Factors Influencing Outpatient Cardiac Rehabilitation Attendance

A thesis submitted in partial fulfilment of the requirements for the degree of

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Abstract

BACKGROUND: Cardiac rehabilitation (CR) is an evidence-based, secondary prevention treatment programme that assists and guides patients in developing healthier lifestyles after a cardiac event. CR has been shown to prevent future coronary events and is an effective way of reducing disability and prolonging survival in patients with coronary heart disease.

Less than half of eligible people with heart disease attend CR programmes. This may be due to non-referral of eligible patients or non-attendance of patients after referral. In New Zealand some groups of people are significantly less likely to attend CR. These groups include people who are older, have less education, and are female, Māori or Pacific people.

AIM: This study discusses whether the delivery and content of inpatient CR meets patient expectations and if inpatient CR has an influence on attending an outpatient CR programme. The study will focus on information given to patients and their perceptions of heart health during their hospital stay. Clarity will be offered on which health professional is most successful in recommending attendance at CR.

METHODOLOGY: A quantitative, descriptive and non-experimental study was conducted, starting with a hospital audit of information of patients with a discharge diagnosis of acute coronary syndrome. The sample group was patients discharged from hospital between November 2011 and July 2012. Information from the hospital system included discharge diagnosis, length of stay, readmissions to hospital, discharge ward and basic demographics such as age, ethnicity, and home address. A questionnaire was sent to 418 patients meeting the inclusion requirements. Questions focused on what sort of information was provided during inpatient CR while in hospital and how patients perceived their illness. Information was also sought on attendance to outpatient CR programmes. The data was analysed using Excel™.

RESULTS: There were 181 people who completed the survey; 37% of respondents were 37% female, 9% were Māori, and 70% of respondents were over 65 years old. Key findings were 50% of people felt their heart event was a shock and felt they would have liked more information in hospital. Only 37% of people attended outpatient CR on discharge from hospital which is about the same as international figures. Some of the reasons given for not attending were not knowing about CR (27%) and 61% of people understood only some/none of the information given while in hospital. The
health professional who consistently recommended CR was the CR nurse and the invitation was given after discharge from hospital.

Some themes from the comments for not attending were the distance to travel was too far (especially from one of the rural districts), the time of the programme conflicted with work commitments and some felt CR was not necessary. The people who did attend said they went to learn about heart disease and felt it would be beneficial to their health.

CONCLUSION: These findings suggest an automatic referral tool would increase referral rates, and following evidence based guidelines for inpatient care could increase participation rates for CR. Employing a coordinator for inpatient CR would increase nursing knowledge of CR and promote outpatient CR.
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LIST OF ABBREVIATIONS

CABG  Coronary artery bypass graft
CHF   Congestive heart failure
CR    Cardiac rehabilitation
DHB   District Health Board
ED    Emergency Department
GP    General practice or General practitioner
GTN   Glycerine trinitrate
HGA   Heart Guide New Zealand
ICD   International Classification of Disease
LOS   Length of Stay
MI    Myocardial infarction
NHF   National Heart Foundation of New Zealand
NZDep New Zealand Deprivation Index 2006
PTCA  Percutaneous trans luminal coronary angioplasty
RCT   Randomised controlled trial
QALY  Quality adjusted life years
UK    United Kingdom
USA   United States of America
Definition of Terms

**Cardiovascular disease** (CVD): A term that includes having any of the following; coronary artery disease (CAD), atherosclerosis, ischemic heart disease (IHD), strokes, hypertension, peripheral vascular disease or congestive heart failure (CHF).

**Cardiac rehabilitation**: A multidisciplinary approach that aims to modify cardiac risk factors through lifestyle change and improve functional capacity, self-confidence, and reduce psychological distress. The desired result is for patients to regain and maintain their best physical, emotional and vocational state.

**Coronary artery disease** (CAD): A disease caused by the buildup of cholesterol plaques thickening the lining of a coronary artery wall. It can occlude blood flow to the heart causing irreversible damage.

**Acute myocardial infarction** (MI): The death of myocardial tissue as a result of a blood clot forming on a plaque in a coronary artery causing a prolonged period of ischemia.

**Coronary artery bypass graft** (CABG): A blood vessel is surgically grafted to a coronary artery, bypassing an area that is narrowed as a result of atherosclerotic plaques.

**Morbidity**: The rate of incidence of a disease.

**Mortality**: The number of deaths in a given time and place.

**Percutaneous coronary intervention** (PCI): This is a procedure used to treat stenotic (narrowed) vessels of the coronary arteries. A metal stent on an introducer is passed into the vessel and expanded with a balloon, pushing the plaque into the lining of the vessel. The balloon is then deflated and introducer removed, leaving the stent in place.
**Inpatient cardiac rehabilitation (Phase One):** Involves in-hospital education and begins at admission through to discharge. Information is offered through counselling, to explain the diagnosis of CVD and raise awareness of risk factor modification, cardio-protective dietary guidelines, smoking cessation and early mobilisation. It includes reassurance of progress, family involvement and education relating to angina, medications, alcohol consumption, and returning to work/driving. An invitation to outpatient Phase Two is also given.

**Outpatient cardiac rehabilitation (Phase Two):** Involves a 6-12 week programme, including an exercise programme individually tailored to each participant. Cognitive behaviour therapy is used to explore risk factor modification and adherence to lifestyle changes. A multidisciplinary team approach is preferred for information sessions.
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Chapter One

INTRODUCTION

The World Health Organisation (WHO) estimates that coronary heart disease (CVD) is the leading cause of death globally, causing 30.8% of all deaths per annum (Roger et al., 2011). Cardiovascular disease (CVD) covers a large range of conditions affecting the heart, vascular system; the most common disorders are stroke, ischaemic heart disease (IHD) and heart failure (World Health Organization, 2011).

In New Zealand, CVD remains one of the leading causes of death, accounting for 40% of all deaths in 2006 (Tobias et al., 2008). CVD causes premature death, suffering, disability, and diminishes quality of life by affecting people emotionally, socially and financially. For the working population it can disrupt employment, with reduced productivity and increased sick days (Shepherd & While, 2011; Suaya et al., 2007). The New Zealand Health Strategy developed by the Ministry of Health (2000) makes management of CVD a priority in its population-health objectives. One of the key strategies for reducing the effects of CVD is CR (A. King, 2000).

Importance of cardiac rehabilitation

CR is an evidence-based, secondary prevention treatment that assists and guides patients in developing healthier lifestyles after a cardiac event and may prevent future coronary events (Evans, Probert, & Shuldham, 2009). CR is an effective way of reducing disability and prolonging survival in patients with CVD (Leon et al., 2005).

National and international guidelines recommend all patients diagnosed with myocardial infarctions should attend a CR programme (Leon et al., 2005; The New Zealand Guidelines Group, 2002). The National Heart Foundation of New Zealand and The World Health Organisation recommend that CR services be routinely offered to everyone with CVD and that the programme be delivered by qualified health clinicians (New Zealand Guidelines Group, 2002b; World Health Organization, 1964).
Background

In New Zealand fewer than a half of eligible people with heart disease attend CR (Doolan-Noble, Broad, Riddell, & North, 2004). Research suggests this is due to non-referral of eligible patients or non-attendance of patients after referral (Bunker, McBurney, Cox, & Jelinek, 1999; Scott, Lindsay, & Harden, 2003; Suaya et al., 2007). In New Zealand specific groups are significantly less likely to attend CR. These groups include people who are older, have less education, and are female, Māori or Pacific peoples (Doolan-Noble et al., 2004; New Zealand Guidelines Group, 2002b; Wells, Broad, & Jackson, 2006). Specific information on minority group non-attendance rates has not been analysed by the District Health Board (DHB). The features and content of an inpatient CR may influence attendance to an outpatient CR programme, but this information has not been scrutinised. This research will look at potential barriers and enablers to attendance at outpatient CR programmes in the DHB’s region.

Phase One CR is about counselling, aiming to explain the diagnosis of CVD and raise awareness of risk factor modification, cardio-protective dietary guidelines, smoking cessation and early mobilisation. It includes reassurance of progress, family involvement and individualised education relating to angina, medications, alcohol consumption, and returning to work/driving. An invitation to outpatient Phase Two should be offered in Phase One to promote attendance (Goble, Worcester, Centre, & Services, 1999; New Zealand Guidelines Group, 2002b). In the current health climate the length of stay of cardiac patients in hospital has been decreasing, and this has significantly reduced the time a patient has for inpatient CR. This research will explore patient perceptions of hospital care and whether this influences their decision to attend CR.

In the DHB’s region many patients are not seen by a CR nurse prior to discharge and advice to attend CR is commonly provided by ward nurses. Johnson, Inder, Nagle and Wiggers (2010) state a CR nurse or a physician recommendation significantly increases the odds of a patient attending CR. Patient education is a vital component of CR and the reduction of mortality and morbidity associated with CVD. Awareness of risk factors such as smoking, obesity, hypertension, high cholesterol and sedentary lifestyle can improve the chance of recovery and survival from a heart event. Nurses are in a prime position to assess patient education needs and can implement CR programmes that will provide the most effective education for the individual patient and family. This study will clarify the
effectiveness of information given to patients regarding exercise, diet, chest pain management, medication and their side effects.

Due to increasing admissions at the DHB, cardiac patients can be allocated a bed in a general medical ward not specifically designated for cardiac patients. All nurses are expected to have an understanding of CR and be able to offer an invitation to cardiac patients to attend the CR outpatient programme. Harkness et al. (2005) found that if a patient does not have a clear understanding of what CR involves in hospital and does not receive an invitation prior to discharge, they are less likely to attend an outpatient CR programme.

**The benefits of Cardiac Rehabilitation**

CR has multiple clinical benefits and is provided in the hospital setting, either while admitted (Phase One), or in the immediate 6 to 12 weeks after discharge (Phase Two), or in a long-term community maintenance capacity (Phase Three) (Goble et al., 1999). A few District Health Boards in New Zealand have considered implementing home-based CR programmes to address the low rates of CR uptake associated with hospital-based programmes.

Inpatient Phase One CR is often regarded as the automatic part of cardiac inpatient care (Day & Batten, 2006). Despite the evidence to support CR it has been suggested that there is a disparity between published guidelines and actual clinical practice (Flynn, Cafarelli, Petrakos, & Christophersen, 2007). The primary aim of this investigation was to assess if the respondents considered the quality of the information they received was adequate and whether this influenced their decision to attend an outpatient CR programme. The questionnaire was developed from the key measures in the guidelines for Phase One of CR (New Zealand Guidelines Group, 2002b). As a secondary investigation an audit of questionnaire results will also assess the use of the guidelines at one District Health Board and measure if they are consistent throughout the hospital setting.

