than 20 years experience and a further 15.2% with 15 – 20 years. Of the remaining nurses, there were 6.5% who had 10 – 15 years and also 5 – 10 years experience.
**Area of work**

Nurses working in a number of service areas within Primary and Community Health Services responded to the on-line survey. *Primary health and care coordination* had the highest response rate (54.3%), followed by *Rehabilitation and consultation* (17.4%), *Post acute* (13%), *Children and families* (13%) and *Alcohol and drug* (2.2%). There were no responses from nurses working in *Palliative care*, *Indigenous health* or *Sexual health and HIV services*.

Table 4.8 presents a summary of the socio-demographic information from nurses participating in Phase 2 of the study.

**Table 4.8**  
*Frequency Distribution of Socio-demographic and Nursing Variables (N=46)*

<table>
<thead>
<tr>
<th>Socio-demographic variables - nurses</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age (N = 45)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Under 45 years</td>
<td>17</td>
<td>37.8</td>
</tr>
<tr>
<td>45 – 55 years</td>
<td>15</td>
<td>33.3</td>
</tr>
<tr>
<td>55 – 65 years</td>
<td>13</td>
<td>28.9</td>
</tr>
<tr>
<td>Over 65 years</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Missing</td>
<td>1</td>
<td>1.1</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>1</td>
<td>2.2</td>
</tr>
<tr>
<td>Female</td>
<td>45</td>
<td>97.8</td>
</tr>
<tr>
<td><strong>Country of birth</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Australia</td>
<td>32</td>
<td>69.6</td>
</tr>
<tr>
<td>Other</td>
<td>14</td>
<td>30.4</td>
</tr>
<tr>
<td><strong>Language other than English</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>13</td>
<td>28.3</td>
</tr>
<tr>
<td>No</td>
<td>33</td>
<td>71.7</td>
</tr>
<tr>
<td><strong>Highest level of education</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Completed primary school</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Junior high school &lt;10</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Senior school 11 - 12</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Trade, technical certificate, diploma</td>
<td>9</td>
<td>19.6</td>
</tr>
<tr>
<td>University or college degree</td>
<td>11</td>
<td>23.9</td>
</tr>
<tr>
<td>Post graduate diploma or degree</td>
<td>26</td>
<td>56.5</td>
</tr>
<tr>
<td><strong>Employment status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full time</td>
<td>37</td>
<td>80.4</td>
</tr>
<tr>
<td>Part time</td>
<td>9</td>
<td>19.6</td>
</tr>
</tbody>
</table>
4.2.2 RESEARCH QUESTION 4:

*What is the perception of nurses about the level and type of perceived barriers to health promotion activities for midlife and older women with a chronic disease?*

**Mean barriers score**

The mean was calculated on the total barriers scores (TBS) for all participants. The mean was 44.48 ($SD = 6.24$) and the median score was 43.00 with the range of scores being 34 to 62.

The mean TBS of 44.48 for this sample of nurses is higher than mean TBS that have been reported in the literature. The highest reported mean TBS was 36.74 in a study of women with fibromyalgia (Beal, et al., 2009).
**Distribution of scores**

Total barriers scores for the sample of women were slightly positively skewed with a slight negative kurtosis.

**Item analysis**

All 46 participants item scores were summed with number and proportion of responses for each item calculated. Table 4.9 presents the number and proportion of responses for the 18 perceived barriers item. The highest proportion of responses fell in the *sometimes* and *often* categories for all 18 items.

Table 4.9

*Perceived Barriers Items – Number and Proportion of Responses of Nurses (N = 46)*

<table>
<thead>
<tr>
<th>Barriers items</th>
<th>Never No. (%)</th>
<th>Sometimes No. (%)</th>
<th>Often No. (%)</th>
<th>Routinely No. (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Lack of convenient facilities</td>
<td>1 (2.2)</td>
<td>30 (65.2)*</td>
<td>11 (23.9)</td>
<td>4 (8.7)</td>
</tr>
<tr>
<td>2. Too tired</td>
<td>1 (2.2)</td>
<td>19 (41.3)</td>
<td>21 (45.7)*</td>
<td>5 (10.9)</td>
</tr>
<tr>
<td>3. Lack of transportation</td>
<td>3 (6.5)</td>
<td>26 (56.5)*</td>
<td>12 (26.1)</td>
<td>5 (10.9)</td>
</tr>
<tr>
<td>4. Feeling what I do doesn’t help</td>
<td>0 (0.0)</td>
<td>28 (60.9)*</td>
<td>15 (32.6)</td>
<td>3 (6.5)</td>
</tr>
<tr>
<td>5. Lack of money</td>
<td>1 (2.2)</td>
<td>16 (34.8)</td>
<td>25 (54.3)*</td>
<td>4 (8.7)</td>
</tr>
<tr>
<td>6. Impairment</td>
<td>2 (4.3)</td>
<td>27 (58.7)*</td>
<td>16 (34.8)</td>
<td>1 (2.2)</td>
</tr>
<tr>
<td>7. No one to help me</td>
<td>1 (2.2)</td>
<td>24 (52.2)*</td>
<td>19 (41.3)</td>
<td>2 (4.3)</td>
</tr>
<tr>
<td>8. Not interested</td>
<td>0 (0.0)</td>
<td>26 (56.5)*</td>
<td>17 (37.0)</td>
<td>3 (6.5)</td>
</tr>
<tr>
<td>9. Lack of information about what to do</td>
<td>1 (2.2)</td>
<td>27 (58.7)*</td>
<td>18 (39.1)</td>
<td>0 (0.0)</td>
</tr>
<tr>
<td>10. Embarrassment about appearance</td>
<td>1 (2.2)</td>
<td>17 (37.0)</td>
<td>22 (47.8)*</td>
<td>6 (13.0)</td>
</tr>
<tr>
<td>11. Concern about safety</td>
<td>5 (10.9)</td>
<td>32 (69.9)*</td>
<td>9 (19.6)</td>
<td>0 (0.0)</td>
</tr>
<tr>
<td>12. Lack of support from family and friends</td>
<td>0 (0.0)</td>
<td>21 (45.7)</td>
<td>22 (47.8)*</td>
<td>3 (6.5)</td>
</tr>
<tr>
<td>13. Interferes with other responsibilities</td>
<td>0 (0.0)</td>
<td>11 (23.9)</td>
<td>26 (56.6)*</td>
<td>9 (19.6)</td>
</tr>
<tr>
<td>14. Lack of time</td>
<td>0 (0.0)</td>
<td>10 (21.7)</td>
<td>28 (60.9)*</td>
<td>8 (17.4)</td>
</tr>
<tr>
<td>15. Feeling I can’t do things correctly</td>
<td>5 (10.9)</td>
<td>24 (52.2)*</td>
<td>14 (30.4)</td>
<td>3 (6.5)</td>
</tr>
<tr>
<td>16. Difficulty with communication</td>
<td>3 (6.5)</td>
<td>35 (76.1)*</td>
<td>7 (15.2)</td>
<td>1 (2.2)</td>
</tr>
<tr>
<td>17. Bad weather</td>
<td>4 (8.7)</td>
<td>34 (73.9)*</td>
<td>5 (10.9)</td>
<td>3 (6.5)</td>
</tr>
<tr>
<td>18. Lack of help from health care professionals</td>
<td>3 (6.5)</td>
<td>30 (65.2)</td>
<td>12 (26.1)*</td>
<td>1 (2.2)</td>
</tr>
</tbody>
</table>

* Category with the highest proportion of responses.

Scores for each barrier item were also summed in order to analyse which of the items were ranked the highest. A rank order of sum item scores is presented in Table...
4.10, illustrating that the top five ranked barriers items were: lack of time and interferes with other responsibilities equal number one; embarrassment about appearance; lack of money; too tired and lack of support from family and friends. The five lowest ranked barriers items were: feeling they can’t do things correctly; lack of help from health care professionals; difficulty with communication; concern about safety and bad weather.

Table 4.10
*Rank of Sum Barriers Item Scores – Nurses (N=46)*

<table>
<thead>
<tr>
<th>Barriers items</th>
<th>Sum item score</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of time</td>
<td>90</td>
<td>1</td>
</tr>
<tr>
<td>Interferes with other responsibilities</td>
<td>90</td>
<td>1</td>
</tr>
<tr>
<td>Embarrassment about appearance</td>
<td>79</td>
<td>2</td>
</tr>
<tr>
<td>Lack of money</td>
<td>78</td>
<td>3</td>
</tr>
<tr>
<td>Too tired</td>
<td>76</td>
<td>4</td>
</tr>
<tr>
<td>Lack of support from family/friends</td>
<td>74</td>
<td>5</td>
</tr>
<tr>
<td>Not interested</td>
<td>69</td>
<td>6</td>
</tr>
<tr>
<td>No one to help them</td>
<td>68</td>
<td>7</td>
</tr>
<tr>
<td>Feeling what they do doesn’t help</td>
<td>67</td>
<td>8</td>
</tr>
<tr>
<td>Lack of transportation</td>
<td>65</td>
<td>9</td>
</tr>
<tr>
<td>Lack of convenient facilities</td>
<td>64</td>
<td>10</td>
</tr>
<tr>
<td>Lack of information about what to do</td>
<td>63</td>
<td>11</td>
</tr>
<tr>
<td>Impairment</td>
<td>62</td>
<td>12</td>
</tr>
<tr>
<td>Feeling they can’t do things correctly</td>
<td>61</td>
<td>13</td>
</tr>
<tr>
<td>Lack of help from health care professionals</td>
<td>57</td>
<td>14</td>
</tr>
<tr>
<td>Difficulty with communication</td>
<td>52</td>
<td>15</td>
</tr>
<tr>
<td>Concern about safety</td>
<td>50</td>
<td>16</td>
</tr>
<tr>
<td>Bad weather</td>
<td>47</td>
<td>17</td>
</tr>
</tbody>
</table>

*Other reasons*

There were seven responses given to the open ended item ‘Other reasons’. A number of these reasons gave further information on items on the questionnaire, for example, “looking after grandchildren” which is reflected in Item 2 - interferes with other responsibilities.
The responses that provided new themes that were not on the questionnaire were: lack of culturally specific information; fear of failure; depression and education level.

**Internal consistency reliability of scale**

Internal consistency of the 18 item barriers scale with this sample of nurses was calculated with a Cronbach’s alpha of .854, indicating a high level of internal consistency.

**4.2.3 RESEARCH QUESTION 5:**

*Is there a relationship between the level of perceived barriers to health promotion activities and different nursing positions, service areas, levels of experience and socio-demographic variables?*

**Nursing variables**

The relationship of the mean total barriers score and categorical variables of nursing position, nursing experience and area of work was investigated with *t*-tests and one way analysis of variance (ANOVA). The categories of nursing experience were collapsed to two categories, *less than 20 years* and *more than 20 years*. There was no statistically significant difference in mean TBS between nurses working different nursing positions, with different levels of experience and area or work; therefore for the null hypothesis was accepted. There were also no clear trends evident between categories within each of the independent variables. Results are presented in Table 4.11.
Table 4.11

Relationship Between Mean Barriers Score and Nursing Variables (N=46)

<table>
<thead>
<tr>
<th>Variable</th>
<th>No.</th>
<th>M</th>
<th>SD</th>
<th>T-test</th>
<th>ANOVA</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nursing position</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Registered nurse</td>
<td>1</td>
<td>49.00</td>
<td>-</td>
<td>.47</td>
<td>.756</td>
<td></td>
</tr>
<tr>
<td>Clinical nurse</td>
<td>27</td>
<td>43.70</td>
<td>6.57</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinical nurse consultant</td>
<td>6</td>
<td>47.00</td>
<td>3.74</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nurse manager</td>
<td>9</td>
<td>44.33</td>
<td>7.50</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>3</td>
<td>45.33</td>
<td>4.04</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nursing experience</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 20 years</td>
<td>13</td>
<td>44.69</td>
<td>5.85</td>
<td>.14</td>
<td>.886</td>
<td></td>
</tr>
<tr>
<td>&gt; 20 years</td>
<td>33</td>
<td>44.39</td>
<td>6.47</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Area of work</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alcohol &amp; drug</td>
<td>1</td>
<td>43.00</td>
<td>-</td>
<td>.16</td>
<td>.956</td>
<td></td>
</tr>
<tr>
<td>Post acute</td>
<td>6</td>
<td>45.50</td>
<td>9.44</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Children &amp; families</td>
<td>6</td>
<td>45.83</td>
<td>3.37</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary/care coordination</td>
<td>25</td>
<td>43.92</td>
<td>6.48</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rehab. &amp; consult.</td>
<td>8</td>
<td>44.63</td>
<td>5.53</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Two tailed significance level reported.
* p < .05

Socio-demographic variables

The relationship between mean TBS and nurses’ socio-demographic variables was explored with independent t-tests and ANOVA. Income categories were collapsed to three categories less than $80 000, more than $80 000 and does not know. Results of statistical tests showed no significant difference in mean TBS between categories of age, country of birth, language other than English, education level, employment, and income. Therefore, the null hypothesis was accepted. Results are presented in Table 4.12.
Table 4.12

Relationship Between Mean Barriers Score and Socio-demographic Variables of Nurses (N=46)

<table>
<thead>
<tr>
<th>Variable</th>
<th>No.</th>
<th>M</th>
<th>SD</th>
<th>T-test</th>
<th>ANOVA</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Under 45 years</td>
<td>17</td>
<td>45.94</td>
<td>5.86</td>
<td>1.28</td>
<td>.289</td>
<td></td>
</tr>
<tr>
<td>45 – 55 years</td>
<td>15</td>
<td>42.47</td>
<td>6.08</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Over 55 years</td>
<td>13</td>
<td>44.23</td>
<td>6.55</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Country of birth</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Australia</td>
<td>32</td>
<td>45.47</td>
<td>6.22</td>
<td>1.66</td>
<td>.104</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>14</td>
<td>42.21</td>
<td>5.89</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Language other than English</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>13</td>
<td>45.15</td>
<td>6.48</td>
<td>.46</td>
<td>.650</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>33</td>
<td>44.21</td>
<td>6.22</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education (highest level)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.88</td>
<td>.421</td>
</tr>
<tr>
<td>Trade, certificate, diploma</td>
<td>9</td>
<td>42.44</td>
<td>8.76</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Degree</td>
<td>11</td>
<td>46.18</td>
<td>6.23</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post graduate</td>
<td>26</td>
<td>44.46</td>
<td>5.22</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-.22</td>
<td>.829</td>
</tr>
<tr>
<td>Full time</td>
<td>37</td>
<td>44.38</td>
<td>6.10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Part time</td>
<td>9</td>
<td>44.89</td>
<td>7.15</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Income</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.28</td>
<td>.289</td>
</tr>
<tr>
<td>&lt; $80 000</td>
<td>17</td>
<td>46.24</td>
<td>6.72</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt; $80 000</td>
<td>25</td>
<td>43.16</td>
<td>6.11</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does not know</td>
<td>4</td>
<td>45.25</td>
<td>3.40</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.* Two tailed significance level reported.

* *p < .05

4.3 RESULTS – COMPARISON OF WOMEN AND NURSES

Socio-demographic variables

There were number of descriptive differences in the socio-demographic variables of the group of women compared to the group of nurses. The mean age of women was at least 17 years older than the mean age of the nurses, with the majority of women aged over 56 years and the most nurses aged less than 55 years. Comparing education levels, of the group of women 50% had a highest level of primary/junior school, while 56.5% of the group of nurses had completed post-graduate education. Most of the women (68.2%) were retired, while 80.4% of the nurses worked full time. The gross annual household income of the group of women
was largely less than $60,000 (67.4%) while in contrast the group of nurses mostly had an income greater than $60,000 (86.9%).

