THE HEALTH BELIEF MODEL AND WOMEN’S ADHERENCE TO A
CARDIAC REHABILITATION PROGRAM

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Nicole Lindsey Gates, candidate for the degree of Master of Science in Kinesiology & Health Studies, has presented a thesis titled, *The Health Belief Model and Women’s Adherence to a Cardiac Rehabilitation Program*, in an oral examination held on May 21, 2015. The following committee members have found the thesis acceptable in form and content, and that the candidate demonstrated satisfactory knowledge of the subject material.

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Abstract

The purpose of this study was to identify health beliefs that affect adherence rates to prescribed exercise programming for women based on medically diagnosed cardiac-related conditions. Research indicates that despite the documented health benefits of a Cardiac Rehabilitation (CR) program, only a small percentage of eligible women are being enrolled and adhering to a CR program. This study sought to better understand participation and adherence rates of women using the Health Belief Model (HBM; Becker, 1974) as a theoretical framework.

Qualitative research methods were used in this study. Five female patients who were enrolled in a cardiac rehabilitation program for 6 months or longer were recruited from a local CR program to participate in two, 45 minute interviews. The Qualitative Health Belief Interview Guide was used to explore health beliefs associated with adherence in their CR program.

Each case was analyzed based on each construct of the Health Belief Model (HBM). Although each case differed, commonalities arose through each construct of the HBM. Analysis indicated that all constructs together led to adherence to a recommended health action.

The results of this study indicate that by ensuring that women experience benefits in a CR program and by decreasing their barriers, it appears that women will adhere to a CR program. The results of this study will be of interest to physicians, health regions, nurse educators, and other stakeholders with the intent of understanding the issue and working toward improved practice at every level of involvement.
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# Table of Contents

ABSTRACT .......................................................................................................................... ii

ACKNOWLEDGMENTS ......................................................................................................... iii

TABLE OF CONTENTS .......................................................................................................... iv

CHAPTER ONE: INTRODUCTION ......................................................................................... 1
  1.1 Purpose of the Inquiry .................................................................................................... 4
  1.2 Potential Significance ................................................................................................... 4
  1.3 Theoretical Framework ................................................................................................. 5
  1.4 Research Questions ...................................................................................................... 5
  1.5 Ethical Considerations .................................................................................................. 6
  1.6 Definition of Terms ....................................................................................................... 6

CHAPTER TWO: LITERATURE REVIEW .............................................................................. 7
  2.1 Cardiovascular Disease (CVD) .................................................................................... 7
    2.1.1 CVD in the world ................................................................................................... 7
    2.1.2 CVD in Canada ..................................................................................................... 8
    2.1.3 What is CVD? ........................................................................................................ 9
    2.1.4 Economic burden ................................................................................................. 10
  2.2 Women and CVD ......................................................................................................... 12
  2.3 Cardiac Rehabilitation (CR) Programs ...................................................................... 15
    2.3.1 What is cardiac rehabilitation? ............................................................................ 15
    2.3.2 Who is eligible? .................................................................................................... 17
    2.3.3 The CR team ...................................................................................................... 17
    2.3.4 What does the program include? ....................................................................... 17
    2.3.5 Outcomes of a CR program ................................................................................. 20
  2.4 Women’s Barrier, Participation and Adherence to a CR Program ............................ 22
    2.4.1 Women’s barriers ............................................................................................... 22
    2.4.2 Women’s participation and adherence to CR programs ....................................... 26
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.5 The Health Belief Model</td>
<td>29</td>
</tr>
<tr>
<td>2.5.1 Perceived severity</td>
<td>30</td>
</tr>
<tr>
<td>2.5.2 Perceived susceptibility</td>
<td>30</td>
</tr>
<tr>
<td>2.5.3 Perceived benefit</td>
<td>31</td>
</tr>
<tr>
<td>2.5.4 Perceived barriers</td>
<td>31</td>
</tr>
<tr>
<td>2.5.5 Cues to action</td>
<td>31</td>
</tr>
<tr>
<td>2.5.6 Self-efficacy</td>
<td>32</td>
</tr>
<tr>
<td>2.6 Research Purpose</td>
<td>34</td>
</tr>
<tr>
<td><strong>CHAPTER THREE: RESEARCH METHODS</strong></td>
<td>35</td>
</tr>
<tr>
<td>3.1 Qualitative Research</td>
<td>35</td>
</tr>
<tr>
<td>3.2 The Role of a Qualitative Researcher</td>
<td>36</td>
</tr>
<tr>
<td>3.3 Researcher Reflexivity</td>
<td>37</td>
</tr>
<tr>
<td>3.4 Research Design: Multicase Study Research</td>
<td>40</td>
</tr>
<tr>
<td>3.5 Participants</td>
<td>41</td>
</tr>
<tr>
<td>3.5.1 Participant recruitment</td>
<td>41</td>
</tr>
<tr>
<td>3.6 Data Collection Methods</td>
<td>42</td>
</tr>
<tr>
<td>3.7 Analysis</td>
<td>43</td>
</tr>
<tr>
<td>3.8 Ethical Considerations</td>
<td>45</td>
</tr>
<tr>
<td>3.9 Trustworthiness in Qualitative Research</td>
<td>46</td>
</tr>
<tr>
<td><strong>CHAPTER FOUR: RESULTS AND SUMMARY</strong></td>
<td>49</td>
</tr>
<tr>
<td>4.1 Participant 1 - Berta</td>
<td>49</td>
</tr>
<tr>
<td>4.1.1 Perceived threat (severity and susceptibility)</td>
<td>50</td>
</tr>
<tr>
<td>4.1.2 Perceived benefits</td>
<td>52</td>
</tr>
<tr>
<td>4.1.3 Perceived barriers</td>
<td>54</td>
</tr>
<tr>
<td>4.1.4 Cues to action</td>
<td>54</td>
</tr>
<tr>
<td>4.1.5 Self-efficacy</td>
<td>55</td>
</tr>
<tr>
<td>4.1.6 Researcher reflexivity</td>
<td>55</td>
</tr>
<tr>
<td>4.2 Participant 2 - Catherine</td>
<td>56</td>
</tr>
<tr>
<td>4.2.1 Perceived threat (severity and susceptibility)</td>
<td>57</td>
</tr>
</tbody>
</table>
4.2.2 Perceived benefits .......................................................... 58
4.2.3 Perceived barriers .......................................................... 60
4.2.4 Cues to action ................................................................. 61
4.2.5 Self-efficacy ................................................................. 61
4.2.6 Researcher reflexivity ..................................................... 62
4.3 Participant 3 - Beth ............................................................. 62
  4.3.1 Perceived threat (severity and susceptibility) ....................... 64
  4.3.2 Perceived benefits ........................................................ 65
  4.3.3 Perceived barriers ........................................................ 67
  4.3.4 Cues to action .............................................................. 68
  4.3.5 Self-efficacy ............................................................... 68
  4.3.6 Researcher reflexivity .................................................... 69
4.4 Participant 4 - Laura ............................................................. 69
  4.4.1 Perceived threat (severity and susceptibility) ....................... 70
  4.4.2 Perceived benefits ........................................................ 72
  4.4.3 Perceived barriers ........................................................ 73
  4.4.4 Cues to action .............................................................. 73
  4.4.5 Self-efficacy ............................................................... 74
  4.4.6 Researcher reflexivity .................................................... 74
4.5 Participant 5 - Gloria ............................................................. 75
  4.5.1 Perceived threat (severity and susceptibility) ....................... 76
  4.5.2 Perceived benefits ........................................................ 77
  4.5.3 Perceived barriers ........................................................ 78
  4.5.4 Cues to action .............................................................. 79
  4.5.5 Self-efficacy ............................................................... 79
  4.5.6 Researcher reflexivity .................................................... 79
4.6 Summary ............................................................................ 80
  4.6.1 Perceived threat (severity and susceptibility) ....................... 81
  4.6.2 Perceived benefits ........................................................ 82
  4.6.3 Perceived barriers ........................................................ 84
  4.6.4 Cues to action .............................................................. 85
CHAPTER FIVE: CONCLUSION ................................................................. 88
  5.1 Now what? .................................................................................. 88
  5.2 Implications ................................................................................ 89
  5.3 Limitations .................................................................................. 91
  5.4 Future Considerations ................................................................. 92
  5.5 Conclusion .................................................................................. 93

REFERENCES ....................................................................................... 94
APPENDIX A: The Health Belief Questionnaire (HBQ) ....................... 104
APPENDIX B: Information Letter .......................................................... 109
APPENDIX C: Consent Form ................................................................. 111
APPENDIX D: University of Regina Research Ethics Approval Form ...... 114
Chapter 1: Introduction

Cardiovascular disease (CVD) is the leading cause of death worldwide. According to the World Health Organization (WHO), more people die annually from CVD that any other disease, representing 30% of all global deaths (2011). CVD encompasses many conditions affecting the vascular system such as myocardial infarction, coronary artery disease, congestive heart failure, coronary bypass surgery, and valvular disease. The Public Health Agency of Canada (2009) describes CVD as “chronic, lifelong diseases caused by an interaction among genetic predispositions, health behaviours, and the environment” (p. 5).

As the number one cause of death worldwide, CVD is greatly impacting our health care system. As our life expectancy continues to increase along with increased obesity, it is estimated that CVD will continue to present a major economic burden on health care systems and society. This economic burden is measured through direct costs (hospitalization, rehabilitation, physicians, and drugs) and through indirect costs (disability or mortality). According to Health Canada (2002), CVD is the most costly disease in Canada; totaling $21.2 billion in direct and indirect costs annually. In the United States, the costs are even more alarming totaling $457.4 billion in 2006 (Tarride et al., 2009).

In the past CVD has long been considered a “man’s disease”, however this is no longer the case as women now present more risk factors than men (Lee & Foody, 2008). In many countries, including Canada, CVD affects more women than men. According to Statistics Canada (2011), in 2008, CVD accounted for more than 69,500 annual deaths (28% of all male deaths, and 29.7% of all female deaths). Although death rates from
CVD are on the decline in men, the same results are not being seen in women. According to the American Heart Association (AHA), 1 in 3 women continue to die from CVD (Rosamond, Flegal & Furie, 2008). In 2004, 52.8% of those who died from heart disease were women, not men. Lee and Foody (2008) found that the death rate in women from CVD is still ten times the death rate for breast cancer.

While the death rates are comparable in men and women, women tend to be affected later in life than men (Daly et al., 2002). With increased education through the media, more women are becoming aware of their risks, however many still believe that CVD is a disease that mostly affects middle aged men or that they are “protected” until they are older (Daly et al., 2002). The American Heart and Stroke Foundation found that only 57% of women are aware of theirs risks of CVD and that more needs to be done to educate women before they are affected (Rosamond et al., 2008).

According to Public Health Agency of Canada (2009), physical inactivity increases the risk of developing CVD thereby increasing the potential of death by nearly 50% over those who are active. Unfortunately, for many women who survive a cardiac event, their first opportunity to experience physical activity is through a cardiac rehabilitation program.

Enrollment in a cardiac rehabilitation (CR) program has been shown to be beneficial in reducing mortality after a cardiac event (Daly et al., 2002). Participation in such a program has shown to promote recovery, enhance quality of life, improve physical function and reduce fatal events by 25% within the first year (Daly et al., 2002). Despite the documented health benefits of a CR program, only a small percentage of eligible patients are being referred by their physicians to a cardiac rehabilitation
program. Although 80% of physicians suggest that their patients follow an exercise program, only 7% of eligible patients are actually being referred to a CR program (Daly et al., 2002). Furthermore, once a patient is referred to a program, adherence rates are extremely low with approximately half dropping out within the first year (Oldridge & Streiner, 1989).

For women, physician referrals and adherence rates are even more of a concern. Caulin-Glaser, Blum, Schmeizl, Prigerson, Zaret, and Mazure (2001), found that women are significantly less likely to be referred to a CR program than men. When women are referred, they are less likely to participate. Studies have shown that women have “poorer program uptake, poorer adherence and significantly higher drop-out rates” (Daly et al., 2002, p. 11) than men. The most common barriers that prevent women from participating and adhering to a CR program include lack of energy, transportation problems, location of the program, domestic and work responsibilities, cost, time constraints, and spousal support (Caulin-Glaser et al., 2001).

Through the scope of this study, in an attempt to better understand participation and adherence rates of women to a CR program, the Health Belief Model (HBM; Becker, 1974) was used as a theoretical framework to explain and predict health behaviours. The Health Belief Model also seeks to explain the reasons for non-compliance to a recommended health action (Bouchard, Blair, & Haskell, 2007). Thus, the HBM provided a sound theoretical model for understanding adherence rates to CR programming for women in the context of this study.
1.1 Purpose of the Inquiry

The purpose of this study was to explore health beliefs and their implications on adherence rates to prescribed exercise programming for women based on a medically diagnosed cardiac-related conditions (e.g., myocardial infarction, coronary artery disease, congestive heart failure, diabetes, obesity, coronary bypass surgery, or valvular disease) or as a primary/secondary measure for prevention. Participants recruited to this study were referred to a cardiac rehabilitation exercise program based on their diagnosis and treatment for any of the above-mentioned reasons by cardiologists from a local mid-sized health region in an urban setting.

The proposed project sought to differentiate itself from the existing literature by:

1) Focusing specifically on women and the potentially unique health beliefs that encouraged or negated their adherence rates to cardiac rehabilitation program.

2) Examining the barriers unique to women who resided in an urban setting.

1.2 Potential Significance

This project was developed in response to clinical and community need. Through anecdotal conversations with 2 local cardiologists the researcher learned that cardiologist-based referrals to CR programming are not a standard discharge order for potential candidates. Additionally, physician follow-up appointments with female cardiac patients rarely address exercise practices and adherence in a CR program environment. As such, this project will advance research through the analysis of women and their health beliefs towards a CR program.

It is the researcher's belief that the results of this study will lead to greater advocacy for women and their adherence to physical activity in a cardiac rehabilitation
program. The dissemination of the knowledge gained through this study will be communicated through a patient advocacy lens to physicians, the local health region, nurse educators, institutional rehabilitation programs, and other stakeholders with the intent of understanding the issue and working toward improved practice at every level of involvement.

1.3 Theoretical Framework

The Health Belief Model (Becker, 1974) was used as the theoretical framework for the study. This model served as a tool for understanding exercise behaviour in relation to each participant's general health motivation, personal perception of the threat-value of cardiovascular disease on their health, and individual perceptions of the effectiveness of an exercised-based rehabilitation program in terms of reducing that perceived health threat. The Health Belief Questionnaire (Mirotznik, Feldman, & Stein, 1995) was used as a reference tool to develop a qualitative interview guide. This Qualitative Health Belief interview guide was developed by the researcher by modifying the format from a Likert scale to open ended interview questions. The content of the questions remained the same. It was used to measure such indicators such as one’s perceived severity, perceived susceptibility, perceived benefits, perceived barriers, cues to action, and self-efficacy to explore factors associated with motivation and adherence in the above-mentioned regard.

1.4 Research Question

The following question was used to guide this research:

1. What health beliefs contribute to a women’s decision to adhere to a cardiac rehabilitation program after experiencing a cardiac event?
1.5 Ethical Considerations

This project adheres to the Tri-Council Policy Statement on ‘Ethical Conduct for Research Involving Humans’ (2010). Prior to the initiation of the study, this project received approval from the University of Regina Research Ethics Board. Written consent was obtained from the participants. Confidentiality was maintained throughout the study.

1.6 Definition of Terms

Cardiac event: any severe or acute condition affecting the heart. This includes: myocardial infarction, coronary artery disease, congestive heart failure, coronary bypass surgery, valvular disease.

Cardiovascular disease (CVD): refers to the diseases affecting the heart and the circulatory system. These diseases involve narrowed or blocked blood vessels that may lead to a heart attack or a stroke. These conditions include: coronary heart disease (disease of the blood vessels supplying the heart), cerebrovascular disease (disease of the blood vessels supplying the brain), peripheral artery disease (disease of the blood vessels supplying the arms and legs), congenital heart disease (heart defects present since birth), heart rhythm problems (arrhythmias), heart infections, and heart defects (congenital heart defects).

Long-term adherence: Hamm, Kavanagh, Campbell, Mertens, Beyene, Kennedy, and Shephard (2004) found that although most CR programs are 12 weeks in length, it takes 26-38 weeks (6-9 months) to reach peak improvement and receive the optimal benefits. Thus, 6 months will be considered “long-term adherence” in this study.
Chapter 2: Literature Review

A review of the literature was conducted on a variety of topics as they pertain to this study. Literature from clinical and motivational sources was used to provide a summary of the background information pertaining to women, cardiac rehabilitation, adherence, and the Health Belief Model (Becker, 1974). The section that follows speaks to each of these topics within the scope of their intended purpose of this study.

The organization is as follows:

1. Cardiovascular Diseases (CVD)
2. CVD and Women
3. Cardiac Rehabilitation (CR) Programs
4. Women’s Barriers, Participation and Adherence to a CR Program
5. Health Belief Model (HBM)

2.1 Cardiovascular Disease (CVD)

Cardiovascular disease (CVD) is the leading cause of death and disability worldwide, accounting for 30% of all global deaths (WHO, 2013). In 2008, CVD was responsible for 17.3 million deaths. Canada is no exception – CVD continues to be the number one killer of Canadians. In 2004, CVD was responsible for the deaths of 72,743 Canadians (Public Health Agency of Canada [PHAC], 2009).

2.1.1 CVD in the world. Although the mortality rates due to CVD have shown to be decreasing worldwide in the past decade, the actual number of deaths have not been decreasing as significantly. According to the WHO (2009), this is due to the world’s increasing population as well as the increase in the aging population (those over 65).
Further to this, there has been an increase in the prevalence of CVD risk factors such as obesity and diabetes in recent years. As a result, the WHO (2009) predicts that CVD will continue to increase in the near future. They predict that by 2030, 25 million people will die annually from CVD, an increase of 5 million from where we are today (WHO, 2009).