**Significance of the research**

The results of this research will provide a benchmark for programme structure, highlighting areas where health professionals can improve the delivery of patient education. There is the potential to design a well-structured inpatient programme which can influence a patient’s decision to further attend an outpatient programme,
and establish if there is a need to develop a more flexible outpatient programme for those who work or have transport issues or have other commitments. A more flexible approach may increase referral and participation rates of CR. This research may offer an insight into barriers or enablers that historically influence people’s decision to attend or not attend an outpatient CR programme. It also may highlight specific minority group individual’s ability to access CR. This research will raise awareness of CR in the region and the wider community and offer ways to strengthen relationships with other health services; also information will be sought on the suitability of the programme structure to the local community.

Who is Interested in this Issue

The National Heart Foundation (NHF) has an interest in CR services provided in New Zealand and was contacted prior to this research for their expert opinion on the validity of the research. A cardiologist at the DHB also assessed the relevance of the research within the hospital setting. Nurses working in the cardiac area were also consulted with varying opinions given on the CR inpatient programme offered throughout the hospital. Cardiac patients in the DHB will also benefit from the outcome of this research, as the information provided may help improve not only service provision but increase attendance at CR programmes.

Researcher’s interest

I am a registered nurse working in the Emergency Department at the DHB. I have a special interest in cardiac care and was a CR nurse for nine years prior to working in the Emergency Department. The constantly changing field of cardiology nursing is very challenging and rewarding.

To me CR is about ongoing progression of coronary artery disease. It encompasses lifestyle modification and focuses on cognitive behaviour therapy by helping patients maintain heart health and changing negative lifestyle patterns. CR crosses both primary and secondary health services and is a very dynamic field of nursing.

I have maintained a professional interest in cardiac health and believe this provides me with an excellent platform for a non-biased approach to conducting research within the hospital setting.
Research Question

Does the delivery and content of inpatient CR have an impact on attendance rates at Phase 2 CR?

This research will explore patients’ view of inpatient CR and will consider individual emotional responses to heart disease, and their understanding of the information presented to them. A review around the referral process to CR will be discussed and barriers to attendance at outpatient CR will be established.

Aim of Research

The objective of this research is to establish whether cardiac patients admitted to hospital with acute coronary syndrome (ACS) are adequately prepared for discharge, to establish if the inpatient CR programme meets evidence-based guidelines, to establish patient satisfaction with the in-patient programme and whether the information they receive meets their educational requirements. Information will be collected on the adequacy of the inpatient referral system to CR. Discussion around identification of specific minority group individual’s ability to access CR will be made. This study will ultimately provide information on the suitability of the inpatient programme provided for the DHB’s regional community and whether it meets patient expectations.

Outline of research

This research used an audit of the DHB information system to identify all patients with acute coronary syndrome discharged between November 2011 and June 2012. Information from the hospital system included length of stay, readmission to hospital, discharge ward, home address, demographics and relevant ICD10 codes. A questionnaire was sent to all patients meeting the inclusion requirements. The questionnaire was used to gather data and ascertain information provided to patients in hospital and information on how patients perceived their illness while in hospital. Information was also requested on attendance to outpatient CR.

Delimitations

The research was delimited to the following factors:
Research has to be completed in a five month time frame (June to November 2012). This places a limit on the magnitude of the research.

Potential bias by the researcher will be reduced by having questionnaires returned to an administrator and all identifying information removed.

Inclusion requirements: All patients discharged from the DHB with a diagnosis of ACS from 1 November 2011 to 31 July 2012.

Exclusions: Patients with a diagnosis of heart failure. A specific pathway which does not include referral to CR exists for patients with heart failure at DHB. Guidelines (NZGG, 2002) suggest usual care for heart failure patients is for participation in CR programmes.

**Limitations**

The questionnaire does not allow for explanations to questions, therefore the answers may not show clear understanding of the question.

A non-response to questionnaires may present a bias.

It was assumed that all participants will complete the survey honestly and correctly and they all understand the instructions for filling out the survey.

People who have not attended a CR group programme may respond to the questionnaire at a lower rate than those who have attended CR.

**Assumptions**

All participants completed the survey honestly and correctly

All participants read and understood the instructions for filling out the survey

**Thesis outline**

**Chapter One Introduction:** The introductory chapter has provided background around the key definitions for the research question. The researcher’s interest and the significance of the topic are presented.

**Chapter Two Literature review:** A comprehensive review of national and international literature has been reviewed relating to the topic. Although there is
some literature regarding cardiac CR inpatient programmes, there are limited studies around inpatient programmes influencing patient’s choice to attend outpatient CR. Literature on patient education needs has been reviewed.

**Chapter Three: Methodology.** The research methodology is described in terms of design, data collection method, participant selection and the use of Microsoft Excel collection analysis. Ethical considerations are documented, including gaining ethical approval from Eastern Institute of Technology Research committee, The District Health Board Research Committee along with the District Health Board Māori Health Unit. The Central Region Ethics Committee informed the researcher this research does not require approval.

**Chapter Four: Results and Data analysis.** Results from the postal questionnaire are presented and analysed. The data has identified three main categories and sub categories of participant’s perceptions of inpatient CR.

**Chapter Five: Discussion.** Research results in relation to the research aims and existing literature are discussed and limitations of the research are identified. Each theme is relation to the research aims and literature.

**Chapter Six: Recommendations and Summary.** Conclusions from the research results and discussions are presented. The implication for nursing education, nursing practice and recommendations regarding future research are documented.
Chapter Two
LITERATURE REVIEW

Introduction

The literature review is divided into three sections. The first section is an introduction to the geographical area of the DHB region, with research about the rural locality and the issues of people who live in this region. Comparisons are made with national and international statistics. The second section reviews the guidelines and recommended procedures for CR. The third section explores CR and its current approach, examining what works and what does not.

Search strategy

Electronic databases were searched for literature published from 1996 to 2012 for the purpose of this review. Searches were conducted with CINAHL, Medline, Science Direct, Google Scholar, and Primo. Databases were searched using key search terms ‘cardiac rehabilitation’, ‘Phase One’, ‘attendance’, ‘utilisation’, ‘inpatient’ and ‘in hospital’. The electronic search produced numerous citations. The studies were dated from 1999 until 2012. Papers were included for review if they met the following inclusion criteria: available in full text, articles written in English, in peer review journals, and addressed in-hospital education and attendance at CR. Of the 800 articles available in that time period, 105 articles met the inclusion criteria and were included in the current review.

The literature search was aimed at answering questions about CR inpatient programmes and factors associated with nonattendance, in relation to cardiac patients care in hospital, and whether this non-attendance met national CR guidelines of care to people with acute coronary syndrome diagnosis.

History of Cardiac Rehabilitation

Historically, CR first appeared in health journals in the 1940s. Previously, sufferers of an MI were managed on bed rest for six weeks for the purpose of relieving the healing heart of any undue stress (Mallory, White, & Salcedo-Salgar, 1939). However, in the 1940s it was observed that those who allowed to sit on a chair had
better health outcomes. By the 1950s, new recommendations offered a brief walk of no more than 10 minutes per day (Levine & Lown, 1952). In the 1960s, Hellerstein and Ford (1957) were the pioneers of a multidisciplinary approach to CR promoting exercise combined with psychological support, risk factor reduction and education.

Despite the benefits and limited risks, established cost-effectiveness, and multiple published guideline recommendations internationally, referral and participation rates for CR after MI were low (Mazzini, Stevens, Whalen, Ozonoff, & Balady, 2008). In the hospital setting, reported referral rates were as low as 36% after hospitalisation for acute coronary syndrome in New Zealand (Doolan-Noble et al., 2004).
CVD remains one of the leading causes of death and has a large impact on health status and service delivery. CR is an evidence-based intervention which aims to optimise patients' functioning, enhance quality of life, and minimise the risk for recurrent cardiac events (Giannuzzi et al., 2003). One main randomised controlled trial demonstrated the proven clinical benefits of CR by decreasing disability, reducing recurrent coronary events, reducing recurrent hospitalisations, and decreasing mortality rates (O'Connor et al., 1989).

CR complements secondary prevention, typically integrating several methods of rehabilitation. These approaches differ between programmes but usually include exercise components, psycho-social interventions, and education programmes and advice regarding smoking cessation, return to sexual activity and healthy eating.

The term comprehensive cardiac rehabilitation (CCR) refers to programmes containing elements of physical intervention alongside education and counselling (West, Jones, & Henderson, 2012). Many national and international organisations have published guidelines with frameworks of delivery of service. The New Zealand Guidelines Group (2002) published Best Practice for CR which offers advice on secondary prevention for patients following myocardial infarction.

**District Health Board**

The DHB provides a comprehensive range of services to people within a diverse geographic area covering a distance of approximately 300 kilometres north to south, as well as an island 800 kilometers offshore. There are two principal islands in the region (Ministry of Justice, 2009).

The estimated population in the region is 147,783. The region’s population has a large percentage of Māori (22%), compared to 14.6% nationally, a small but growing population of Pacific peoples (2.3%), compared to 6.7% nationally, and a similar percentage of older people (13.2%) compared to the national average of 12.6% (Statistics New Zealand, 2006a).
**Ethnicity**

In 2008, the Central Regions Technical Advisory Service (TAS) (2008) published a health needs assessment on chronic conditions relating to circulatory system disease. The central region consists of seven District Health Boards that cover the lower North Island. TAS has found that ethnic disparities in mortality rates existed within the central region, with only a slight improvement observed over the previous two years. Several studies confirm Māori had a significantly higher death rate from CVD than non-Māori which is confirmed to be around three times higher than non-Māori (Chan et al., 2008). Pacific mortality rates sit between non-Māori and Māori (Bell et al., 1996; Cameron et al., 2012; TAS, 2008; Chan et al., 2008; Jansen, Bacal, & Crengle, 2008). The DHB region under study has the highest rates of hospitalisation for CVD in New Zealand in both the central regions and nationally. In New Zealand there are major disparities in CVD between ethnic groups and significant under-treatment of high-risk patients (Wells et al., 2006).

Included in the DHB is a rural district, located two hours north of the nearest fully serviced hospital and the closest CR programme. The population in 2006 was 8481, of whom 61% identified themselves as Māori (Statistics New Zealand, 2006b). Cameron et al. (2012) compared CVD between rural Māori in the Wairoa District with urban Māori living in Auckland and Christchurch. This study was the first of its kind in New Zealand and revealed that Māori living in Wairoa have higher levels of deprivation than their urban counterparts and significantly higher risk factors for heart disease, including obesity, smoking, hypertension, dyslipidaemia, diabetes mellitus type 2 and hyperuriaemia. This research suggests that the New Zealand Statistics for CVD may be underestimated for rural Māori.