Table 4.13
Comparison of Socio-demographic Variables Women (n=22) and Nurses (n=46)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Women (n = 22)</th>
<th>Nurses (n = 46)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>65.57 (8.795)</td>
<td>48.42 (8.441)</td>
</tr>
<tr>
<td>Age – category</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Under 45 years</td>
<td>0</td>
<td>17 (37.0%)</td>
</tr>
<tr>
<td>45 – 55 years</td>
<td>3 (13.6%)</td>
<td>15 (32.6%)</td>
</tr>
<tr>
<td>56 – 65 years</td>
<td>9 (40.9%)</td>
<td>13 (28.3%)</td>
</tr>
<tr>
<td>Over 65 years</td>
<td>9 (40.9%)</td>
<td>0</td>
</tr>
<tr>
<td>Missing</td>
<td>1 (4.5%)</td>
<td>1 (2.2%)</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary/junior</td>
<td>11 (50%)</td>
<td>0</td>
</tr>
<tr>
<td>Senior</td>
<td>2 (9.1%)</td>
<td>0</td>
</tr>
<tr>
<td>Trade, certificate, diploma</td>
<td>8 (36.4%)</td>
<td>9 (19.6%)</td>
</tr>
<tr>
<td>Degree</td>
<td>1 (4.5%)</td>
<td>11 (23.9%)</td>
</tr>
<tr>
<td>Post graduate</td>
<td>0</td>
<td>26 (56.5%)</td>
</tr>
<tr>
<td>Employment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full time</td>
<td>5 (22.7%)</td>
<td>37 (80.4%)</td>
</tr>
<tr>
<td>Part time</td>
<td>1 (4.5%)</td>
<td>9 (19.6%)</td>
</tr>
<tr>
<td>Retired</td>
<td>15 (68.2%)</td>
<td>0</td>
</tr>
<tr>
<td>Unemployed</td>
<td>1 (4.5%)</td>
<td>0</td>
</tr>
<tr>
<td>Income</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; $20 000</td>
<td>9 (40.9%)</td>
<td>0</td>
</tr>
<tr>
<td>$20 001 - $40 000</td>
<td>4 (18.2%)</td>
<td>0</td>
</tr>
<tr>
<td>$40 001 - $60 000</td>
<td>4 (18.2%)</td>
<td>2 (4.3%)</td>
</tr>
<tr>
<td>$60 001 - $80 000</td>
<td>2 (9.1%)</td>
<td>15 (32.6%)</td>
</tr>
<tr>
<td>&gt; $80 000</td>
<td>1 (4.5%)</td>
<td>25 (54.3%)</td>
</tr>
<tr>
<td>Don’t know</td>
<td>2 (9.1%)</td>
<td>4 (8.7%)</td>
</tr>
</tbody>
</table>

**Statistical test - comparison of mean age**

An independent samples *t*-test was conducted to compare the mean age for the women and the nurses. There was a significant difference in age for women (*M* = 65.57, *SD* = 8.79) and nurses (*M* = 48.42, *SD* = 8.44); *t* (64) = 7.47, *p* < .001.
4.3.1 RESEARCH QUESTION 6:

Is there a difference in the level and type of perceived barriers between women and nurses?

Comparison of descriptive statistics

When comparing the descriptive statistics for the mean total barriers scores between the group of women and group of nurses the mean TBS of 32.18 (SD = 9.53) for the women was lower than the mean TBS of 44.48 (SD = 9.53) for the group of nurses. The median score of the women was 33.00 compared to 43.00 for the nurses.

Figure 4.2 provides a box plot comparing TBS for the group of women and the group of nurses.

Homogeneity of variance

The homogeneity of variance assumption was checked using a Levene’s Test. For the total barriers scores, variances between women and nurses were not equal $F(1, 66) = 5.612, p = .021$. 
**Statistical tests:**

**a) Comparison of median total barriers scores**

As there was a breach of Levene’s test and the data were skewed, it was not appropriate to undertake a parametric statistical test to compare the mean total barriers scores between the women and nurses. When comparing the median total barriers score between the group of women and group of nurses there was a statistically significant difference between the scores \( Z = -4.929, N = 68, p < 0.001 \). The median difference was 10 score units higher for nurses \( (Md = 43) \) than women \( (Md = 33) \), indicating higher barriers perception in the group of nurses than the group of women.

**b) Adjusting for age/effect size**

A general linear model was fitted to explore the impact of age and group (women/nurses) on total barriers scores. The interaction between age and total barriers score was not statistically significant \( F(2, 64) = .15, p = .698 \). There was a statistically significant main effect for group \( F(2, 64) = 17.30, p < .001 \); the effect size was large (partial eta squared = .215). These results indicate that age was not a confounding factor and that 21.5% of the variance in total barriers scores can be explained by the independent variable of group.

**d) Difference in barriers item ratings**

**Item analysis**

To investigate the differences between item scores between the group of women and group of nurses, chi-square tests were performed on each of the 18 barriers items. As the response categories provided ordinal data where there is no measure of distance between categories of response, it was most appropriate to use a
statistical test to analyse the difference in the proportion of responses rather than comparison of the mean item scores (Allen & Christopher, 2007; Jamieson, 2004).

The assumption for chi-square is that all expected frequencies in the cross-tabulation table should be five or greater. In the case of this group of women and group of nurses the assumption was not met, and so a Fisher’s exact test was also performed. Fisher’s exact test is a reliable method of calculating the exact probability of a chi-square statistic when sample sizes are small (Field, 2009).

Due to multiple comparisons and the increased risk of type 1 errors (Bland, 2005), a Bonferroni correction was undertaken, where the alpha level is calculated based on the number of independent significance tests (k). In this case, \( \alpha = \frac{0.05}{k} \) or \( \frac{0.05}{18} \) which sets the significance level at .0027.

Apart from three items including lack of interest, feeling they can’t do things correctly and bad weather, there was a statistically significant difference in fifteen barriers item scores, between the group of women and the group of nurses, where nurses rated the barrier higher than the women. Results of chi-square and Fisher’s exact tests are displayed in Table 4.14.
<table>
<thead>
<tr>
<th>Barrier item</th>
<th>Never No. (%)</th>
<th>Sometimes No. (%)</th>
<th>Often No. (%)</th>
<th>Routinely No. (%)</th>
<th>$\chi^2$/Exact test</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Lack of facilities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Women</td>
<td>11 (50.0)</td>
<td>10 (45.5)</td>
<td>1 (4.5)</td>
<td>0 (0.0)</td>
<td>$\chi^2 = 25.35$</td>
</tr>
<tr>
<td>Nurses</td>
<td>1 (2.2)</td>
<td>30 (65.2)</td>
<td>11 (23.9)</td>
<td>4 (8.7)</td>
<td>Exact = 23.23**</td>
</tr>
<tr>
<td>2. Too tired</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Women</td>
<td>4 (18.2)</td>
<td>13 (59.1)</td>
<td>4 (18.2)</td>
<td>1 (4.5)</td>
<td>$\chi^2 = 9.916$</td>
</tr>
<tr>
<td>Nurses</td>
<td>1 (2.2)</td>
<td>19 (41.3)</td>
<td>21 (45.7)</td>
<td>5 (10.9)</td>
<td>Exact = 9.22**</td>
</tr>
<tr>
<td>3. Lack of transportation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Women</td>
<td>17 (77.3)</td>
<td>1 (4.4)</td>
<td>3 (13.6)</td>
<td>1 (4.5)</td>
<td>$\chi^2 = 37.17$</td>
</tr>
<tr>
<td>Nurses</td>
<td>3 (6.5)</td>
<td>26 (56.5)</td>
<td>12 (26.1)</td>
<td>5 (10.9)</td>
<td>Exact = 37.04**</td>
</tr>
<tr>
<td>4. Feeling it does not help</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Women</td>
<td>11 (50.0)</td>
<td>28 (60.9)</td>
<td>15 (32.6)</td>
<td>3 (6.5)</td>
<td>$\chi^2 = 27.56$</td>
</tr>
<tr>
<td>Nurses</td>
<td>0 (0.0)</td>
<td>16 (34.8)</td>
<td>25 (54.3)</td>
<td>4 (8.7)</td>
<td>Exact = 26.47</td>
</tr>
<tr>
<td>5. Lack of money</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Women</td>
<td>9 (40.9)</td>
<td>8 (36.4)</td>
<td>4 (18.2)</td>
<td>1 (4.5)</td>
<td>$\chi^2 = 20.11$</td>
</tr>
<tr>
<td>Nurses</td>
<td>1 (2.2)</td>
<td>16 (34.8)</td>
<td>25 (54.3)</td>
<td>4 (8.7)</td>
<td>Exact = 18.88**</td>
</tr>
<tr>
<td>6. Impairment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Women</td>
<td>13 (59.1)</td>
<td>9 (40.9)</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
<td>$\chi^2 = 29.24$</td>
</tr>
<tr>
<td>Nurses</td>
<td>2 (4.3)</td>
<td>27 (58.7)</td>
<td>16 (34.85)</td>
<td>1 (2.2)</td>
<td>Exact = 29.24**</td>
</tr>
<tr>
<td>7. No one to help them</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Women</td>
<td>10 (45.5)</td>
<td>9 (40.9)</td>
<td>1 (4.5)</td>
<td>2 (9.1)</td>
<td>$\chi^2 = 25.03$</td>
</tr>
<tr>
<td>Nurses</td>
<td>1 (2.2)</td>
<td>24 (52.2)</td>
<td>19 (41.3)</td>
<td>2 (4.3)</td>
<td>Exact = 24.75**</td>
</tr>
<tr>
<td>8. Lack of interest</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Women</td>
<td>6 (27.3)</td>
<td>10 (45.5)</td>
<td>5 (22.7)</td>
<td>1 (4.5)</td>
<td>$\chi^2 = 13.92$</td>
</tr>
<tr>
<td>Nurses</td>
<td>0 (0.0)</td>
<td>26 (56.5)</td>
<td>17 (37.0)</td>
<td>3 (6.5)</td>
<td>Exact = 12.64</td>
</tr>
<tr>
<td>9. Lack of information</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Women</td>
<td>8 (36.4)</td>
<td>8 (36.4)</td>
<td>5 (22.7)</td>
<td>1 (4.5)</td>
<td>$\chi^2 = 17.86$</td>
</tr>
<tr>
<td>Nurses</td>
<td>1 (2.2)</td>
<td>27 (58.7)</td>
<td>18 (39.1)</td>
<td>0 (0.0)</td>
<td>Exact = 16.25**</td>
</tr>
<tr>
<td>10. Embarrassed about appearance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Women</td>
<td>13 (59.1)</td>
<td>3 (13.6)</td>
<td>5 (22.7)</td>
<td>1 (4.5)</td>
<td>$\chi^2 = 29.57$</td>
</tr>
<tr>
<td>Nurses</td>
<td>1 (2.2)</td>
<td>17 (37.0)</td>
<td>22 (47.8)</td>
<td>6 (13.0)</td>
<td>Exact = 27.61**</td>
</tr>
<tr>
<td>11. Concern about safety</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Women</td>
<td>7 (31.8)</td>
<td>7 (31.8)</td>
<td>5 (22.7)</td>
<td>3 (13.6)</td>
<td>$\chi^2 = 13.743$</td>
</tr>
<tr>
<td>Nurses</td>
<td>5 (10.9)</td>
<td>32 (69.6)</td>
<td>9 (19.6)</td>
<td>0 (0.0)</td>
<td>Exact = 12.793**</td>
</tr>
<tr>
<td>12. Lack of support family</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Women</td>
<td>11 (50.0)</td>
<td>7 (31.8)</td>
<td>2 (9.1)</td>
<td>2 (9.1)</td>
<td>$\chi^2 = 30.15$</td>
</tr>
<tr>
<td>Nurses</td>
<td>0 (0.0)</td>
<td>21 (45.7)</td>
<td>22 (47.8)</td>
<td>3 (6.5)</td>
<td>Exact = 29.99**</td>
</tr>
<tr>
<td>13. Other responsibilities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Women</td>
<td>10 (45.5)</td>
<td>11 (50.0)</td>
<td>1 (4.5)</td>
<td>0 (0.0)</td>
<td>$\chi^2 = 38.47$</td>
</tr>
<tr>
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<td>11 (23.9)</td>
<td>26 (56.5)</td>
<td>9 (19.6)</td>
<td>Exact = 39.92**</td>
</tr>
<tr>
<td>14. Lack of time</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Women</td>
<td>7 (31.8)</td>
<td>11 (50.0)</td>
<td>3 (13.6)</td>
<td>1 (4.5)</td>
<td>$\chi^2 = 27.62$</td>
</tr>
<tr>
<td>Nurses</td>
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<td>10 (21.7)</td>
<td>28 (60.9)</td>
<td>8 (17.4)</td>
<td>Exact = 26.94**</td>
</tr>
<tr>
<td>15. Feeling can’t do correctly</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Women</td>
<td>8 (36.4)</td>
<td>9 (40.9)</td>
<td>4 (18.2)</td>
<td>1 (4.5)</td>
<td>$\chi^2 = 6.39$</td>
</tr>
<tr>
<td>Nurses</td>
<td>5 (10.9)</td>
<td>24 (52.2)</td>
<td>14 (30.4)</td>
<td>3 (6.5)</td>
<td>Exact = 5.91</td>
</tr>
<tr>
<td>16. Communication</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Women</td>
<td>10 (45.5)</td>
<td>7 (31.8)</td>
<td>3 (13.6)</td>
<td>2 (9.1)</td>
<td>$\chi^2 = 18.16$</td>
</tr>
<tr>
<td>Nurses</td>
<td>3 (6.5)</td>
<td>35 (76.1)</td>
<td>7 (15.2)</td>
<td>1 (2.2)</td>
<td>Exact = 17.32**</td>
</tr>
</tbody>
</table>
17. Bad weather

<table>
<thead>
<tr>
<th></th>
<th>Women</th>
<th></th>
<th>Nurses</th>
<th></th>
<th>χ²</th>
<th>Exact</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10 (45.5)</td>
<td>11 (50.0)</td>
<td>1 (4.5)</td>
<td>0 (0.0)</td>
<td>13.16</td>
<td>11.51</td>
</tr>
</tbody>
</table>

18. Lack of support from health professionals

<table>
<thead>
<tr>
<th></th>
<th>Women</th>
<th></th>
<th>Nurses</th>
<th></th>
<th>χ²</th>
<th>Exact</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10 (45.5)</td>
<td>9 (40.9)</td>
<td>1 (4.5)</td>
<td>2 (9.1)</td>
<td>18.56</td>
<td>17.45**</td>
</tr>
</tbody>
</table>

Note. Degrees of freedom = 3 for all tests. Fisher’s exact test reported.

** p < .0027 (Bonferroni correction)

Descriptive comparison of top 5 ranked barriers items

A comparison of the top five ranked items for the women and the nurses was also made using the rank of sum item scores from Table 4.5 and 4.10. Results are displayed in Table 4.15

Table 4.15

<table>
<thead>
<tr>
<th>Rank</th>
<th>Women</th>
<th>Nurses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Concern about safety</td>
<td>Lack of time</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Interferes with other responsibilities</td>
</tr>
<tr>
<td>2</td>
<td>Too tired</td>
<td>Embarrassment about appearance</td>
</tr>
<tr>
<td>3</td>
<td>Not interested</td>
<td>Lack of money</td>
</tr>
<tr>
<td>4</td>
<td>Lack of information about what to do</td>
<td>Too tired</td>
</tr>
<tr>
<td>5</td>
<td>Lack of time</td>
<td>Lack of support from family/friends</td>
</tr>
<tr>
<td></td>
<td>Feeling I can’t do things correctly</td>
<td></td>
</tr>
</tbody>
</table>

This chapter has presented results from Phase 1 and Phase 2 of the study. The following chapter discusses these results in more detail and in the context of the literature.
Chapter 5: Discussion

This chapter contains a full discussion, interpretation and evaluation of the results with reference to the literature. Section 5.1 provides a summary and discussion of the main findings. Section 5.2 discusses some possible explanations for the findings and Section 5.3 discusses the clinical implications of the findings. Finally section 5.4 proposes a conceptual model for understanding perceived barriers to health promotion activities.