**2.1.2 CVD in Canada.** Canadians are not immune to CVD. As stated above, approximately 30% of Canadian deaths every year are due to CVD (PHAC, 2009). Along with rates of CVD around the world, rates in Canada are also on the decline. In the past 10 years, CVD rates have declined by 10% (Statistics Canada, 2011). However, this is not enough as risk factors continue to rise.

According to Statistics Canada (2011), one Canadian dies every 7 minutes from CVD or stroke. In 2008, this accounted for 28% of all male deaths, and 29.7% of all female deaths. Not only are millions of Canadians dying from CVD, but millions are also living with it. In 2007, 1.3 million Canadians were reported to be living with CVD (Statistics Canada, 2011). Of the Canadian population, females living with CVD account for 4.2%, and while males living with CVD account for 5.3% (Statistics Canada, 2011). Further, CVD affects people of every age. Among those aged 25-34, 0.5% were affected, among those aged 45-54, 3.2% were affected, and among those aged 55-64, 7.9% were affected. CVD rates drastically increased in those aged 65-74, with 14.8% being affected along with those aged 75-84, where 21.8% were affected. Those aged 85 and over showed the highest death rates due to CVD, with 27.5% being affected by the disease (PHAC, 2009).
2.1.3 What is CVD? Simply put, cardiovascular diseases are diseases of the circulatory system. According to the Public Health Agency of Canada (2009), “Cardiovascular diseases (CVD) are chronic, lifelong diseases caused by an interaction among genetic predispositions, health behaviours, and the environment” (p.5). The four most common types of CVD’s will be explained in the following paragraphs.

2.1.3.1 Myocardial infarction. Myocardial infarction (heart attack) occurs when the blood supply to one of the coronary arteries of the heart is blocked or interrupted (PHAC, 2009). Blockages are a result of coronary artery disease (CAD), where plaque accumulates in one or more arteries. If a plaque ruptures in the artery, clotting factors accumulate, blocking blood flow and oxygen to the heart. As a result, the muscle begins to die (American College of Cardiology, 2011).

2.1.3.2 Ischemic heart disease. Ischemic heart disease is the most common type of CVD in Canada and the world (PHAC, 2010). It occurs when arthematous plaque (composed of cholesterol, fat, and other substances) builds up on the walls of the arteries. As such, there is a lack of oxygenated blood flowing to the heart. This prevents normal function of the heart and may result in a heart attack (PHAC, 2009, 2010).

2.1.3.3 Cerebrovascular disease. Cerebrovascular disease refers to a group of disorders which affect the brain by limited or no blood flow. This includes disorders where there is a lack of oxygen to the brain (stroke), brain hemorrhaging where blood leaks out of the blood vessels, and other disorders where clots prevent blood flow (PHAC, 2009).
**2.1.3.4 Congestive heart failure.** Congestive heart failure (CHF) occurs when the heart is unable to provide the body with a sufficient amount of blood. CHF results when the heart is unable to fill with enough blood or if the heart is unable to propel a sufficient amount of blood throughout the body. This results in a buildup of blood in the lungs and/or swelling in the limbs (American College of Cardiology, 2011).

Although the four types of CVD are the most common (PHAC, 2009), other types do exist. Other types of CVD include peripheral vascular disease, rheumatic heart disease, and congenital heart disease (American College of Cardiology, 2011).

**2.1.4 Economic burden.** As the number one killer worldwide, CVD is a significant economic burden on our society. In Health Canada’s report, *The Burden of Illness in Canada* (2002), it is reported that CVD is the most costly disease in Canada, costing the Canadian economy $18.5 billion per year, 11.6% of the total cost of illness. The World Health Organization (2012) states that chronic diseases (CVD as one of them) are the most serious health burden on our society. As our life expectancy continues to grow along with increasing risk factors, it is projected that CVD will continue to impact our economy. According to the Public Health Agency of Canada (2009), currently “[n]ine out of 10 individuals over the age of 20 years have at least one of the following risk factors: smoking, physical inactivity during leisure time, less than recommended daily consumption of vegetables and fruit, stress, overweight and obesity, high blood pressure, or diabetes.” (p. 18). Consequently, the World Health Organization, (2012) predicts that by 2020, chronic diseases will account for 73% of all deaths and 60% of the burden of disease.
The economic burden to society is measured through direct and indirect costs. The Heart and Stroke Foundation of Canada (2003) defines *direct costs* as “the value of goods and services for which payment was made and resources used in treatment, care and rehabilitation related to illness or injury” (p. 49). This includes costs such as hospitalization, prescription drugs, physician care, and other health professional care (PHAC, 2009). The Heart and Stroke Foundation (2003) defines *indirect costs* as “the value of economic output lost because of illness, injury related work disability, or premature death” (p. 49). These costs include mortality, disability, time lost from work, and time lost from work by family members or friends. According to Health Canada (2002), of the $18.5 billion spent on CVD, $6.8 billion was spent on direct costs and $11.7 billion was spent on indirect costs.

Hospitalization is the largest contributor to direct costs, amounting to 4 billion, or 17.8% of CVD costs. In 2004, CVD was the leading cause of hospitalization, accounting for 14% of all hospitalizations (CACR, 2009). Following hospitalization, prescription drugs cost 9.6% of CVD costs while physician costs totaled 6.9%.

In indirect costs, mortality as a cost of premature death accounted for 41% of CVD costs. Long term disability totaled 18.7%, and short term disability accounted for 5.3% of all CVD costs.

Subsequently, as modifiable risk factors continue to rise, more needs to be done to decrease these factors. CVD is a great economic burden on our society year after year and needs to be further addressed in order to reduce the financial burden it is having on the Canadian economy.
2.2 Women and CVD

CVD is the leading cause of death in women, however many are still unaware of their risks. According to the Public Health Agency of Canada (2009), 88% of Canadian women above the age of 20 have at least one risk factor and 36% of women have three or more risk factors associated with CVD. Although men and women experience CVD differently, traditional risk factors are the same for both sexes. Women, however, have a higher prevalence of traditional risk factors and also have an increase in significant risk factors than men (Lee & Foody, 2008). Traditional risk factors can be divided into two groups: (a) non-modifiable risk factors such as gender, age, ethnicity, and genetics, and (b) modifiable risk factors which include health behaviours that an individual can control such as smoking, physical inactivity, diet, alcohol consumption, obesity, and psychosocial factors (CACR, 2009). Furthermore, these modifiable risk factors are directly associated with clinical risk factors for CVD such as diabetes mellitus, hypertension, and dysplipidemia (CACR, 2009).

As modifiable risk factors continue to rise, more needs to be done to decrease these factors in order to decrease the burden on society. Although the following risk factors apply to both men and women, they tend to affect them differently. Smoking is the most dangerous modifiable risk factor and the number one cause of preventable deaths. The use of tobacco has drastically decreased in the past few decades, however 21% of Canadian women still smoke (CACR, 2009). Secondly, physical inactivity is a substantial risk for CVD in women, as they tend to do less exercise and lead a more sedentary life than men. According to the Canadian Physical Activity Guidelines (Canadian Society for Exercise Physiology, 2013), adults ages 18-64 require 150
minutes of moderate to vigorous exercise per week to obtain health benefits. Accordingly, only 50% of women are getting the recommended amount of physical activity per week (CACR, 2009). Diet is the third major risk factor, as 57% of women do not consume the recommended amounts of fruits and vegetables per day (Heart and Stroke, 2003). Further, 90% of adults are surpassing the recommended amounts of saturated fats (7%), 25% of women surpass the recommended amount of cholesterol per day, and 60% of women surpass the limit of sodium (CACR, 2009). Consequently, a greater number of women are overweight and obese. The Public Health Agency of Canada, (2009) states that in 2007, 27% of Canadian women were overweight and 15.8% were obese. Fourthly, women tend to be more affected than men with regards to psychosocial factors such as stress and depression (12% vs. 8%) increasing their risk for CVD (CACR, 2009). Fifthly, diabetes is a significant risk factor for the development of CVD in women. According to the Public Health Agency of Canada, (2009), 6.6% of Canadian women had diabetes in 2005 with 19.2% of those aged 75-85 being diabetic. Although the percentage is quite low, Lee and Foody (2008) state that “[r]egardless of age, diabetes mellitus is one of the most significant risk factors for the development of CAD [coronary artery disease] in women, doubling the risk for MI and tripling the incidence of CAD as compared to non-diabetic women” (p. 297). They state that this could be due to the fact that diabetic women have multiple risk factors (smoking, hypertension, and obesity). Sixthly, hypertension (high blood pressure) is a common cardiovascular risk factor for women as hypertension develops as most women transition into menopause due to a lack of estrogen (Lee & Foody, 2008). In 2007, 18% of Canadian women were hypertensive. In women aged 75-85, the percentage increased
significantly with 60% of women having high blood pressure (PHAC, 2009). Even more alarming, by the age of 75, 85% of American women report being hypertensive (Lee & Foody, 2008). Finally, dyslipidemia presents a major risk factor for women as women’s cholesterol levels increase slowly until their mid-fifties at which time they rapidly increase (CACR, 2009).

Following a cardiac event, women react differently than men both physically and psychologically. According to the Heart and Stroke Foundation (2007), women are 16% more likely to die after a cardiac event than men. Caulin-Glaser et al. (2001) state that following a myocardial infarction (heart attack), 31% of women will have another one, 34% will develop angina, 20% will develop heart failure, and 6% will die. Although reasons for these differences have not been adequately researched, it is known that women, as compared to men, have increased morbidity, increased congestive heart failure, and respond less favorably to coronary angioplasty and coronary artery bypass graft surgery (Moore, 1996). The American Heart Association (2013) indicates that women are more likely than men to have adverse outcomes. Furthermore, women have poorer functional status than men in the first years following the event. In their study following patients after a coronary artery bypass surgery (CABG), Vaccarino et al. (2003) found that women had a more difficult recovery than men. They state that “[s]ix to eight weeks postsurgery, women reported more physical problems and side effects than men,[…], more depressive symptoms, and were almost twice as likely as men to have been readmitted to the hospital” (p. 311). However, if participating in a cardiac rehabilitation program, functional status following the event is comparable to that of men (Moore, 1996).
Although more studies are starting to compare gender differences in CR programs, women are often under-represented (Grace et al., 2009). Daly et al. (2002) also found that most of the research surrounding CR programs and adherence has been conducted with men. According to the American Heart and Stroke Foundation (2013), most clinical trials have been conducted with an inadequate amount of women. Consequently, the results of the studies aren’t entirely applicable to women. To further complicate the problem, the American Heart Association (2013) states that only 28% of studies are specifying gender, making sex-specific results difficult to obtain. Subsequently, as CVD is no longer solely a “man’s disease” more research needs to be conducted with women.

2.3 Cardiac Rehabilitation (CR) Programs

Cardiac rehabilitation is an integral part of cardiac care. Enrollment in such a program has proven to be beneficial in reducing mortality after a cardiac event and as a preventative measure in those who present risk factors for CVD. Yet, despite what is known about the benefits of enrolling in such a program, cardiac rehabilitation programs remain underutilized throughout the world (Wenger, 2008).

2.3.1 What is cardiac rehabilitation? Cardiac rehabilitation programs were developed in the 1960’s when a prolonged hospital stay by those who suffered a cardiac event had been recognized as beneficial (Ades, 2001). Prior to this time, patients who had suffered a myocardial infarction were prescribed with 12 weeks of complete rest to aid in the healing process. In 1969, the first report was published by the World Health Organization (WHO) stating that “[r]ehabilitation should take place at an early stage and be continuous” (WHO, 1993, ANNEX 2, p.1). Upon discharge, patients were
encouraged to continue rehabilitation exercises at home. The unsupervised home activities became a concern for physicians, leading to physician supervised physical activity programs (Ades, 2001).

As the length of a hospital stay continued to shorten after a cardiac event, the importance of CR programs has continued to increase over the years. Cardiac rehabilitation programs have grown worldwide into comprehensive, multifaceted, and multidisciplinary services (Wenger, 2008).

According to the Canadian Association of Cardiac Rehabilitation (CACR, 2009), CR is “the enhancement and maintenance of cardiovascular health through individualized programs designed to optimize physical, psychological, social, vocational, and emotional status. This process includes the facilitation and delivery of secondary prevention through risk factor identification and modification in an effort to prevent disease progression and the recurrence of cardiac events” (p. 1).

The overall goal of such a program is to promote recovery, enhance quality of life, improve physical function, and reduce secondary events (Daly et al., 2002). Thus, secondary prevention, measures taken to prevent further events, is an integral part of a CR program as participation has been shown to reduce fatal events by 25% within the first year (Daly et al., 2002). The goals of a CR program can be grouped in the following manner: medical, psychological, and socio-economic. As stated above medical goals include secondary prevention and relief of symptoms. Psychological goals include stress and anxiety relief, improving self-confidence, and depression relief and strategies. Socio-economic goals include return to work, regaining physical independence and function, and reduction of future medical costs (WHO, 1993).
2.3.2 Who is eligible? Cardiac rehabilitation was originally designed for patients who suffered from a myocardial infarction (MI). However, today the program is offered to all those who are likely to benefit. This includes not only MI patients, but those who have undergone coronary artery bypass graft (CABG), percutaneous coronary intervention (PCI), patients with stable or unstable angina, those who have suffered from heart failure, those with peripheral arterial disease, and patients who have undergone surgical procedures for heart valve repair or valve replacement (Wenger, 2008). Today, more and more CR programs are also being recommended as prevention-based programs for those who present risk factors, such as women, those who have multiple comorbidities, and the elderly (Wenger, 2008).

2.3.3 The CR team. Although all CR programs vary depending on their size and services, all programs include a multi-disciplinary team. The CACR’s Canadian Guidelines for Cardiac Rehabilitation and Cardiovascular Disease Prevention (2009) recommend that each CR team is composed of a medical director, a program manager, an administrative assistant, a health educator, and an exercise therapist. Some programs may also include cardiologists, other physicians, nurses, dieticians, and psychologists (WHO, 1993).

2.3.4 What does the program include? Although cardiac rehabilitation programs vary depending on the site, most countries have a list of guidelines for cardiac rehabilitation and cardiovascular disease prevention. The Canadian Guidelines for Cardiac Rehabilitation and Cardiovascular Disease Prevention (CACR, 2009) outlines eight recommended core elements for all CR programs: referral, patient assessment, health behaviour interventions/risk factor management, exercise training, leisure time
activities, outcomes/assessment programs, and continuous professional development programs (p. 391).

2.3.4.1 Referral. In order to participate in a successful CR program, participants can be referred following a cardiac event or may participate as prevention if they are at risk. To achieve optimal enrollment and program utilization for those who have experienced a cardiac event, the referral process should take place within the first 1-3 weeks following discharge (Wenger, 2008). Thompson and Clark (2009) state that “commencing cardiac rehabilitation around two weeks after hospitalization […] have been found to increase participation to around 80% of eligible patients” (p. 1898).

Although many referral methods exist, the Canadian Guidelines for Cardiac Rehabilitation and Disease Prevention (CACR, 2009), states that “an automated referral process from acute care to CR significantly increases referrals and enrollment” (p. 390). In their study, Grace et al. (2007) found that patients who received an automatic referral were twice as likely to enroll in a CR program. As such, the referral process is essential in integrating the CR program into the cardiac care continuum of patients.

2.3.4.2 Patient assessment. All patients enrolled in a CR program undergo an initial assessment by a trained exercise physiologist as a starting point to create a CR plan. The initial assessment of the patient includes a standard medical examination and review of medical history, exercise stress testing, psychosocial assessment, nutritional assessment, and risk factor assessment (Wenger, 2008).

2.3.4.3 Health behaviour interventions/risk factor modification. In this component of the CR program, the patient’s current health behaviours and risk factors are examined and educational counseling is provided as a form of intervention (WHO,
1993). This includes lipid management, hypertension management, smoking cessation counseling, diabetes management, weight reduction counseling, and physical activity counseling (Ades, 2001). Reducing risk factors has shown to be beneficial in reducing fatal events by 25% (Oldridge & Streiner, 1989).

2.3.4.4 Exercise Training. Based on each participant’s initial assessment, each CR exercise training program is individualized to fit each participant’s needs. The standard exercise training program includes aerobic training, strength and resistance training, and flexibility training (CACR, 2009). Although each program is different, most exercise sessions are completed 1-3 times per week on site with additional exercises to be completed at home. Programs vary in duration, from as brief as 2 months to as long as 2 years. The most commonly implemented models as outlined in the CACR’s Guidelines for Cardiac Rehabilitation and Cardiovascular Disease Prevention (2009) include the U.S. Standard model (36 visits over 12 weeks), the Hybrid or Distributed model (30-36 visits over 6-12 months, including home exercises, resulting in a total of 5 sessions per week), and the Ontario CR Pilot Project Model (2 visits weekly over 6 months). Although each program varies slightly, each design has proved to be successful as long as the following components were included: weekly exposure to a CR team, the duration of the program is longer than 12 weeks, the program is interdisciplinary and multifaceted, and a long-term maintenance plan is outlined (CACR, 2009).

2.3.4.5 Leisure time activities. This component of the CR program encourages participants to engage in leisure time activities. This includes activities where light to
moderate physical exertion is needed to perform enjoyable tasks, such as walking or swimming (CACR, 2009).

2.3.4.6 Outcomes, assessment programs, and continuous professional development programs. The final core component of a CR program encompasses the program outcomes, program assessment, and professional development programs. Based on CACR’s Guidelines (2009), this includes assessing clinical, health, educational, behavioural, and service outcomes to measure performance and improve programs. This also includes engaging employees in professional development programs to ensure a continuous learning process.

2.3.5 Outcomes of a CR program. As the program itself is multifaceted, so too are the outcomes. There are many benefits to participating in such a program, however, the most significant outcome is the reduction of fatal events by 25% within the first year (Daly et al., 2002). Secondly, participation in a CR program has shown a decrease in secondary coronary events as well as decreased rates of subsequent hospitalization (CACR, 2009).