The 2006/2007 New Zealand Health Survey (NZHS) reported national health information across the New Zealand population and included analysis by ethnicity, but not by locality. This information may have grossly miscalculated data for rural Māori. For example, 13.6% of the population reported taking medication for high blood pressure which is similar to the urban Māori figure of 14.9% (NZHS, 2007), but Cameron et al. (2012) reported around 25% of rural Māori are taking blood pressure lowering medication. Cameron et al. (2012) also found rural Māori had over double the reported risk of CVD compared to urban Māori with increases in blood pressure, cholesterol, and obesity (Ministry of Health, 2008).
**Rural Locality**

Access to CR services can depend upon how close the services are to your home, and seven studies were reviewed for rural difficulties. These were all international studies and did not account for the small size of New Zealand, i.e. to travel for four hours in New Zealand is regarded as a long way, but in Australia the similar distance would be regarded as quite close. If a person in NZ had to travel more than 30 minutes to attend a CR programme, the distance will be considered to have had an impact on attendance and be a possible barrier to attending CR (Harrison & Wardle, 2005). Five studies showed a significantly negative relationship between rural location and CR attendance (Brual et al., 2010; K. King, Humen, & Teo, 1999; K. M. King & Teo, 2012; Yates, Braklow-Whitton, & Agrawal, 2012), and two showed no relationship between attendance and rural locality (Harrison & Wardle, 2005; Sundararajan, Bunker, Begg, Marshall, & McBurney, 2004).

**Cardiac rehabilitation in the DHB Region**

The CR service in this district is based at the main regional hospital. This is the only setting for Phase One where inpatient CR is formally done. Both the smaller rural hospitals in the district transport all cardiac patients to the central regional hospital as soon as practicable. Phase Two outpatient CR is held at two venues and follow the same format of weekly sessions over six weeks, encompassing both exercise and education. The CR programme is delivered in two hour group sessions involving a multidisciplinary team with contributions from CR nurses, physiotherapists, dieticians, pharmacists and cardiologists. The first CR programme is at DHB in the physiotherapy department, and the second programme is held at a community location. There is one full time CR nurse for the area and the role includes coordination of Phase Two CR.

The Phase Three programme is run in one city and one town and is a community-based programme, with a representative from the community running the activities. The aim is to provide support and exercise on an ongoing basis. This programme has no connection with the DHB. The National Heart Foundation provides support for these programmes.

Nationally, there are 41 centres offering Phase One and Phase Two CR programmes in different formats and with variations in services, facilities, equipment, and duration of programmes. For example, an audit of the nutritional
component of all formal Phase Two CR programmes showed that the total time spent on nutritional components varied from 15min to nine hours (NZGG, 2002b).

**Financial Cost of Heart Disease**

CVD has major economic implications, including health care costs, social costs and loss of economic productivity either through disability or death. The American Heart Association (2011) estimated the total cost for the United States was US$177.5 billion in 2007. The European Heart Network (2012) estimated the total cost to the European economy was $49 billion euro, while the United Kingdom (UK) estimates $29 billion pounds in healthcare expenditure and loss of productivity with heart disease (BBC, 2006).

In a sentinel study Ades, Waldmann, Polk and Coflesky (1992) attributed cost savings for CR attendees to reduced readmissions to hospital, and a shorter length of stay when admitted, compared to non-CR attendees. CR attendees also required fewer medical and surgical interventions, such as angiography and angioplasty (Ades et al., 1992). However, a flaw in this study was that comparison groups were not randomised and differed in occupation, age and other factors. More recent studies have not found a difference in rehospitalisation or medical/surgical interventions (Beswick et al., 2005; Briffa et al., 2005). No New Zealand cost benefits were found. The closest study was an Australian randomised control trial by Briffa (2005), supporting no difference in readmission rates.

**Mortality and morbidity**

CR after myocardial infarction is thought to have a secondary preventive effect on mortality and morbidity. A systematic review of 48 studies involving 8490 patients compared usual care with these patients who took part in exercise and CR programmes. The results were an overwhelming reduction of 13% of all deaths and 26% of cardiac deaths in patients who took part in exercise and CR programmes (Taylor et al., 2004). A recent randomised control trial completed in 2012, called Rehabilitation after Myocardial Infarction Trial (RAMIT), suggested that the reduction in mortality has changed over the last 30 to 40 years. Findings were attributed to the improvement of medical management and inclusion of revascularisation. The trial compared 903 patients who attended CR to 910 patients who did not attend over a ten year period and reported no significant difference in mortality between the two groups (West et al., 2012).
This has been quite controversial, with considerable online discussion on Heart and Education in Heart (an international peer reviewed online journal) from researchers and cardiologists who disagree with RAMITs findings. Their argument is the trial has just been published but is over 10yrs old. The original trial was supposed to include 8000 participants, but was stopped due to lack of funding. Another criticism was the CR programmes/centres involved did not follow the current guidelines for exercise and CR and therefore could not be measured for outcomes (Heart and Education in Heart, 2012).
SECTION 2: Education and Patient’s Perceptions of Cardiac Rehabilitation

The major modifiable risk factors for CVD are smoking, hypertension, high serum cholesterol, diabetes, obesity, exercise and diet. Assessment of on going risk for the secondary prevention of CVD is the role of health care providers through education and behaviour modification. This intervention is a responsibility for both the primary, secondary and tertiary health sectors.

Primary health care is the first element of a continuing healthcare process that may also include the provision of secondary and tertiary levels of care. Primary care involves the widest scope of healthcare including patients of all ages, and a variety of socioeconomic backgrounds and geographical locations. Primary health care focuses on health promotion with the use of models, such as the Flinders Model of Self-care, as a framework for chronic disease management (Battersby et al., 2007). WHO (2012) considers the provision of primary health care as an integral component of patient management and this has been incorporated into the New Zealand Primary Health Care Strategy.

Secondary care is the healthcare service provided by medical specialists and other professionals who do not have first contact with the patients, such as cardiologists seeing a patient with ACS in hospital. Secondary health care includes acute care treatment necessary for a short period of time, for example, a cardiac event or ACS (WHO, 2012).

Tertiary care is specialized consultative healthcare for inpatients and referral from a primary or secondary health professional, such as cardiac surgery for CABG (WHO, 2012).

**Cardiac Rehabilitation – Primary or Secondary Care?**

CR fits in both primary and secondary care and, in fact, in the United Kingdom (UK) the National Service Framework has recommended coronary heart disease should be where primary and secondary care work together (Department of Health, 2000). Improving services is illustrated in a report about a UK city, Cornwall, where an innovative programme combining traditional hospital based CR with home based rehabilitation and using the Heart manual resulted in more than 85% of eligible patients enrolling in CR. This study was done as a partnership between primary and secondary health care (Wingham, Proctor, & Dalal, 2007).
In New Zealand, this finding was also considered in an Auckland study called predict-CVD-12. This study looked at combining both primary and secondary health care with the use of an electronic tool and Heart Guide Aotearoa (HGA). This study involved 5000 patients, starting from inpatient care with an editable action plan, a linkage created from patients to CR and primary care chronic care management, and post-discharge tracking for individual patient outcomes. The benefits of this study were the outcomes for Māori with the use of Heart Guide Aotearoa, including the early identification of treatment gaps and disparities in outcomes of patients. Although the reported in-hospital CR increased, no data were available for attendance at Phase Two or Three programmes (Kerr, Looi, Garofalo, Wells, & McLachlan, 2010).

In 2003, an evidence-based guideline (New Zealand Guidelines, [NZGG], 2003) called Assessment and Management of Cardiovascular Risk (AMCVR) was released throughout Primary Health Care providers in New Zealand (NZGG, 2003). When the guideline was released, it was widely thought that AMCVR would be accepted into everyday practice as a cardiovascular risk (CVR) screening tool. The AMCVR guideline provided recommendations for those who are most at risk and what should be assessed, and the pharmaceutical requirements and/or lifestyle interventions are adjusted to the level of risk for each individual. Interventions are mainly directed at modifying cardiovascular risk factors (Smith J et al., 2004).

A recent study by McKillop, Crisp, and Walsh, (2012), looking at barriers and enablers to implementing New Zealand guidelines into primary health care found resistance to their use. A framework called promoting action on research implementation in health services (PARIHS) was used as a template for data analysis and interpretation. This qualitative study involved focus groups of nurses, doctors, managers and funders/planners of primary health services. The study found a lack of facilitation was the major barrier to implementation. Discussion around workplace culture influencing practice, resources, time and equipment, leadership and teamwork were all important to the implementation of the guidelines. This study exposed the links between primary healthcare practices in general practice and workplaces cultures and offered solutions for change. CVD remains a major focus, both locally and nationally; the New Zealand government has created national targets for healthcare and there is continuing pressure to meet these targets by all healthcare provider services.

Secondary health care provides acute treatment of ACS and the on going care following diagnosis. Interventions are targeted at reducing symptoms and delaying
the progression on the disease. Education is offered to reduce the incidence of further cardiac events by managing risk factors and making lifestyle changes. The management of CVD does not work in isolation, and a connection between primary and secondary care can increase and maintain a patients' recovery. CR is flexible and can link the primary and secondary care services.

**Theoretical framework for cardiac rehabilitation**

An American study by Clark and Dodge (1999) explored self-efficacy as a predictor of disease management behaviours in 570 older women with heart disease. Although the difference was small, it was statistically significant for several disease management behaviours. At four and twelve months, patients had good use of medications, increased exercise, and reduced stress, and they were following a recommended diet (Clark & Dodge, 1999).

To assess cognitive behaviour therapy (CBT) heart disease self-management programmes on the use of hospital services, Wheeler (2003) estimated hospital cost savings and compared them with the cost of delivering CR. Wheeler (2003) used a randomised, controlled study design and collected data from hospital billing records during a 36-month period. Wheeler (2003) compared healthcare use with costs between treatment and control groups for hospital admissions, in-patient days and emergency department visits. The results showed that programme participants experienced 46% fewer in-patient days and lower in-patient costs than those in the control group. Hospital cost savings exceeded programme costs by nearly five to one.

It is recognised that incorrect beliefs can cause a negative illness perception and can lead to poor outcomes. There is some debate over which model is best to use to ensure the best outcome. The Health Belief Model, Common Sense Model, and CBT were explored to see which model is most effective for ACS patients to help come to grips with their heart event for a positive recovery. Shanks (2010) studied 116 patients in the United States of America by assessing illness perception using the Health Belief Model. A survey was carried out in hospital, and the participants were telephoned four months later to see if they had participated in CR. It was concluded that the Health Belief model did not have an influence on initiation or attendance to outpatient CR. This study did not appear to have any recommendations for nurses in the hospital setting.
Golding, Furze, and Birks (2010) conducted a systematic review of 13 trials, looking at what type of interventions work to change maladaptive illness beliefs. Three areas were used to access cognition change: knowledge, beliefs, and misconceptions. The results showed that CBT interventions appeared particularly effective in changing illness beliefs and that the Common Sense Model offered both factual and emotional support.