5.1 SUMMARY OF MAIN FINDINGS

5.1.1 SOCIODEMOGRAPHIC CHARACTERISTICS OF WOMEN

All of the women in this study had been diagnosed with type 2 diabetes and were participating in the ‘Reducing Chronic Disease among Adult Australian Women’ project. The 22 women in this study were on average 65 years old and mostly Australian born and English speaking. Half of the women were currently married and nearly a third was widowed. The majority of the women were retired and had a low income, with nearly half the women having an income less than $20,000 per annum. Only a very small proportion of the women had an education level beyond year 10 of high school.

5.1.2 MODIFIABLE LIFESTYLE RISK FACTORS

Most of the women participating in this study had risk factors for chronic disease, which is not surprising given that they had all been diagnosed with type 2 diabetes. A very large percentage (86.4%) was overweight or obese, and most did not meet the recommended daily levels of physical activity and fruit and vegetable intake. On a positive note, none of the women were current smokers.
5.1.3 PERCEIVED BARRIERS TO HEALTH PROMOTION IN WOMEN

An important aim of this study was to explore the level of perceived barriers to health promotion in this sample of midlife and older women with type 2 diabetes. Using the BHADP scale to measure the barriers, the average total barriers score for this group of women was 32.18, where the possible range of scores was 18 to 72.

In comparison to other studies that have used the BHADP instrument to measure barriers, the average score of 32.18 in this study is similar to other published data. Stuifbergen and Becker (1994) found that adults with a range of disabilities had an average barriers score of 33.5, while adults with multiple sclerosis had an average score of 32.54 and adults with post-polio syndrome an average of 33.12 (H. Becker & Stuifbergen, 2004). A sample of 198 women with fibromyalgia had a higher average barriers score of 36.74 (Beal, et al., 2009). Compared to a sample of adults without disabilities who had an average score of 25.07 (H. Becker, et al., 1991) this sample of women with type 2 diabetes had a considerably higher average score, more similar to groups with a disability or illness.

Analysis of the individual barriers items on the scale revealed that the leading five barriers, representing the top third of items were: concern about safety; too tired; not interested; lack of information about what to do; with lack of time and feeling I can’t do things correctly equal fifth highest barriers. In contrast the five lowest ranked responses to individual barriers items were: interferes with other responsibilities; bad weather; lack of convenient facilities; lack of transportation and impairment. Although impairment was the lowest ranked item in scale responses, in the open ended question asking for other reasons three responses indicated other health concerns such as broken bones, recent surgery and arthritis were preventing
them from exercising. This suggests that it is possible the item ‘impairment’ may have been underscored or misunderstood by the women.

When comparing the top barriers items identified in this study to the literature, there are a number of observations that can be made. In a number of studies of older women the barriers of safety, fatigue and lack of interest or motivation have been similarly identified. Jones and Nies (1996) first identified safety as an important issue in a study of thirty older African American women (mean age 72 years) and modified the BHADP scale to incorporate the item concern about safety. Lucas and colleagues (2000) explored the determinants of health promoting behaviour in a sample of 107 women aged over 65 years (mean age 77 years), and found that concerns about safety and injury and lack of motivation were important barriers. Physical barriers to exercise in older women (mean age 73 years) after myocardial infarction also included fear of falling and safety, although this was also a small study (N= 15) (Crane & McSweeney, 2003). Fatigue and lack of motivation were also common themes in a qualitative study of older women with an average age of 67 (Wilcox, et al., 2005). Lack of information which was the fourth highest ranked barrier in this study has also been identified as a barrier in other studies with midlife and older women (Lucas, et al., 2000; Mosca, et al., 1998). A recent study of perceived barriers to health promotion in Emirati women at risk of type 2 diabetes also found that safety, motivation and time were important, however the average age of women in this study was 39 years (H. I. Ali, et al., 2010).

Time is a barrier that consistently appears in nearly all studies of barriers to health promotion in women and in this study it was ranked as the fifth leading barrier. In midlife and younger women, time is often given as the leading barrier that prevents women from exercising (Bowen, et al., 2006; Heesch, et al., 2000; Juarbe,
et al., 2002; Mosca, et al., 1998; Nies, Vollman, & Cook, 1998; Osuji, et al., 2006). This is not surprising given that midlife and younger women are often juggling work and family responsibilities.

In contrast to other studies of barriers in women (Ansari & Lovell, 2009; Eyler, et al., 2002; Juarbe, et al., 2002; Wilcox, et al., 2003; Wilcox, et al., 2005), in this study other responsibilities was ranked in the lowest five barriers. As women in this study are mostly older and retired they would probably not have as many primary care responsibilities for children and elderly parents, as would young and midlife women.

5.1.4 PERCEIVED BARRIERS AND MODIFIABLE LIFESTYLE RISK FACTORS

In this study there was no significant relationship between the level of perceived barriers to health promotion activities and body mass index, physical activity, dietary behaviour and smoking behaviour.

In contrast to these results, there is evidence that obesity is a barrier to increasing physical activity in Australian women (Ball, et al., 2000). In this pilot survey of the ‘Fitness of Australians’ 1,227 women were included, and found significant associations observed between ‘too fat’ as a barrier and being too shy/embarrassed and too lazy/not motivated. In the current study of twenty two women, where almost 85% were overweight or obese, correlation of BMI and mean total barriers score did approach the level of significance ($p = .06$). A limitation of the sample size and lack of variance in BMI’s perhaps made it difficult to detect any significant association.

Also in contrast to the results in this study, a number of other studies have observed an association between the current level of exercise and perceived barriers
to exercise, with women who perceive barriers to be lower exercising more frequently (Jones & Nies, 1996; Osuji, et al., 2006; Wilcox, et al., 2003; Williams, et al., 2006). Other studies have found perceived barriers to be negatively associated with healthy eating behaviour (N. S. Ali & Twibell, 1994; Hall, Colantonio, & Yoshida, 2003) and smoking behaviour in women (Thanavaro, 2005; Ussher, et al., 2006). In the current study, all of the participants were non-smokers so without any variance in the results, smoking status was not included as an independent variable in statistical testing.

A major limitation of the small sample size was that multiple linear regression modelling was unable to be undertaken as originally planned, and that the statistical tests that were conducted were likely to be of low power with the risk of a type 2 error where the null hypotheses is falsely rejected.

5.1.5 PERCEIVED BARRIERS AND SOCIO-DEMOGRAPHIC VARIABLES IN WOMEN

This research also explored whether there was a relationship between the level of perceived barriers to health promotion activities and women’s socio-demographic variables including age, marital status, country of birth, language other than English, education level, employment status, income and time since diabetes diagnosis. In this study there was no statistically significant relationship demonstrated.

This is in contrast to other studies of women where significant associations have been observed between perceived barriers and socio-demographic variables. Perceived barriers has been found to be negatively associated with older age (Ansari & Lovell, 2009; Lucas, et al., 2000) and positively associated with higher education levels (Gatewood, et al., 2008; Lucas, et al., 2000; Thanavaro, et al., 2006) and
income levels (Gatewood, et al., 2008; Mochari-Greenberger, Mills, Simpson, & Mosca, 2010; Osuji, et al., 2006) in women.

It seems likely that the limited sample size reduced the power to detect significant differences between small groups, or that there was insufficient variation in the socio-demographic characteristics of this sample.

5.1.6 LIFESTYLE INTERVENTION AND PERCEIVED BARRIERS

Women participating in the ‘Reducing Chronic Disease among Adult Australian Women’ project were randomised to either the intervention group or the control group. This study also explored whether there was a difference in level and type of perceived barriers between women in each of the groups. Women were surveyed at three to six months after the lifestyle intervention which focused on increasing exercise levels and healthy eating.

Although the intervention sub-group was very small \((n = 7)\) compared to the usual care group \((n = 15)\), descriptively there was a difference in the mean and median scores, with the intervention group having higher barriers scores \((M = 37.86, \text{Md} = 35)\) than the usual care group \((M = 29.53, \text{Md} = 28)\). However, there was no statistically significant difference between the groups \((p = .15)\). For the 18 barriers items, there was also no significant difference between the intervention and usual care groups. With such small sub-sample sizes it is difficult to draw any conclusions from these results.

There is some evidence in the literature that lifestyle interventions can reduce the perceived barriers for women. In a sub-sample of 161 women participating in the ‘WISEWOMAN’ study, minimum and no program participants perceived significantly more barriers to attendance than did participants who undertook the full
health promotion program targeting physical activity, nutrition and smoking (Gatewood, et al., 2008). In contrast 35 post-menopausal women participating in seven week walking program had no significant change in perceived barriers to participation after the program (Williams, et al., 2006).

5.1.7 SOCIO-DEMOGRAPHIC CHARACTERISTICS OF NURSES

The nurses participating in this study were employed in Primary and Community Health Services of Queensland Health. The 46 nurses in this study were on average 48 years old and mostly Australian born and English speaking. The majority of the nurses were working full time and had an income above $60 000, with over half the having an income greater than $80 000 per annum. Most of the nurses had a university or college degree and over half had a post-graduate diploma or degree.

The average age of nurses in this study is higher than the national average of 43.8 years for Registered nurses, and the proportion of nurses in this study working part – time (19.6%) is lower than the national average of 55.2% reported by the Australian Institute of Health and Welfare (2009). It can be concluded that nurses in this study were not necessarily completely representative of the wider population of nurses in Australia.

The majority of the nurses were working in clinical roles as registered nurses, clinical nurses and clinical nurse consultants, with a smaller proportion in management positions. The nurses were very experienced with most having more than fifteen years and at least seventy per cent over twenty years’ experience.
The nurses worked in a variety of service areas within the Primary and Community Health Service with over half working in the Primary Health and Care Coordination service.

5.1.8 NURSES PERCEPTION OF THE BARRIERS FOR WOMEN

This study explored nurses’ perceptions of the perceived barriers to health activities in women older than forty five years with a chronic disease. Using the BHADP scale to measure the barriers, the average total barriers score was 44.48.

In comparison to other studies where the BHADP scale has been used to measure perceived barriers the average score for nurses was much higher, with the highest reported average score being 36.74 in a group of women with fibromyalgia (Beal, et al., 2009). All prior studies have used the scale to measure self-perceptions about barriers rather than to measure the perceptions about others, so in this respect it is difficult to make an accurate comparison between the nurses’ average score and other reported average scores. Although the instrument has not been used in this method previously, it did appear to have a good internal consistency with a Cronbach’s alpha of .854 for this sample of nurses.

Analysis of the nurses’ ranking of the eighteen barriers items of the scale revealed that the leading five barriers, representing the top third of items, were: lack of time and interferes with other responsibilities the equal top barriers; embarrassment about appearance; lack of money; too tired and lack of support from family and friends. The five lowest ranked perceived barriers items were: feeling they can’t do things correctly; lack of help from health care professionals; difficulty with communication; concern about safety and bad weather.
In comparison with a study of Emirati health professionals’ perceptions of barriers for women at risk of type 2 diabetes (H. I. Ali, et al., 2009), there are similarities with family responsibilities and lack of social support also being identified in that study. In contrast with that study, embarrassment about appearance, lack of money and fatigue were not identified in the Emirati study, which found that lack of appropriate exercise facilities and hot weather were more important barriers (H. I. Ali, et al., 2010). These differences would seem to reflect the differing environment and cultural norms for women and health professionals living in the United Arab Emirates compared to Australia.

The nurses’ perceptions of the main barriers that midlife and older women face would appear to align with much of the barriers literature particularly studies focused on midlife or younger women. Much of the research reports time as an important barrier (Bowen, et al., 2006; Heesch, et al., 2000; Juarbe, et al., 2002; Mosca, et al., 1998; Nies, et al., 1998; Osuji, et al., 2006; Wilcox, et al., 2003) and other responsibilities especially family responsibilities are also commonly reported barriers (Ansari & Lovell, 2009; Eyler, et al., 2002; Juarbe, et al., 2002; Perry, et al., 2008; Wilbur, Vassalo, Chandler, McDevitt, & Miller, 2005; Wilcox, et al., 2003). Lack of money or financial issues is also a barrier that women commonly report (Crane & McSweeney, 2003; Lucas, et al., 2000; Mochari-Greenberger, et al., 2010; Mosca, et al., 1998; Osuji, et al., 2006) and also lack of social support (H. I. Ali, et al., 2010; Crane & McSweeney, 2003; Kaewthummanukul, et al., 2006; Lucas, et al., 2000; Moore, et al., 2003).

*Embarrassment about appearance* was a highly ranked barriers item by the group of nurses however only one other study found the issue of appearance important with “hair maintenance” being described as a deterrent to exercise in
younger African American women (Harley, et al., 2009). Fatigue was also an important barrier identified by nurses, which has also been reported elsewhere (Heesch, et al., 2000; Osuji, et al., 2006; Wilcox, et al., 2003; Wilcox, et al., 2005).

There were four themes that emerged from the open ended responses of nurses giving other reasons. The themes were that culturally specific information was not available, that women feared failure, and also depression and low education level were issues. There has been some exploration of cultural issues and barriers undertaken in other studies, where issues such as family expectations, food preferences and beliefs about exercise have been identified as barriers (Crane & McSweeney, 2003; Eyler, et al., 2002).

In summary, nurses’ perception of the barriers for women using the BHADP scale revealed a higher average perceived barriers score than all other studies that have used the scale. However, the nurses rating of the eighteen items on the scale revealed that their perceptions aligned with findings in many other studies where time, family and other responsibilities and also financial issues were leading barriers that prevent women from exercising and leading a healthy lifestyle.

5.1.9 PERCEIVED BARRIERS AND NURSING DEMOGRAPHICS

There was no significant difference in the level of perceived barriers between nurses working in different positions, service areas and with different levels of experience. This lack of significant difference could be explained by the homogenous sample, where most of the nurses had more than twenty years experience and over half the nurses worked in the same service area of Primary Health and Care Coordination. There were also no clear trends that could be identified.
There was also no statistically significant relationship demonstrated between the level of perceived barriers to health activities and nurse’s socio-demographic variables including age, country of birth, language other than English, education level, employment status, and income.

Once again, this lack of significant difference could be explained by lack of variation in the sample of nurses where most were Australian born, English speaking, had a high level of education and an annual household income of more than $60 000.

5.1.10 COMPARISON OF SOCIO-DEMOGRAPHIC CHARACTERISTICS OF WOMEN AND NURSES

The women and nurses in this study had different socio-demographic characteristics. There was a statistically significant difference in the average age of the women of 65 years in compared to the average age of 48 years for the group of nurses.

For most of the women the highest level of education was junior high school or a trade certificate/diploma. The nurses were predominantly tertiary educated with over half having a post-graduate qualification. Most of the women were retired compared to nurses who were mostly working full-time. There were also contrasting income levels of the two groups with few women having a household income more than $60 000 and 20% less than $20 000, while the majority of nurses had an income above $60 000 and 54% more than $80 000.

5.1.11 COMPARISON OF PERCEIVED BARRIERS BETWEEN WOMEN AND NURSES

An important question in this study was whether there was a significant difference in the level of perceived barriers to health promotion activities between the group of women and the group of nurses. Descriptively there was an obvious
difference in the average and median total barriers scores, with the group of women having a lower barriers score \( (M = 32.18, Md = 33) \) than the group of nurses \( (M = 44.48, Md = 43) \). Comparison of the median scores between each group showed a statistically significant difference between the groups: \( Z(68) = -4.929, p < 0.001 \).