Many other outcomes of participating in a CR program are well documented. Outcomes can be grouped in the following manner: physical outcomes, psychological outcomes, and socio-economic outcomes.

2.3.5.1 Physical outcomes. There are many physical outcomes from participating in a CR program. First, patient exercise capacity and physical fitness consistently improve in a CR program. According to Ades (2001) those who participated in a CR program three times a week for three months increased their exercise tolerance by 30 to 50%. These patients reported improvement in activities of daily living such as climbing
stairs and carrying groceries. Patients also experience weight loss, increased strength, and improved physical functioning (Ades, 2001).

Along with the physical outcomes, other benefits result from the increase in physical activity. An increase in physical activity has a positive effect on many coronary risk factors such as: a reduction in high blood pressure levels, an increase in HDL cholesterol levels, and an improvement in glucose and insulin levels (WHO, 1993).

2.3.5.2 Psychological outcomes. Similarly, there are many psychological outcomes for those who participate. For most, the positive psychological outcomes are the most significant effects of a CR program. These include a decrease in stress, anxiety, and depression; an increase in self-confidence; an increase in energy and enthusiasm; better relaxation and sleep patterns (WHO, 1993). According to Ades (2001), “[p]atients enrolled in programs that include psychosocial interventions have greater reductions in anxiety and depression, lower blood pressure, and lower rates of mortality and recurrent cardiac events at two years than do those enrolled in programs without a psychosocial component” (p. 899).

2.3.5.3 Socio-economic outcomes. Socio-economic outcomes also result from participation in a CR program. Those who participate in such a program have less invalidism and an increased return to work rate. Further, CR patients have a reduced professional inactivity period after their event. In their study, Levin, Perk, and Hedback (1991) found that after five years, a greater number of participants in the CR group had successfully returned to work (53%) as opposed to the number of participants returning to work in the control group who did not attend a CR program (38%). Lastly, those who
participate in a CR program reduce medical costs by reducing the risk of secondary events and the amount spent on medicine (WHO, 1993).

2.4 Women’s Barriers, Participation, and Adherence to a CR Program

2.4.1 Women’s barriers. Both women and men continue to face barriers preventing their participation in a cardiac rehabilitation program. Although some barriers between men and women are similar, many barriers are quite different. According to Grace et al. (2009) the number of barriers faced by women is not greater than those faced by men, women however experience very different barriers compared to their male counterparts.

2.4.1.1 Physician referral. Physician referral is among the most frequently described barrier to a CR program. According to Bittner, Sanderson, Brelan, and Greene (1999), only 9% of cardiac patients are actually referred to a CR program. Furthermore, Pathman, Konrad, and Freed (1996) found that physicians were not following correct referral guidelines. This is significant as physician referral is predictive of patient participation. According to the Ontario Medical Association (2006),

[P]hysicians are essential to the success of [cardiac rehabilitation] programs. Physicians are considered a credible source of information among patients with advice having powerful impact on motivation. Studies have repeatedly shown that the advice of a physician is the single strongest determinant of preventive practices (p. 1).
Beckie et al. (2009) also found that the physician referral is necessary for a successful enrollment of women into CR program. They stated that “the strength of a physician endorsement and enthusiasm for CR is the single most powerful predictor of CR attendance” (p.6). The study concludes that physicians need to make referrals to a CR program more of a priority.

Further to this, studies show that women are less likely than men to receive a referral to a CR program post cardiac event. McCarthy, Vaughan, and Chyun (2011) found that “although women had a significantly higher eligibility rate for CR than men, they were referred at a lower rate” (p. E6). Grace, Racco, Chessex, Rivera, and Oh (2010), state that “men are referred almost twice as often as women” (p. 204). Many women reported not being offered a CR program. Sanderson, Shewchuck, and Bittner (2010) found similar results. In their study, the most significant barrier varying from participants to non-participants was the non-referral from a physician. They state, “[w]ith the proven effectiveness of CR, the recommendation for the attendance must be communicated uniformly by all healthcare professionals with the same strength of endorsement as other evidence-based secondary prevention strategies” (p. 18). The reason for non-referral in women remains unclear. However, in their study on physician referral and women, Scott and Allen (2004) found that physicians did not refer women as they were unable to identify if the woman was an eligible candidate, they did not believe that women were interested in participating in a CR program, and the communication was unclear between inpatient and outpatient providers during the referral process.

2.4.1.2 System-level factors. Many system-level factors are also known barriers for women to participate in a CR program. First, financial issues prevent many from
attending such a program. In many cases, CR programs are not covered by insurance. This is a greater barrier in the United States than Canada as many citizens do not have adequate insurance coverage (Sanderson et al., 2010). In Canada, where most programs are covered by insurance, financial concerns are still reported as a barrier (Heart and Stroke, 2010). These concerns include transportation costs, the cost of loss of work, and the cost of service. Sanderson et al. (2010) report that “socioeconomically disadvantaged patients were less likely to embark on healthier lifestyle changes following an acute myocardial infarction, despite having poorer prognosis and greater severity, that those with higher socioeconomic status” (p.16). In their study, Cooper, Jackson, Weinman, and Horne (2005) found that women with a higher socio-economic status were more likely to attend CR programs. They found that “a higher income was found to be a significant predictor of attendance in spite of the cost of the course being waived” (p. 543). Consequently, women with no financial constraints are more likely to participate in a CR program than those who have financial constraints.

Transportation is also a significant barrier to attending a CR program. Women are known to experience more difficulty travelling to and from CR programs. This could be due to their increased age at the time of the cardiac event. For example, many elderly women do not have access to a car or a convenient mode of transportation to and from a program (McCarthy et al., 2011). Drive times to a CR program have also been shown as a barrier to CR attendance and utilization. Brual et al. (2010) found that women were less likely to enroll in a CR program if the travel time was greater than 60 minutes. Furthermore, traffic conditions and geographic barriers also influenced patient decisions
to enroll. Although Brual et al. (2010) concluded transportation was a barrier for enrollment, they found it unrelated to attendance and adherence to a CR program.

2.4.1.3 Individual-level factors. Many individual-level factors are outlined as barriers to CR programs. Health perceptions are often a barrier, as many self-report poor health and state that they are “too sick” to join such a program (Cooper, Jackson, Weinman, & Horne, 2002). In addition, patients with poor exercise habits prior to their cardiac event are also less likely to join a CR program following their event (McCarthy et al., 2011). Cooper et al. (2002) state that “[p]atients who participated in regular exercise were more likely to attend than patients who perceived themselves as being mildly rather than moderately physically impaired” (p. 550). Grace et al. (2009) also found that women with a lower activity status and thus a greater need for the program were less likely to enroll.

Personal perceptions of a CR program are also a barrier for women. Many women have a lack of awareness or misperceptions of the benefits of a CR program. Grace et al. (2009) found that the greatest barriers for women were the perceived lack of need to participate in a program and a lack of CR awareness. Many non-exercisers also have perceptions of exercise as being tiring or painful (McCarthy et al., 2011).

Moreover, marital status and gender-role affected uptake in a CR program. First, women are primary caregivers in family settings. Often, women have a domestic role and an occupation (Grace et al., 2009). Due to this, they may feel that they do not have the time to commit to such a program making attendance problematic even if she is interested in participating. Secondly, marital status is a large predictor of CR enrollment and attendance, with married women being more likely to attend. Cooper et al. (2002)
reported that “being currently married positively influences cardiac rehabilitation in both sexes” (p. 550). In addition to being married, social support from a spouse, family members, and friends positively influences CR participation. King, Humen, Smith, Phan, and Teo (2001) found that women who received less social support were less likely to participate in a CR program. Cooper et al. (2002) found that non-attenders to a CR program were likely to be single and lacked social support. As women are typically more sensitive than men, this has shown to be a greater predictor for women than men. Moore (1996) reports that “social support from family and friends has consistently been shown to predict exercise participation and recently it has been shown to be a more important predictor for women than men” (p. 129). Consequently, women with lack of support won’t likely attend a CR program.

2.4.2 Women’s participation and adherence to CR programs. When women are referred to a cardiac rehabilitation program, they are less likely to participate and adhere to the program for its full duration. Studies have shown that women have “poorer program uptake, poorer adherence, and significantly higher drop-out rates” (Daly et al., 2002, p. 11). In their study, Grace et al. (2009) found that only 15-30% of post-cardiac patients participate in a CR program with only 11-20% being women. With women having a poorer prognosis and a higher rate of disability following a CVD diagnosis, poor participation and adherence to a CR program is a concern (CACR, 2009).

According to Grace et al. (2009), the reasons for women missing from CR are multifactorial and include health care system factors as well as personal factors. As mentioned above, participation is greatly influenced by the patient’s health care provider, with men being referred to a CR program almost twice as often as women (Grace et al.,
2010). Further, many women report not being offered a CR program at all (Sanderson et al., 2010). Thus, the referral process, or lack thereof, is a major health care system factor affecting women’s participation.

With regards to personal factors, women face many barriers that greatly influence their participation, as mentioned previously. These barriers faced by women are also the reasons they fail to adhere to the program once referred; transportation issues, financial costs, lack of support from family members and friends, perceptions of exercise as tiring or painful, perceptions that they are too ill to participate, a lack of awareness of the program, along with psychosocial factors (McCarthy et al., 2011).

Once women enroll in a CR program, they are less likely to adhere to it. Many studies show that women have a higher dropout rate than men (e.g., Grace et al., 2009). In a previous study, Jackson, Leclerc, Erskine, and Linden (2005) found the following:

Women were referred less often and adhered less often to CR programs and this is likely to be because of the presence of a cluster of predictors that are particularly prevalent in women, namely, increased age, greater co-morbidity, higher depression, lower initial exercise capacity, and less available social support (p. 13).

Oldridge and Streiner (1989) found that 40-50% of patients (women and men) referred to a CR program drop out within 6-12 months of program uptake. In their study, Schuster and Waldron (1991) reported that during the first month of a CR program, women had a 14% dropout rate whereas men only had a 5% dropout rate.

Some studies suggest that women have a greater dropout rate due to CR programs being male-oriented (Grace et al., 2009). Cardiac rehabilitation programs were
originally designed in the late 1960’s, and many have remained unchanged since. This design may not be meeting female participants’ needs. Moore (1996) indicates in her findings that “the low rate of participation by women may be because most programs were designed to meet the needs of middle-aged men” (p. 129). In her study, Moore found that women had different program expectations and preferences than men. The features most liked by women were positive encouragement from staff, feeling safe in their exercise program, and interacting and socializing with other participants. They also liked having a large variety of exercises and feeling comfortable in the program (not feeling rushed, being in a relaxed atmosphere). Women also disliked many features of the CR program including a lack of exercise options, a lack of emotional support, limited social interaction, feeling that men had the priority or that they were in a “men’s club”, feeling rushed and crowded during the session, and being weighed (Moore).

Consequently, Moore’s study (1996) suggests it is crucial to design programs that are meaningful to participants. Although she does not suggest that programs should be gender-based, she does believe that programs should offer more emotional support from staff, more variety of exercise choices, bigger rooms, no overlapping sessions, and more socialization opportunities for all clients. She states that “[c]ardiac rehab programs that are viewed by clients as having features that are important to them and match their expectations are more likely to be used” (p. 167). In order provide meaningful programs to participants in which they will adhere, it is important to fully understand the health beliefs of women who are already adhering to a CR program. The Health Belief Model (Becker, 1974) can provide the theoretical framework to better understand women’s health beliefs and why they are adhering to a CR program.
2.5 Health Belief Model

The Health Belief Model (HBM, Becker, 1974) is a theoretical framework used to explain and predict health behaviour. It also seeks to explain the reasons for non-compliance to a recommended health action (Bouchard, Blair, & Haskell, 2007). Although dated, this model is one of the most commonly used theories in health education and promotion used to “explain change and maintenance of health – related behaviours and as a guiding framework for health behaviour interventions” (Champion & Skinner, 2008, p. 45).

The model originated in the 1950’s when a group of social psychologists in the U.S. Public Health Service were concerned with individual’s lack of efforts to engage in behaviours which would positively affect their health. The model evolved in 1974 when Becker extended the model to include studying a person’s behaviour in response to an illness and their adherence to medical regimens (Champion & Skinner, 2008).

The HBM was originally divided into four main theoretical constructs used to explain and predict health behaviour. The four constructs were as follows: perceived severity, perceived susceptibility, perceived benefits, and perceived barriers. Over the past two decades, the HBM has expanded to include two other concepts: cues to action and self-efficacy. Champion and Skinner (2008) explain “[i]f individuals regard themselves as susceptible to a condition, believe that condition would have potentially serious consequences, believe that a course of action available to them would be beneficial in reducing either susceptibility to or even severity of the condition, and believe the anticipated benefits of taking action outweigh the barriers to (or costs of)
action, they are likely to take action that they believe will reduce their risks” (p.47).

Definitions of each construct will be explained in the following paragraphs.

**2.5.1 Perceived severity.** Perceived severity is an individual’s perception of the seriousness or severity of a disease or condition (Champion & Skinner, 2008). Perceived seriousness to a disease varies from individual to individual. Some base their beliefs on their medical knowledge or information they have gathered throughout their lives, and some base their belief on the negative effect a disease would have one’s lifestyle. For example, loss of work, financial difficulties, family issues, and pain or discomfort (Bouchard et al., 2007) could all influence one’s perception of the seriousness or severity of an illness. Champion and Skinner (2008) define perceived severity as “[f]eelings about the seriousness of contacting an illness or of leaving it untreated include evaluations of both medical and clinical consequences (for example, death, disability, and pain) and possible social consequences (such as the effects of the condition on work, family life and social relations” (p. 47).

**2.5.2 Perceived susceptibility.** The second theoretical construct is perceived susceptibility. Perceived susceptibility is an individual’s belief surrounding the likelihood that a disease or condition would adversely affect their health. More often than not, if there is a perceived high risk for a disease, individuals are more likely to engage in healthy behaviours to decrease this risk (Bouchard et al., 2007). According to Bouchard et al., (2007), “[i]t is only logical that when people believe they are at risk for a disease, they will be more likely to do something to prevent it from happening” (p. 32). The combination of perceived severity and perceived susceptibility are combined to establish a person’s perceived threat.
2.5.3 Perceived benefit. *Perceived benefit* is an individual’s opinion on the usefulness of changing a behaviour to decrease the risk or seriousness of developing a disease (Champion & Skinner, 2008). Even with a high perceived threat, a person is not expected to accept any recommended health changes unless they find the recommended health action is beneficial to them. This construct plays an important role in secondary prevention behaviour, after a person has accepted the disease and chooses to take action (Bouchard et al., 2007).

2.5.4 Perceived barriers. *Perceived barriers* refers to an individual’s perception of the obstacles preventing them from taking action or adopting a new behaviour. Bouchard et al., (2007) state “of all the constructs, perceived barriers are the most significant in determining behaviour change” (p. 33). In order for a behaviour to be changed, the benefits of the new behaviour need to outweigh the consequences of the old behaviour. Rosenstock (1974) explains that “combined levels of susceptibility and severity provide the energy or force to act and the perception of benefits (minus barriers) provide a preferred path of action” (p. 332).

2.5.5 Cues to action. This concept of the HBM refers to the thought that a person’s readiness to take action is activated by cues (bodily events, environmental events, or media publicity; Champion & Skinner, 2008). Although it is known that this concept may trigger a person to act, it has not yet been systematically studied. According to Champion and Skinner (2008), “although the concept of cues as triggering mechanisms is appealing, cues to action are difficult to study in explanatory surveys; a cue can be as fleeting as a sneeze or the barely conscious perception of a poster” (p. 49). Furthermore, identifying cues can be difficult for participants to remember in
retrospective studies. Rosenstock (1974) explains that “[s]ince the kinds of cues that
have been hypothesized may be quite fleeting and of little intrinsic significance (e.g., a
casual view of a poster urging a chest x-ray), they may easily be forgotten with the
passage of time. An interview taken months later could not adequately identify the cues”
(p. 333).

2.5.6 Self-Efficacy. *Self-efficacy* is defined by Bandura (1997) as “the
conviction that one can successfully execute the behaviour to produce the outcomes” (p.
193). Self-efficacy differs from perceived benefits as it is focused more on one’s
confidence to take action. In 1988, Rosenstock, Strecher, and Becker decided to include
perceived self-efficacy as a separate construct. This construct was added as it is
important in the maintenance of behaviour change. Champion and Skinner (2008)
explain “[f]or behaviour change to succeed, people must (as the original HBM
theorizes) feel threatened by their current behavioural patterns (perceived susceptibility
and severity) and believe that change of a specific kind will result in a valued outcome at
an acceptable cost (perceived benefit). They also must feel themselves competent (self-
efficacious) to overcome perceived barriers to take action” (p.50).

Bandura (1977) also explains that self-efficacy can be determined from four
sources: performance attainments, vicarious experience, verbal persuasion, and
physiological state. *Performance attainments* refer to one’s experience and how
successful they were. Rosenstock, Strecher, and Becker (1988) state “[p]erformance
accomplishments are the most influential sources of efficacy information because they
are based on personal mastery experience” (p. 180). The second source of self-efficacy
information, *vicarious experience*, is obtained through the successful or unsuccessful
performance of others. Next, *verbal persuasion* can also lead to self-efficacy, which includes verbally motivating and encouraging a patient to increase their efficacy expectation. Finally, *physiological states* affect one’s self-efficacy by informing them that they are able or not able of completing the required action (Rosenstock et al., 1988).

These beliefs work together to determine health actions. As such, if an individual has positive health beliefs and feels threatened by a disease or condition, this individual is more likely to engage in a behaviour to reduce the threat of disease, than someone who has low health beliefs.