The Common Sense Model explains how illness presentations are constantly being reappraised and modified, and how anxiety is likely to influence the formation of perceived symptoms. During the education process, people who have a high level of distress about their cardiac condition may need to hear information in many ways; written, oral and visual material should be offered. It is theorised that a person with high distress levels is more likely to make behaviour changes associated with their disease (Diefenbach & Leventhal, 1996).

CBT is focused on changing individual behaviours by motivational interviewing. Aims include challenging ideas and reforming cognition, reducing stress, and correcting any misconceptions. In a recent study by Gulliksson et al. (2011), 362 cardiac participants were randomised into control and intervention groups. The intervention group was given 20 minute CBT sessions each week for two years. The results showed the intervention group had a 41% lower rate of fatal and non-fatal CVD events than the control group (Gulliksson et al., 2011).

**What is the role of a Nurse in cardiac education?**

Garvey and Noonan (2011) reviewed literature on the individual education needs of patients with CVD. The researchers reviewed studies from 2000 to 2010 assessing the best type of education for patients with an acute MI. They concluded the most effective education for patients was an individualised plan, where the patient’s education needs, preferences, social factors and stage of recovery are assessed; then education specific to the individual patient is compiled and an appropriate method chosen for information delivery. Garvey and Noonan (2011) found that nurses are in a prime position to assess a patient’s education needs. Nurses hold a pivotal role in educating the patients and promoting the value and importance of outpatient CR. These findings were repeated in the AHA position statement (R. J. Thomas et al., 2007) for increasing referral and participation, as well as recommending an inpatient CR director to empower and direct inpatient process (R. J. Thomas et al., 2007).
A study of nursing staff in a cardiac step-down unit of a large regional hospital in Australia, examined nursing practice over a six month period (Conway, McMillan, & Solman, 2006). The study was done because managers felt there was low morale amongst nursing staff which was impacting on patient care. The results showed that nurses were concerned with admissions, transfers and discharges with a high turnover of patients, and actual patient contact time was reduced. The study also indicated a need to educate nurses who work in CR about the diversity of patients' needs during the rehabilitative phase of their admission. They suggested nurses need to develop a self-care model of cardiac nursing, and skills, including patient education counselling and referral skills as well as increased knowledge about issues of concern to patients who were about to be discharged. Locsin (2002) stated that making a difference to patients through education and support can be very rewarding and can change the culture of a work environment.

**Patient's Understanding of Heart Disease**

Secondary prevention for coronary heart disease is partially achieved by pharmaceutical control of risk factors and a patient's self-management behaviour. To have a good long-term outcome a patient needs the following: sufficient knowledge of their condition; a willingness to make changes to their lifestyle, and an understanding of heart disease. They also need resources in the community and hospital setting; and support from their PHO provider, hospital specialist and CR nurse. Patients should be satisfied with their care and have a detailed care plan prior to discharge (Lewin et al., 2002).

Dunlay et al., (2009) looked at 179 participants and their barriers to participation in CR. Results suggested that a lack of patient understanding of the components of the programme was a major problem and that patients who did not attend CR did not know what the course involved and therefore did not attend. The cost and inconvenience of CR was secondary but still had an impact on their decision to attend. A limitation of this study was that the survey used structured questionnaires with no additional input permitted. Two qualitative studies on the same subject with only 10 and 13 participants respectively, found similar results and concluded that a person’s perception of the programme was essential to attendance above family, financial and social factors. Both studies encouraged nurses to give a good written and verbal description of the CR outpatient programme in the inpatient setting (AF Cooper, Jackson, Weinman, & Horne, 2005; Dunlay et al., 2009; Hagan, Botti, & Watts, 2007).
A meta-analysis of 28 studies assessing the effects of patient education in heart disease with measurements of clinical and behavioural benefits showed a measurable positive impact on diet, mortality, and exercise, although only a small difference was noted in other areas such as lipid profiles (Mullen, Mains, & Velez, 1992).
SECTION 3: Factors Influencing Cardiac Rehabilitation Attendance

Phases of care

CVD is a chronic disease that can be controlled but, at present, cannot be cured. Most patients admitted with (ACS) have acquired coronary heart disease in part due to maladaptive health behaviours (Furze, Lewin, Murberg, Bull, & Thompson, 2005). Even though primary health care effectively screens people for CVD risk factors, without patient compliance, resources and effective management, patients will continue to be admitted with ACS. In today’s environment with less invasive interventions and shorter stays in hospital, chronic disease management and secondary prevention have become essential features of contemporary cardiac care. Cardiac prevention and rehabilitation services are effective and efficient channels for the delivery of care designed to stabilise, minimise or reverse the progression of the atherosclerotic disease process (Leon et al., 2005).

Most CR programmes are designed to offer three or four phases. Phase One is an inpatient phase and generally begins within 24 hours of admission for ACS. The primary purpose of inpatient CR include activity progression, education, psychosocial support, discharge planning and referral to the outpatient Phase Two CR.

In Phase Two, outpatient CR patients are encouraged to begin as soon as possible post-discharge, mostly because of the clinical assessment, teaching and emotional support they receive can reduce anxiety and possibly depression (The New Zealand Guidelines Group, 2002). Phase Two is a supervised setting and lasts for one to six weeks after a cardiac event. The aim of Phase Two is to enhance activities of daily living, increase exercise tolerance and participate in monitored and supervised exercise training.

Phase Three outpatient CR has historically been referred to as the maintenance rehabilitation phase for patients who have completed Phase Two and want on going support and maintenance. This can be held in any community setting.

Phase Four CR is used as on going monitoring of cardiovascular health, with General Practices recalling patients for on going health checks and monitoring of maintenance programmes.
**Home based vs. Hospital based Cardiac Rehabilitation**

Until recently in New Zealand CR was provided only in the hospital setting. The dominant model of CR nationally is a six to 12 week programme of information giving, provided in secondary care and in a group format. These programmes consist of a series of fixed content education sessions that focus on disease information and risk factors. There is little flexibility to tailor the content to individual needs.

An initiative called Heart Guide Aotearoa (HGA) has been developed as a patient self-management tool in collaboration between the Heart Foundation, Te Hotu Manawa Māori and the Ministry of Health. HGA is based on the UK Heart Manual. There was a pilot study conducted across six sites during 2007 and 2008, consisting of a qualitative and a quantitative evaluation (Henwood & Barnes, 2008; TMG Associates, 2009). The stand-out success of the programme was the ability of the HGA to capture people who would not otherwise engage with CR; to improve access through programme flexibility and taking the intervention to the patient on their terms.

A systematic review of 16 trials looked at quality adjusted life years (QALY) and reducing the cost of medical interventions comparing participants in CR compared to no CR and or home based CR. The results represented an accurate view of CR with many different study perspectives, economic study designs and time frames. The outcomes were that supervised home based CR was highly cost effective although hospital based CR was as beneficial as home based CR. Overall the studies support implementation of CR but the programmes in the studies highlighted the wide variability of CR programme design (Wong, Feng, Pwee, & Lim, 2012).

**Disparities to Access**

Cooper, Jackson, Weinman, and Horne (2002) performed a systematic review of 15 articles which covered referral and participation of individuals to CR programmes from 1978 to 2001. The results showed disparities in attendance for many populations, especially older people, ethnic minorities and women. In 2007 a qualitative research study in Australia found women continued to be underserved in CR. Semi-structured interviews with 10 people found that some people perceived the relevance of CR to be not as important as financial, family and social factors, and especially noted women tended not to attend CR (Hagan et al., 2007).
limitation of this study was the size, and a bigger cross section of the community may have exposed other issues.

Although women, older people and minority groups are well documented to be underserved in CR, very few studies have been done in New Zealand to assess issues for Māori. In 1996, New Zealand Māori men and women had more than double the coronary heart disease mortality rate than Europeans (Bell et al., 1996). CR referral and attendance were reviewed by Doolan-Noble (2004) in a study of 2001 people hospitalised in Auckland for MI and referred to CR. This study found a 36% referral rate. People between 65 and 74 years were more likely to attend CR, and older or younger patients were less likely to complete the programme. With each 10 year age increase, there was a lower likelihood of referral and attendance. Some associations with deprivation were found but no associations between referral and attendance with ethnicity.

Cram, Smith and Johnston (2003) interviewed 72 older Māori women (kuia) for their thoughts on health. The results centred around Māori having to re-engage to all things Māori: to the marae, whanau and hapu. The marae was seen as a place for spiritual connection and learning, and it was suggested that to improve Māori health, the marae should be used in rural towns for a place of learning.

A study (Chan et al., 2008) describing the prevalence of CVD in New Zealand by ethnicity and socioeconomic status estimated national data sets of public hospital discharges, mortality registrations and pharmaceutical dispensing during the years 1988 to 2007. Results showed Māori had the highest age-standardised prevalence of CVD across all age groups. There was a clear association between CVD and social deprivation. The burden of CVD falls heavily on Māori, with a 66% higher incidence of heart disease compared to non-Māori. Recommendations were to target patients with prevalent CVD risk factors as this was likely to be a cost effective strategy. A strength of this study’s findings were from national data collections rather than from participants and therefore were not subjected to rate biases and were based on data for entire New Zealand populations (Chan et al., 2008).

**Barriers for Women**

Gallagher et al. (2003) suggested the main reason for women not attending CR outpatient programmes was a lack of referral from a health professional. An Australian study (Williams et al., 2002) interviewed 196 women aged between 55 and 70 years had been admitted to hospital for a cardiac event. Results showed
that the women did not attend for reasons such as a lack of transport, being too sick or tired, feeling it was unnecessary, had multiple role conflicts, lacked motivation, and thinking the programme did not suit them. Recommendations were to offer a range of flexible programmes, and support was required to assist with decision making. A limitation of this study was the cut-off age, as many older women over 70 years benefit from CR (Williams et al., 2002).

A number of studies discussed older women not receiving an invitation or referral to CR, suggesting reasons such as age, co-morbidities and diuretic therapy were exclusions to CR attendance (Allen, Scott, Stewart, & Young, 2004; Schuster & Waldron, 2012; Suaya, Stason, Ades, Normand, & Shepard, 2009). More recent studies discuss the reasons why older women do not attend CR are related to their social environment and whether they live alone (Schuster & Waldron, 2012). There was a perception by women that CR is a "men's club" (Gallagher, McKinley, & Dracup, 2003).

Gallagher et al. (2003) discussed how women who had had a coronary artery bypass graft (CABG) and stayed in hospital for longer than five days were more likely to attend CR than those with MI and a shorter in hospital stay. Women were not as affected by illness perception and were more concerned with disruption to home life. Disruption to their caring role was also a priority for women (Gallagher et al., 2003).

**Referral/non-referral**

New Zealand’s rates of CR referral are consistent with international levels. A systematic review by Cortes (2006) of referral rates and their determinants found an average of 34% of eligible candidates were referred to CR; while rates as low as 10% and as high as 60% were observed, with the highest rates in centers with an automatic referral process for all eligible candidates. None of the 41 CR centers in New Zealand reviewed by Doolan-Noble et al., (2004) had an automatic referral mechanism in place. At present, the clinician makes the referral decision.