To explore whether this difference between the groups was related to the age of participants, a general linear model was fitted to analyse the impact of age and group on total barriers scores. Results indicated that age was not a significant factor and that a significant amount of variance (21.5\%) in the level of perceived barriers was explained by whether a participant was a woman or a nurse, with a large effect size or difference (partial eta squared = .215).

So in this study, nurses appeared to have a different perception about the level of barriers that women experience, than the perception of women themselves. The nurses perceived that the barriers were significantly higher for women than how the women perceived them. This is an interesting finding of this study and the possible explanations and implications of this difference will be discussed further in sections 5.2 and 5.3.

The types of perceived barriers as rated by the women and nurses were also compared. Analysis using chi-square tests demonstrated a statistically significant difference in responses between the women and the nurses \( (p < .0029) \), where the nurses’ perceived the barrier to be greater than the women for 15 of the 18 barriers items. The three items where there was no significant difference between the women and nurses were: lack of interest, feeling I/they can’t do things correctly and bad weather.

When the leading five ranked barriers for each group were compared there were some similarities and differences observed. Fatigue and lack of time were both
among the top ranked barriers for women and nurses, however time was the leading barrier for nurses and the fifth highest barrier for the women. The other highest barriers for the women were: concern about safety; lack of interest; lack of information about what to do, and feeling I can’t do things correctly. In contrast, the other leading barriers that nurses perceived were: interferes with other responsibilities; embarrassment about appearance; lack of money and lack of support from family and friends.

In summary, there was a significant difference in the level or frequency of perceived barriers to health promotion activities between the women and the nurses, and also a significant difference in responses to the individual barriers items. The leading ranked barrier for women was concern about safety and the leading ranked barriers for the nurses were lack of time and interferes with other responsibilities.

5.2 EXPLAINING DIFFERENT PERCEPTIONS

There are a number of possible explanations for the differing perceptions of women and nurses in this study, about the level and type of perceived barriers to health promotion activities. However, because this study is small it is difficult to generalise these results or give a definitive explanation. There is also no available literature that assists in explaining these differences between the women and nurses.

One possible explanation is that the socio-demographic characteristics of the group of women and group of nurses were very different. The women had an average age of 65 years, most were retired, with an education level of junior high school and a low household income. In contrast the nurses had an average age of 48 years, were mostly employed full-time, and also had a high level of education and relatively high household income. These different personal and life situations could quite feasibly
influence knowledge and perceptions of what is a healthy lifestyle and how to engage in healthy activities and behaviours. However, age alone, was not a significant predictor of the level of perceived barriers.

The women all had a current diagnosis of type 2 diabetes and most were overweight or obese, yet despite this, as a group they had a significantly lower average total barriers score than the group of nurses. It seems possible that nurses with their clinical experience and knowledge of chronic disease risk factors could have a heightened awareness of the challenges that women with chronic disease face in changing behaviour and leading a healthy lifestyle. This was perhaps reflected in the higher average total barriers score for the group of nurses. However, knowledge was not a factor that was measured in this study so it is not possible to quantify this.

There was a descriptive difference between the women who had received the lifestyle intervention and the women who received usual care, with the women who received the intervention having a higher average total barriers score, however this did not reach a level of statistical significance. There were no significant differences in the item scores between the intervention and usual care group that could give some indication of why there was a descriptive difference between the sub-groups.

There were significant differences in the responses of the women and nurses to 15 of the individual items on the questionnaire. Time and fatigue were among the leading barriers for each group; however other items differed with safety being the leading barrier for the women. When comparing these differences to the barriers literature, it would seem that the women’s responses were similar to barriers reported in other studies of older women over 60 years of age and the nurses’ responses were similar to studies of younger and middle aged women. On the questionnaire that the nurses’ completed, they were asked “how much you believe each of these problems
prevents women older than 45, with a chronic health condition from taking care of their health”. It seems possible that if the questionnaire had asked nurses about the barriers for women older than 60, there could have been a different response and therefore possibly less difference between the responses of the women and the nurses. Although the level of perceived barriers identified by nurses was significantly higher than the women, the leading barriers items identified by the nurses, while different to the women in this study were similar to barriers reported in the literature for younger and midlife women.

There was a significant difference in the average age of nurses in the study, which was 48 years, compared to the average age of the women of 65 years. All but one of the nurses was women, so as they were thinking about the barriers for women with chronic disease, it seemed feasible that they were also reflecting on the barriers that they personally face in leading a healthy lifestyle. As they were all working full time and possibly had family commitments as well, the top two items lack of time and interferes with other responsibilities, would be likely barriers that they experience. However, when age was adjusted for using a general linear model the interaction between total barriers scores and the age of all participants including the women and nurses, was not significant. So even though there was a significant difference in the ages of the women and the nurses, the total barriers scores were not dependent on age.

There appear to have been no other studies undertaken where the perception of barriers of women and health professionals has been compared, so there is no available literature that directly explains the differences between women and nurses in this study.
5.3 CLINICAL IMPLICATIONS OF FINDINGS

The different perceptions of this group of women and group of community nurses about the level and type of barriers to health promotion activities, is an interesting and potentially significant finding of this study. Although a small study which could be considered to be like a pilot study, the results raised some questions about whether this difference in perceptions was important and to what extent there could be clinical implications for women and nurses in a health service context?

Although it may seem obvious that a group of older women with a chronic disease would be likely to have a different perception of barriers to leading a healthy lifestyle than a group of nurses, what is surprising is the degree of difference in those perceptions where the nurses perceive the barriers for women as being significantly higher than the women themselves. There is also a surprising difference in the leading barriers that nurses identify in comparison to the women. This is important because one of the key roles of clinical nurses is to provide information, education and support for women with a range of chronic illnesses to promote health and facilitate behaviour change to reduce risk factors for illness. If nurses have quite different perceptions about what are the factors that prevent women from leading a healthy lifestyle this could potentially affect the clinical interactions with the women as clients. This is not to say that the perception of either the women or the nurses is inaccurate or unreliable. In fact the literature around the barriers to health promotion supports both the perspective of the women and the nurses in relation to the major barriers that each group identified.

It would seem possible that in a clinical context this difference in perceptions could influence how nurses engage with women as clients. If nurses have perceptions about a client that are not aligned with the client’s perceptions then this could
potentially affect communication and the therapeutic relationship. If a nurse perceives that the barriers for a woman are very high then that could lead to the nurse having lower expectations of successful behaviour change. Although outside the scope of this study, there is some evidence that outcome expectations of nurses can influence the time (Borrelli et al., 2001) and the quality of risk assessment and prevention counselling they provide to clients (Bluespruce et al., 2001). This would be particularly relevant in the context of nurse consultation where the role of the nurse may include facilitating behaviour change with lifestyle education, risk factor management and goal setting.

At present, the clinical focus of type 2 diabetes management is on clinical management of the disease, prevention of complications and also risk factor modification including smoking, poor nutrition, high alcohol intake and lack of physical exercise (Diabetes Australia, 2009). Health professionals, including nurses are encouraged to provide individualised information and education to promote self-management and use goal setting to help achieve behaviour change to modify risk factors (Diabetes Australia, 2009). While these approaches are essential components of best practice clinical care, what does not seem to be so strongly emphasised is the importance of identifying the perceived barriers that prevent an individual from engaging in healthy activities. There is strong evidence from studies using the health belief model and health promotion model that perceived barriers are an important determinant of health promotion behaviours, so it is argued that clinically there should be greater emphasis on identification of barriers and goal setting to reduce their impact on the individual trying to modify risk factors.
5.4 CONCEPTUAL MODEL OF PERCEIVED BARRIERS

The health promotion model places perceived barriers to action among a number of important behaviour specific cognitions and affect (Pender, 1982, 2006; Pender, et al., 2010) that influence an individual’s capacity to change behaviour to engage in a healthy lifestyle activities. It is important to acknowledge that although barriers are an important factor, there are also other social-cognitive factors included in the HPM which are: perceived benefits of action; self efficacy; activity related affect; interpersonal and situational influences; and competing demands and preferences. This study did not seek to explore the explanatory or predictive power of perceived barriers in relation to these other components of the model, but did allow some further exploration and analysis of the differing perceptions of barriers between women with a chronic disease and community nurses.

It is proposed that a conceptual model of perceived barriers to action could be expanded to include not only the perception of a woman but also the perception of a nurse. More broadly this could also be conceptualised to the perception of a client and the perception of a clinician. The perception of each about perceived barriers to action to reduce risk factors is influenced by individual personal factors, social factors and environmental factors which may lead to differing outcome expectations about the potential for behaviour change. In this context, Bandura’s description of outcome expectations could be applied, where outcome expectations are the costs or benefits of particular health behaviour and can include physical outcomes, social approval or disapproval and self-evaluative reactions (2004). Outcome expectations are influenced by perceived self-efficacy, perceived benefits, social expectations and physical capacity (A. Bandura, 2004). In the proposed model, perceived barriers to action influence outcome expectations of individual clients and clinicians and these
perceptions may not be aligned, as evidenced by the different perceptions of barriers between women and nurses in this study.

Where perceptions about barriers and outcome expectations do not align in a clinical context, there is potential impact on the therapeutic relationship with possible misunderstanding and unrealistic goal setting. Therefore, in a clinical context perceived barriers to action should be explicitly discussed and explored in client focused manner, where specific barriers are identified that are relevant to the individual client and their individual risk factors, along with assessment of readiness to change. It is proposed that goal setting, action planning and review of barriers could be included in clinical nursing consultation where there is a focus on lifestyle and risk factor modification. This could include not only women with type 2 diabetes, but other chronic diseases such cardiovascular disease where risk factor modification is crucial to improving outcomes and preventing complications. Figure 5.1 is a diagrammatic representation of this expanded conceptual model where the green section represents the three over-arching concepts of the health promotion model, with perceived barriers to action expanding out from behaviour specific cognitions and affect.
In order to operationalise this conceptual model to a clinical context there would appear to be a need for the development of simplified scale that allows a clinician to objectively assess an individual’s barriers. Such a scale could potentially provide a score and risk rating, where not only individual barriers factors are
identified, but risk is stratified as low, medium or high. Depending on the level of risk, an algorithm for managing ‘perceived barriers’ risk could possibly be incorporated into a clinical tool. This proposed Barriers Risk Assessment Tool would need to be developed and tested to provide evidence of its reliability and validity.

The use of risk scoring and algorithms is commonly seen in the clinical environment. Two examples would be the *Framingham Risk Equation* which measures cardiovascular disease risk factors (D'Agostino et al., 2008) and the *Assessment Algorithm* published by the National Heart Foundation in Australia (National Vascular Disease Prevention Alliance, 2009). Another example which is a nursing specific risk assessment tool is the *Waterlow pressure ulcer prevention/treatment policy* (Waterlow, 2005), which assists nurses to objectively assess the risk of pressure ulcers in an individual and provides a management algorithm for reducing risk in high risk individuals. A Barriers Risk Assessment Tool for assessing and managing perceived barriers to healthy lifestyle activities could potentially be used in a number of clinical contexts including primary prevention and management of risk factors in people who already have chronic disease such as type 2 diabetes and cardiovascular disease. Such a tool could potentially be used not only by nurses, but also by other health professionals involved in risk factor modification and lifestyle counselling.

Figure 5.2 further expands the *Clinical context* section of the conceptual model of perceived barriers, to illustrate how lifestyle risk factor modification could incorporate a more focused approach on perceived barriers to action. Currently in the context of a clinical consultation, for example between a diabetes nurse educator and a woman with type 2 diabetes, there are three priorities which are illustrated in the small purple boxes which include: clinical management; self management and
lifestyle risk factor reduction. Clinical management may involve activities such as assessment of symptoms, checking and recording of height and weight. Self-management refers to principles and activities where the patient is encouraged to effectively monitor and manage their diabetes, for example, blood glucose testing and self-administration of medications. Lifestyle risk factor modification includes education and goal setting around individual risk factors such as smoking, nutrition, alcohol and physical activity.

It is proposed that in addition to identifying risk factors such as smoking, nutrition, alcohol and physical activity, perceived barriers to action could also be assessed in a more comprehensive manner. This process could be facilitated by the use of a Barriers Risk Assessment Tool, which could assist in identifying an individual’s leading barriers and also a risk rating. Aligned with risk factor education and goal setting, awareness raising and goal setting to address specific barriers to action could be undertaken. To give an example, a nurse may identify the need for an individual to increase physical activity levels, using a Barriers Risk Assessment Tool it is possible that an individual’s concern about safety and lack of time could also be easily identified. Planning and goal setting could then be undertaken with a client, not only to include physical activity targets but also to specifically reduce barriers to action.

Further research could be undertaken to develop and validate a Barriers risk assessment tool and also to test the validity of the proposed conceptual model of perceived barriers to action.
In summary this chapter has discussed the main findings of this study of women and nurses. It has discussed the comparative differences between perceived barriers to action for the women and nurses participating and also the significance of these findings. A conceptual model for understanding ‘perceived barriers’ has been proposed, including the suggested development of a risk assessment tool. The
following chapter will give a final summary, discuss conclusions, limitations and final recommendations of the study.
Chapter 6: Conclusions

This concluding chapter provides a final summary of the background and aims of the thesis including a summary of the major findings and discusses the implications of the study for clinical practice, policy making and future research. Limitations of the study are also presented.

6.1 BACKGROUND AND AIMS

Chronic diseases including type 2 diabetes are a significant cause of morbidity and mortality globally and within Australia. In women the prevalence of type 2 diabetes increases markedly after the age of 45 years. There are a number of well known lifestyle risk factors for chronic diseases including smoking, nutrition, alcohol consumption and physical activity. There is evidence that lifestyle interventions for women can change behaviour to reduce risk factors, and the ‘Reducing Chronic Disease among Adult Australian Women’ project is currently investigating the effects of a lifestyle intervention for women with type 2 diabetes.

An important determinant of how successful women are in changing behaviour to reduce risk factors is the perceived barriers that women face that prevent them from taking action. Pender’s health promotion model (1982, 2006) provided a conceptual framework for understanding health behaviour change where barriers to action is but one of a number of social-cognitive factors that influence an individual’s capacity and commitment to engage in positive health behaviours.

While there has been research in other countries exploring the perceived barriers for women, there has been little Australian research undertaken on this topic. It is in this context that this study has explored the barriers for a sub-sample of 22
women with type 2 diabetes who participated in the ‘Reducing Chronic Disease among Adult Australian Women’ project. The primary aim of the study was to identify the factors that influence health promotion activities in midlife and older Australian women with a chronic disease particularly the personal, social and environmental barriers that prevent women from engaging in healthy lifestyle activities that can reduce their risk factors for chronic disease.

There has also been little research on how health professionals including nurses perceive the barriers that women with a chronic disease experience. This study also explored the perceptions of a sample of nurses working in Primary and Community Health Services of Queensland Health. The secondary aim of the study was to explore nurses’ perception of the factors that influence midlife and older women’s participation in healthy lifestyle activities.

6.2 SUMMARY OF MAJOR FINDINGS

6.2.1 PERCEIVED BARRIERS OF MIDLIFE AND OLDER WOMEN WITH TYPE 2 DIABETES

Women in this study had average total barriers score of 32.18 which was similar to average scores reported in the literature for women with a range of physical disabilities and illnesses. The leading five barriers for this group of women were: concern about safety; too tired; not interested; lack of information about what to do; with lack of time and feeling I can’t do things correctly the equal fifth ranked barriers. These barriers were consistent with the barriers that were reported in the literature, particularly compared to studies of older women where safety was identified as important. In contrast to other studies, other responsibilities was not identified as a leading barrier for this group of women.
No statistically significant correlation could be demonstrated between the average total barriers score for the women and BMI, self-rating of physical activity level and number of serves of fruit and vegetables consumed each day. This result may have been due to the homogenous sample and insufficient sample size limiting power to detect a significant difference.