Prior research has been done using the original four constructs of the HMB (perceived severity, susceptibility, benefits, and barriers) to investigate the compliance and dropout in a CR program. In 1995, Mirotznik et al. explored the utility of the HBM to explain attendance at a supervised CR program. In 1989, Oldridge and Streiner examined compliance and dropout in a CR program. Similar studies have been conducted by Lindsay-Reid and Osborn (1980) and Morgan, Shephard, Finucane, Schimmelfing, and Jazma (1984). In the studies mentioned above, results have been inconsistent and contrary to what would be expected. Oldridge and Streiner (1989) found that the greater the perceived susceptibility, the greater the dropout rate. They also found that the perceived severity of disease threat was not associated with compliance to a CR program. Lindsey-Reid and Osborne found similar results with perceived susceptibility and perceived benefits; the greater the perceived susceptibility and benefits, the lower the adherence. Conversely, some studies found what would be expected theoretically. Oldridge and Streiner found (1989) found that fewer perceived barriers lead to greater adherence.
In the studies mentioned above, most state that additional research is warranted. According to Mirotznik et al., (1995) the HBM “[…] has not been extensively tested with regard to adherence to exercise programs for CHD”. Further, most studies in this area have been retrospective. Mirotznik et al. state that “[their] findings provide justification for conducting a prospective study on the HBM and CHD exercise adherence” (p. 245). Additionally, the studies researching this topic are outdated and do not look solely at women. As such, in the proposed research, it is felt that the Health Belief Model would provide an appropriate framework to investigate the beliefs of women referred to a CR program and how those beliefs affect adherence.

2.6 Research Purpose

In summary, it is evident that CVD and women is a growing problem that needs to be addressed. Although it may be difficult to prevent a primary cardiovascular event in women, it is possible to decrease their chances of a secondary event through the use of a CR program. However, despite what is known about CR programs, women’s adherence in such programs is poor. As explained above, this is due to the many barriers faced by women in today’s society.

Through the use of the Health Belief Model and qualitative interviewing, it will be possible to dive deep into the health beliefs of women and understand how their beliefs affect their adherence to a prescribed cardiac rehabilitation program.
Chapter 3: Research Methods

In this chapter, an overview of the research methods used in this study will be discussed. As this study was focused on the experiences and health beliefs of women who were enrolled in a cardiac rehabilitation (CR) program, qualitative research design and analysis and their relevance to the study will be illustrated.

3.1 Qualitative Research

Qualitative research as defined by Marshall and Rossman (2006) is “a broad approach to the study of social phenomena” (p. 2). Differing from the traditional laboratory approaches to research, qualitative research allows researchers to utilize multiple methods in a natural setting giving the data more depth and complexity (Marshall and Rossman).

Simply put, qualitative research is naturalistic. It occurs in a natural setting where the researcher becomes an observer interpreting the phenomena and meanings of their surroundings. In order to attain a strong interpretation, researchers utilize multiple methods including observations, notes, interviews, conversations, and pictures (Denzin & Lincoln, 2005). Denzin and Lincoln (2005) explain that “qualitative researchers deploy a wide range of interconnected interpretive practices, hoping always to get a better understanding of the subject matter at hand” (p. 4).

A qualitative research approach was chosen for this study for numerous reasons. I initially thought that this study would be conducted through a quantitative approach – surveying 100 women on their health beliefs to investigate enrollment and adherence to a CR program. After an extensive review of the literature, I did not discover any qualitative research had been done on health beliefs and adherence to a CR program.
Further, there had been very limited qualitative research on women’s adherence to a CR program. After much consideration, I realized that I wanted this study to focus on the women’s individual lived experiences that would give the study a depth that could not be captured through a quantitative approach. Marshall and Rossman (2006) state that “human actions cannot be understood unless the meaning that humans assign to them is understood” (p. 53). Through the interviews conducted, I would gain a deeper understanding of my participant’s thoughts, feelings, and health beliefs while participating in a CR program. This increased understanding gained through their experiences is key to developing an effective strategy to increase women’s adherence in a CR program.

3.2 The Role of a Qualitative Researcher

The role of a qualitative researcher has often been described as that of a *bricoleur*, a handyman who pieces together a set of representations with a multitude of tools and techniques (Zimmer, 2011). The term *bricoleur*, a French word meaning “maker of quilts”, is one who “uses aesthetic and material tools of his or her craft, deploying whatever strategies, methods, and empirical materials are at hand” (Becker, 1998, p. 2). The qualitative researcher, as bricoleur, uses a multitude of methods, strategies, and techniques to construct an interpretation and understanding of a situation or phenomena (Denzin & Lincoln, 1998). This, in turn becomes their *bricolage* - “a complex, dense, reflexive, collage like creation that represents the researcher’s images understandings, and interpretations of the world or phenomenon under analysis” (Denzin & Lincoln, 1998, p. 4).
3.3 Researcher Reflexivity

Researcher reflexivity is an essential component in the qualitative research process. Researcher reflexivity allows the researcher to explore their underlying assumptions and disclose them as a part of the narrative for the reader. This component to the analysis process strengthens the accuracy of research outcomes by further qualifying the constructed biases that inform the outcomes (Research Design Review, 2014).

My professional career began in 2007 when I graduated from the University of Regina’s Baccalaureate of French Education program. Since that time, I have had many different experiences leading to where I am today. These experiences will undoubtedly influence this research project.

I have always had a very physically active background. Growing up I was involved in numerous sports. I finally found my true passion in the sport of competitive synchronized swimming in which I participated heavily throughout my high school years. Being involved in this sport taught me the importance of physical activity and a healthy lifestyle. As our team competed at a national level, we were fortunate to work with a nutritionist and a personal trainer during our “land time” out of the pool. Our coaches encouraged us not only to swim, but to cross-train – run, bike, yoga, weights, exercise classes - anything to work our muscles differently to make us top athletes. Our coach felt so strongly in cross-training, that she signed us up numerous times for running long distance races as a team. At the time I did not realize it, but my coach taught me something that would stay with me forever – the importance of physical activity and an active lifestyle.
Consequently, after I quit swimming competitively I held on to that healthy lifestyle. Shortly after, I decided to become a fitness instructor with Gold’s Gym. I began teaching a biking class (Group Ride) and a step class (Group Step). I found this to be a very rewarding part-time job as I was able to help participants improve their fitness and maintain a healthy lifestyle.

At my school, I was also involved in many extra-curricular sport activities. I took the lead and became the In Motion Champion teacher at my school. The Saskatchewan In Motion initiative began a few years prior, with the goal of increasing physical activity in our province. At first it was very popular in schools, but at the time I began my teaching career, it was starting to die off. With my very physically active background, I was determined to help our school provide 30 minutes of physical activity per day for each student. I successfully implemented daily In Motion activities and planned many physically active activities to do as a school.

A few years had passed since the start of my career as a teacher and I felt the need to continue my education by completing a Master’s degree. A previous professor of mine suggested that I look at programs outside of the education realm to broaden my perspective. Knowing my physically active background, she suggested I complete a Masters in Kinesiology. Consequently, I applied to the University of Regina’s Graduate Program in Kinesiology and Health Studies and was accepted.

At the time, I was interested in children’s health and physical activity. However, during the second year of my Master’s program, I was offered a position with the Prairie Vascular Research Network as a Research Coordinator. As such, I left the teaching profession to explore new opportunities and gain new experiences. My role as Research
Coordinator involved implementing and managing cardiovascular research projects. This may seem like a huge leap from my role as a classroom teacher, however many of my skills transferred over to this new position.

Through the projects I was managing for the research network, I saw a need for research in women’s cardiovascular health. As a woman, I was discouraged by the amount of women I saw coming in with heart issues on a daily basis. I was also discouraged by the amount of women who were not interested or aware in a rehabilitation program following their heart episode. As an educator, I found myself wanting to educate and encourage them to take charge of their health. As a result, my Master’s research became focused on women and cardiac health.

With this new focus, I started to become aware of my subjectivities towards women as I began to worry about my own mother. I grew up in a home where my mother was a stay-at-home mom. I was always very grateful for this, even as a young child. I would come home from school and she would always have something homemade on the table. My mom was always a smoker who rarely did anything for herself. She lived for her kids and her family. Recently, as I am about to become a mother myself, I have noticed my mom is often sick. Like many other women of her era, she rarely took the time to take care of herself during her 30’s and 40’s and now in her 60’s she has many risk factors for CVD. Reflecting on my mom has definitely influenced my biases towards women in this study.

As I began this study, I was aware of my past experiences and biases, and how they may influence this study. Although my perceptions of women and physical activity may be shaped by my past experiences as a fitness instructor, they may not be reality.
Further, my experiences as a research coordinator and my perception that women do not adhere to a CR program may be negatively impacted by what I saw. I am aware of my subjectivities towards women as homemakers and that they do not take care of themselves until it may be too late. I am aware that these experiences and perceptions are my own and may not be reality. Throughout the study, I did my best to put my own subjectivities aside as I explored the true experiences of others.

3.4 Research Design: Multicase Study Research

In order to fully understand women’s health beliefs and their adherence to a CR program, it is necessary to speak to them regarding their experience. Although one case may provide insight on the issue of women’s adherence to a CR program, multiple cases would lead to a greater understanding of women’s health beliefs and why women do or do not adhere to a CR program (as stated in Chapter 2). This would provide a better picture of what is happening overall. As such, a qualitative multicase inquiry was used (Stake, 2005).

A qualitative multicase study seeks to understand the larger phenomenon. It allows the researcher to observe multiple cases, which are similar but not identical in order to understand a greater picture. A multicase inquiry is not used for comparative purposes. Stake (2005) states that “[multicase studies] are chosen because it is believed that understanding them will lead to better understanding, and perhaps better theorizing, about a still larger collection of cases” (p. 446). Stark and Torrence (2005) further explain that a “[multi]case study thus is particular, descriptive, inductive and ultimately heuristic – it seeks to ‘illuminate’ the readers’ understanding of an issue” (p.33).
Multicase studies are descriptive in nature and “say different things to different audiences, accommodating and eluding various expectations” (Stake, 2006, p. 88). Using the multicase approach, the researcher presents the descriptions of each participant, aware that there may be resemblances and differences between these descriptions. These similarities may impact the interpretations of the reader and/or the researcher. However, as the researcher, I acknowledge that although the cases may be interpreted as similar by the reader, I have not given emphasis to comparisons in my descriptions. Although this is challenging as the participants were chosen based on a set criteria, my analysis was not conducted in a comparative manner. I do acknowledge however that during this process, generalizations may have occurred through my human instincts.

3.5 Participants

A purposive sample of 5 female patients who had been enrolled in a cardiac rehabilitation program for 6 months or longer were involved in this study. Eligible participants met the following criteria: (1) were medically diagnosed with a cardiac-related condition within the last year through a local health region (e.g., myocardial infarction, coronary artery disease, congestive heart failure, diabetes, obesity, coronary bypass surgery, valvular disease, or as a primary/secondary measure for prevention); (2) were female; (3) were over the age of 18; (4) were able to speak English; and (5) had been participating in a CR program for 6 months or longer.

3.5.1 Participant recruitment.

Participants recruited to this study had already been participating in a local CR program based on their diagnosis by cardiologists. The CR’s Coordinator sent out a
letter (Appendix B) and a consent form (Appendix C) to eligible participants. The letter outlined the study and included the researcher’s contact information. The consent form was also given at this time to ensure the potential participant had a 24-hour period to decide whether they wished to participate. Interested participants were asked to contact the researcher by telephone or email to enroll in the study and give consent to participate.

3.6 Data Collection Methods

All eligible participants had already been participating in the CR program for a 6 month period or longer. This time frame was used as Hamm (2004) found that although most CR programs are 12 weeks in length, it takes 26-38 weeks (6-9 months) to reach peak improvement and receive the optimal physical and psychological benefits.

Participants interested in the study contacted the researcher to set up a convenient time and date for the interview to take place.

For the purpose of this study, in-depth interviewing was the method used to gather information. This method was chosen as it is believed to be the best way to illustrate the participants’ health beliefs. Marshall and Rossman (2006) state that “interviews allow the researcher to understand the meanings that everyday activities hold for people” (p. 102). As such, the participants were asked to participate in two, individual semi-structured interviews. Each interview was approximately 45 minutes in length. Prior to the commencement of the interview, the researcher reiterated the purpose of the study and explained their rights to the participant. At this time signed consent was obtained.

The individual interviews were recorded using a digital audio recorder, allowing the interviewer to focus on the interview process and avoid the distraction of continual note taking. Anecdotal written notes were also be kept by the interviewer to enrich the data
collection process. Following the interview, the researcher also kept a journal on key points from the interview.

The questions asked during the interview were based on The Health Belief Questionnaire (HBQ), developed by Mirotznik, Feldman and Stein (1995) to use in their study entitled The Health Belief Model and Adherence with Community Centre-Based, Supervised CHD Exercise Programs. This questionnaire operationalized the dimensions of the health belief model (HBM) in relation to CHD and exercise. The questionnaire consisted of a series of questions divided by dimensions: general health motivation measured by 5 items, perceived severity consisted of 11 items, perceived susceptibility measured by 3 items, perceived benefit consisted of 9 items, and perceived cost measured by 5 items.

From this questionnaire, the researcher created a qualitative interview guide attached as Appendix A. This Qualitative Health Belief Interview Guide was used to explore factors associated with motivation and adherence in the above-mentioned regard.

3.7 Analysis

Qualitative analysis has been described as “messy, ambiguous, time consuming, creative, and fascinating” (Marshall & Rossman, 2006, p. 154). The qualitative researcher’s role is to look at the data, find underlying themes, and interpret these themes in order to transform them into findings. This task is often complex as much of the data are not measurable. Marshall and Rossman (2006) suggest seven phases of analytic procedures: (1) organizing the data, (2) immersion of the data, (3) generating categories and themes, (4) coding the data, (5) offering interpretations, (6) searching for alternative understandings, and (7) presenting the findings (writing the report). By dividing the
analysis into phases, the researcher is able to focus on the data. This study was analyzed in the following fashion.

First, the researcher organized the data. This included collecting, recording, and transcribing the interviews. During this process, the researcher removed the participant names from the observation notes and transcriptions and provided a pseudonym. Qualitative text data were analyzed manually to identify themes and code them.

Once the data were organized the researcher performed an initial scan of the data in order to better understand it. Zimmer (2011) explains that “scanning is an analysis process that is recommended at the beginning of the formal analysis portion in a project, allowing the researcher to organize and synthesize the data from the onset” (p. 73). Through this process, the researcher identified patterns and commonalities of responses to produce meaningful themes present throughout the data. The researcher took notes in the margins of her initial observations. These themes were reviewed independently by the researcher and examined to establish a set of themes that were thought to appropriately represent participant views. Once the researcher finished the scanning process, she proceeded to a more formal coding process.

Although computer-based coding programs do exist, the researcher chose to use a manual coding process for the following reasons. First, the task of coding has been described as a difficult task for a novice researcher. Patton (2002) explains,

The data generated by qualitative methods are voluminous. I have found no way of preparing students for the sheer mass of information they will find themselves confronted with when data collection has ended. Sitting down to make sense out of pages of interviews and whole files of field notes can be overwhelming.
Organizing and analyzing a mountain of narrative can seem like an impossible task. (p. 440)

Although I am familiar with basic computer programs, I am not familiar with the computer-based program, *Nvivo*. As the task of coding already seemed intimidating and difficult enough, I did not want to add on any other complications with the coding process. As a teacher, I was comfortable with the process of “cutting and pasting”. As visual and kinesthetic learner, I needed to see and touch something to fully understand it. As such, I used a colored coding scheme so I was visually able to see themes in the data.

Next, the researcher began making sense of the themes and offered interpretations. Patton (2002) states that “[i]nterpretation means attaching significance to what is found, making sense of the findings, offering explanations, drawing conclusions, extrapolating lessons, making inferences, considering meanings, and otherwise imposing order” (p. 480). Lastly, the researcher generated a report of her findings in Chapter 4 of this thesis.

### 3.8 Ethical Considerations

Prior to the initiation of the study, this project received approval from the University of Regina Research Ethics Board (Appendix D). This project adhered to the Tri-Council Policy Statement on ‘Ethical Conduct for Research Involving Humans’ (2010).

Throughout the study, the confidentiality of the participants was maintained. Once participants were approached to participate in the study, the study was fully explained to them. They were aware of their rights as a participant, that their
participation was voluntary, and that they may choose to withdraw from the study at any time. Written consent was obtained from all participants. Pseudonyms chosen by the researcher have also been used to maintain participant confidentiality.

All data and consent forms have now been stored in the Motivation and Active Living Lab (a locked lab) in the Faculty of Kinesiology and Health Studies and will remain there until final destruction.

3.9 Trustworthiness in Qualitative Research

Lincoln and Guba (1985) explain that “it is incumbent upon the researcher to persuade the audience that the findings of the inquiry are believable and worth paying attention to” (p. 290). In order to ensure trustworthiness in qualitative research, Lincoln and Guba (1985) suggest the credibility, transferability, dependability, and confirmability of the data collected should be verified. These four principals were used throughout the research process and will be further explained below.

**Credibility** refers to the truthfulness of the findings in a study (Lincoln & Guba, 1985). First, persistent observations were used to establish credibility in this study. The researcher kept a research journal to take note of any observations she noticed throughout the study. **Triangulation** is another mode of improving the credibility in a study (Lincoln & Guba, 1985). This technique was used through the use of multiple methods (interviews and journal use). Throughout the interview process, the researcher employed another technique to improve credibility - “member checks”. This technique allowed participants to hear and read the data they provided to ensure that it was correct (Lincoln & Guba, 1985). This way, participants had the opportunity to change their response if it was not correct and also add additional information if it was triggered.
Member checks are said to be “the most crucial technique for establishing credibility” (Lincoln & Guba, 1985, p. 314).

The second principal used to establish trustworthiness in a study is transferability. Humbert (1995) explains that “transferability is the degree to which, and the conditions under which readers are able to transfer the findings to their own circumstances and experiences” (p. 15). To do so, the researcher must provide a thick description of the findings in hopes that the reader is able to relate to these findings in their own lives. In this study, the researcher provided this “thick description” in an attempt to make the research relevant to the reader’s lives.