A common theme of the five quantitative studies reviewed is that receiving a formal invitation in hospital to attend CR while in hospital had an impact on attendance. One of the studies (Dunlay et al., 2009) reported a six fold increase in attendance by giving a formal referral to a patient while in hospital. Other themes from the studies of increased attendance to CR were a diagnosis of MI, being male and ward placement, all of which had an influence on receiving a referral to CR. Being elderly
or female decreases the chances of receiving an invitation (Gallagher et al., 2003; Melville, Packham, Brown, Weston, & Gray, 1999; Whitmarsh, Koutantji, & Sidell, 2003).

Recommendations by health professionals are predictive of attendance at CR and were seen to be more effective if given by a specialist in cardiac care. Health professional recommendations can double the number of people attending an outpatient CR programme (Johnson et al., 2010). Specifically, a cardiologist or CR nurse recommendation was found to be more meaningful and effective for the cardiac patient than from a ward nurse. (Johnson et al., 2010). Gallagher et al. (2003) found women were more likely to attend a CR outpatient programme if recommended by a health professional. Harkness et al. (2005) indicated a post discharge phone call by a cardiac nurse enhanced attendance.

Psychological variables were also discussed by Whitmarsh et al. (2003), who stated that participants with a greater number of symptoms from heart disease and who also experienced more distress were better at attending and completing the CR programme.

**Emotions and illness perceptions**

A number of studies have established a link between negative perceptions and poor outcomes in people with CVD. For example, Furze, Lewin, Murberg, Bull and Thompson (2005) found that illness perception and angina were associated with poor physical function and negative psychological outcomes. A seminal study by Wynn (1967) exposed the finding that illness perceptions of people with MI had a significant influence on the speed of people returning to work, their functional ability at home, and their recreational and social activity, with negative perceptions predicting a poor outcome. This study found 50% of 400 people with CVD had misconceptions about MI (Wynn, 1967).

Two similar quantitative studies done in New Zealand by Petrie, Weinman, Sharpe and Buckley (1996) and Broadbent, Ellis, Thomas, Gamble and Petrie (2009) researched cardiac patients’ illness perception and whether these had an impact on returning to work and attending CR programmes. Petrie, Cameron, Ellis, Buick, and Weinman (2002) interviewed 143 people after admission with MI diagnosis and Broadbent et al. interviewed 108 people. Both studies used a recognised cognitive illness perception scale, with five main components to measure symptoms, assess health risk, and direct action during recovery (Leventhal, Meyer, & Nerenz, 1980).
Both studies found evidence that psychological factors become more important than medical factors in guiding the recovery process after an MI, and that patients’ ideas about their illness had an impact on attendance at CR Phase Two programmes. Patients’ beliefs also impacted on their ability to return to work and resume normal activities (Broadbent et al., 2009; Petrie et al., 1996).

Whitmarsh et al. (2003) examined illness perceptions predicting attendance at CR, and found that there was no significant relationship between illness perception and attendance at CR programmes. However, one finding which surprised the researchers were patients’ illness perception and the relationship to their quality of life, comparing 24hrs post diagnosis and six months after discharge. Whitmarsh et al. (2003) found when patients believed that in the first 24hrs of their MI they would have unpleasant consequences, six months later the same patients showed a significant decrease in their quality of life scores, compared to those who did not believe their MI to be consequential.

The size of an MI is recorded by the number of myocardial enzymes leaking into the blood-stream; this is counted after a cardiac event and dictates the size of an MI. This information is used in discussion with the patient to illustrate myocardial damage and the time needed for recovery. French, Lewin, Watson and Thompson (2005) thought that high enzyme count and MI size were linked to patients’ understanding and expectations that their illness would have serious consequences, and that patients were more likely to attend CR if they perceived their heart event would affect their life.

**Characteristics of those who do not attend CR**

CR participation rates in New Zealand are available from only two studies. One was a national audit of 30 CR centers in the country (Doolan-Noble et al., 2004) and the other was an audit of CR at Auckland Hospital (Parks, Allison, Doughty, Cunningham, & Ellis, 2000). Participation rates were 15.9% and 17.3%, respectively. These rates are lower than other countries, such as Australia (32%) and the UK (28.5%). Many of the barriers to participation were consistent with multiple studies, including older age (A. Cooper, Weinman, Hankins, Jackson, & Horne, 2007; Suaya et al., 2007); female (Allen et al., 2004; Schuster & Waldron, 2012); lack of physician referral (Arena et al., 2012; K. M. King & Teo, 2012); not feeling that rehabilitation was necessary (Beswick et al., 2005; AF Cooper et al., 2002); an inability to drive/lack of transport (Doolan-Noble et al., 2004); and education level (Altenhöner, Baczkiewicz, Weishaar, & Kutschmann, 2012).
Summary

This district is not unlike other regions in New Zealand, other than its very rural aspect and the large proportion of cardiac high-risk people in the population. There is documented evidence of disparities between Māori and non-Māori, which have an impact on how information should be delivered and services provided.

Several potential benefits are possible from offering a comprehensive inpatient programme. The addition of a home-based programme is likely to lead to greater overall participation and completion in CR among all those eligible as will reducing barriers to participation, such as being able to still work and attend CR, and solve transport and costs associated with transport and parking. CR programmes should be in line with guidelines and should offer a more personalised approach. Greater emphasis on self-care models should be encouraged within in the hospital setting. Primary Health Organisations need to be involved in the hospital discharge-plan and on going care of the patient. The numerous clinical benefits achievable through participation in CR have been well studied and with the current low participation rates, these clinical benefits are not being realised. Secondly, there is a potential to increase exposure to CR among those carrying the greatest burden of CVD. The data suggests Māori are under-represented at hospital-based CR, despite being greatly over-represented in CVD statistics. CR needs to be more culturally available and offered from different venues such as marae.
Chapter Three

METHODOLOGY

Introduction

The literature review identified poor attendance at CR programmes due to a multitude of reasons. In this chapter the researcher will describe the research design and discuss sample selection and data collection methods. The chapter will also discuss validity and reliability of the data. Ethical principles and issues will be reviewed and finally the management and analysis of data will be discussed.

Research Design

This research is a quantitative non-experimental descriptive/observational study. This type of research involves no interaction with participants, data collection was via questionnaire and information will be sorted and gathered using a quantitative perspective (Schneider & Elliott, 2007).

Quantitative nursing research involves the collection and analysis of numerical data to find out how often, when or how effective particular nursing interventions or treatments are (Whitehead, 2007). For this research a quantitative approach was used because the study focuses on finding out how many people attended the cardiac rehabilitation outpatient programme and what the barriers were that may have prevented attendance. Information included in the material presented in Phase One of the inpatient programmes may also influence people attending outpatient CR programmes.

A non-experimental observational study was chosen as information can be collected on the characteristics of a cardiac inpatient group. Observational designs work from a clear concise problem statement that has the advantage of gathering a lot of information from a large population in an economical manner (Elliott, 2007).

A disadvantage of descriptive studies is that information tends to be brief and superficial with a focus of breath rather than depth of data (Schneider & Elliott, 2007). To address this limitation there is one open ended question where
respondents were given the opportunity to make additional comments. From these comments themes have been established to give greater understanding of the issue. However, this research is not considered mixed methodology design because of its strong quantitative perspective.

The type of research will be greatly influenced by the research programme time, facilities and resources (Schneider & Elliott, 2007). The researcher was employed part-time as a registered nurse while enrolled in a one year masterate research course consisting of a 30 credit Research for Practice paper and 60 credit thesis. With the constraints of a 60 credit thesis and limited time and resources a quantitative postal questionnaire was chosen because it would be an achievable research project.

_Hospital Audit_

A hospital audit was initiated by requesting data from the information technology department at the hospital. Information requested was international classification codes for cardiac diagnosis and demographic information for all 768 patients between the dates of November 2011 to July 2012. Data was received in an Excel™ format and then sorted into relevant dates. Some of the data was duplicated as each admission was recorded i.e. the same patient may have had more than one admission. Duplications were removed so each patient had only one admission recorded against their hospital universal registration number.

It was important to avoid sending questionnaires to any potential participants listed in the hospital audit data who may have died. The researcher asked if a query could be added to exclude any possible deaths prior to the information being sent to the researcher. This information comes from the Births, Deaths and Marriages register and from general practitioner notifications. The hospital system endeavours to keep up to date of this information on an hourly basis. There was an unavoidable gap of a week in between receiving the data and analysing and sorting the information into a sample population before sending out the questionnaire. To ensure the questionnaire was not sent out to someone who had died another check of the hospital system was completed by checking every hospital universal register number into the system to see if any deaths had occurred between receiving the audit information and sending out the questionnaire to the sample population. The
importance of this was realised as eight people had died in this short time frame and they were removed from the sample.

**Sample Size**

A purposeful sample of all patients admitted to hospital within a nine month time frame with an ICD 10 code relating to ACS was selected. Of the 768 people listed in the data from the IT department, 418 people met the inclusion criteria, excluding those who lived in another country.

**Data collection Tool**

The researcher was unable to find a quantitative survey in the literature which questioned cardiac patients on their perceptions of the inpatient CR programme while they were in hospital. Therefore a questionnaire consisting of 30 questions was developed. The questionnaire took approximately fifteen minutes to complete and was designed to reflect the aims of the research.

A quantitative study design was selected by the researcher for ease of accessing patients from a broad geographical area and ability to use a large sample size. A postal questionnaire was considered the most appropriate method for the age and computer ability of the subjects sampled.

**Validity**

“Unless measurement tools validity and reliability reflect the concepts of the theory being tested, conclusions drawn from the empirical studies will be invalid and will not advance the development of nursing”

*Elliot (2002, p. 332).*

The questionnaire has been validated by a content approach. Four cardiac patients were invited to critique the data collection tool. All four people agreed to review the questionnaire and the general consensus was the tool was well planned and there were no major areas of concern. Each person gave minor suggestions on one or two questions which were taking out a tick box column that created confusion and adding an ethnicity tick box. The questionnaire was also given to two cardiac rehabilitation nurses, coronary care nurses and cardiologists for their expert
opinions on cardiac education. From this a question was added in regard to the use of GTN spray and chest pain management. Their suggestions were accepted and the questionnaire was modified slightly with an increased font and type setting. The questionnaire also was critiqued by the researcher’s supervisor and associate supervisor who have extensive experience in conducting quantitative research.

Reliability

Reliability refers to the consistency with which the instrument (questionnaire) measures what is intended to measure (Bryman, 2012). A reliable instrument is one that will produce the same results if the behaviour is measured again and again by the same scale (Schneider & Elliott, 2007). The pilot study was distributed to cardiac patients and cardiac nurses who were culturally diverse, from different age groups and socioeconomic stages. Reliability was not demonstrated in this study as the researcher was unable to contact original participants as the survey participation was anonymous.