There was no statistically significant relationship between the average total barriers score for the women and socio-demographic variables including age, marital status, country of birth, language other than English, education level, employment status, income and time since diabetes diagnosis. Once again, this result may have been due to the homogenous sample and insufficient sample size limiting power to detect a significant difference.

6.2.2 PERCEIVED BARRIERS OF WOMEN PARTICIPATING IN A LIFESTYLE INTERVENTION TO MODIFY RISK FACTORS

In comparing the average and median total barriers scores for women in the intervention or usual care group in the ‘Reducing Chronic Disease among Adult Australian Women’ project, women in intervention group had a descriptively higher average total barriers score but this was not a statistically significant difference. There was no significant difference in the barriers items scores between the intervention and usual care group.

6.2.3 NURSES’ PERCEPTION OF THE BARRIERS FOR MIDLIFE AND OLDER WOMEN

Nurses in the study had an average total barriers score of 44.48 which was much higher than all other average scores reported in the literature. However, other studies have used the BHADP scale to measure self-perceptions rather than the perceptions about others. The leading five barriers that nurses perceived were an
issue for women with a chronic disease were: *lack of time* and *interferes with other responsibilities* the leading barriers; *embarrassment about appearance*; *lack of money*; *too tired* and *lack of support from family and friends*. These barriers were also consistent with barriers identified in the literature, particularly studies of midlife or younger women where lack of time and family responsibilities were commonly reported.

There was no statistically significant relationship between the average total barriers scores and nursing position, service area or level of experience. There was also no relationship between the nurses’ socio-demographic variables of age, country of birth, language other than English, education level, employment status and income, and the level of perceived barriers to health activities. This lack of significant relationship may have been due to the homogenous sample of nurses.

### 6.2.4 DIFFERING PERCEPTIONS OF WOMEN AND NURSES

When comparing the results of women and nurses in the study there were significant differences in the self-perceptions of the women and the perception of nurses about the barriers for women. There was a statistically significant difference in the median total barriers score between the groups and also a significant difference in the responses to the individual barriers items in fifteen out of the eighteen items. There was also a difference in the leading ranked barriers that women and nurses reported where the women were most concerned about safety and fatigue, in contrast to the nurses where they perceived lack of time and other responsibilities were the leading barriers for women with a chronic disease.

There are a number of possible explanations for this difference in the level of perceived barriers between the women and the nurses, one reason being the
difference in combined socio-demographic characteristics such as age, education level, employment and income levels. However, age alone was not a significant predictor of the level of perceived barriers in the combined sample of women and nurses.

Another possible reason is the greater knowledge and awareness by nurses of the barriers that woman with chronic disease experience, with nurses having good knowledge of lifestyle risk factors and often in roles that involve delivering health education programs. Nurses may also have witnessed the difficulty for individuals with a chronic disease such as diabetes, in changing behaviour to lead a healthier lifestyle. The difference in perceptions of women and nurses in the level and type of perceived barriers is an important finding of this study.

6.3 IMPLICATIONS OF THE STUDY

6.3.1 IMPLICATIONS FOR CLINICAL PRACTICE

This study of the perceptions of women and nurses about the barriers to health promotion activities has a number of potential clinical implications. In particular, the difference in perceptions between women and nurses could potentially influence communication and the therapeutic relationship. If a nurse perceives that the barriers for a woman are very high this could possibly lead to lower outcome expectations which could influence the quality of risk assessment and counselling that is provided by the nurse.

At present, the focus of type 2 diabetes management is on clinical management of the disease, prevention of complications and risk factor modification including smoking, nutrition, alcohol and physical activity where there is an emphasis on the provision of individualised education and goal setting. Less explicit in current
management guidelines is the concept that barriers to action need to be identified and addressed in conjunction with other strategies, with goal setting focused not only on changing behaviour but also on reducing barriers to action. An example of this would be when recommending regular physical activity such as walking to an older woman there may be a barrier such as concern about safety, and goal setting may need to include strategies to overcome that barrier.

6.3.2 IMPLICATIONS FOR POLICY DEVELOPMENT

Policies and strategies for chronic disease prevention and management continue to be a priority at an international, national and local level given the mortality, burden of disease and social and financial costs of diseases such as type 2 diabetes and cardiovascular disease. Policies regarding health promotion and lifestyle education to target modifiable risk factors of smoking, nutrition, physical activity and overweight and obesity are an important part of chronic disease prevention and management.

There is substantial evidence from the published literature that perceived barriers are an important predictor of health behaviour change, yet the emphasis in current policy and guidelines is on lifestyle education and goal setting with little attention to the identification and management of barriers to action. This study would suggest that there may need to be a greater emphasis on the assessment and management of perceived barriers as an important component of health promotion policies and programs.

6.3.3 IMPLICATIONS FOR FUTURE RESEARCH

Despite evidence that ‘barriers’ are an important factor and determinant of health behaviour change, there has been very little research to date within the
Australian context about the barriers that women with chronic disease experience. This study provides a starting point, but more work is needed to provide further evidence about the extent to which perceived barriers are an effective predictor of health behaviour change in people with other chronic diseases such as cardiovascular disease and in other high risk groups in the Australian context.

Future research could also be undertaken to develop and test a simplified barriers risk assessment tool for application in clinical and health promotion environment. A risk assessment tool could potentially be incorporated into health education and lifestyle risk factor programs in a variety of clinical contexts such as type 2 diabetes management, cardiac rehabilitation, smoking reduction and weight loss programs.

6.4 STUDY LIMITATIONS

This study has a number of limitations that need to be mentioned. The first is that of sample size, particularly Phase 1 of the study where data were collected from only 22 women. There were some issues with the recruitment of women into the ‘Reducing Chronic Disease among Adult Australian Women’ project, which impacted on the number of women who completed the Time 3 Questionnaire which included the BHADP scale for this study. One of the reasons that recruitment was slow was that the H1N1 influenza outbreak in Southeast Queensland in winter of 2009 meant that many Community Health clinics including diabetes clinics, ceased to operate for some months. Women who could potentially have been recruited were not, and the Time 3 questionnaires that would have expected to be completed in the first half of 2010 did not eventuate. In retrospect, it may have been better to include the BHADP scale in the Time 2 questionnaire. There were time constraints on this
study which meant that data collection had to cease at the end of July 2010, unfortunately only twenty-two women had completed the Time 3 questionnaire between August 2009 and August 2010. The consequences of this were that there was insufficient sample size to undertake multiple linear regression modelling which required a minimum sample size of eighty-two. The small sample size also affected the power of the other statistical tests to detect significant differences or association lifestyle and demographic variables and barriers to action.

In retrospect, there were also some apparent limitations with the BHADP scale, which although validated in previous research, when it came to analysis of the results in this study it was not very clear from the literature how to analyse the eighteen barriers items. The BHADP instrument uses a forced choice Likert-type scale for responses, which after further reading and reflection may be a limitation to how sensitive the measurement scale was. There is evidence that Likert scales should have five to seven response categories to be most reliable (Allen & Christopher, 2007).

Finally, data were collected by self-report questionnaire and both women and nurses volunteered to participate in the study. These factors may have caused response bias and selection bias, limiting the extent to which these results can be generalised to the wider population of women with type 2 diabetes and nurses.

6.5 CONCLUSION

Despite limitations, this study contributes to developing some understanding of the perceptions of midlife and older women with a chronic disease and also the perception of nurses, about the barriers to action that women face. It provides preliminary evidence that the perceptions of women and nurses may differ and
suggests that these differences may have significant implications in the clinical context.

Findings of this Masters study will be disseminated by presentation to Primary and Community Health Service clinicians, some of whom will have participated in the study. There is also an aim to publish in peer review journals and present results at relevant conferences.

Chronic disease and type 2 diabetes are major health problems not only for individuals but also for communities and governments at a state, national and international level. Continuing work is needed at a strategic, policy and health service level to promote health of individuals and communities and reduce the burden of chronic disease. Research is an essential component of this approach, providing evidence and driving innovation in practice to promote and improve health and well-being.


**APPENDIX A: MATRIX TABLE - BARRIERS**

*Matrix Table - Barriers*

Search terms: barriers, health behaviour, illness, health promotion, exercise, physical activity, nutrition, smoking, women

<table>
<thead>
<tr>
<th>Author/date</th>
<th>Research Question</th>
<th>Sample</th>
<th>Methods</th>
<th>Main Findings</th>
<th>Comments</th>
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<tbody>
<tr>
<td>Sechrist et al</td>
<td>Development and evaluation of Exercise Benefits/Barriers Scale</td>
<td>Convenience</td>
<td>Cross sectional</td>
<td>Crohnbach’s alpha reliability coefficients: .952 for total scale .953 for benefits scale .886 for barriers scale</td>
<td>Based on Health promotion model</td>
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<tr>
<td>(1987)</td>
<td></td>
<td>N=664 Adults Mean age 39 60% female “middle class” US</td>
<td>65 item instrument constructed Benefits and barriers to exercise (EBBS) 4 point Likert format</td>
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<tr>
<td>Becker et al</td>
<td>Development of a scale to measure barriers to health promotion activities among persons with disabilities</td>
<td>Convenience – disabled adults N=135 Adults Mean age 36 44% female Comparison group 144 non-disabled adults US</td>
<td>Cross sectional</td>
<td>Crohnbach’s alpha of .82 T-test analysis significant difference in scores disabled sample and comparison group</td>
<td>Built on previous work of Sechrist and Pender.</td>
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<tr>
<td>(1991)</td>
<td></td>
<td></td>
<td>16 item scale constructed Barriers to health promotion 4 point Likert format</td>
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<td>Mosca et al</td>
<td>Gender differences in barriers to lifestyle change for cardiovascular disease prevention</td>
<td>Convenience</td>
<td>Cross sectional survey - priorities and barriers to lifestyle change</td>
<td>Significant gender differences in barriers to lifestyle change. Self-esteem, stress and time rated as most important barriers to women. Women also rated money,</td>
<td></td>
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<tr>
<td>(1998)</td>
<td></td>
<td>N =293 Adults attending preventive cardiology clinic</td>
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<tr>
<td>Author/date</td>
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<td>Lee, C (1993)</td>
<td>Exercise patterns in older Australian women</td>
<td>Random sample four urban and two rural electoral districts. N =286 Adult women 50-64 Mean age 56 Australia</td>
<td>Cross sectional Telephone survey</td>
<td>Low to moderate levels of activity. Few demographic predictors of exercise. Scale used had low reliability for barriers.</td>
<td>Old study No clear conclusions.</td>
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<td>Ali et al (1994)</td>
<td>Barriers to osteoporosis prevention in peri menopausal and elderly women</td>
<td>Convenience – 7 congregate meal centres Women 52-99 Mean age 74 N =100 Urban, US Low income</td>
<td>Cross sectional Questionnaire Questionnaire Benefits/barriers scale – calcium intake, exercise, hormone usage</td>
<td>Low calcium intake</td>
<td>Barriers not well reported in article</td>
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<td>Jones &amp; Nies</td>
<td>Relationship of perceived</td>
<td>Convenience – urban</td>
<td>Cross sectional</td>
<td>Significant relationship between</td>
<td>Modified Barriers scale</td>
</tr>
<tr>
<td>Author/date</td>
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<td>Methods</td>
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<td>(1996)</td>
<td>benefits and barriers to exercise in older African American women</td>
<td>senior citizens centres Women 60-90 Mean age 72 N =30 Southern US</td>
<td>Questionnaire Exercise scale HPLP Perceptions of importance – Cantril ladder EBBS One open ended question</td>
<td>current level of exercise and perceived benefits and barriers. Women who perceived exercise beneficial and barriers few, appear to exercise more.</td>
<td>to add in safety barrier Homogenous sample, low literacy level Self reporting</td>
</tr>
<tr>
<td>Nies et al</td>
<td>Facilitators, barriers and strategies for exercise in European American women</td>
<td>N =16 Healthy women Employed and unemployed Age 35-50 US</td>
<td>Qualitative focus groups</td>
<td>Facilitators of physical activity – five major themes – social support, accommodating schedule, self-improvement, environmental support, individual factors. Barriers to physical activity – five major themes – time constraints, unaccommodating schedule, consequences from exercise, environment and individual factors.</td>
<td></td>
</tr>
<tr>
<td>Wang</td>
<td>Predictors of health promotion lifestyle of 3 ethnic groups of elderly</td>
<td>Taiwan N = 391 complete data 65 – 91</td>
<td>Pender’s HPM</td>
<td>Main barrier to exercise 2 groups – inconvenience to mobilise to recreation area, 1 group - exercise</td>
<td></td>
</tr>
<tr>
<td>Author/date</td>
<td>Research Question</td>
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<td>Methods</td>
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<tr>
<td>Heesch (2000)</td>
<td>Differences in perceived barriers to exercise and stage of exercise adoption in older women of different racial/ethnic groups</td>
<td>Random selection of minority women by zip code from US census Adult women $N = 2,912$ Mean age 54-57 US</td>
<td>Cross sectional Telephone questionnaire Stages of adoption scale Barriers - 10 item San Diego health and Exercise Survey</td>
<td>Lack of time most common barrier. Too tired and lack of energy were common to half the sample. Some differences between groups. Acknowledged limitations of instrument.</td>
<td>Methodological issues with survey instrument Difficult to interpret clear conclusions from article</td>
</tr>
<tr>
<td>Rimmer et al (2000)</td>
<td>Barriers to exercise in African American women with physical disabilities</td>
<td>Convenience Women- severe disability $N = 53$ Age 18-64 ? Mean age 65% 50-64 US</td>
<td>Cross sectional Telephone interview Scale developed-Barriers to Physical Exercise and Disability (B-PED)</td>
<td>82% liked to exercise 1-cost of joining fitness centre 2-lack of energy 3-lack of transportation</td>
<td>Arthritis, stroke, MS, diabetes/heart disease, COPD, other Homogenous sample, small</td>
</tr>
<tr>
<td>Eyler et al (2002)</td>
<td>Environmental, policy and cultural barriers to physical activity in women</td>
<td>White, African American, Latina and American Indian women Age 20 – 50yrs $N = 305$</td>
<td>Multi-site focus groups – 42 in total</td>
<td>Family priorities were the main barrier to physical activity in all groups. Cultural barriers varied among the groups, acculturation issues, lack of</td>
<td></td>
</tr>
</tbody>
</table>