Dependability is the third principal of trustworthiness, referring to the “extent to which one’s findings can be replicated” (Humbert, 1995, p. 16). In this study, the researcher kept a journal to note all observations and changes throughout the study in an effort to make the results dependable. Furthermore, Goertz and LeCompte (1984) suggest that a detailed methods section helps ensure a study’s dependability. It is the researcher’s belief that this methods section is well detailed helping to ensure dependability.

Confirmability is the final principal of trustworthiness referring to the objectivity of the researcher (Marshall & Rossman, 2006). Lincoln and Guba (1985) suggest that the research findings be confirmed by someone other than the researcher to attest that the findings are internally coherent and supported by the data. In addition, confirmability refers to the natural subjectivities of the researcher. Zimmer (2011) explains that the researcher needs to be aware of their personal biases and how they could affect the research. To establish confirmability in this study, the researcher kept a journal to log
her own reflexivities. The researcher also had a colleague review the data to ensure the findings are supported by the data.
Chapter 4: Results and Summary

The purpose of this study was to explore what health beliefs contributed to a women’s decision to adhere to a cardiac rehabilitation program after experiencing a cardiac event. Five individual cases were analyzed through each construct of the HBM (perceived threat [severity and susceptibility], perceived benefits, perceived barriers, cues to action, and self-efficacy). The five cases presented in the following section are in descriptive form, highlighting what these women experienced in the CR program. Each case will be presented by outlining the participant’s background, followed by the analysis of their experience based on each construct of the HBM. The following analyses are my interpretations based on the data collected throughout the interviews.

It is important to note that although similar, these cases cannot be generalized to all women who participate in a CR program. Rather, the data tell the unique stories of these women and why they are adhering to a CR program. As stated in Chapter 3, this multicase study does not seek to compare cases. However, I acknowledge as the researcher that the reader will make comparative assumptions between cases based on the information provided in this section. In understanding these cases, the reader may reach a greater understanding of a larger collection of cases.

4.1 Participant 1 – Berta

Berta is a 71 year old woman who was born and raised in Saskatchewan. She is married and has two children and grandchildren. She has worked part-time throughout
her life at a newspaper and some substitute teaching. Berta has been a diabetic since she was 11 and has been insulin dependent ever since.

Berta’s journey began approximately 3 years ago when she went to see her doctor complaining of heavy breathing. As a result of this appointment, she learned that she would need two or three stints in her heart.

\[\textit{Berta:}\] “I went to my heart doctor and he found I was breathing rather heavily, so he did some testing and then discovered I needed at least one stint – at least one […] And when he went in, he didn’t tell me till after that I should have three stints rather than two. But, the third one was too close to a spot where it was dangerous to do, so he didn’t do the third one.”

Shortly after, Berta also suffered a stroke affecting her left side. To help with recovery, she was placed into two care homes. During her recovery, she was determined to walk without a walker or a cane. She was able to go home with a cane.

After being released from the care home with her cane, Berta began her sessions at the local CR program. Since that time, she has been attending the program regularly three times a week. On days when she does not attend, she walks two miles with her husband outdoors. During our interview, Berta explained that she has always been physically active and will continue to be until she is no longer able to.

Socially, Berta seems to be happy. She has a social life; she goes out for coffee with friends, out for supper with her husband, and sees her family often.

\subsection{4.1.1 Perceived threat (severity and susceptibility).} Perceived susceptibility refers to the likelihood of getting a disease or condition. Perceived severity is the severity of that condition and how it will affect one’s life. These two constructs are combined to create the perceived threat (Champion & Skinner, 2008). During our
interview, Berta referred to both constructs – perceived susceptibility and perceived severity – indicating that a perceived threat of further heart issues do exist for her.

First, Berta expressed a general health concern stating she thinks about her health “everyday”. When elaborating on this topic, she explained that she thinks about her diabetes everyday as her medication reminds her that she is diabetic. She is also reminded of her stroke because she limps and does not always have balance. However, she does not always think about her heart or her stints as she doesn’t have anything to remind her.

_Berta:_ “I’ve never had pain in my chest. And I just don’t have pain to remind me of it.”

Berta also explained that she tries her best to lead a healthy lifestyle. She explained that she takes vitamins, sleeps well, sees her doctor if she is ill, and worries about her diet. During the interview, Berta also explained her feelings towards CVD.

_Interviewer:_ “What do you think of cardiovascular disease? Do you think it’s a severe medical condition?”

_Berta:_ “I do. Because I saw my dad suffer from it. Oh both my parents died of heart disease - different kinds. My dad had a heart attack and a year later, my mom had congestive heart failure. So, that part bothers me, but I’ve never had a heart attack and I’ve never had congestive heart failure. So, I don’t worry about it as much as maybe I should be.”

As both parents died from heart related conditions, Berta seemed concerned that she was susceptible to it as well. However she also indicated that she should be more concerned. As such, it is evident that a perceived threat exists for Berta; she is aware that she has had minor heart issues and that both parents died from heart related conditions. However, she does not dwell on it or think about it often.
In-line with Rosenstock’s rational for perceived threat (1974) Berta further expressed concern that she does feel susceptible to developing a more serious heart condition as her doctor was unable to put a stint in one of her blockages.

*Berta:* “It’s from the one he couldn’t do […] I wonder what that one that wasn’t done is doing.”

### 4.1.2 Perceived benefits.

Perceived benefit refers to the usefulness of changing a behaviour to reduce the risk of disease or health threat (Champion & Skinner, 2008). In this case, Berta has accepted the recommended health action (attending a cardiac rehabilitation program).

Berta started attending the local CR program when she was able to walk with a cane after her stroke. Berta explained that she has experienced numerous benefits from attending the CR program.

First, Berta indicated that she has improved her overall health since attending the program. The first health benefit experienced by Berta was the improvement in her overall mobility. When she first attended the program, she was weak, lacked balance, and wasn’t able to lift herself off the floor. Since attending the program, she has noticed improvements in this area.

*Berta:* “Well I was nervous and scared but once I got started and because I had a huge problem with balance I thought, Oh no, I don’t want to do this because people can see me. […] We did some exercises on the floor with mats. And I couldn’t get up for the longest time; I always had to have help. Now I can get up.”

Berta also explains that the program has made a difference in her daily life and is now able to contribute to household chores and work more outdoors.
**Berta:** “It helped to strengthen my legs and arms. [...] I can do more outdoors now with at least some strength. Like I can pull out vegetables which I couldn’t do a year ago”.

The health benefits reported above by Berta are consistent with the positive physical outcomes found in previous studies stated in Chapter 2 of this thesis, that those who participate in a CR program increase their exercise tolerance and mobility in daily life activities (Ades, 2001).

Secondly, Berta has found many benefits with regards to the facility. She explained that the benefit she enjoyed the most was the support she received from the staff. She enjoys asking them questions and knowing that someone is there if she needs help.

**Berta:** “If you need help there’s somebody there to help you. If you have to ask a question there’s somebody you can ask. And say I’m having an insulin reaction, a lot of time I do when I go and it’s when I start – then it puts me down and I need help to get off the mat [...] instead of getting up right away and leaving the circle, they’ll kind of stay around and see how I’m doing.”

She also enjoys that there are nurses on site to “monitor you”. The program is set up so each participant needs to be monitored at different times, which she thinks is good. Further to this, she finds the staff helpful with explaining different exercises if she needs help or if she isn’t doing the exercise properly.

The facility itself is a benefit for Berta. She lives close (within three kilometers) which she finds convenient. Berta likes the overall program and states that “It’s the actual exercise routine that keeps me going back”. She enjoys the warm up and cool
down exercises and the machines they have at the facility. As such, Berta states she will stay with the program “as long as I’m getting something out of it.”

Third, Berta has experienced social benefits from attending the program. She explains that “[t]here are people that I know that have come since I’ve been in it. And yes I have made one good friend […] if I’m the first one there and she’s still doing something else then I’ll get two mats down, one for each of us and she’ll do the same for me”. In accordance with Moore (1996), women enjoy interacting and socializing with other participants leading to a greater adherence to the CR program.

4.1.3 Perceived barriers. When asked about barriers preventing her from attending the program, she explained there was “nothing that serious” keeping her from attending the program. She further explained that cost wasn’t an issue as the program was covered by insurance; time wasn’t an issue as she has time to do it; transportation isn’t a problem as her husband drives her and picks her up. She also has the support of her husband as he walks with her every day. Berta explained that the only “barrier” which has prevented her from going are doctor’s appointments.

4.1.4 Cues to action. As stated in chapter three, cues to action are the cues (bodily events, environmental events, or media publicity) that trigger a person to act (Champion & Skinner, 2008). For Berta, her primary cue to action following her heart event was her physician referral. Berta also sees her cardiologist on a regular basis who asks if she continues to participate in a CR program. When asked about the Heart and Stroke Foundation and how she was influenced by media publicity, Berta indicated that
although she was aware of certain commercials and occasionally received postcards in the mail, that this did not influence her decision to attend a CR program.

4.1.5 Self-efficacy. Self-efficacy refers to one’s feelings of confidence to implement a recommended change (Bandura, 1997). Although she wasn’t confident when first attending the CR program, Berta explained that her self-efficacy for exercise grew as she was able to do more and more exercises every day. This indicates that Berta experienced performance achievements, the most influential source of self-efficacy (Rosenstock et al., 1988). She explained, “Some of them I wasn’t able to do […] Then I started doing the odd one on my own and I could do it so then gradually I worked in all the one’s that involved the legs and I was able to do them.”

Further, as Berta’s overall health and mobility improved, so did her self-efficacy in her abilities to exercise. Since Berta first started attending the program, her mobility, balance, and physical strength has increased. Berta explained that she is determined to improve and feels enough self-efficacy for these activities to push herself with her program.

Berta: “I’m going to tell them that some of the [repetitions] I’ve raised myself, instead of doing 62 I may do 65 on my own. So I’m going to tell them I’ve raised some of them on my own and I can do them higher.”

4.1.6 Researcher reflexivity. After speaking with Berta, my overall impression is that Berta’s health beliefs are consistent with the HBM. Berta’s perceived threat is high – she feels susceptible to further heart issues and indicates they could be severe. In order to reduce the threat, she participates in the local CR program. It seems that perceived benefits seem to be the main reason for Berta’s long-term adherence to the program. Berta seemed to really like the CR program and attending it. She really liked
the help of the staff and knowing there was always a nurse there if she needed help. She also explained the many benefits she’s experienced from attending: increased strength, balance, and improved cardio health. Furthermore, Berta does not experience any barriers keeping her from attending. Berta does not indicate any cues to action, however she did receive a referral. Berta also has a high-self efficacy for exercise as she experienced performance achievements while attending the program.

4.2 Participant 2 – Catherine

Catherine grew up in Melfort, Saskatchewan with her family. She worked as a lab technician for many years then retired from microbiology in 2002. She has three children and was married for many years until her husband passed away from lung cancer in 2004.

Her journey with CVD began after the passing of her husband. In 2008, she underwent a hip replacement. In 2010, Catherine and a friend went on a trip to the United States where she contracted a cold she could not get rid of. Upon returning to Canada, she saw her doctor who gave her a chest x-ray to check for pneumonia. The results showed that Catherine’s heart was enlarged. Further tests showed that her heart was damaged, however she had no blockages. A year later, Catherine’s doctor recommended that she have an implantable cardio defibrillator (ICD) put into her chest right below her shoulder. According to Catherine, this device monitors the heart and will shock it if needed. She explains that “[the ICD] can’t change your heart condition or anything, but it monitors the heart so that if the heart starts acting kind of strangely, […]"
it will shock it. It’s just like having an EMT sitting on your shoulder!” Since having it implanted in 2011, it has not gone off.

Catherine has been physically active throughout her life and was active in many sports until having children. Once they were born, she was not as active, as she was busy being a mother. After the passing of her husband, however, she joined Herbal Magic, Curves, and did aquasize. She explained that she lost 40 pounds and thought she was in good physical shape. Catherine joined the local CR program in 2010 and has been attending regularly ever since.

4.2.1 Perceived threat (severity and susceptibility). A perceived threat is the combination of one’s perceived severity and perceived susceptibility to a condition or disease (Champion & Skinner, 2008). In Catherine’s case, a perceived threat exists as she expressed that she had a high concern for her health. When asked how often she thought about her health, she replied “All the time”. She further explained that she considered herself to be ill and affected by illness by stating:

“Being ill is a depletion of your quality of life, not being able to do the things that you normally would have done if you were well and mentally it’s depressing and it develops paranoia because you are worried about the- how can I put it- the future.”

This quote not only illustrated that Catherine feels she is ill, but also shows that her perceived severity and susceptibility are high. First, it illustrates Catherine’s perceived severity of her heart disease by showing that Catherine believes her illness is depleting her quality of life and that she feels she is not able to do the things she would have normally done before her illness. Second, it demonstrates her perceived
susceptibility to heart disease - that she feels susceptible to a worsening condition in the future.

Next, Catherine explained the severity of CVD and her thoughts towards it. During the interview, she told a story of seeing her cardiologist for a routine appointment. Her doctor said to her:

“You know Catherine, you walked into my office, many of my patients can’t even walk into my office by themselves. You are very fortunate to be able to do that. In your case, I can’t operate on you. There’s no plugs, there’s no valve problems or anything. You’re fine that way and I can’t operate and fix your damaged muscle on your heart. The next thing that we can do other than medication for you is a heart transplant. If you ever go to the stage of needing a heart transplant, there are 20,000 people in Canada per year who need a heart transplant and there’s 2,000 hearts so take it from there.”

Retelling the story, Catherine had tears in her eyes and was clearly upset by it. When asked how the discussion with her doctor made her feel, she expressed that she felt “small and like no chance at all probably in getting a heart transplant if I ever had to have one because I’m 71 years old and they probably give all the hearts to younger persons. […] It is a very serious disease because if your heart stops beating, then you’re dead whereas if you have some other organ that’s sick, the heart will still be healthy.”

The first interview concluded with a discussion on recovering from a heart event. At the end of the conversation, Catherine emphasized the perceived threat she felt from her condition. She stated “I will never recover. My heart is damaged and I will never recover.”

4.2.2 Perceived benefits. In this case, Catherine has a high perceived threat, has accepted the recommended health action (attending a cardiac rehabilitation program) and
sees it to be beneficial to help reduce the threat, in-line with the HBM’s framework for behaviour change (Champion & Skinner, 2008).

Catherine experiences numerous health benefits from attending the program. She finds that by attending the program her mood and energy improve. She explained that in the facility there is a note that states “If you don’t feel very good now, do your exercises and your mood will improve.” She attributes this to all the happy people she meets in the facility.

*Catherine:* “You meet a lot of people down there and everybody seems to be in a jovial mood even though some are aching and some have problems. Still, when they come across other people there, they start to visit with them and they forget their problems.”

Another health benefit she has experienced since starting the program is an increase in muscle mass, which coincides with Ades study (2010) reporting that participants in a CR program experience numerous physical outcomes such as an increase in strength. She states, “it has made my muscles much better since I started doing that at the gym.”

Secondly, Catherine has found that there are benefits with regards to the facility and program. Catherine indicates that she likes the facility and enjoys that the program shares the facility with the university gym.

*Catherine:* “I feel that it’s very conducive to exercise. It’s not closed in. It’s very high ceilings. Both sides can use the track. We have 2 lanes for running and two are for walking. They go opposite directions so everybody who’s running doesn’t have an accident with everybody who’s walking. And yet it’s beneficial to both sides because either side can use the same equipment or the same track.”
One of the main benefits according to Catherine is the program itself. In accordance with Moore’s (1996) findings that women enjoy feeling comfortable in their CR program, Catherine enjoys that the program is laid back and that even though she has guidance, she can do what she wants.

*Catherine*: “I like it because it’s laid back. Once you get incorporated into knowing what to do, it’s very laid back[…] Everything is designed to make it easier to exercise and to come, so I enjoy the program with the fact that it’s laid back[…] It’s not a rigid program that you have to just be forced into doing this and this.”

Within the program she appreciates that the “friendly” staff is available and are very helpful if needed. She explains that the staff isn’t “hovering over you like a car salesman waiting to – just watching every move you make, which I don’t like exercising like that.” She further explains that it is beneficial to have a nurse on site if anything happens.

*Catherine*: “If you’re going on the track there’s buttons you can push at every corner. There’s buttons you can push in the bathroom. If you need help immediately there would be somebody there. That’s one thing that’s very, very good to have[…] you have somebody on hand in a moment’s notice if you need help and I really treasure that and appreciate that.”

Third, Catherine experiences social benefits from attending the program. Throughout the interview, she frequently talks about the support group she has and the friends she’s made from participating in the program:

*Catherine*: “You have friends. You get to know people there. There’s a support group there with a psychologist.”

### 4.2.3 Perceived barriers.

When asked about the barriers she experiences with program, Catherine did mention that the cost of the program was not covered by her insurance policy. As stated in Chapter 2, financial barriers prevent many from attending
a CR program (Sanderson et al., 2010). Although Catherine pays out of pocket for her sessions, she does not see cost as a barrier. She explains that although it would be cheaper to attend a different exercise program that she wouldn’t have the support team that she has at the CR program. She explains it as an insurance policy.

*Catherine:* “[Another exercise program is] much less cost, but then you don’t have immediate medical benefit if you had a heart attack […] So I mean comparison wise you’re paying for the doctor, the nurse, the exercise experts and all that as well, so I mean that’s your extra costs. Of course you could flip a coin and it’s like an insurance policy.”

When asked about the other barriers often experienced by those who do not adhere to a CR program, Catherine did not experience any of them.

**4.2.4 Cues to action.** Catherine’s primary cue to action was when she was diagnosed with an enlarged heart and had an ICD implanted. At this time, her physician recommended she attend a CR program. Catherine indicated that she was aware of certain media campaigns such as the Heart and Stroke foundation and remembers receiving pamphlets from them, but does not feel they have influenced her attendance in the CR program.