Distributing and Collecting the Research Data

The researcher considered many avenues of data collection before settling on using a postal questionnaire. A returned postage paid envelope was included with the questionnaire for the participant to use. The questionnaire was returned to an administrator who removed any identifying information.

A reminder letter was sent out to all those aged 65 years and below. This group was purposefully targeted as the researcher was aware of the high return rate of the over 65 year old age group. The participants were invited to email or phone the researcher for a replacement if they had misplaced the questionnaire.

Ethics

This research conforms to ethical requirements. The principles of informed consent, privacy and confidentiality, and anonymity were applied in this study.
Ethical approval process

Ethical approval for this study was sought and obtained from the New Zealand Central Region Health and Disability Ethics Committee and the Eastern Institute of Technology Research Ethics and Approval Committee. Approval was also sought and gained from the DHB to access hospital records for the hospital audit data.

Informed consent

Informed consent is not needed where anonymous questionnaire are used. With voluntary participation completing the questionnaire is regarded as consent (Fisher & Vacanti-Shova, 2012). In this research, both an anonymous questionnaire was used and participation was voluntary.

Anonymity

It was not possible to identify any individual respondent from the data unless the respondent had put their own name on the returned survey. All identifying information was removed before analysis. Participants will not be identifiable in any reports or presentations of the research.

Cultural considerations

The research did not particularly target Māori but the researcher has an interest in Māori views and the aim of this research is to gain insight into why many Māori do not attend outpatient cardiac rehabilitation groups. Discussions were held with the Māori Health Advisor at the DHB in regards to the cultural sensitivity and appropriateness of the questionnaire and their approval was gained. Confirmation was given that the results and aim of the recommendations would be used to improve and support Māori attendance in the future.

Potential conflict of interest and roles

Because of the researchers previous work in the cardiac rehabilitation service, some of the participants would have had previous contact with the researcher. Selection for participation was done by hospital audit and participation was voluntary. All identifying information on the returned questionnaires was removed prior to analysis.
**Cultural safety**

Questions within the questionnaire were developed in consultation with Māori and demonstrated a commitment to the Treaty of Waitangi and recognise tangata whenua (people of the land). Questions related directly the principles of protection, partnership and participation.

**Data Analysis**

Both quantitative and qualitative analysis approaches were needed to analyse the data in this study. Most of the data collected was in a tick box format or Likert scale for quantitative analysis. Microsoft Excel™ was used to analysis the data using descriptive statistics. Demographic data was analysed and graphically represented using pivot tables with percentages to note numerical differences and trends. The idea was to condense large quantities of information into meaningful data so this could be compared with national and international data.

**Use and Storage and Disposal of Data**

The data will be used by the researcher for this masterate thesis research. Findings will be published and presented ensuring anonymity of the participants.

The data will be stored electronically with a password protection until completion of the thesis. Returned surveys will be destroyed once data has been entered into the computer. Computer data will be retained for ten years after which time they will also be destroyed. The paper copies of the data and results will be destroyed when the thesis is completed.
Chapter 4

RESULTS

“Sometimes the questions are complicated and the answers are simple”

(Dr. Seuss)

Introduction

This chapter will present the findings of the research. The findings are grouped into two main sections. The first section is the hospital audit and the second section is the questionnaire results, which will focus on Māori, women and the older age group as these groups historically do not attend CR. Comparisons were made between those participants who did attend cardiac rehabilitation (ACR) and those who did not attend cardiac rehabilitation (NCR). The second section will be further subdivided as follows:

a) Hospital Audit
b) Demographics
c) Perceptions and Emotions
d) Education and Understanding
e) Question for attending/not attending CR

The quantitative data has been presented in a variety of formats such as tables and charts and were described using average and mode scores. Participants had the opportunity to make additional comments on their stay in the hospital and the reasons they chose to attend CR (ACR) or not attend CR (NCR). These comments will be categorized into main themes using a qualitative inductive approach (D. R. Thomas, 2006).

Sample Selection and Response Rate.

The hospital audit of cardiac patients retrieved data from 1 November 2011 to 31 July 2012, a total of 768 entries. There were 350 multiple entries which were removed. A review of possible deaths checked against the data on the hospital system excluded a further 19 participants before the final sample of 418 was selected. This sample was mailed a questionnaire including a self-addressed stamped envelope for the purpose of returning the questionnaire by post. A
reminder letter was sent out three weeks after the initial questionnaire to 158 people who were under the age of 65 years. This group was selected because of the initial high response rate from the 65-80+ years population. The reminder letter had the details of the researcher’s phone and email contact. Fifteen people contacted the researcher wanting another questionnaire or saying they had already completed the questionnaire. There were 181 people who returned the questionnaire. Fifteen letters were returned to the researcher with insufficient or incorrect address, including two people that had died in the seven days between checking the hospital; system and sending out the survey. A letter of apology was sent to the wife of a respondent who wrote a letter advising me of her husband’s death as in Appendix 7, the name ‘David’ is a pseudonym. Another unopened survey was returned by a rest home stating the resident had died.

A response rate of 43.3% was achieved. A postal questionnaire was chosen specifically for this age group as an email questionnaire may have excluded some of the older age group who may not familiar with computers.

The questionnaire was generally very well filled out with only a few people not answering every question. The researcher was contacted by one participant who said they were unable to read or write but still wanted to participate and the questionnaire was then completed over the phone. Another participant scanned and emailed the questionnaire to the researcher as this suited them better. A number of participants left contact details in case any more information was required even though they understood the questionnaire was intended to be anonymous.
SECTION 1: Hospital Audit

Cardiac patient demographics – who has cardiovascular disease?

The ethnicity of the sample population is shown in Figure 1. New Zealand Pakeha (New Zealander of Caucasian descent) made up the majority of the sample presenting 73% of the total.

![Pie chart showing ethnic distribution of hospital audit sample.](image)

Figure 1: Ethnicity from Hospital Audit.

Māori made up 18% of the sample, although the 2006 census indicates approximately 25% of people in the study district identify themselves as Māori.

Females made up 40% of the hospital audit sample, and the average age of the sample was 70 years.

Where do they live?

The sample population is scattered around the district with the majority living in one of the two cities (see Figure 2).

What was the CVD diagnosis?

In Figure 3, the hospital audit shows most people were discharged with a diagnosis of Subendocardial Myocardial Infarction. In recent years, this name has changed to Non ST Elevation MI (NSTEMI). In addition, 50 people were discharged with a diagnosis of acute myocardial infarction (AMI) in different locations of the heart.
Figure 2: Region and Percentage of Respondents

Figure 3: Identification Classification Codes for Hospital Audit Sample.

What Ward Was the Sample Discharged From?

Figure 4 represents the ward the sample were discharged from. The majority (38%) of the patients were discharged from Floor One, which is made up of two medical wards, one is a general medical ward and the other is a step down cardiac medical ward. The next area with the most significant discharges was Regional Coronary Care at 34%. From this data, most of these patients should receive cardiac
education as the dominant knowledge base of nurses working in these wards is in the cardiac field.

Figure 4: Sample Discharge Ward.
SECTION 2: Questionnaire Results

Demographics

Ethnicity

The participants were asked to identify their ethnicity as NZ European/Pakeha, Māori, Cook Island Māori, Samoan, Tongan, Indian, or Other. The ethnicity of the respondents is shown in Figure 5. New Zealand Pakeha made up the majority of the respondents representing 88% (n=157) of the total, followed by Māori 9% (n=17) Cook Island Māori, Samoan 1% (n=2) and Tongan 1% (n=1) represented in Figure 5. Asian or Indian ethnicities were not represented in this study.

![Figure 5: Ethnicity of Respondents]

Age

The average age of the respondents was 71 years with the majority of the respondents being over the age of 65 years (71%). This is the traditional retirement age and it is assumed that this group may have more time and are more aware of emerging personal health concerns.

The next largest group was 50-64 years and there were only six people under the age of 50. This is reflected in the incidence of heart disease, as the older age group has higher rates of heart disease than those below 50 years (Table 1).
Gender

From the 179 respondents there were 112 men (62%) and 66 women (37%). One person left this question blank. Māori respondents were 65% (n= 11) female and 35% (n= 6) male.

Attendance at outpatient cardiac rehabilitation

Of the 181 respondents, 66 people attended CR as an outpatient, which is an attendance rate of 37%. From those who attended CR, 35% (n= 23) were women and 65% (n= 43) were men. Nine (53%) of the 17 Māori respondents attended CR.

There were 81 respondents in the over 65 year age group, and nearly half of all the respondents in this group attended cardiac rehabilitation (47%, n=38) which is the highest percentage from all age groups. In the 80+ year age group, 26% (n=12) of 46 respondents attended CR.

Table 1: Age attending cardiac rehabilitation

<table>
<thead>
<tr>
<th>AGE</th>
<th>NCR</th>
<th>ACR</th>
<th>Grand Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-34</td>
<td>1</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>35-49</td>
<td>2</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>50-64</td>
<td>30</td>
<td>12</td>
<td>42</td>
</tr>
<tr>
<td>65-79</td>
<td>43</td>
<td>38</td>
<td>81</td>
</tr>
<tr>
<td>80+</td>
<td>34</td>
<td>12</td>
<td>46</td>
</tr>
<tr>
<td>no age provided</td>
<td>3</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Grand Total</td>
<td>113</td>
<td>66</td>
<td>179</td>
</tr>
</tbody>
</table>

Discharge Diagnosis

Every questionnaire was coded with the respondent’s discharge diagnosis using the international classification of disease (ICD) codes.

Subendocardial MI (NSTEMI) was the most common code amongst all the questionnaires (n=120). The next most common code was angina (n=38) and all other AMI codes from different locations in the heart make up the other 22 questionnaires (see Table 2).
Table 2: Discharge diagnosis

<table>
<thead>
<tr>
<th>Discharge diagnosis</th>
<th>NCR</th>
<th>ACR</th>
<th>Grand Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angina</td>
<td>24</td>
<td>14</td>
<td>38</td>
</tr>
<tr>
<td>AMI</td>
<td></td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>IMI</td>
<td>7</td>
<td>8</td>
<td>15</td>
</tr>
<tr>
<td>AMI other sites</td>
<td>3</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>AMI unspecified</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Acute subendocardial MI</td>
<td>77</td>
<td>43</td>
<td>120</td>
</tr>
</tbody>
</table>

Marital status

The respondents were asked their marital status. The majority of respondents were married and the next largest group were widowed (Figure 6). From the 59% of respondents who were married 21% attended CR. From the widowed group 8% attended CR.