Rural women
<table>
<thead>
<tr>
<th>Author/date</th>
<th>Research Question</th>
<th>Sample</th>
<th>Methods</th>
<th>Main Findings</th>
<th>Comments</th>
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</thead>
<tbody>
<tr>
<td>Juarbe et al</td>
<td>Perceived benefits and barriers to physical activity among older Latina women</td>
<td>Purposive Latina women Age 40-79 Median age 55 N =143 Low income and education US</td>
<td>Qualitative design Interview: 2 open ended questions, benefits and barriers Physical activity questionnaire Self-identity tool</td>
<td>Content analysis Most frequently reported barriers: time, women’s role, personal health, internal factors, external factors. No difference in perceptions by socioeconomic or educational level, or acculturation. Health specific barriers more likely reported by women.</td>
<td>Well described study</td>
</tr>
<tr>
<td>Nies &amp; Kershaw</td>
<td>To develop a model of psychosocial and environmental influences on physical activity and health outcomes in sedentary women</td>
<td>Cross sectional Volunteers from community Sedentary women Age 30 – 60 Mean age 44 N =198 US</td>
<td>Evaluation of a structural equation model. Questionnaire followed by physiological assessment – 1 mile walk, BMI, percentage body fat</td>
<td>Overall, model showed a good fit. Self efficacy, age, race and income correlated with physical performance, relapse prevention, age related to physical activity. Performance inversely correlated with body size, physical activity directly related to perceived vigour.</td>
<td>Not so relevant to Barriers study</td>
</tr>
<tr>
<td>Wilcox et al</td>
<td>Perceptions of physical activity and personal barriers and enablers in African American women</td>
<td>Snowballing N=42 African American women 19-51 yrs US – South Carolina</td>
<td>Qualitative - 6 focus groups Brief demographic questionnaire and 6 questions physical activity</td>
<td>Majority of women did not meet national physical activity recommendations and were overweight. Strong negative views about sedentary women and positive views about active women. Belief that women can be fit and overweight and that the two not related. Barriers – health related issues, time,</td>
<td></td>
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<tr>
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<td>Methods</td>
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<tr>
<td>Wilcox et al (2003)</td>
<td>Psychosocial and environmental correlates of physical activity in rural and older African American and white women.</td>
<td>Convenience Various sites Women 50 yrs or older N =102 Mean age 70 – 71 Southern US</td>
<td>Cross sectional Questionnaire: Physical activity, self efficacy for PA, social support for PA, pros and cons of PA, depression &amp; stress, open ended questions about barriers</td>
<td>Content analysis of barriers: Health problems, lack of time, family responsibilities, work responsibilities, community obligations, too tired, lack of motivation.</td>
<td></td>
</tr>
<tr>
<td>Wilcox et al (2005)</td>
<td>Exercise in older African American and White women- perceptions, barriers, motivations</td>
<td>Convenience Women - sedentary AA n=16 White n=23 50 yrs or older Mean age 67.5 Southern US</td>
<td>Qual study – 6 focus groups</td>
<td>Barriers – participants most vocal about relative to other topics Personal barriers – health problems, too old, tired, confidence, boredom, self motivation &gt; for AA women. Social barriers – all groups, family and work higher priority than exercise Cultural barriers – exercise not discussed Environmental barriers – rural, lack of facilities</td>
<td></td>
</tr>
<tr>
<td>Crane (2003)</td>
<td>Exploring older women’s lifestyle changes after myocardial infarction</td>
<td>Women with diagnosis of MI – not participating in outpatient cardiac rehabilitation program N =15 66-88 yrs Mean age 74 Southern US</td>
<td>Mixed method. Questionnaire – demographic, health status, depression scale. In-depth interviews.</td>
<td>Most frequent facilitators to change – family/friend support, spiritual support, financial support. Barriers – cultural issues such as food preference, lack of family/friend support and financial barriers. Physical activity barriers – fear of falling, weather, safety, co-morbidites and transportation.</td>
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<tr>
<td>Moore et al (2003)</td>
<td>Predictors of women’s exercise maintenance after cardiac rehabilitation</td>
<td>Convenience Women post MI or CABG, post Phase 2 CR N =60 Mean age 65 US</td>
<td>Prospective, descriptive Chart review Exercise patterns – wristwatch heart monitor Questionnaire: Pain, motivation, mood, social support, self efficacy Health beliefs – EBBS scale</td>
<td>Predictors of exercise frequency were co morbidity and social support. Social support only predictor of exercise persistence. Benefits/barriers was only significant individual predictor or total amount of exercise.</td>
<td>Well written and described study. Good tables.</td>
</tr>
<tr>
<td>Tod (2003)</td>
<td>Barriers to smoking cessation in pregnancy</td>
<td>Convenience N =18, 11 only interviewed Pregnant women UK – Yorkshire</td>
<td>Qual Semi-structured interviews</td>
<td>Barriers – belief system about smoking cessation, influence of family and friends, interpretation of facts related to smoking, nature of smoking cessation service.</td>
<td>Very small sample - 11</td>
</tr>
<tr>
<td>Jilcott et al (2004)</td>
<td>Implementing the WISEWOMAN program – staff attitudes, beliefs and perceived barriers</td>
<td>Health educators, nurses, nutritionists delivering program Pretest n=99</td>
<td>Cross sectional survey</td>
<td>Counsellors sceptical about patient’s motivation to improve lifestyle. At follow up intervention counsellors reported higher self-efficacy for</td>
<td>Focuses on organisational barriers to counselling effectively.</td>
</tr>
<tr>
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<tr>
<td>Pierce (2005)</td>
<td>Health promotion behaviours of rural women with heart failure and diabetes</td>
<td>Convenience Older women with heart failure N=45 Age 65-98 Mean age 78 White US</td>
<td>Descriptive correlation Four instruments: Health Promoting Lifestyles Profile II BHADPS Personal Resource Questionnaire 85 Perceived health status question</td>
<td>Less cardiac symptoms more likely to perform health promotion behaviours. History of diabetes positively associated with HPB. Social support not significant in predicting variance in HPB.</td>
<td>Social support finding different to other studies.</td>
</tr>
<tr>
<td>Thanavaro (2005)</td>
<td>Barriers to coronary heart disease risk modification in women without prior history</td>
<td>US N = 120 Age 35 – 60 Mean age 49 94% white</td>
<td>Cross sectional descriptive Barriers scale – BAS Barriers scale</td>
<td>Women moderate barriers to CHD risk modification Leading barriers: family commitments, laziness, more encouragement to change lifestyle, lack of self-discipline to exercise, don't like to force myself</td>
<td>BAS – cardiac preventive behaviours scale</td>
</tr>
<tr>
<td>Kaewthummanuk u et al (2006)</td>
<td>Predictors of exercise participation in female hospital nurses</td>
<td>Convenience – university hospital Female RN’s N=970 Age 18-60</td>
<td>Cross sectional, correlation Questionnaire – back translation Personal factors</td>
<td>Perceived barriers to exercise and perceived social support statistically significant predictors of exercise participation. Self efficacy and education also</td>
<td>Very well described study.</td>
</tr>
<tr>
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</table>
| Osuji et al      | Barriers to physical activity among women in the rural Midwest                     | Sample obtained from database company  
*N* =2,510.  
*N* =1,877 women  
Mean age women 48  
2/3 healthy  
1/3 diabetes, heart disease or arthritis  
US | Cross sectional telephone survey – Physical activity BRFSS  
Personal and environmental barriers | 65% women did not meet recommendations for moderate physical activity  
Ten most frequent barriers reported: too tired, lack of time, bad weather, no energy, no motivation, don’t like to exercise, traffic, exercising at work, no one to exercise with, fear of injury.  
Dos-response relationship between number of barriers and not meeting activity recommendations. Differences concerning barriers and annual income | * Very relevant study to my research                                                                                           |
| Shin             | Exercise self-efficacy, benefits and barriers among Korean women with osteoporosis and osteoarthritis | Convenience  
Women over 40 with osteoporosis or osteoarthritis  
*N* =154  
Mean age 61-67  
Korea | Cross sectional Questionnaire: Exercise Self-Efficacy Scale  
EBBS | Variable of self-efficacy explained majority of variance in commitment to exercise.  
Barriers only significant in osteoarthritis group – anticipated pain. | Barriers not well described.                                                                                      |
| Ussher et al     | Barriers and benefits of attending a stop smoking course during pregnancy           | *N* =443  
Pregnant women  
87% North America or UK | Internet based questionnaire posted on smoking cessation website | Most endorsed barriers: fear of disappointment if failed, not seeking help.  
Most endorsed benefits: advice about cravings, praise and | Online questionnaire not validated in a pilot                                                                    |
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<tr>
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<tbody>
<tr>
<td>Timmerman (2007)</td>
<td>Addressing barriers to health promotion in underserved women – healthy eating</td>
<td>N/A</td>
<td>Literature review</td>
<td>Barriers represent a complex mix of factors. Comprehensive plans for overcoming barriers needs to be “integral component” of health promotion interventions.</td>
<td>Lit review</td>
</tr>
<tr>
<td>Gatewood (2008)</td>
<td>Perceived barriers to community based health promotion program participation</td>
<td>'WISEWOMAN' project $N = 161$ Women</td>
<td>3 levels of program participation Secondary analysis of data</td>
<td>Full program participants less barriers to attendance than other 2 groups No significant diff in groups on barriers to health behaviour change Program day and time and time to attend key barriers</td>
<td></td>
</tr>
<tr>
<td>Perry (2008)</td>
<td>Rural women walking for health – barriers and motivators</td>
<td>Convenience Women 21-65 Mean age 46 Rural</td>
<td>Randomised pilot Heart to Heart 12 week exercise intervention Qualitative phase</td>
<td>Barriers described: Balancing family and self, chronic illness in the way of routine, illness or injury breaks routine</td>
<td>Risk factors for CAD</td>
</tr>
<tr>
<td>Author/date</td>
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<tr>
<td>Anderson, R (2008)</td>
<td>Exercise and dietary behaviour change in a sample of midlife Australian women</td>
<td>Women 51-66 yrs N =564 Rural and urban Queensland</td>
<td>Cross sectional postal survey Semi-structured interviews n=29</td>
<td>Main facilitators of behaviour change – positive role models, more time due to retirement, support from significant others. Main obstacles to making change were work, care-giving, illness and injury.</td>
<td></td>
</tr>
<tr>
<td>Ansari &amp; Lovell (2009)</td>
<td>Barriers to exercise in younger and older non-exercising adult women</td>
<td>Random – shopping centre Women, well, not exercising N =100 Younger women N =50 20-27 Mean 23 Older women N =50 28-35 Mean 32 UK</td>
<td>Cross sectional Questionnaire – Demographics EBBS</td>
<td>Older women significantly higher perceived barriers than younger women. Motherhood and family responsibilities affected exercise participation the most.</td>
<td></td>
</tr>
<tr>
<td>Harley et al (2009)</td>
<td>Influence of social and cultural contexts on participation in physical activity – African American women</td>
<td>Criterion sampling African American female 25-45 N =15 interview N =9 focus groups</td>
<td>Grounded theory – in depth interviews and focus groups</td>
<td>Lack of PA exposure, PA norms and beliefs, hair maintenance</td>
<td>Possible selection bias</td>
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<tr>
<td><strong>Author/date</strong></td>
<td><strong>Research Question</strong></td>
<td><strong>Sample</strong></td>
<td><strong>Methods</strong></td>
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<tr>
<td>Mochari-Greenberger 2010</td>
<td>Knowledge, preventive action, and barriers to cardiovascular disease prevention by race and ethnicity in women</td>
<td>US N = 1008 women White/Black/Hispanic</td>
<td>Cross sectional survey</td>
<td>Difference in barriers between groups Black women – God, lack of money for health insurance, changes too complicated Hispanic women – fearful of change</td>
<td></td>
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</tbody>
</table>
APPENDIX B: FLOWCHART FOR ‘REDUCING CHRONIC DISEASE AMONG ADULT AUSTRALIAN WOMEN’ STUDY
APPENDIX C: TIME 1 QUESTIONNAIRE ‘REDUCING CHRONIC DISEASE AMONG ADULT AUSTRALIAN WOMEN’ STUDY – RELEVANT QUESTIONS FOR MASTER’S STUDY
T1 QUESTIONNAIRE

ID: ____
On the following pages, we ask you a lot of questions about many aspects of your life. To us it is very important that we learn about you as a person, as well as about your physical and emotional health.

Please answer each question carefully and, when you finish, mail back this questionnaire right away in the reply paid envelope.

*Please answer in the space provided, circle the number or mark the box next to the answer that is correct for you.*

**Firstly, some questions about yourself:**

1. What is the postcode of the town/ suburb that you live in? _______

2. What is your age? _______ (years)

3. What is your marital status?
   - [ ] Married
   - [ ] De facto
   - [ ] Separated
   - [ ] Divorced
   - [ ] Widowed
   - [ ] Single/ Never married

4. Which country were you born in?
   - [ ] Australia
   - [ ] Other _______________

5. Do you identify yourself as an Aboriginal, Torres Strait or South Sea Islander?
   - [ ] Yes
   - [ ] No

6. In your home do you usually speak a language other than English?
   - [ ] Yes
   - [ ] No

7. Which of the following best describes the highest qualification you have obtained?
   - [ ] No schooling
   - [ ] Completed primary school
   - [ ] Completed junior school
   - [ ] Completed senior school
   - [ ] Trade, technical certificate or diploma
University or college degrees

8. Which of the following best describes your current employment status?
   - Employed full time
   - Employed part-time
   - Home duties
   - Unemployed
   - Full-time student
   - Part-time student
   - Retired
   - Permanently ill/ unable to work

9. Which of the following categories does your total gross annual household income from all sources fall into? (This means the total income from all members of your household before tax is deducted).
   - Less than $10,000
   - $10,001 - $20,000
   - $20,001 - $40,000
   - $40,001 - $60,000
   - $60,001 - $80,000
   - Over $80,000
   - Don’t know

10. At which clinic did you hear about this research and receive this questionnaire?
    - Diabetes clinic at Chermside
    - Diabetes clinic at Redcliffe
    - Diabetes clinic at Pine Rivers
    - Diabetes clinic at Caboolture
    - Cardiac Rehabilitation clinic at Chermside
    - Other (please specify): ______________

Now, some questions about your general health:

11. What is your weight? ..............kg  OR  .......Stones.....lbs

12. What is your height? ..............cm  OR  ............feet..........inches
APPENDIX D: TIME 3 QUESTIONNAIRE ‘REDUCING CHRONIC DISEASE AMONG ADULT AUSTRALIAN WOMEN’ STUDY – RELEVANT SECTIONS INCLUDING BHADP SCALE
T3 QUESTIONNAIRE   ID: ______
45. **General daily activity** includes activities such as housework, caring for children, shopping, gardening or activity at work. It does not include exercising.

How do you describe your current general daily activity level?

- [ ] Very active (involves strenuous labour)
- [ ] Moderately active
- [ ] Mildly active (some walking/stair climbing)
- [ ] Sedentary (mostly sitting)

46. During the past month, how many times did you exercise for at least 15 minutes at a time? (Exercise includes activities such as calisthenics, jogging, racquet sports, team sports, dance classes, brisk walking, lifting weights, yoga, Tai Chi etc)

- [ ] Daily
- [ ] 5-6 times a week
- [ ] 3-4 times a week
- [ ] 1-2 times a week
- [ ] None

47. Overall, how do you rate your current level of physical activity (general daily activity plus exercise)? Rate from (00) not at all active to (10) extremely active.

00 01 02 03 04 05 06 07 08 09 10
NOT AT ALL ACTIVE EXTREMELY ACTIVE

---

**The next questions are about your diet:**

48. Do you eat some dairy products on a **daily basis**?

- [ ] Yes
- [ ] No → skip to question 50

49. How many total grams of milk, yoghurt and/or cheese do you typically eat **per day** (1 cup = 250 grams)? __________ grams/ day
50. How many milligrams of calcium supplement do you usually take daily? (Include amount from multiple vitamin and mineral supplement, too) ________ calcium/day

Do you eat fruit and vegetables on a daily basis?  
- Yes  
- No → skip to question 53

51. How many servings (1 serving equals 1 piece of fruit or half a cup of chopped vegetables) do you typically eat per day ________ servings/day

52. Do you currently consume any beverage or substances containing caffeine either regularly or occasionally?  
- Yes  
- No → skip to question 55

53. How many drinks of caffeine-containing beverages did you have during the past week? (8-12 oz = 1 drink) ________ drinks/week

The next questions are about your use of alcohol and smoking:

54. During the past week, on how many days did you drink any alcohol/alcohol-containing beverages such as beer, wine or liquor? (CIRCLE ONE)  
- 0  
- 1  
- 2  
- 3  
- 4  
- 5  
- 6  
- 7  
- Days

55. During the past week, on the days that you drank alcoholic beverages, how many standard size drinks did you have per day, on the average? (1 drink = 12 oz beer, 5 oz wine, or 2 oz spirits) ________ drinks/day

57. Is the amount you drank last week more, about the same or less that you would usually drink?  
- More than usual  
- About the same as usual  
- Less than usual

58. Do you currently smoke cigarettes?  
- No, never smoked → skip to question 60
No, smoked regularly (at least once a day) in the past → skip to question 60
☐ Yes, **regular (at least once a day)** smoker
☐ Yes, **casual (not every day)** smoker

59. Approximately how many cigarettes do you usually smoke per week? (one package contains 20) __________ cigarettes/week

**The next questions are about barriers to staying healthy:**

People sometimes have problems doing what they want to do to stay healthy. Please circle the number that best indicates how much each of these problems keeps you from taking care of your health.