**4.2.5 Self-efficacy.** Catherine indicated that she has a high self-efficacy for participating in a CR program. Catherine’s perceptions derive from her performance accomplishments in the program. At first when she came to the program she explained that she felt “nervous about going” because she didn’t know what she was going to have to do. Once she arrived to the program her worries were calmed as she realized that she would be able to complete the exercises. She explained, “once I got there, I realized that they test how much you really can do and they don’t push you to do anything that you really can’t do.” Over the past three years of attending the program, Catherine has
experienced personal mastery of certain exercises which has enhanced her self-efficacy for exercise. This supports Rosenstock et al. (1988), who indicate the importance of self-efficacy in the maintenance of behaviour change.

4.2.6 Researcher reflexivity. Catherine’s experience is consistent with the HBM. All constructs work together to illustrate her health beliefs and adherence to the CR program, however some are more dominant than others. After interviewing Catherine, I believe that her adherence is driven by her high perceived threat. She feels very susceptible to further heart issues and considers her condition to be severe. She even indicates that she will “never recover”. With regards to benefits, Catherine enjoys the program and had positive comments regarding the staff, facility, exercises, support, and friends. She did not have many barriers preventing her attendance, although she does pay out of pocket. Catherine’s cue to action was her diagnosis and physician referral. Catherine’s has a high self-efficacy for exercise and indicates many performance accomplishments.

4.3 Participant 3 – Beth

Beth’s journey with CVD began in 2003 while she was at work for the city. Her symptoms started as nausea and sweating which she attributed to having the flu. Seeing her mother’s color, her daughter immediately took Beth to the emergency. Once she was in triage, she passed out and didn’t wake up until two weeks later.

Beth had had a major heart attack putting her into a coma. Doctors prolonged her coma for two weeks to help her recovery. While in her coma Beth remembers having hundreds of vivid dreams of what was happening around her. Once she awakened from
her coma, Beth’s recovery was slow as her leg muscles had atrophied. She spent two more weeks in the hospital learning how to walk with a walker. Shortly after, Beth began attending the local CR program.

In 2010, she began to feel ill again with flu like symptoms. At this time, she went back to the hospital where they discovered that she had had two more heart attacks during the previous week. As a result, she had two more stints put in. Her recovery was much quicker this time, and she resumed attending the CR program shortly after.

In 2013, Beth began to notice changes in her heart rate while at the CR program. She also woke up during the night with burning in her throat. Knowing this was a symptom of a heart attack, she returned to the hospital to discover she had had another heart attack. Doctors put in one more stint.

Beth’s family history is indicative of heart issues, as her father died from a heart attack at the age of 48 years, when she was 15. Her mother had a series of strokes at the age of 85.

Beth indicates that she was very physically active growing up and played a variety of sports. Once she was married she believes she was physically active as they lived on a farm and she “did tons of barn cleaning and lots of that kind of stuff.” However, Beth indicates that later in life she wasn’t as physically active as she should have been, nor did she eat properly “[I] wasn’t always perfect with what I did. Like I didn’t do much exercise, I gained a bunch of weight[…] I wasn’t eating properly. And I ate what I liked to eat and gained weight and … lost and gained and lost and gained.”
Throughout the interview, Beth indicated on numerous occasions that she has a lot of stress in her life since her husband left her in 1999. She states “if there’s something to stress about, I’ll stress; and if not, I’ll find something.” Following her most recent heart attack, she was diagnosed with mixed-mood disorder and now takes medication which helps alleviate her stress.

4.3.1 Perceived threat (severity and susceptibility). As Beth has had 3 subsequent heart attacks since her first one in 2003, her perceived threat of further episodes is high. First, her overall general health concern illustrates that her perceived susceptibility is high. When asked about illness in general, Beth replied by saying she feels susceptible to more heart attacks and she wonders when it will happen again. She says, “I think I’m always ill, because I’ve always got so many things to watch and do and… then of course you’ve had all these silly heart attacks, as soon as you get a pain you think: “When’s it gonna come again?”

Although, Beth recognized that her condition if left untreated would likely result in death, somewhat contradictorily, this did not seem to be a threat for her. Beth seemed to have accepted that she would likely die from a heart attack, and did not fear it. When asked how often she thought about her health, she replied, “I would say probably always. But I’m not afraid. I’m not afraid to die; if it’s my time, it’s my time.”

Beth did describe the social consequences she’s experienced from her condition and how it has affected her life. According to Champion and Skinner (2008), social consequences illustrate a person’s perceived severity. Beth explains,

Beth: “[T]here’s a lot of things I don’t do now. Like somebody’ll say “Do you want to go to the Red Sox game? – the baseball games in Regina – “Oh
no. No.” Because I got to get from the car to the stands. And I can’t go up the stairs without holding on… I can’t. Like that kinda stuff, and so I’m… restricted in a lot of ways[…] so it changed a lot – a lot – as far as what I do.”

4.3.2 Perceived benefits. In an effort to reduce her perceived threat, Beth actively engages in a CR rehabilitation program, as she experiences numerous benefits from participating. Beth strongly believes that participating in the program has saved her life in many different ways. She stated numerous times throughout the interview that “this gym… is my salvation”.

The most dominant benefit explained by Beth throughout the interview was the social benefits she has experienced, coinciding with Moore’s study (1996) indicating that women enjoy socializing at a CR program. As she has been in the program for over 10 years, Beth explains that she considers herself as a “shepherd” in the program guiding and helping all the participants. She explains, “[the program] it’s just great. It’s great. I promote it everywhere I can […] lots of people think I work here, because I’m always there, and I like to help. I consider myself the shepherd, and they’re my – all my sheep.”

She further explains that the program has become so familiar to her and such a big part of her life that she attends the program almost every day and stays for long lengths of time. She says, “you’re supposed to be there for an hour, but I’m there for, like three.” She feels a sense of ownership in the program and stays to clean the equipment. She explains, “I kinda help out – I tidy up the stuff and move the chairs and put stuff away…. I’m kinda housekeeping.”

As the “shepherd” in the program, Beth has made many friends and enjoys socializing throughout the program. She explains that she stays for such a long time
every day as “a lot of it is visiting; you know it’s social”. When asked about her social
life, she explains that the CR program is her social life and the sense of community she
feels while she is there, as is evidenced through this dialogue:

*Interviewer:* “So your social life?”

*Beth:* “Is the gym.”

*Interviewer:* “And the important people in your life?”

*Beth:* “A lot of them are here, at [the CR program]. And I think the thing is
with this place, even if you come on a non-[CR] day […] there’s always
somebody, like 50 people that you say good morning to, and I think you
feel a part of something. […] Yeah so this is basically my whole life.”

In addition to the social benefits, Beth has experienced numerous health benefits
associated with her attendance at the program. As stated in Chapter 2, there are many
physical outcomes that may occur from participating in a CR program, such as weight
loss, increased strength, and improved mobility (Ades, 2001). The main physical
outcome for Beth has been the increase in her mobility. She explains that when she
started at the CR program she was unable to walk, and now walks up to 80 laps a day.

*Beth:* “I couldn’t walk one lap in the little gym. Not a lap. And so I worked on
the bike. […] And then I gradually started walking… and walking, and
now I’m up to five miles a day.”

As Beth became more physically active attending the CR program, she began to
lose weight and sees this as a benefit from her attendance. She explains that “[n]othing
tastes as good as thin feels. And that’s the –just the truth. […] It’s such a wonderful
feeling. Wonderful, wonderful feeling.”
Third, Beth enjoys the program and finds certain aspects to be beneficial. She enjoys that there is someone there if she needs help. In line with Moore’s findings (1996) that women need to feel comfortable and supported by staff in their CR program in order to adhere, Beth explains she “feels safe” at the facility.

*Beth:* “They all have to keep an eye on you, […] it’s such a relief and … takes all the pressure out of what just happened to you as far as having a heart attack when you’ve got them there and they control what you do and they’re there is something happens. And it’s so important – so important – to have that confidence in being able to come.”

She also explains that parking is an “absolute wonderful thing” as participants can park in the underground parking for $1.00 a day.

### 4.3.3 Perceived barriers.

When initially asked whether she experienced any barriers which kept her from attending the program, Beth answered “no” that she did not have any barriers. However, as the conversation progressed, Beth did have a few complaints about the program.

First, Beth explained that cost wasn’t a barrier anymore as it is now covered in her plan. However, when she first started, it wasn’t covered and she found the cost was somewhat of an issue. She explains “it wasn’t a drop in the bucket[…] especially me ‘cause I come six days a week, so I was renewing a lot.”

She also expressed that although cost wasn’t an issue for her, that for some it was. She explained that many participants purchase the 48 session pass. Her concern was that it expires after a year which deters people from purchasing it.

*Beth:* “[The CR program] has a rule… and most people buy the 48 sessions, right? And you have a year to use that. Which to you and me would be fine. I’d use it up quickly. But these guys sorta – and then they’ll have a
health problem, and it could be a knee or hip or back or old things, you know [they're] older – when you get older stuff. And so they’ve had to stay away for 6 months? And then they don’t use their 48 sessions in the year. […] And now they expire you. […] But when you do that to them – and I know that lots have said “You’re gonna take those ten sessions away from me? You’ll never see me again!” So they’re losing everything. So they’re losing those people, they’re losing the people that can only come maybe four times a month now, cause they’re not using it up. And they’re punishing them.”

Although Beth explains that travel is not an issue for her as she drives, she mentions the older widows she knows in the program who do have travel as a barrier to attend. This is in accordance with McCarthy et al.’s study (2011) that found that many elderly women find transportation as a barrier as many do not have access to a car or a convenient mode of transportation. Beth suggests that a buddy program for those who drive would be a good idea.

Beth: “There are people - mainly women – that don’t drive. And have never driven. I still can’t figure this out, but their husbands have died. And like, one of them in particular, her husband died a year ago. And … she – they came three times a week. And now she can’t drive. And cabs are just way too costly. And I think a sort of buddy program might be a good idea.”

4.3.4 Cues to action. Beth’s primary cue to action was following her first heart attack in 2003. She sees her cardiologist regularly who initially referred her to the CR program. When asked about the Heart and Stroke Foundation, Beth indicated that she was aware of their campaigns and thought they did well at promoting CVD. Although she knew of the foundation, she did not feel they had anything to do with her attendance or adherence to the CR program.

4.3.5 Self-efficacy. Beth explained that when she first came to the program, she was unable to move, but was determined to improve.
Beth: “And I couldn’t walk one lap in the little gym. Not a lap. And so I worked on the bike. Stationary bike, I did that and the arm ergometer. […] And then I gradually started walking… and walking, and now I’m up to five miles a day.”

The above statement shows that Beth’s self-efficacy for exercise has improved through her experienced performance accomplishments while attending the program.

4.3.6 Researcher reflexivity. Beth’s adherence to the local CR program is consistent with the theory of the HBM. For Beth, two constructs were dominant: perceived threat and perceived benefits. First, Beth has had 4 heart attacks in 10 years, indicating a high perceived threat. She does believe she will have more heart attacks – like she’s prone to them. Secondly, I feel as though her other main reason for attending and adhering to the program is due to the social aspect of the program. As she’s been attending for so long, she’s made many friends and is very comfortable there. It seems like she really enjoys the sense of community and the inclusion she feels from attending. She even calls herself the shepherd and the others her sheep.

Beth also did not have any barriers keeping her from attending. The only main cue to action she indicated was the events themselves along with her physician referral. She also had a high self-efficacy for exercise as she has been participating in the program for ten years and has mastered many of the exercises.

4.4 Participant 4 – Laura

Laura is a 52 year old woman who was born and raised in Regina, Saskatchewan. Her story began on May 16th, 2013 when she felt like something was wrong. Out of breath, and feeling like her ribs were being crushed, she called her brother to take her to the hospital. She was admitted right away and was managed with medications until 2
days later when she had three stints put into her heart. She was released the following day and explains that she “felt amazing after the stints” and had a very easy recovery.

Laura had a very active lifestyle growing up and played on “all the teams at school”. Even though she was physically active, Laura always struggled with her weight and put on a lot of weight in high school. As a result, Laura developed high blood pressure and diabetes.

Laura’s family history is also very indicative of heart issues. Her mother had a series of heart attacks and a fatal heart attack at the age of 64. Her mother’s four siblings also all passed away from heart attacks. Her father was a severe diabetic who has both legs amputated and poor eyesight. Although he had a stroke in his 60’s, he also passed away from a fatal heart attack at the age of 70.

Laura indicated that she has always felt stress in her life. She explained “I found it stressful with my mom’s passing. It was stressful with my dad being so sick all the time […] then I found it stressful leading up to the heart attack”. Following her mother’s passing, she lost a lot of weight due to stress and over exercise. Married at 29, Laura explains that she “blossomed into being obese” after the birth of her child. A year prior to the heart attack, Laura’s husband had three surgeries out of town, which Laura found challenging.

Laura started attending the local CR program following her heart attack and has been attending for almost a year.

4.4.1 Perceived threat (severity and susceptibility). Laura describes illness as “[n]ot being well enough to do your day-to-day activities”. When asked if she felt that
she was ill, she said no. However, Laura explained that she does think about her diabetes every day and worries about her blood sugar levels sending her into a diabetic coma. Laura also explains that since her heart attack, she has made significant changes on her lifestyle and now eats properly and exercises, indicating that an overall health concern and perceived threat does exist.

*Laura:* “Since the heart attack, I eat properly now. I go to the gym – I go to the [CR program] six times, sometimes even seven times a week.”

Furthermore, Laura alludes that her perceived susceptibility does exist, as she feels susceptible to further heart attacks based on her family history.

*Laura:* “I always knew I was going to have a heart attack, I just didn’t know when. I assumed it would be in my 60’s only because of my mother, but I had it about 10 years sooner than I thought I would.”

However, when asked if she feels susceptible to developing a more serious heart condition, Laura answers “no”. She explains “I know that I am not fixed. I’m always going to have a cardiac problem, but I’m not worried about it.” Later in the interview, Laura also explains that although she is not worried about it, she is susceptible.

*Laura:* “Well, they tell you you’re always kind of susceptible to the condition. I don’t know if I feel like I’m away to the races and nothing’s ever going to happen again, but I mean they’ve told me that I may live with this for the rest of my life. So I don’t know what to expect, but I’m hoping for the best.”

Laura’s indicates her perceived severity of heart disease is high as she feels if she did have further heart episodes, it would likely result in death. She feels this was due to her family history as her mother and her four siblings all passed away from fatal heart attacks.
Laura: “I would hope for the mild side, but I’m thinking it would probably be severe.”

4.4.2 Perceived benefits. Laura participates in the CR program in an effort to reduce her perceived threat. Throughout the interview Laura explained the numerous health benefits she receives from attending the CR program. Although she enjoys all the health benefits, Laura explains numerous times that the benefit she enjoys the most is the weight loss.

Laura: “Just feeling better about yourself and being able to do things without getting exhausted or whatever. Weight loss – I love the weight loss part!”

Along with losing 45 pounds since joining the program, Laura has noticed that her mood has also improved and states that “I’m more upbeat than I was prior to the heart attack.” These benefits are in-line with the positive physical outcomes found in Ades study (2001), described in Chapter 2.

The next benefit that Laura receives from the program are the social benefits. When asked about friends and her social life Laura replied the following:

Laura: “I would say I don’t really have much of a social network. I did prior to marriage, and then my life just focused on my husband and my son and my dad. And I’m close with my brother and his wife, but other than that, I’m very nuclear I guess. I don’t go outside that. I don’t really associate much with my husband’s family, so I would say no, I don’t really have a social life. Although I do have my peeps now at the [CR program].”

During the second interview, Laura reiterated the importance of her “peeps” (friends) at the CR program. The program has become her social life as, as she mentioned in the first interview, she does not have many friends outside her family.
Laura: “About my peeps at the [CR program]. I find I’m quite close to [them] […]when I was gone for 10 days or whatever, people that I knew had asked how I was and where I’d been and stuff like that. So yeah, I love them.”

She also mentions in the interview that her “peeps” are the reason she continues to attend the program. She explains that after her initial 36 sessions, she knew she had to get a membership somewhere and as she loved the people, she chose to stay there.

Laura: “I said [to my husband], ‘Well I’ve gotta get a gym membership somewhere, and I wanna stay here ‘cause I wanna stay with my peeps,’ so then we bought the yearly membership[…] I just think the people because I mean, really, realistically I could go to any gym, but it’s just not the same because I’ve got bonds, and I just look forward like when I was away on the holiday, I was wondering what they’re doing today.”

Furthermore, Laura explained that she finds the facility to be “good” and has no complaints with regards to the staff. She stated that there’s nothing she would change about the program as she is “happy” with it and says “I’ll stay here until I die”.

4.4.3 Perceived barriers. Laura did not experience any major barriers preventing her from attending the CR program. When asked about the cost of the program, Laura explained that although she paid out of pocket, this was not a barrier for her as “you can’t put a cost on your health”. She further explained that time wasn’t a barrier as she schedules it in everyday; transportation isn’t an issue as she is still able to drive. Furthermore, Laura also has the support of her husband who attends the program with her twice a week. According to Cooper (2002), marital status is a large predictor of attendance, with married women being more likely to attend.

4.4.4 Cues to action. Laura’s main cue to action was the referral phone call she received following her heart attack. As indicated in Chapter 2, being referred to a CR program by a medical professional is a strong predictor of attendance (Beckie et al.,
Laura mentioned that although she knows she was referred, she doesn’t remember it. She explained: “you know, I honestly don’t know how I got going – they wanted to know in the hospital if I wanted to go to the sessions [...] and I said yeah.” Further to this, she explains that if she had not been referred, she likely would not have attended.

Laura: “If I hadn’t been referred, would I have gone there on my own? My husband might have tried to find something for me, but I probably wouldn’t have.”

Furthermore, when asked about the Heart and Stroke Foundation’s campaign, Laura explained that although she had heard of it, it did not influence her to attend the CR program. She states: “I’ve never really thought about it. I don’t think it affects me.”

4.4.5 Self-efficacy. Laura indicated that when she initially started the CR program she was “huffy and puffy” and questioned her own abilities. However, after sticking with the program, Laura’s self-efficacy for exercise increased and she was determined to improve. She explains: “the more you go, the better you get, and the more weight you lose, the better you feel, and you’re not dragging yourself.” This indicates that Laura feels self-efficacious for her exercise program as she achieved performance attainments.