Gender

Female respondents were asked if they live alone, and this and their marital status were compared to attendance at CR. A total of 64 out of 66 women answered this question. Out of the 17 women over 80 years of age, none attended CR. From the 29 women who lived alone nine attended CR. From 111 men a total of 19 men were widowed and six of those attended CR.
Figure 7: Women’s CR Attendance by Living Alone, Age and Marital Status
**Emotional Responses by Gender/Age/Ethnicity**

The questionnaire had themes relating to emotions and perceptions of respondents while they were in hospital. The information presented in these results indicates how the respondent felt about their heart event and their health as a whole. The questions will be compared between respondents who attended CR and those who did not. Each question will be viewed by age, ethnicity and gender.

**My heart event was a shock.**

In Q1, respondents were asked if they thought their heart event was a shock. A Likert scale was used with a tick box for ‘strongly disagree’, ‘disagree’, ‘agree’ and ‘strongly agree’. A total of 176 respondents answered this question. The majority (73%, n=138) of the respondents agreed or strongly agreed and are presented in green and purple in Figure 8.

![Figure 8: Shock After a Heart Event by Gender and CR attendance](image)

A total of 33% (n= 54) of those respondents who thought their heart event was a shock also said they attended CR, while all those respondents who said they strongly disagreed their heart event was a shock did not attend CR.

The majority of both female (50 from a total of 66) and male (85 of 110) respondents agreed or strongly agreed to their heart event being a shock. A higher percentage of women (46%, n=23) who agreed or strongly agreed their heart event was a shock attended CR than men (38%, n=42).
**Age**

In Figure 7, age was compared to emotional response of shock after a heart event. In all age groups except the 20-34 years age group, if a respondent agreed or strongly agreed to their heart event being a shock they were more likely to attend CR (represented as red in colour). No one who disagreed their heart event was a shock from the under 65 years age population attended CR. Except for the 80+ year age group those who strongly agreed were more likely to attend CR than any other group.

![Figure 9: Emotional Shock by Age and CR attendance After a Cardiac Event](image)

**Ethnicity**

There was no difference in Māori compared to Pakeha for this question.

**My heart problems will continue forever**

In Q2, respondents were asked if they thought their heart condition would last forever. Six respondents did not answer this question. From the total who answered this question, 72% (n=126) thought their heart condition would last forever.

**Gender**

Of the women who answered this question, 75% (n=50) agreed or strongly agreed to their heart condition lasting forever. This did not impact on attending CR, as only 16 of 50 (32%) female respondents attended CR. A smaller percentage of men thought their heart condition would last forever (66%, n=75) but 25 out of 75 (33.3%) attended CR.
Age

More respondents in the 65+ year age group disagreed or strongly disagreed their heart event would last forever (n=47) than all other age groups.

The only respondent in the 29-34 year age group thought their heart condition would continue forever but did not attend CR. Four out of five respondents in the 35-49 year age group thought their heart event would last forever but only two respondents attended CR. In the 50-64 year age group there were 40 respondents, and 14 (35%) respondents disagreed their heart event would last forever. Of those 14 respondents two (14%) attended CR. In the 65-79 year age group there was a total of 80 respondents and 33% (n=26) of them disagreed their heart event would last forever but 65% (n=17) of those attended CR. The remaining 54 respondents agreed their heart event would last forever and 39% (n=21) attended CR. In the 80+ year age group there was a total of 46 respondents and 10% (n=5) disagreed with Q2 and 60% of them (n=3) said they attended CR compared to 82% (n=38) of respondents who agreed or strongly agreed, but only nine of those attended CR.

Figure 10: Perceptions of Heart Health by Age and CR attendance
Ethnicity

Twelve out of the 16 (75%) Māori respondents agreed their heart event would last forever and of those six (50%) attended CR.

*My lifestyle has changed since my heart event*

In Q3, respondents were asked if their lifestyle had changed since their heart event. A total of 95% (n=173) respondents answered this question and 68% (n=117) respondents agreed or strongly agreed their lifestyle had changed since their heart event.

**Gender**

From the women respondents 75% (n=50) agreed or strongly agreed their lifestyle has changed. A total of 34 out of 50 women did not attend CR and agreeing or strongly agreeing their heart event would last forever did not appear to have an impact on attending CR.

**Age**

The 80+ year age group had the most respondents 42% (n=19) disagreeing and strongly disagreeing to their heart event changing their lifestyle. Fourteen of these respondents did not attend CR. In the 65-79 year age group from a total of 72 respondents 38% (n=28) disagreed or strongly disagreed their lifestyle had changed, and 13 of these did not attend CR.

![Figure 11: Changes to Lifestyle by Age and CR attendance after Heart Event](image-url)
Ethnicity

Fifteen Māori answered this question, 14 answered agree or strongly agree to their lifestyle changing since their heart event and eight of them went to CR. One Māori answered disagree to this question and did not attend CR.

Beliefs

In Q8, the respondents were asked if they felt emotionally supported in hospital and 93% (n=165) agreed or strongly agreed to feeling emotionally supported. Seven percent (n=13) said they disagreed or strongly disagreed to emotional support in hospital. Three respondents choose to not answer this question.

Gender

Four of the respondents who didn’t feel emotionally supported were women, and one attended CR. Nine of the respondents were men and three of those attended CR.

Age

The respondents who didn’t feel supported were spread across the age groups with each age group represented. There was no obvious relationship to attendance at CR.

Ethnicity

Results showed that only one Māori respondent felt emotionally unsupported and they did not attend CR. Pakeha were the only other ethnicity represented in this group, and nine of the 12 respondents did not attend CR.

My beliefs were respected in hospital.

In Q11, respondents were asked if their beliefs were respected in hospital and 95% (n=168) of respondents agreed or strongly agreed that their beliefs were respected. Only eight respondents did not feel their beliefs were respected while in hospital. From those eight respondents only one person attended CR. Eleven respondents did not answer this question.
Gender

A total of 60 women agreed or strongly agreed to this question with 21 women attending CR. The three women who disagreed with their beliefs being respected in hospital did not attend CR.

Age

There was no relationship between beliefs being respected in hospital and attending CR for any age group.

Ethnicity

There was also no obvious difference in attendance at CR with the ethnic groups. Pakeha were the only group who thought their beliefs were not respected.

Did You Feel safe to go home

In Q12, respondents were asked if they felt safe to go home. A total of 179 respondents answered this question. A small number (n=16, 8%) of respondents did not feel safe to go home, all were of Pakeha descent and consisted of seven females and nine males. Twelve respondents were over the age of 65 years. A total of six out of 16 respondents attended CR.

Anxiety and Depression

In Q4 and Q5, the respondents were asked if they felt depressed or anxious since their heart event. A total of nine respondents did not answer these questions. Figures 10A and 10B show if respondents agree or strongly agree to be anxious following their heart event they are more likely to attend CR than those who are depressed. Males are represented in orange and Females are represented in blue. A total of 21% (n=37) of respondents agreed or strongly agreed to being depressed since their heart event. Slightly more respondents admitted to being anxious after their heart event with 36% (n=62) respondents agreeing or strongly agreeing to anxiety after their heart event.
Gender

In both these questions women were more likely to attend CR if they were anxious and less likely if they were depressed, with 13 women going to CR when they agreed or strongly agreed to anxiety compared to five women who attend CR with agreeing or strongly agreeing to depression. This difference is not so large with the men, where 14 men went to CR who agree or strongly agree to anxiety and 10 men went to CR when they agreed or strongly agreed to depression.

![Figure 12: Anxiety (A) and Depression (B) by gender and CR attendance](image)

Age

In the 50-64 year age group more respondents agreed to being anxious (n=19) after their heart event than being depressed (n=10), however this did not impact on CR attendance. In the 65-79 year group every respondent answered this question (n=80) and more respondents answered strongly agree/agree to anxiety (n=28) than depression (n=17). This had an impact on CR attendance with 16 respondents attending CR who agreed to anxiety compared to 11 respondents who agreed to depression after their heart event. In the 80+ year age group most respondents strongly disagreed or disagreed to anxiety and depression with no-one strongly agreeing to anxiety or depression. Eight respondents out of 43 agreed to depression and one person attended CR. Twelve respondents agreed to anxiety out of 42 respondents with three respondents attending CR.

Ethnicity

There was no obvious difference with all respondents answering from all sections.
**Cardiac rehabilitation will benefit me**

In Q 14, the respondents were asked if they believed CR would benefit them. A total of 167 respondents answered this question. Most respondents agreed or strongly agreed CR would benefit (n=119) them and they were more likely to attend CR (n=59) than the respondents who disagreed or strongly disagreed (n=48) to the benefit of CR and then attended CR (n=5).

**Gender**

A total of 60 women and 107 men answered this question. There were 39 (65%) women who agreed or strongly agreed CR would benefit them, and from those respondents 54% (n=21) attended CR. More men agreed or strongly agreed CR would benefit them (74%, n=80) with a smaller percentage (35%, n=30) attending CR.

**Age**

The person in the 25-39 year age group did not think they would benefit from CR and did not attend. All five of the respondents in the 35-49 year age group thought CR would benefit them and three respondents attended CR. From the 42 respondents in the 50-64 year age group 57% (n=24) respondents thought CR would benefit them but only 23% (n=10) of those respondents went to CR. Two respondents who did not think CR would benefit them went to CR. In the 65-79 year age group 81% (n=61) respondents thought CR would benefit them, from those respondents 57% (n=35) of respondents attended CR. Two respondents who did not think CR would benefit them also went to CR. In the 80+ year age group 64% (n=27) respondents thought CR would benefit them and 37% (n=10) respondents attended as an outpatient.

**Ethnicity**

From the 17 Māori respondents 13 thought CR would benefit them, and four of them attended CR.

**Health improvement**

Respondents were asked to rate their health improvement as ‘improved a lot’, ‘improved a little’, ‘stayed the same’ and ‘got worse’. A total of 179 respondents answered this question. The majority 85% (n=153) said their health improved a
lot/a little and 31% (n=47) of those attended CR as an outpatient. Of the 32% (n=57) of respondents who thought their health stayed the same, 14 respondents attended CR. Half of the 10 respondents who thought their health got worse attended CR.

Gender

All female respondents answered this question. A total of 63% (n=42) women thought their health improved a lot/a little. Of this group 26% (n=11) respondents attended CR. Not all the men responded to this question (97%, n=113). The men who thought their health improved a lot/a little (61% n=69) were more likely to attend CR (46% n=32) compared to the women. Eighteen (42%) women thought their health stayed the same and 27% (n=5) of those attended CR. A total of 39 (34%) of men said their health stayed the same and 23% (n=9) of those attended CR.