1 = Never  2 = Sometimes  3 = Often  4 = Routinely

1. Lack of convenient facilities .......................................................... 1 2 3 4
2. Too tired ...................................................................................... 1 2 3 4
3. Lack of transportation ................................................................. 1 2 3 4
4. Feeling what I do doesn't help .................................................... 1 2 3 4
5. Lack of money ............................................................................. 1 2 3 4
6. Impairment .................................................................................. 1 2 3 4
7. No one to help me ....................................................................... 1 2 3 4
8. Not interested .............................................................................. 1 2 3 4
9. Lack of information about what to do ....................................... 1 2 3 4
10. Embarrassment about my appearance ..................................... 1 2 3 4
11. Concern about safety ................................................................. 1 2 3 4
12. Lack of support from family/friends ......................................... 1 2 3 4
13. Interferes with other responsibilities ........................................ 1 2 3 4
14. Lack of time ................................................................................ 1 2 3 4
15. Feeling I can't do things correctly .............................................. 1 2 3 4
16. Difficulty with communication .................................................. 1 2 3 4
17. Bad weather ............................................................................. 1 2 3 4
18. Lack of help from health care professionals ......................... 1 2 3 4

Other reasons:
______________________________________________________________
______________________________________________________________
APPENDIX E: PERMISSION TO USE BHADP SCALE AND PERMISSION TO MODIFY SCALE

AMANDA MCGUIRE

From: Amanda McGuire [am.mcguire@student.qut.edu.au]
Sent: Thursday, 27 August 2009 12:02 PM
To: AMANDA MCGUIRE
Subject: FW: BHADP scale
Attachments: BARRIERS SCALE.doc, ATT00007.htm

From: Heather Becker [mailto:heatherbecker@mail.utexas.edu]
Sent: Thursday, 6 August 2009 7:19 AM
To: Amanda McGuire
Subject: Re: BHADP scale

You certainly have my permission to use the BHADP in your research. I'm attaching a copy of the scale for your convenience. Simply sum across the ratings to get a summary score; there are no reverse scored items. Good luck with your research.
Hi, Amanda: Your changes look fine to me. In the directions, you may want to tell the respondent to think about women with a chronic health condition (not women in general). Good luck with your research.

On Sep 15, 2009, at 11:28 PM, AMANDA MCGUIRE wrote:

Dear Dr Becker

I contacted you some time ago about the use of your Barriers Scale -- thank you very much for sending me a copy and giving me permission to use.

In my study I would also like to explore how nurses perceive the barriers for women with a chronic disease. I was wondering whether you would give permission for me to use a slightly modified version of the Scale, which would be administered to nurses.

I have attached the Scale with minor edits in red, for your comment.

Regards
Amanda

Amanda McGuire
Research Masters Student
07 3138 8212/ am.mcguire@student.qut.edu.au

School of Nursing & Midwifery
Queensland University of Technology
Victoria Park Road / Kelvin Grove / 4059
APPENDIX F: HREC APPROVALS FOR ‘REDUCING CHRONIC DISEASE AMONG ADULT AUSTRALIAN WOMEN’ STUDY

Dear Aspro Debra Anderson

A UHREC should clearly communicate its decisions about a research proposal to the researcher and the final decision to approve or reject a proposal should be communicated to the researcher in writing. This Approval Certificate serves as your written notice that the proposal has met the requirements of the National Statement on Research Involving Human Participation and has been approved on that basis. You are therefore authorized to commence activities as outlined in your proposal application, subject to any specific and standard conditions detailed in this document.

Within this Approval Certificate are:

* Project Details
* Participant Details
* Conditions of Approval (Specific and Standard)

Researchers should report to the UHREC, via the Research Ethics Officer, events that might affect continued ethical acceptability of the project, including, but not limited to:

(a) serious or unexpected adverse effects on participants; and
(b) proposed significant changes in the conduct, the participant profile or the risks of the proposed research.

Further information regarding your ongoing obligations regarding human based research can be found via the Research Ethics website http://www.research.qut.edu.au/ethics/ or by contacting the Research Ethics Coordinator on 07 3138 2340 or ethicscontact@qut.edu.au

If any details within this Approval Certificate are incorrect please advise Research Ethics within 10 days of receipt of this certificate.

[Signature]
Research Ethics Officer
(on behalf of the Chairperson, UHREC)

Date 16/9/08

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**Project Details**

Category of Approval: Full Application

Approved Until: 31/12/2009

Approval Number: 2898H

Project Title: Reducing chronic disease among adult Australian women

Project Chief Investigator: Aspro Debra Anderson

Other Project Staff/Students:

Prof Patsy Yeates, Dr Jacqueline Jones (CI), Dr Nuala Byrne, Dr Jenniefer Barr, Mrs Cheryl Byrne, Ms Qunyan Xu

Experiment Summary:

Assess the long-term effectiveness of a health promotion program in helping women to prevent cardiovascular disease, breast cancer, osteoporosis and menopausal symptoms.

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**Participant Details**

Participants:

Approximately 352

Location/s of the Work:

Prince Charles Chelmsford Community Clinic
University Human Research Ethics Committee
HUMAN ETHICS APPROVAL CERTIFICATE
NHMRC Registered Committee Number EC00171

Conditions of Approval

Specific Conditions of Approval:
No special conditions placed on approval by the UHREC. Standard conditions apply.

Standard Conditions of Approval:
The University's standard conditions of approval require the research team to:

1. Conduct the project in accordance with University policy, NHMRC / AVCC guidelines and regulations, and the provisions of any relevant State / Territory or Commonwealth regulations or legislation;

2. Respond to the requests and instructions of the University Human Research Ethics Committee (UHREC);

3. Advise the Research Ethics Officer immediately if any complaints are made, or expressions of concern are raised, in relation to the project;

4. Sustain or modify the project if the risks to participants are found to be disproportionate to the benefits, and immediately advise the Research Ethics Officer of this action;

5. Stop any involvement of any participant if continuation of the research may be harmful to that person, and immediately advise the Research Ethics Officer of this action;

6. Advise the Research Ethics Officer of any unforeseen development or events that might affect the continued ethical acceptability of the project;

7. Report on the progress of the approved project at least annually, or at intervals determined by the Committee;

8. (Where the research is publicly or privately funded) publish the results of the project in such a way to permit scrutiny and contribute to public knowledge, and

9. Ensure that the results of the research are made available to the participants.

Modifying your Ethical Clearance:
The University has an expedited mechanism for the approval of minor modifications to an ethical clearance (this includes changes to the research team, subject pool, testing instruments, etc.). In practice this mechanism enables researchers to conduct a number of projects under the same ethical clearance.

Any proposed modification to the project or variation to the ethical clearance must be reported immediately to the Committee (via the Research Ethics Officer), and cannot be implemented until the Chief Investigator has been notified of the Committee's approval for the change / variation.

Requests for changes / variations should be made in writing to the Research Ethics Officer. Minor changes (changes to the subject pool, the use of an additional instrument, etc) will be assessed on a case by case basis and interim approval may be granted subject to ratification at the subsequent meeting of the Committee.

It generally takes 7 - 14 days to process and notify the Chief Investigator of the outcome of a request for a minor change / variation.

Major changes to your project must also be made in writing and will be considered by the UHREC. Depending upon the nature of your request, you may be asked to submit a new application form for your project.

Audits:
All active ethical clearances are subject to random audit by the UHREC, which will include the review of the signed consent forms for participants, whether any modifications / variations to the project have been approved, and the data storage arrangements.

End of Document

RM Report No. E801 Version 2
Dear Prof Anderson,

Re: EC2673: Reducing Chronic Disease among Adult Australian Women

D. Anderson, P. Yates, P. Fulbrook, N. Byrne, J. Barr, D. Otte, M. Massey, K. Constantinou

I am pleased to advise that The Prince Charles Hospital Human Research Ethics Committee reviewed the minor amendments submitted and upon recommendation, the District Manager has granted approval for the following:

- Participant Information Sheet and Consent Form Version 3 dated 14 Oct 08
- Change to completion date
- Data collection at additional sites
- Collection of follow up data at 6 months
- Addition of a standardized questionnaire to the survey
- Staff changes

This information will be tabled at the next Human Research and Ethics Committee meeting 13 November 2008 for noting.

Patient information collected and distributed as part of the previously approved research has been approved in accordance with Section 62 of the Health Services Act and the recent amendments to the Public Health Act Sections 282 and 284. Any change to the collection and or distribution will need to be reviewed by the HRBC.

On behalf of the Human Research Ethics Committee, I would like to wish you every success with your research endeavour.

Yours truly,

Philip Lee, MBA (UQ); BAppSc (QUT); FRCNA; AFAIM
Executive Officer - Research
Email: Leep@health.qld.gov.au
7 November 2008
16 October 2008

Ms Cathryne Lang
School of Nursing
Queensland University of Technology
Victoria Park Road
KELVIN GROVE QLD 4059

Dear Ms Lang,

Re: Redcliffe approval no. 08Oct10
A NOVEL METHOD FOR DELIVERING A NON-PHARMACOLOGICAL INTERVENTION FOR MANAGING RISK FACTORS IN WOMEN WITH A CHRONIC DISEASE.

We wish to advise you that the above submission was given ethical clearance on 8th October 2008, at the meeting of the Redcliffe-Caboolture Ethics Committee.

The submission has now been forwarded for presentation at the relevant site’s Management Committee Meeting, for further discussion and assessment of relevant impact, if any, of this study on the District. Final approval will be granted by this Committee. This is a standard procedure for all projects involving direct contact with Queensland Health sites operating within the Northside Health Service District.

The Ethics Department will be notified of the project’s final approval, and in turn, we will notify you of the outcome.

The next Management Committee Meeting is scheduled for 5th November 2008.

Please do not hesitate to call on the above number, if you have any queries concerning this process.

Kind Regards,

C. R. Bancroft

Marce Durous/Megan Ratcliffe/Christina Benfell
HREC COORDINATORS
REDCLIFFE-CABOOLTURE ETHICS COMMITTEE

Office
Ethics Hub
Unit 1, Ground Level
Redcliffe Hospital
Anzac Avenue
REDCLIFFE Q 4020

Postal
HREC Coordinators
Redcliffe-Caboolture
Ethics Committee
Locked Mail Bag No 1
Redcliffe Hospital
REDCLIFFE Q 4020

Phone
Direct Line 07 38375251
Dept Phone 07 38377199

Fax
Office 07 3833 7530
Subject: Invitation to participate in research

Dear colleague

My name is Amanda McGuire from the School of Nursing & Midwifery at QUT and I am undertaking a Master of Health Science (Research) jointly supported by Metro North Health Service District and QUT. I am conducting a research project to explore nurses’ perceptions of the factors that prevent older women with a chronic disease participating in health promotion activities.

If you would like to help me with this study, your participation would involve the completion of an anonymous online questionnaire which should only take 10 minutes to complete.

Details on the study and how to participate can be found in the following Participate in Research information.

Many thanks for your consideration of this request.

Amanda McGuire
Research Masters Student

School of Nursing & Midwifery | Institute of Health and Biomedical Innovation
Queensland University of Technology | Victoria Park Rd KELVIN GROVE QLD 4059
☎️ (07) 3138 8211 | am.mcguire@student.qut.edu.au
Factors that influence health promotion activities in older Australian women with a chronic disease.

Research Team Contacts

<table>
<thead>
<tr>
<th>Amanda McGuire</th>
<th>Professor Debra Anderson</th>
<th>Professor Paul Fulbrook</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Masters Student</td>
<td>School of Nursing &amp; Midwifery</td>
<td>Nursing Director Research &amp; Practice Development</td>
</tr>
<tr>
<td>School of Nursing &amp; Midwifery</td>
<td>School of Nursing &amp; Midwifery</td>
<td>The Prince Charles Hospital</td>
</tr>
<tr>
<td>QUT</td>
<td>QUT</td>
<td>The Prince Charles Hospital</td>
</tr>
<tr>
<td>07 3138 8211 (Tue – Thur)</td>
<td>07 3138 3881</td>
<td>07 3139 4087</td>
</tr>
<tr>
<td>Email: <a href="mailto:am.mcguire@student.qut.edu.au">am.mcguire@student.qut.edu.au</a></td>
<td>Email: <a href="mailto:dj.anderson@qut.edu.au">dj.anderson@qut.edu.au</a></td>
<td>Email: <a href="mailto:paul.fulbrook@acu.edu.au">paul.fulbrook@acu.edu.au</a></td>
</tr>
</tbody>
</table>

What is the purpose of the research?
The purpose of this project is to explore nurses’ perceptions of the factors that influence the uptake of positive health behaviours in older women with a chronic disease.

Who is funding this research?
This project is being undertaken as part of Masters project funded by an Australian Research Council linkage grant project between QUT and Metro North Health Service District. The funding body will not have access to the data obtained during the project.

Are you looking for people like me?
The research team is looking for Registered Nurses currently working in Primary and Community Health in the Metro North Health Service District of Queensland Health.

What will you ask me to do?
Your participation will involve completing a short online questionnaire that will take approximately 10 minutes. There will be some demographic questions and a question about the types of barriers to health promotion activities for older women with a chronic disease.

Are there any risks for me in taking part?
The research team does not believe there are any risks for you if you choose to participate in this research.

Are there any benefits for me in taking part?
The project will potentially benefit nurses and women with chronic disease, by enhancing knowledge and understanding of factors that assist and prevent women from participating in healthy lifestyle activities.

I am interested – what should I do next?
If you would like to participate in this study, please follow this link to the study site: [http://www.surveymonkey.com/s/JN9LWDL](http://www.surveymonkey.com/s/JN9LWDL)
You will be provided with further information to ensure that your decision and consent to participate is fully informed.

Thank You!
APPENDIX H: PARTICIPANT INFORMATION AND ONLINE SURVEY

QUESTIONS – NURSES

1. Participant information and consent

Research project title:
Factors that influence health promotion activities in older Australian women with a chronic disease.

Description:
This project is being undertaken as part of Masters project funded by an Australian Research Council linkage grant project between QUT and Metro North Health Service District. The funding body will not have access to the data obtained during the project.

The purpose of this project is to explore nurses’ perceptions of the factors that influence the uptake of positive health behaviours in older women with a chronic disease.

We request your assistance because in your role you are providing health education and support to women with a chronic disease.

Participation:
Your participation in this project is voluntary and confidential. If you do agree to participate, it will not be possible to withdraw once you have submitted the online questionnaire, as all submissions will be anonymous.

Your participation will involve a short questionnaire which should only take approximately 10 minutes to complete. There will be some demographic questions and a question about the types of barriers to health promotion activities for older women with a chronic disease.

Expected benefits:
This project will primarily benefit nurses and women with chronic disease, by enhancing knowledge and understanding of factors that assist and prevent women from participating in healthy lifestyle activities.

Risks:
There are no risks beyond normal day-to-day living associated with your participation in this project.

Confidentiality:
All comments and responses will be treated confidentially. The names of individual persons are not required in any of the responses.

Consent to Participate:
Completion of the following questionnaire is accepted as an indication of your consent to participate in this project.