4.4.6 Researcher reflexivity. After speaking with Laura, my overall impression is that Laura’s health beliefs are consistent with the HBM and influence her adherence to the CR program. Two constructs stood out in Laura’s story: perceived threat and perceived benefits. First, her perceived threat is very high because of her family history. She explained to me that if she were to have another heart attack that she thinks it could be fatal. Although she does have a high susceptibility, it seems that her major reason for
attending the program is the social benefits. Throughout both interviews she mentioned her “peeps”. It didn’t sound like she had a social life outside of her immediate family at home. I feel as though she is adhering to the program as she has found some friends and feels a sense of community there with them. She also explained that she has lost a lot of weight since she’s started attending, which I believe is another main reason she attends.

In terms of the other constructs of the HBM, Laura had no barriers preventing her from attending the program. The only main cue to action she indicated was the referral phone call she received. She also has a high self-efficacy for exercise and has experienced some performance achievements.

4.5 Participant 5 – Gloria

Gloria is a 69 year old woman who was born and raised in Cupar, Saskatchewan. She was an only child and lived with her parents on their family farm until her father was killed in an accident. She attended nurses college and moved back out to the farm when she was married in 1966. She and her husband had three children and she practiced nursing in numerous small towns close to her farm.

Gloria’s heart issues began in 2013 when she had just returned from getting groceries. She felt pain in her jaw and her left arm and decided to go to the hospital. Gloria had an inferior block and had two stints put in. She was released from the hospital two days later. Apart from adjusting to the new medications she was put on, Gloria felt great and had an easy recovery.
Gloria’s family history is not indicative of heart issues. Her father passed away from an accident and her mother lived until the age of 105. She does not recall anyone in her extended family being affected by heart issues.

Gloria indicated that she has always lived a physically active life. As a child she played volleyball, baseball and curling and figure skated until the end of high school. Once she was married, she continued to curl and did much manual labor on her farm and looking after her children. She also explained that she had been physically active up until the time of her heart attack. Eight days prior, she had returned from a trip to Antarctica where she hiked a glacier. Gloria explained that she felt good before her heart attack and was surprised that she had one.

**4.5.1 Perceived threat (severity and susceptibility).** Gloria’s perceived susceptibility to further heart issues can be examined by looking at her general health concern. When asked about her health and how often she thinks about it, she replied “I don’t think about it at all […] I mean if I’m feeling well, no I don’t think about my health.” She also explained that she does not feel susceptible to developing a more serious heart condition. In terms of her perceived severity, Gloria explained that she is not worried about CVD.

*Interviewer:* “How worried are you about cardiovascular disease?”

*Gloria:* “Well not really. Not worried about it no. […] they tell me I have no heart damage, so I guess. I didn’t think I had a bad heart before, so I always preface it you say, ‘Are you fine?’”, I say ‘I think I am. I thought I was before, and I wasn’t.’ so I guess I don’t know, but I think yes – I feel fine.”
4.5.2 Perceived benefits. Gloria experiences some benefits from attending the CR program. First, Gloria experiences program benefits. When asked about the facility, Gloria explained how helpful it was in the beginning, when she started to exercise. In line with Moore’s study (1996) indicating that women liked to feel safe in their CR program, Gloria indicated that she enjoyed having the staff available and was reassured that there was someone there if something happened.

Gloria: “I think it’s a fantastic place. I – that is one thing. I probably would have been a little hesitant about exercise if I had just been on my own. And it felt really good to go there and be able to do it and not worry about it – you know, not worry if you’re doing too much or too little or you know what you should do or shouldn’t do – it was amazing. It felt really good. I really appreciated the earlier part. […] And there’s always somebody – I mean you’re not doing it by yourself. That helps a lot, that you’re not alone there doing it. I don’t think I could do it if I had to do it by myself. So there’s always somebody there, and the staff is extremely friendly and very approachable, and funny, you know? They make it as good as it can be. They really do.”

It is also evident in the above quote that Gloria enjoys the social aspect of the program and is motivated to exercise by those around her.

Next, Gloria experiences health benefits from attending the program. Although Gloria mentions she does not like exercising, she does like the physical outcomes and knows that exercising is important when dealing with CVD. Some of the benefits she experiences are similar to those found by Ades (2011) in his study which includes: weight loss, an improved energy level, and an improved mood. She explained “[exercise] improves your general health. It improves your feeling of wellbeing, I guess.”

It is obvious throughout the interview that Gloria does not like to exercise, but knows of its importance and feels that she has to do it. When asked why she has chosen
to stay with the program she explained, “[b]ecause I think I need to do something and especially now in the winter time it’s hard to do other things, so that’s my best option, I think, and because I feel very comfortable there. I do, and I think the exercises are good for me.”

4.5.3 Perceived barriers. Gloria experiences some barriers with regards to attending the CR program. One of the major barriers for Gloria is that she finds attending the program to be time consuming. Gloria lives across the city from the program and does not enjoy the drive. This is in accordance to Brual et al.’s study (2010), indicating that women are less likely to enroll in a CR program due to drive times and traffic conditions.

Gloria: “Well, I find going to the [CR program] very time consuming, and you know, three days a week it pretty much takes 2.5 hours every time I go. I don’t know why it bothers me, but it seems then like, it seems to take a lot of time out of my life”.

Gloria also dislikes exercise and finds she has to talk herself into doing it. She states, “I don’t like exercising just for the sake of exercising”. She explains that she loves being physically active, but doesn’t like to “work out”.

Gloria: “I would like to keep going, but I wish I it was closer […] Well it’s just that it’s time consuming and sometimes I have to talk myself into it. Like I’d rather do something else – and I hate the road in the wintertime, and in the summer there’s so many other things I’d rather do”.

Further to this, Gloria does not find that there are enough machines and hates waiting in line for an open machine.

Gloria: “Well the only thing that bothers me is not getting – the main one is the weight line. It is really hard to get on there and not have to wait for machines. But sometimes there’s nothing free. I mean nothing that I use.
They’re all being used sometimes […] I don’t like having to wait for equipment”.

4.5.4 **Cues to action.** Gloria received her primary cue to action in the hospital while discussing the CR program with a nurse. She also indicated that she received a phone call from the program once she was home. Gloria has also received pamphlets from the Heart and Stroke Foundation, but was not influenced by their campaign in attending the CR program.

4.5.5 **Self-efficacy.** Gloria indicated that she feels self-efficacious for participating in the CR program. She explained that as she was first attending the program, the staff’s verbal persuasion enhanced her self-efficacy.

   *Gloria:* “They made me feel comfortable. I didn’t really have much of an idea of what it was going to be like. But they explain it very well, and they’re right there if you need help. […] Just do what they say”.

   Gloria has also experienced performance accomplishments leading to her feelings of self-efficacy for exercise. She indicated that attending the program has helped her maintain her physical appearance. She also indicated that she now feels more confident in her own abilities for exercising. She stated, “[n]ow it wouldn’t bother me to do it because I know I can. But until you know you can, I was a little leery about doing some things by myself.”

4.5.6 **Researcher reflexivity.** Gloria’s interview indicated that she had certain health beliefs leading to her adherence in the CR program. Although Gloria indicated that she did not feel susceptible to further heart issues, she did express a high general health concern. I feel her high health concern is the main reason she attends. What I found interesting about Gloria is the fact that she attends regularly and dislikes
exercising. She explained that there is nothing about it she likes. She hates being out of breath, she hates sweating, and feels gross afterwards. Even though she hates it, she does it because she knows she has to. Thus, Gloria must feel threatened enough to go, or else she wouldn’t attend.

Along with her own psyche keeping her from attending, Gloria also experienced barriers. She didn’t like the distance she had to travel to the program, nor the fact that she had to wait for equipment. She did like some aspects of the program and found some benefits with attending. Gloria indicated that her main cue to action was the nurse in the hospital along with the referral phone call she received when she got home. She also indicated that she has a high self-efficacy for exercise and has experienced some performance achievements in the program.

4.6 Summary

The health belief model (HBM, Becker, 1974), was the theoretical framework used to understand health behaviour in this study. It was also used to understand compliance to a certain health action (Bouchard et al., 2007). The HBM was used in this inquiry to answer the following research question: What health beliefs contribute to a women’s decision to adhere to a cardiac rehabilitation program after experiencing a cardiac event? As such, each case was analyzed through each construct of the HBM (perceived threat (severity and susceptibility), perceived benefits, perceived barriers, cues to action, and self-efficacy). In examining the individual cases, the following themes as they relate to the HBM were recurrent in each case.
4.6.1 Perceived threat (Susceptibility and Severity). Although their heart events differed in type, the women interviewed in this study had already experienced a cardiac event, based on the inclusion criteria of the study. Although differing in degree, a perceived threat existed for all women. The perceived threat experienced by the women could be grouped into three categories: their general health concern, their thoughts on their susceptibility to further heart issues, and their thoughts on the severity of CVD.

General health concerns. Commonalities could be seen when discussing their general health concern. The women in this study were concerned with their health and most thought about their health “everyday”. Some reoccurring themes discussed in this area were healthy eating and the importance of eating out of the four food groups. These women indicated that they see a doctor if they aren’t feeling well. Although some women indicated that they had trouble sleeping, they were all aware of the importance of sleep. All women also discussed the importance of physical activity in their lives and said that they had been physically active as children. This coincides with the findings of Mirotznik et al. (1995) that general health motivation and health practices were positively correlated with adherence to a CR program.

Perceived susceptibility to further heart conditions. Commonalities arose when discussing their perceived susceptibility to further heart conditions. Although varying in degree, all women indicated that they felt susceptible to another heart episode. For some, this was due to their family history and having family members pass away from heart events.
**Perceived severity of CVD.** Common themes were evident when looking at the perceived severity of CVD in all women. As stated above, perceived severity refers to “feelings about the seriousness of contracting an illness or of leaving it untreated include evaluations of both medical and clinical consequences (for example death, disability, and pain)” (Champion & Skinner, 2008, p. 47). All women explained their feelings of seriousness of their disease and expressed a fear of death from further heart events. Although varying in degree, all women explained that their heart issues had affected their life (social, family, and work). Social consequences were obvious as many did not go out on their own or felt very apprehensive if they did. None of the women worked as they were either on disability or retired.

As such, all women experienced a generally high perceived threat. They all felt susceptible to further cardiac events and they all expressed concern over the severity of CVD. Similarly, Mirotznik et al. (1995) reported that perceived severity of CHD was positively correlated with adherence to a CR program.

**4.6.2 Perceived benefits.** According to Champion and Skinner (2008), “individuals exhibiting optimal beliefs in susceptibility and severity are not expected to accept any recommended health action unless they also perceive the action as potentially beneficial by reducing the threat” (p. 47). In all of the cases analyzed, many commonalities were seen in the benefits experienced by all of the women. These benefits could be divided into three major themes: health benefits, social benefits, and program benefits.
Health benefits. Commonalities could be seen in the health benefits experienced by the women. All the women in this study stated that they have increased their physical fitness since they started in the program. This included increased mobility, strength, and flexibility. As a result of the increased physical fitness, the women have increased their muscle mass and have lost weight. All women also indicated an increase in energy and a more upbeat mood.

Social benefits. One of the most common themes which arose when discussing benefits was the social benefits experienced by the women. The women in this study indicated that they have made numerous friends in the program and enjoyed that there was always someone around to talk to. The program serves as a support group to these women. For some, it is their social life as they do not have one outside of the gym.

Program benefits. Commonalities were also evident when the women discussed the benefits they experienced with regards to the program itself. First, the women enjoyed the exercise routine and that it was tailored to their own needs and abilities. They also enjoyed the flexibility in this routine – that guidance was available, but they were able to do what they wanted. The staff was a common theme discussed during the interviews. The women enjoyed that the staff was friendly, helpful, and available if needed. It was comforting to the women that there was a nurse on site, giving them a sense of reassurance if something were to happen. The women also liked the facility itself. It is a fairly new building and they enjoyed that it felt conducive to exercise. Another benefit of the facility was the parking, as they were able to park underground in a heated building for a reasonable fee.
The benefits experienced by the women in this study are consistent with Moore’s (1996) study investigating the features most liked by women in a CR program. Similar to the benefits explained above, Moore indicates that women in CR enjoy the following features in a CR program: a comfortable environment, support staff on-site to ensure safety, a variety of exercises, and interacting and socializing with other participants.

4.6.3 Perceived barriers. Champion and Skinner (2008) explain that perceived barriers are the “potential negative aspects of a particular health action [which] may act as impediments to undertaking recommended behaviours” (p. 47). In all of the cases in this study, potential barriers were discussed with the women. They included the cost of the program, the amount of time it takes to attend, transportation to the program, physicians referral, the lack of support from family, and feeling pain or tiredness from the exercises.

The women did not experience many major barriers preventing them from attending the program. A couple of the women paid out of pocket for the program as it was not covered by insurance. They indicated that although they had to pay, it was not a barrier. Transportation was not an issue as all women were still able to drive or had a spouse who could drive them. One participant indicated that distance was a barrier and she disliked how much time it took out of her day. Physician referral was not a barrier for any of the women as they were all referred when discharged from the hospital. They all also indicated that they had family support. These results coincide with the findings in Oldridge and Streiner’s study (1989) indicating that fewer perceived barriers lead to greater adherence.
4.6.4 Cues to action. Rosenstock (1974) explains that a cue is an instigating event which sets the preferred path of action in motion. In the cases of these subjects, the instigating event was the referral they received either from their doctor or their nurse following their cardiac event. When asked about other cues such as media campaigns and publicity, all women indicated that these cues did not influence their attendance to a CR program. Cues to action are difficult to identify in a study, as a cue can be very small and the subject may be barely conscious that the trigger instigating the action occurred (Champion & Skinner, 2008). Further to this, the subject may have forgotten about certain cues. Rosenstock (1974) explains that “[s]ince the kinds of cues that have been hypothesized may be quite fleeting and of little intrinsic significance (e.g., a casual view of a poster urging a chest x-ray), they may easily be forgotten with the passage of time. An interview taken months later could not adequately identify the cues” (p. 333). As the interviews with these women occurred at least six months following their admittance to their CR program, cues to action were difficult for participants to identify in this study.

4.6.5 Self-efficacy. According to Rosenstock and colleagues (1988), “for behavioural change to succeed, [people] must feel themselves competent (self-efficacious) to implement change” (p. 179). In all the cases in this study the women expressed that their efficacy for the exercise program increased as they stayed with the program and saw improvements in their abilities. Rosenstock et al. also state that, “[p]erformance accomplishments are the most influential sources of efficacy information because they are based on personal mastery experience” (p. 180). Commonalities were seen in this area as all women described the performance accomplishments they have
experienced since being with the program. As they are experiencing these performance accomplishments, their confidence is increasing leading to a high feeling of self-efficacy.

It is evident in the themes that the experience of these women follow the theory of the HBM that “[i]f individuals regard themselves as susceptible to a condition, believe that condition could have potentially serious consequences, believe that a course of action available to them would be beneficial in reducing either their susceptibility to or severity of the condition, and believe the anticipated benefits of taking action outweigh the barriers to (or costs of) action, they are likely to take action that they believe will reduce their risks” (Champion & Skinner, 2008, p. 47).

The women in this study feel susceptible to further heart events which may or may not be severe in nature. As the threat is present in their daily lives, they have decided to participate in a cardiac rehabilitation program in an effort to reduce this threat. They all experience very positive benefits while taking part in the program. These benefits outweigh the barriers to participating. As a result, these women have been participating in the program for a long period of time and plan on staying with it in the future.

It was the purpose of this study to explore the health beliefs that contribute to a women’s decision to adhere to a cardiac rehabilitation program after experiencing a cardiac event. I have found, that not one health belief contributes to a women’s adherence, but all constructs together lead to adherence to the recommended health action. As stated in the HBM, if a perceived threat exists, a course of action is available
and beneficial and limited barriers exist, one is likely to engage in the action. The findings in this study are consistent with this theory.

The results of this study are consistent with some results found in previous research on the HBM and exercise compliance. However, as previous studies have been quantitative, none have found significant results within all the constructs of the HBM. Further, most did not test the HBM in its entirety. Qualitatively, this study was able to examine all constructs and thus, show the importance of all constructs contributing to adherence to a CR program.

On a personal level, the women in this study all had things in common which lead to their daily attendance and adherence to the cardiac rehabilitation program. They had experienced a heart event, resulting in CVD. For them this was a wakeup call that something needed to be changed or they would continue to become ill or possibly die. They were scared of having another heart event and that this time they possibly wouldn’t survive it. As they all were referred by their doctors, they decided to attend the program although most had never heard of it. Upon starting the program, they were treated with respect and kindness by the staff. They felt safe in the program knowing they had professional medical staff on site if something were to happen. They were comforted with this knowledge. As they continued to attend, they began to create friendships with those who had also been through a similar event. Their bodies grew stronger and they were now able to do more and more not only at the gym, but in their daily lives as well. It became their new routine, structure in their ever changed lives. Their friends became their new family. And for all these reasons, they never want to leave.
Chapter 5: Conclusion

5.1 Now What?

When I finished my data analysis, I excitedly told those around me that I was finally on the conclusion section of my research. The first question they always asked was “What did you find?”. Every time I was asked this question by a colleague, professor, or friend, I felt overwhelmed. How could I possibly summarize everything that I learned over the course of my graduate program?

Reading through dissertations of mentors, I realized that I had come to the point where I needed to answer the dreaded “now what?” question. Where was I going to begin? There is so much to say, but hard to put into words. Pondering over what to write, I also began to think about what another colleague had told me: “You are now the expert on this topic”. This was far from what I felt. Although upon reflection, I knew that I had gained some general knowledge, and a lot of knowledge on this topic. So while I may not be an expert, I must have some answers.

While reading through a dissertation of a mentor, she mentioned something very comforting. She explained, “I realized that I didn’t have all the answers” (Humbert, 1995, p. 164). Eisner (1991) also explains,

In qualitative case studies the researcher can generalize, but it is more likely that the readers will determine whether the research findings fit the situation in which they will work. The researcher might say something like this “This is what I did and this is what I think it means. Does it have any bearing on your situation? If it does and if your situation is troublesome or problematic, how did it get that way and what can be done to improve it?” (p. 204)
Will what I found have a bearing on others’ situations? It is difficult to say as each person’s experience and situation is so different. However, after immersing myself in the data, I am ready to offer my thoughts and suggestions on why women adhere to CR programs based on their health beliefs.

5.2 Implications

The intention of this study was to examine the health beliefs of women who have been enrolled in a CR program for longer than 6 months to see why they are adhering to the program. It was felt that this was an important question to pose as studies show that women have “poorer program uptake, poorer adherence and significantly higher drop-out rates” (Daly et al., 2002, p. 11).

The findings in this research showed that all four major constructs of the health belief model (Becker, 1974) together determine adherence to a recommended health action. More specifically, the women in this study all had a strong perceived threat, limited barriers, and experienced many benefits. These beliefs lead to their adherence to the program.

Based on this knowledge, I would encourage all CR programs to consider the following recommendations.

1. Ensure participants are experiencing benefits.
   a. First, create a program for each participant where they will see health benefits. Each participant’s program should be individualized, goal oriented, and challenging. This way, they will feel successful in the program, and may see results in their cardiovascular health, muscle
mass and perhaps a decrease in weight. Nutritional information should also be an integral part of the program to encourage participants to lead a healthier nutritional lifestyle.

b. Secondly, create a program that is welcoming and where participants feel comfortable. Staff need to be available to participants and willing to help if needed. Have appropriate medical staff on site to ease participant worries.

c. Thirdly, ensure the facility itself is a welcoming space: close parking, easy access, clean, bright, and professional. Ensure there is a sufficient amount of equipment so participants do not have to wait. Keep equipment serviced and in good working condition.

2. Limit participant barriers as much as possible. Although the participants in this study had limited barriers, barriers previously identified in the literature were discussed with the women. Although some barriers are fixed (distance of participant from the program, travel time), others can be established by the program itself.

a. Cost of the program: Keep the cost as low as possible. Most participants are retired or on disability. As a result, they don’t generally have supplemental cash flow to pay out of pocket if their medical benefits do not cover their fees.

b. Physician referral: Studies have shown that a physician’s referral is an integral part of enrollment. To achieve optimal enrollment and program utilization for those who have experienced a cardiac event,
the referral process should take place within the first 1-3 weeks following discharge (Wenger, 2008). An automated referral process is optimal. In the case of this study, this was the experience of these women.

c. Family support: encourage family and friends to attend with the participant.

By ensuring that women experience benefits in a CR program and by decreasing their barriers, a greater number of women will adhere to a CR program (Bouchard et al., 2007). Ensuring their participation in a CR program is essential, as it is shown to reduce fatal events by 25% within the first year (Daly et al., 2002). It is also crucial in decreasing secondary coronary events as well as decreasing rates of subsequent hospitalization (CACR, 2009). By ensuring they adhere to the program, we are not only helping to change their lives, but we could be saving their lives.

5.3 Limitations

Marshall and Rossman (2006) explain that “all proposed research projects have limitations; none is perfectly designed” (p. 42). The data collected in this study were limited to the experiences of the participants. As this study was solely based on the experiences of these women, in a semi-structured interview, the data collected were self-reported. As such, recall and desirability biases exist (Zimmer, 2006). The women reported their experiences as they remembered them which may not always be truthful or may be exaggerated. Their experiences may be embellished in a way that they want others to hear, not always indicating actual events. The women in this study may have also had recall biases, where they did not remember accurately their experiences.
A second limitation to this study is me as the researcher. This is the first research project that I have undertaken and I am not an experienced researcher. I acknowledge that I have been the primary person collecting, analyzing, and presenting data. I have been left to rely on my own personal instincts, which may not always be correct.

5.4 Future Considerations

Due to the nature of this study, the researcher looked solely at the health beliefs of women who adhere to CR programs. However, it is difficult to fully understand why women adhere to a cardiac rehabilitation program without looking at the flip side – why women don’t adhere to a cardiac rehabilitation program. In this study, mostly positive aspects of the CR program were explained. The women were overall “happy consumers”. Yet, in order to fully understand the adherence of women to a cardiac rehabilitation program it would be necessary to paint the full picture of the health beliefs of women who adhere versus those who do not adhere. In doing this, more program recommendations could be suggested for change as it is my belief that the women who drop out of the program would have much more negative comments on the program itself. Additional research is warranted in this area. Moore (1996) suggests “[f]uture studies might use focus group interviews involving […] women who have dropped out of a cardiac rehabilitation program […] to gain more understanding of individuals’ perceptions of cardiac rehabilitation programs” (p. 129).

An additional consideration would be regarding the design of the study. Due to the smaller scale of the study, the results found are in no way a comprehensive look at CR programs. First, this study only looked at one CR program. It is my
recommendation that women in other CR programs, both rural and urban, be studied to examine their experiences.

Next, this study only looked at the experiences of women through an interview format – giving light to their experiences, feelings, and opinions. To fully understand the culture of a CR program, it would be beneficial if one could immerse themselves in it. As such, it is my recommendation that an ethnographical study be done on this topic. This would allow the researcher to develop a more in-depth understanding of the behaviours of the women who adhere to a CR program.

5.5 Conclusion

This study has offered some insight on why women adhere to a CR program. It has shown that if a threat exists and there are benefits to a suggested health action and there are limited barriers, that one will likely engage in that health behaviour to make a change.

For me, I still see the occasional Heart and Stroke commercial on TV telling me that “every 7 minutes someone in Canada has a heart attack or stroke” (Heart and Stroke, 2014). It still fills me with feelings of worry and sadness that somewhere out there someone has just lost their mom, wife, grandma, or friend. I still ask myself “How could this be?”. It still doesn’t seem logical that so many women are dying each year from CVD; but they are. However, now when I see these commercials I have a sense of hope that I didn’t have before. Help is out there and if you want it bad enough, this disease can be managed through a CR program. It is time that women start putting themselves first and take control of their lives.
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APPENDIX A: The Health Belief Questionnaire (HBQ)

Background

1. What is your age?

2. What heart condition brings you to this CR program?

3. Do you work?

4. Do you have a family?

5. Were you physically active prior to your cardiac event?

A. General Health Concern and Health Behaviours (Perceived Susceptibility)

A1. Some people are quite concerned about getting sick, while others are not. How concerned are you about getting sick?

A2. How frequently do you think about your health?

A3. Some people are quite concerned about their health, while others are not as concerned. How concerned are you about your health?

A4. People differ in how much importance they place on health. In comparison to health to other people, how important is health to you?

A5. What do you do in your daily life to improve or protect your health?

a. Do you take vitamins or supplements?

b. Do you eat healthy foods?

c. Do you get enough sleep?
d. Do you exercise?

e. Do you go for a yearly physical?

A6. When you don’t feel well, do you go see a doctor?

A7. People act differently in response to the same symptoms. When would you go see a doctor?

**B. How you see your health (Perceived Susceptibility)**

B1. Do you see yourself as someone who is often ill or as a healthy person?

B2. How easily would you say you get sick?

B3. In comparison to other people, how susceptible do you think you are to illness?

B4. Do you see illness as an important threat in your life? Why or why not?

B5. How likely do think it is that someday in the future you will be ill with heart disease?

B6. Do you feel that your present lifestyle puts you at risk of developing heart disease or if you already have it, does your lifestyle put you at risk of aggravating your present condition? Why or why not?

B7. How likely is it that anytime in the future you could develop each of the following conditions or have a recurrence if you’ve already had the condition? (Diabetes, pneumonia, arthritis, cancer, bronchitis, stroke, kidney trouble).
B8. What are the chances that in the future you will be able to maintain a heart healthy lifestyle to prevent getting heart disease or to stop an existing heart condition from getting worse? Why do you feel that way?

B9. In comparison to other people, do you feel you are susceptible to developing an even more serious heart condition? Why?

C. Cardiovascular disease (Perceived Severity)

C1. How worried are you about CVD?

C2. If your condition were to get worse, how serious do you think it would be?

C3. What do you think of CVD? Do you feel it is a severe medical condition? Why or why not? Do you think other diseases are more severe?

C4. What do you think about recovery from a heart attack? Do you feel that most people can make a complete recovery? Why or why not?

C5. If you were to have another episode related to your heart condition, do you think it would be mild or severe? Why?

C6. Do you think a heart condition is disruptive to a person’s life? What do you think is disrupted?

C7. Do you feel that heart disease interferes with a person’s life?

C8. Which aspect of the disease is most likely to interfere with a person’s life? Is it the physical pain, shortness of breath, fatigue, emotional distress, disruption of family life,
disruption of sex life, disruption of work life, hinder your ability to enjoy life, hurt your self-esteem, strain financials, or death.

C9. Do you think that once a person has heart disease, they can do things to alter the course of their condition?

C10. Do you feel that one can get over a heart disease problem completely?

D. Exercise (Perceived Benefits)

D1. Do you feel that exercise is beneficial in dealing with CVD?

D2. Do you believe exercising is beneficial in recovering from a heart episode? Why?

D4. What are the benefits in exercising- with regards to CVD?

    a. Relief of symptoms?
    b. Prevention?
    c. Improving quality of life?
    d. Improving ones physical appearance?
    e. Improving ones’ mood
    f. Improving one’s social life?
    g. Improving one’s energy level?

D5. What is the most important behaviour in preventing CVD? (stop smoking, eating right, checkups, exercise, losing weight, taking meds, living a stress-free life?)

D6. What is the most important behaviour in treating CVD? (stop smoking, eating right, checkups, exercise, losing weight, taking meds, living a stress-free life?)
D7. How often do you exercise?

**E. Costs: Perceived Barriers**

E1. How do you feel about the costs involved with exercising? Do they deter you from doing it?

E2. Is it difficult for you to find the time to exercise on a daily basis? How often do you exercise?

E3. Do you feel there are any “negatives” of exercising? (pain, unsafe, money, travel)

**H. Intentions to stay with the CR program**

H1. How long do you expect to stay with the CR program? Why?
APPENDIX B: Information Letter

September 30, 2013,

I am writing this letter to invite you to participate in a research project entitled: “The Health Belief Model and Women’s Adherence to a Cardiac Rehabilitation Program”. You have been identified as a potential participant as you meet the following criteria: (1) you have been medically diagnosed with a cardiac-related condition within the last year in a local health region (e.g., myocardial infarction, coronary artery disease, congestive heart failure, diabetes, obesity, coronary bypass surgery, valvular disease, or as a primary/secondary measure for prevention); (2) you are female; (3) you are over the age of 18; (4) you are able to speak English; (5) you have been participating in a CR program for 6 months or longer. Your participation in this research project will provide insight on women and the potentially unique health beliefs that encourage or negate their adherence rates to cardiac rehabilitation program.

I would like to do 2 interviews with you that will take approximately 1 hour each. These interviews would be conducted either prior to or following your session at the Dr. Paul Schwaan Centre or at a place and time that is convenient for you. With your permission, our interview will be audio taped and transcribed verbatim. You will be given the opportunity to review the transcript. Upon request, you will have access to a copy of the final research paper.

There are no known risks to participating in this study. Your participation in this project is entirely voluntary and you can answer only those questions that you are comfortable with. You will be compensated for your participation in this study with $25 gift card to Tim Hortons. In order to receive compensation, you must participate in both interviews. You may withdraw from the research project for any reason, at any time without explanation. Your right to withdraw data from the study will apply until results have been disseminated, approximately 6 months following the last interview.

Consent forms and all data files (including the audiotapes and transcripts) will be stored in the Motivation and Active Living Lab (a locked lab) in the Faculty of Kinesiology and Health Studies. All data will be kept in a locked cabinet and information in computer files will be password protected. Once the analysis is complete, all data and consent forms will be stored in the Motivation and Active Living Lab (a locked lab) in the Faculty of Kinesiology and Health Studies until destruction.
This project has been approved by the Research Ethics Board, University of Regina. If you have any questions or concerns about your rights or treatment as subjects, you may contact the Chair of the Research Ethics Board at (306) 585-4775 or research.ethics@uregina.ca.

If you are interested in participating in this study, please email me at the email address provided below, or call me at your earliest convenience. Please feel free to ask any questions regarding the procedures and goals of the study or your role.

Sincerely,

Nicole Gates
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APPENDIX C: Consent Form

Project Title: The Health Belief Model and Women’s Adherence to a Cardiac Rehabilitation Program

Researcher: Nicole Gates
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Purpose of the Research:
• The purpose of this study is to explore your health beliefs and their implications on your adherence to a prescribed cardiac rehabilitation program.

Procedures:
• You will be asked a series of questions in 2 – 1 hour interviews. The interviews will focus on your health beliefs and cardiac rehabilitation. With your permission, the interview will be audio-taped. It will then be transcribed for data analysis. The interviews would be conducted either prior to or following your session at the Dr. Paul Schwaan Centre or at a place and time that is convenient for you.

Potential Risks:
• There are no known or anticipated risks to you by participating in this research. You may experience some discomfort when talking about your cardiac experiences. If you do, you may contact the psychologist associated with the Dr. Paul Schwaan Centre Cardiac Rehabilitation program.

Potential Benefits:
• We cannot guarantee that you will receive any benefits from this study. However, information learned from this research may lead to the improvement of women’s
adherence to cardiac rehabilitation programs. You may also become more aware of your own health beliefs and why you are adhering to a cardiac rehabilitation program.

**Confidentiality:**

- The data from this research project will be used in the researcher’s thesis. It may also be presented at a conference and later published. However, your identity will be kept confidential. Although the researcher may report direct quotations from the interview, you will be given a pseudonym, and all identifying information will be removed from the raw data.
- Data may be shared between the researcher, project supervisor and committee members during the analysis process if required.
- After your interview, and prior to the data being disseminated, you will be given the opportunity to review the transcript of your interview, and to add, alter, or delete information from the transcripts as you see fit.
- Consent forms and all data files (including the audiotapes and transcripts) will be stored in the Motivation and Active Living Lab (a locked lab) in the Faculty of Kinesiology and Health Studies. All data will be kept in a locked cabinet and information in computer files will be password protected. Once the analysis is complete, all data and consent forms will be stored in the Motivation and Active Living Lab (a locked lab) in the Faculty of Kinesiology and Health Studies until destruction.

**Right to Withdraw:**

- Your participation is voluntary and you can answer only those questions that you are comfortable with. You may withdraw from the research project for any reason, at any time without explanation.
- Your right to withdraw data from the study will apply until results have been disseminated, approximately 6 months following the last interview. After this it is possible that some form of research dissemination will have already occurred and it may not be possible to withdraw your data.

**Follow up:**

- To obtain results from the study, please contact the researchers using the information at the top of page 1.

**Compensation:**

- You will be compensated for your participation in this study with $25 gift card to Tim Hortons. In order to receive compensation, you must participate in 2 – 1 hour interviews.

**Questions or Concerns:**

- If you have any questions or concerns about the procedures and goals of the study, please contact the researchers using the information at the top of page 1.
- This study was approved by the Research Ethics Board, University of Regina. If you have any questions or concerns about your rights or treatment as a participant, you may contact the Chair of the Research Ethics Board at (306) 585-4772 or at research.ethics@uregina.ca

Consent :
Your signature below indicates that you have read and understand the description provided. If you are not interested in participating please indicate this in the space below.

I had an opportunity to ask questions and the questions have been answered. I consent to participate in the research project. A copy of this Consent Form has been given to me for my records.

__________________________________  ________________________________  ____________
Name of Participant                  Signature                          Date

__________________________________  ________________________________  ____________
Name of Researcher                   Signature                          Date

________ No, I am not interested in participating in this study.

A copy of this consent will be left with you, and a copy will be taken by the researcher.
APPENDIX D: University of Regina Ethics Approval Form

DATE: August 21, 2013

TO: Nicole Gates
2434 Jameson Crescent
Regina, SK S4V 1K2

FROM: Dr. Larena Hoeber
Chair, Research Ethics Board

Re: The Health Belief Model and Women’s Adherence to a Cardiac Rehabilitation Program (File # 05S1314)

Please be advised that the University of Regina Research Ethics Board has reviewed your proposal and found it to be:

☐ 1. APPROVED AS SUBMITTED. Only applicants with this designation have ethical approval to proceed with their research as described in their applications. For research lasting more than one year (Section 1F), ETHICAL APPROVAL MUST BE RENEWED BY SUBMITTING A BRIEF STATUS REPORT EVERY TWELVE MONTHS. Approval will be revoked unless a satisfactory status report is received. Any substantive changes in methodology or instrumentation must also be approved prior to their implementation.

☐ 2. ACCEPTABLE SUBJECT TO MINOR CHANGES AND PRECAUTIONS (SEE ATTACHED). Changes must be submitted to the REB and approved prior to beginning research. Please submit a supplementary memo addressing the concerns to the Chair of the REB.** Do not submit a new application. Once changes are deemed acceptable, ethical approval will be granted.

☐ 3. ACCEPTABLE SUBJECT TO CHANGES AND PRECAUTIONS (SEE ATTACHED). Changes must be submitted to the REB and approved prior to beginning research. Please submit a supplementary memo addressing the concerns to the Chair of the REB.** Do not submit a new application. Once changes are deemed acceptable, ethical approval will be granted.

☐ 4. UNACCEPTABLE AS SUBMITTED. The proposal requires substantial additions or redesign. Please contact the Chair of the REB for advice on how the project proposal might be revised.

Dr. Larena Hoeber

cc: Dr. Kim Dorsch – Kinesiology and Health Studies

** supplementary memo should be forwarded to the Chair of the Research Ethics Board at the Office for Research, Innovation and Partnership (Research and Innovation Centre, Room 109) or by e-mail to research.ethics@uregina.ca

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