Questions / further information about the project:
Please contact the research team if you require further information about the project –

Amanda McGuire
Research Masters Student
School of Nursing & Midwifery
QUT
Phone: 07 3138 8211
Email: am.mcguire@student.qut.edu.au

Professor Debra Anderson
School of Nursing & Midwifery
QUT
Phone: 07 3138 3881 Email: dj.anderson@qut.edu.au

Professor Paul Fulbrook
Nursing Director Research & Practice Development
The Prince Charles Hospital
Phone: 07 3139 4087
Email: paul.fulbrook@acu.edu.au
Concerns or complaints regarding the conduct of the project:
QUT is committed to researcher integrity and the ethical conduct of research projects. However, if you do have any concerns or complaints about the ethical conduct of the project you may contact the QUT Research Ethics Officer on +61 7 3138 5123 or ethicscontact@qut.edu.au. The Research Ethics Officer is not connected with the research project and can facilitate a resolution to your concern in an impartial manner.

In addition, this study has been assessed and approved by the Metro North Health Service District, Redcliffe-Caboolture Ethics Committee. In the event that you are dissatisfied or unhappy with any aspects of the study, you should first approach the Chief Investigator(s) and express your complaint. If you are still not satisfied with the response, you may complain in writing or by telephone to the office of the Executive Director of the Redcliffe Hospital, Metro North Health Service District on 07 3803 7508.

If you wish to participate in this study click on "Next" or if you would prefer not to participate close this window in your web browser to exit.
### 2. Demographic questions

First some questions about yourself. Please answer all questions - all answers will remain anonymous and confidential.

1. **What is your gender?**
   - [ ] Female
   - [ ] Male

2. **What is your age?**

3. **Which country were you born in?**
   - [ ] Australia
   - [ ] Other
   - Other (please specify) ________________

4. **In your home do you usually speak a language other than English?**
   - [ ] Yes
   - [ ] No

5. **Which of the following best describes the highest qualification you have obtained?**
   - [ ] Completed primary school
   - [ ] Completed junior school
   - [ ] Completed senior school
   - [ ] Trade, technical certificate or diploma
   - [ ] University or college degrees
   - [ ] Postgraduate diploma or degree

6. **Which of the following best describes your current employment status?**
   - [ ] Employed full time
   - [ ] Employed part time
   - [ ] Employed casually
7. What is your current position?

- [ ] Registered Nurse
- [ ] Clinical Nurse
- [ ] Clinical Nurse Consultant
- [ ] Nurse Manager
- [ ] Nurse Practitioner
- [ ] Other

Other (please specify)

8. How many years experience as a Registered Nurse do you have?

- [ ] Less than 5 years
- [ ] 5 - 10 years
- [ ] 10 - 15 years
- [ ] 15 - 20 years
- [ ] More than 20 years

9. Which of the following categories does your total gross annual household income from all sources fall into? (Total income from all members of your household before tax is deducted)

- [ ] Less than $10,000
- [ ] $10,000 - $20,000
- [ ] $20,000 - $40,000
- [ ] $40,000 - $60,000
- [ ] $60,000 - $80,000
- [ ] Over $80,000
- [ ] Don't know
10. In which area of Primary and Community Health Service do you work?

- Alcohol and drug
- Community acute post acute
- Healthier children and families
- Indigenous health
- Palliative care
- Primary health and care coordination
- Rehabilitation and consultation
- Sexual health and HIV

Other (please specify)
3. Questions about older women with a chronic disease

Health promotion activities can include regular exercise, healthy eating and non-smoking.
The following questions relate to your perception of the factors that prevent older women with a chronic disease from taking care of their health.

* 11. For each item please select the word that best indicates how much you believe each of these problems prevent women older than 45, with a chronic health condition from taking care of their health.

<table>
<thead>
<tr>
<th>Lack of convenient facilities</th>
<th>Never</th>
<th>Sometimes</th>
<th>Often</th>
<th>Routinely</th>
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<tbody>
<tr>
<td>Too tired</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Lack of transportation</td>
<td></td>
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<tr>
<td>Feeling what they do does not help</td>
<td></td>
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<td></td>
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<tr>
<td>Lack of money</td>
<td></td>
<td></td>
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<tr>
<td>Impairment</td>
<td></td>
<td></td>
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<tr>
<td>Rifle to help them</td>
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<tr>
<td>Not interested</td>
<td></td>
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<tr>
<td>Lack of information about what to do</td>
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<tr>
<td>Embarrassment about appearance</td>
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<tr>
<td>Concern about safety</td>
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<tr>
<td>Lack of support from family/friends</td>
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<tr>
<td>Injuries with other responsibilities</td>
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<tr>
<td>Lack of time</td>
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<tr>
<td>Feeling they cannot do things correctly</td>
<td></td>
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<tr>
<td>Difficulty with communication</td>
<td></td>
<td></td>
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<tr>
<td>Bad weather</td>
<td></td>
<td></td>
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<tr>
<td>Lack of help from health care professionals</td>
<td></td>
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</table>

12. Are there other reasons not listed above?

[Blank space]
4. Thank you very much for completing this questionnaire!

Question 3 (1) adapted from the Barriers to Health Promotion Activities Among Persons with Disabilities (BHADP) Scale (Stocker, Sturbergan, & Sands, 1991) with permission.
APPENDIX I: HREC APPROVALS FOR PHASE 2 NURSES STUDY – QUEENSLAND UNIVERSITY OF TECHNOLOGY; THE PRINCE CHARLES HOSPITAL; REDCLIFFE-CABOOLTURE HOSPITAL

University Human Research Ethics Committee
HUMAN ETHICS APPROVAL CERTIFICATE
NHMRC Registered Committee Number EC00171

Date of Issue: 13/5/10 (supersedes all previously issued certificates)

Dear Ms Amanda McGuire

A UHREC should clearly communicate its decisions about a research proposal to the researcher and the final decision to approve or reject a proposal should be communicated to the researcher in writing. This Approval Certificate serves as your written notice that the proposal has met the requirements of the National Statement on Research Involving Human Participation and has been approved on that basis. You are therefore authorised to commence activities as outlined in your proposal application, subject to any specific and standard conditions detailed in this document.

Within this Approval Certificate are:

* Project Details
* Participant Details
* Conditions of Approval (Specific and Standard)

Researchers should report to the UHREC, via the Research Ethics Coordinator, events that might affect continued ethical acceptability of the project, including, but not limited to:

(a) serious or unexpected adverse effects on participants; and
(b) proposed significant changes in the conduct, the participant profile or the risks of the proposed research.

Further information regarding your ongoing obligations regarding human based research can be found via the Research Ethics website http://www.research.qut.edu.au/ethics/ or by contacting the Research Ethics Coordinator on 07 3138 2091 or ethicscontact@qut.edu.au

If any details within this Approval Certificate are incorrect please advise the Research Ethics Unit within 10 days of receipt of this certificate.

<table>
<thead>
<tr>
<th>Project Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category of Approval: Human non-HREC</td>
</tr>
<tr>
<td>Approved From: 13/05/2010</td>
</tr>
<tr>
<td>Approved Until: 13/05/2013 (subject to annual reports)</td>
</tr>
<tr>
<td>Approval Number: 1000000430</td>
</tr>
<tr>
<td>Project Title: Factors that influence health promotion activities in older Australian women with a chronic disease</td>
</tr>
<tr>
<td>Chief Investigator: Ms Amanda McGuire</td>
</tr>
<tr>
<td>Other Staff/Students: Prof Debra Anderson, Mr Paul Fulbrook</td>
</tr>
<tr>
<td>Experiment Summary: explore nurses’ perceptions of the factors that influence the uptake of positive health behaviours in women with a chronic disease.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Participant Details</th>
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</thead>
<tbody>
<tr>
<td>Participants: Approximately 300 registered nurses</td>
</tr>
<tr>
<td>Locations of the Work: Primary and Community Health Services within the Metro North area of Queensland Health</td>
</tr>
</tbody>
</table>

| Conditions of Approval |

Specific Conditions of Approval:
University Human Research Ethics Committee  

HUMAN ETHICS APPROVAL CERTIFICATE  

NHMRC Registered Committee Number EC00171

Date of Issue: 13/5/10 (supersedes all previously issued certificates)

No special conditions placed on approval by the UHREC. Standard conditions apply.

Standard Conditions of Approval:
The University's standard conditions of approval require the research team to:

1. Conduct the project in accordance with University policy, NHMRC / AVCC guidelines and regulations, and the provisions of any relevant State / Territory or Commonwealth regulations or legislation;

2. Respond to the requests and instructions of the University Human Research Ethics Committee (UHREC);

3. Advise the Research Ethics Coordinator immediately if any complaints are made, or expressions of concern are raised, in relation to the project;

4. Suspend or modify the project if the risks to participants are found to be disproportionate to the benefits, and immediately advise the Research Ethics Coordinator of this action;

5. Stop any involvement of any participant if continuation of the research may be harmful to that person, and immediately advise the Research Ethics Coordinator of this action;

6. Advise the Research Ethics Coordinator of any unforeseen development or events that might affect the continued ethical acceptability of the project;

7. Report on the progress of the approved project at least annually, or at intervals determined by the Committee;

8. (Where the research is publicly or privately funded) publish the results of the project in such a way to permit scrutiny and contribute to public knowledge; and

9. Ensure that the results of the research are made available to the participants.

Modifying your Ethical Clearance:
Requests for variations must be made via submission of a Request for Variation to Existing Clearance Form (http://www.research.qut.edu.au/ethics/forms/nhm/var/var.htm) to the Research Ethics Coordinator. Minor changes will be assessed on a case by case basis.

It generally takes 7-14 days to process and notify the Chief Investigator of the outcome of a request for a variation.

Major changes, depending upon the nature of your request, may require submission of a new application.

Audits:
All active ethical clearances are subject to random audit by the UHREC, which will include the review of the signed consent forms for participants, whether any modifications / variations to the project have been approved, and the data storage arrangements.
1 June 2010

Dear Ms McGuire,

Re: HREC/10/QPCH/68: factors that influence health promotion activities in older Australian women with a chronic disease. A. McGuire; D. Anderson; P. Fulbrook

I am pleased to advise that The Prince Charles Hospital Human Research Ethics Committee reviewed your submission and upon recommendation, the Chair has granted final approval for your low risk project.

Approval of this project is subject to the same confidentiality and privacy requirements as apply to other research projects and research subjects are not recognisable in publications or oral presentations.

Please complete the Commencement Form before starting your study and return to the office of the Human Research Ethics Committee.


If you intend to publish the results of your work, it is advisable to ascertain from prospective journal editor/s the actual requirements for publication e.g. some journals may require full ethical review of all studies. When results are published, appropriate acknowledgment of the hospital should be included in the article.

Please forward copies of all publications resulting from the study for inclusion in the Internet website list.

On behalf of the Human Research Ethics Committee, I would like to wish you every success with your research endeavour.

Yours truly,

Philip Lee, MBA (UQ); BAppSc (QUT); FRCNA; AFAIM
Executive Officer - Research, Ethics and Governance Unit
Email: Philip_Lee@health.qld.gov.au

<table>
<thead>
<tr>
<th>Office</th>
<th>Postal</th>
<th>Phone</th>
<th>Fax</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Prince Charles Hospital</td>
<td>Rode Road, Chermside Qld 4032</td>
<td>(07) 3139 4300/3139 4691</td>
<td>(07) 3139 9756</td>
</tr>
</tbody>
</table>

Appendices 185
Office of the Redcliffe-Caboolture Human Research Ethics Committee

16th June 2010

Enquiries to:
Mark Zgrajewski
Phone: 07 3837851
Fax: 07 3837530
Our Ref: HRREC/10/QNRC/28
E-mail: RCHISD Ethics Committee
        @health.qld.gov.au

Amanda McGuire
School of Nursing & Midwifery
QUT, Victoria Park Road
KELVIN GROVE QLD 4059

Dear Ms McGuire

HREC Reference number: HRREC/10/QNRC/28
Project title: Factors that Influence Health Promotion Activities in Older Australian Women With a Chronic Disease.

Thank you for submitting the above project for ethical review. This project was first considered by the Redcliffe-Caboolture Human Research Ethics Committee (HREC) on 2nd June 2010.

This HREC is constituted and operates in accordance with the National Health and Medical Research Council’s (NHMRC) National Statement on Ethical Conduct in Human Research (2007), NHMRC and Universities Australia Australian Code for the Responsible Conduct of Research (2007) and the CPMP/ICH Note for Guidance on Good Clinical Practice. Attached is the HREC Composition with specialty and affiliation with the Hospital (Attachment 1).

I am pleased to advise that the Human Research Ethics Committee has granted approval of this research project. The documents reviewed and approved include:

- Low risk application;
- Approach email to potential participants;
- Recruitment flyer;
- QUT HREC certificate;
- Previous approval documents for 08Oct10;
- Patient Information & Consent form.

Please note the following conditions of approval:

1. The Principal Investigator will immediately report anything which might warrant review of ethical approval of the project in the specified format, including:
   a. Unforeseen events that might affect continued ethical acceptability of the project.
HREC Reference number: HREC/10/QNRC/28
Project title: Factors that Influence Health Promotion Activities in Older Australian Women With a Chronic Disease.

Serious Adverse Events must be notified to the Committee as soon as possible. In addition the Investigator must provide a summary of the adverse events, in the specified format, including a comment as to suspected causality and whether changes are required to the Patient Information and Consent Form. In the case of Serious Adverse Events occurring at the local site, a full report is required from the Principal Investigator, including duration of treatment and outcome of event.

2. Amendments to the research project which may affect the ongoing ethical acceptability of a project must be submitted to the HREC for review. Major amendments should be reflected in a revised online NEAF (accompanied by all relevant updated documentation and a cover letter from the principal investigator, providing a brief description of the changes, the rationale for the changes, and their implications for the ongoing conduct of the study). Hard copies of the revised NEAF, the cover letter and all relevant updated documents with tracked changes must also be submitted to the HREC coordinator as per standard HREC SOP. Further advice on submitting amendments is available from http://www.health.qld.gov.au/ohmr/html/egu/regu_home.asp

3. Amendments to the research project which only affect the ongoing site acceptability of the project are not required to be submitted to the HREC for review. These amendment requests should be submitted directly to the Research Governance Office (by-passing the HREC).

4. Proposed amendments to the research project which may affect both the ethical acceptability and site suitability of the project must be submitted firstly to the HREC for review and, once HREC approval has been granted, then submitted to the RGO.

5. Amendments which do not affect either the ethical acceptability or site acceptability of the project (e.g. typographical errors) should be submitted in hard copy to the HREC coordinator. These should include a cover letter from the principal investigator providing a brief description of the changes and the rationale for the changes, and accompanied by all relevant updated documents with tracked changes.

6. The HREC will be notified, giving reasons, if the project is discontinued at a site before the expected date of completion.

7. The Principal Investigator will provide an annual report to the HREC and at completion of the study in the specified format.

8. The District administration and the Human Research Ethics Committee may inquire into the conduct of any research or purported research, whether approved or not and regardless of the source of funding, being conducted on hospital premises or claiming any association with the Hospital; or which the Committee has approved if conducted outside Redcliffe Hospital.

...3
HREC Reference number: HREC/10/QNRC/28
Project title: Factors that Influence Health Promotion Activities in Older Australian Women With a Chronic Disease.

Should you have any queries about the HREC's consideration of your project please contact Mark Zgrajewski (Chairperson), via the HREC Coordinators on 07 38837851.

Please complete the Commencement Form (Attachment II) and return to the office of the Human Research Ethics Committee.

The HREC wishes you every success in your research.

Kind Regards,

/M. Duroux/

for
Mr Mark Zgrajewski
CHAIR
REDCLIFFE-CABOOLTURE HUMAN RESEARCH ETHICS COMMITTEE
METRO NORTH HEALTH SERVICE DISTRICT