Age

In the 35-49 year age group, all the respondents indicated health improvements and three of five respondents attended CR (Figure 13). In the 50-64 year age group 59% (n=25) respondents said their health improved a lot/a little out of 42 respondents. This group believed they had the fewest health improvements from all age groups, and the lowest percentage of respondents attending CR (48%, n=12). In the 65-79 year old group 60% (n=49) said their health improved a lot/a little and 77% (n=38) attended CR. Also in this age group there was the most respondents who thought their health had improved and this was reflected with the highest amount of respondents attending CR than any other age group. In the 80+ year age group 65% (n=30) respondents thought their health improved a lot/ a little after their heart event and 26% (n=8) respondents attended CR.

Figure 13: Health improvement Belief by Age and CR attendance
Ethnicity

There was no significant health change for Māori from this question.

**Knowledge and Understanding**

**Information was overwhelming**

In Q9, respondents were asked if the information given about their heart event was overwhelming and answered ‘strongly disagree’, ‘disagree’, ‘agree’ or ‘strongly agree’. From all the respondents 50% (n=87) agreed or strongly agreed the information was overwhelming. Nine respondents did not answer this question.

**Gender**

Nearly half the women who responded agreed the information they received was overwhelming 46% (n=31) and 32% (n=10) of those attended CR.

**Age**

For each age group the agree/disagree comparison was approximately equal for each age group where half of the respondents thought the information was overwhelming or not overwhelming.

**Ethnicity**

All Māori agreed or strongly agreed with Q9 that the information received was overwhelming.

**More information?**

In Q10, respondents were asked if they would have liked more information. They were given a Likert scale to choose their answers from ‘strongly disagree’, ‘disagree’, ‘agree’, and ‘strongly agree’. A total of 169 respondents answered this question with 12 respondents choosing not to answer. A total of 18% (n= 31) of respondents ticked agree or strongly agree to wanting more information.

**Gender**

Almost all of the females (92%) and males (93%) answered this question. The same percentage of males (36%) as females (36%) wanted more information but
from the female respondents only four (6%) respondents attended CR compared to 12 (10%) males.

**Age**

A total of 100 (59%) respondents did not want more information. All of the 35-49 year age group did not want more information. The largest group in the strongly disagree/disagree section was the 50-64 year age group (n=44), and from this group 54% (n=24) attended CR. In the 65-79 year age group 16 respondents agreed/strongly agreed to want more information, and from those 50% (n=8) attended CR.

In the 80+ year age group 63% n=27 disagreed to wanting more information compared to 37% n=16 who strongly agree to wanting more information.

**Ethnicity**

A total of 16 Māori answered this question and eight respondents said they did not need more information and three of those respondents attended CR. Of the eight respondents who agreed/strongly agreed to need more information, five attended CR.

**Easy to ask questions?**

In Q15, respondents were asked if it was ‘very easy’, ‘fairly easy’, ‘easy’ ‘not very easy’ or ‘not at all easy’ to ask staff questions about their heart. A total of 177 respondents answered this question. The majority of respondents found it very easy, fairly easy or easy to ask the staff questions (91% n=162). A total of 15 (8%) respondents ticked ‘not very easy’ to ask staff questions.

**Gender**

Every female respondent (n=66) and 116 men answered this question. From the 16 respondents who did not find it easy to ask staff questions eight were women and none of these respondents attended CR, while of the remaining eight men, three attended CR.

There were 58 (87%) female respondents who found it easy to ask staff questions, but of those, 35 (53%) did not attend CR. The majority of men (93% n=108) found it easy to ask staff questions and 63 (58%) attended CR.
Age

Out of the total of 16 respondents who found it difficult to ask questions, two (12%) respondents were from the 50-64 year age group, eight (50%) respondents were from the 65 to 79 year age group and six (37%) respondents were from the 80+ year age group. Three respondents attended CR, two respondents from the 65-79 year age group and one person from the 80+ age group.

Ethnicity

Of the 17 respondents who found it difficult to ask questions, only one was Māori and they did not attend CR.

Understanding of information presented.

In Q17, the respondents were asked if they understood the information given to them about their cardiac event. Respondents were asked to rate the information as ‘all of it’, ‘most of it’, ‘some of it’, ‘none of it’, or ‘no information’ was given. The results showed that 75% (n= 139) understood all or most of the information. Leaving 25% (n= 40) that understood some of the information or did not receive any information. Of the respondents who said they did not receive any information (13%, n= 20), only one person attended CR and the remaining 19 respondents did not attend CR.

Gender

All of the women and 111 males answered this question. Every woman who attended CR understood some of the information. The females who received no information (65% n= 43) did not attend CR. The 23 (34%) females who did understand all/most/some information attended CR. One male who was given no information attended CR. All of the 25 males (22%) who said they understood all/most or some of the information attended CR.

Age

A total of 26% (n= 46) of respondents understood all of the information given to them. Respondents in the over 80+ year age group were the largest (26% n=12) number of respondents who had not been given information (presented in yellow in (Figure 14) although 63% of this age group understood all or most of the information presented. In the 65-79 year age group, seven (9%) respondents did not get
information but had the largest (81% n=65) group who understood all or most of the information.

Figure 14: Understanding of Information by Age

**Ethnicity**

All Māori who filled out the questionnaire answered this question. They all understood all/most or some of the information.

**What type of information were respondents given?**

In Q19, the respondents were asked to choose any of four options (media); video, pamphlets, discussion with a health professional and/or a cardiac folder. A total of 165 respondents answered this question. The respondents who had all four options presented to them had the highest attendance (25%, n= 17) at CR, followed by discussion with a health professional. (16%, n= 11). Out of the total of 66 respondents who attended CR, 65 respondents had information presented to them via at least one type of media/ information presented to them while in hospital. Video was the least preferred media with only one person attending CR.

**Gender**

A total of 65 women and 99 men answered this question. The most effective media influencing women to attend CR was discussion with a health professional, 20 out of 23 women received information via some form of media plus discussion with a
health professional; and attended CR. Men preferred written material with 32 out of 42 males attending CR when given written material by itself or with other media.

**Age**

The respondents in the 25-34 year age group and the 35-49 year age group had a discussion with a health professional but did not attend CR. From the age groups who attended CR there was a range of media given to them. Two different media appeared to be important relative to CR attendance; discussion with a health professional \( n=47 \), and/or receiving a cardiac folder with \( n=38 \).

**Ethnicity**

Māori were given a range of media, but no significant difference was see in those who attended compared to those who did not attend.

**How much information is enough?**

In Q20-25 respondents were asked if they got ‘too much’, ‘enough’, ‘some but not enough’, or if ‘no information was given’. This Likert scale was asked for five different questions and the results are shown in the following pie graphs.

In Q20, respondents were asked about exercise in heart disease, and 32% of the respondents said they did not receive enough information. Most of these respondents were over 80 years of age or male. In Q21 respondents were asked about glycerine trinitrate (GTN) spray use and the management of chest pain, and most respondents indicated having enough information. In Q22 respondents were asked about diet and heart disease, with 43% of respondents not receiving enough information. In Q23 respondents were asked about medications in heart disease. This question had the highest number of respondents (73%) answering they received enough information. In Q24 respondents were asked about medication side effects and 56% wanted more information, the most out of all the questions. Overall there were a large percentage of respondents wanting more information and a small percentage saying they received too much.

**Gender**

All female respondents answered these questions. Over all the five questions nearly half of all women said they had enough information. In Q20 and Q21,
a majority (72%, n= 48) of women said they received enough information on exercise and enough information on use of GTN spray, but 28% (n= 18) said they didn't receive any information on exercise or GTN spray use. In Q22, 63% (n= 42) of women said they received enough / some information on diet and heart disease, although 37% (n= 24) women said they didn’t receive any information. The question that majority of women had the most information was the question regarding medication, where 90% (n= 60) of women had enough or some information given to them. The least well answered question (Q24) was regarding medication side effects, and 45% (n= 30) had enough information and 54% (n= 36) did not receive any information on medication side effects.

These questions did not relate to CR attendance. For example, Q20 where majority of women said they received enough information, was also the highest rate of attendance at 39% (n= 26). The question with the lowest attendance and the least amount of women having enough information was Q24 regarding medication side effects, where only 28% (n= 19) of women attended CR.
Age

The person in the 25-34 year age group said they got enough information. The respondents in the 35-49 year age group said they received some but not enough information on exercise in heart disease, but enough information on the use of GTN spray. The respondents were divided on information on diet where three respondents received enough information and the other two respondents said they received either none or some but not enough. The medication question (Q23) all respondents had enough information but were divided on the Q24 of side effects. In the 50-64 year age group in the first four questions regarding exercise, GTN spray and diet and medications approximately two thirds had enough information and from those one third attended CR. In Q22, 23, and 24, from all of the respondents who said they received no information, none attended CR. Four respondents from this age group said they received too much information on all five questions. In the 65-79 year age group at least 18% (n=15) to 45% (n=36) said they didn’t receive enough information over all five questions. The Q23 was the highest score of respondents who received enough information with 81% (n=65) respondents ticking enough information. In the 80+ year age group the majority of respondents had enough information over the five questions.

Ethnicity

Almost all of the Māori respondents had enough information and this did not impact on attendance. A small percentage of Māori said they had too much information with two to three respondents ticking this option on all five questions. Two Māori said they received no information for all five questions.

Who invited the respondents?

In Q13, respondents were asked if they received contact information for the CR nurse. A total of 173 respondents answered this question. A total of 47 (36%) respondents said they did not receive details. From those respondents who did not have contact details only three respondents attended CR outpatient programme.

Gender

From the 47 respondents who disagreed or strongly disagreed to receiving contact details 18 (38%) were women and of those women two went to CR. From the 29 men who did not receive contact details one attended CR. Of the women who strongly agreed/agreed to receiving contact details, 21 out of 23 attended CR.
Age

In the 80+ year age group, 14 out of the 36 respondents did not receive contact details of the CR nurse and did not attend CR. From the 65-74 year age group there were 16 respondents who did not receive contact details and only one person from this group attended CR. From the 50-64 year age group 10 respondents did not receive contact details and from those one person attended CR. All other age groups received contact details.

Ethnicity

NZ Pakeha was the largest group who did not receive contact details. There were only two Māori who did not receive contact details of the CR nurse and they did not attend CR as an outpatient.

Who received an invitation to CR?

In Q18 respondents were asked if they were given an invitation to CR. A total of 178 respondents answered this question with 65% (n=116) said they were invited to CR and 35%, (n=62) said no or don’t know to receiving an invitation. From the 65% n=116 of respondents invited to CR, 47%, (n=54) said they attended CR. From the 35% of respondents who did not receive an invitation, 7% (n=4) of respondents went to CR.

Gender

Of the 26 women who did not receive an invitation to CR, none of them went to a CR outpatient programme. Three of the 33 men who were not given an invitation to CR went to a CR programme.

Age

Figure 16 represents Q18 respondents who were asked if they were given an invitation to CR. The red colour represents those who did not receive an invitation. One person in the 50-64 year age group who did not receive an invitation went to CR. In this graph the older the person is the less likely they are to receive an invitation, with 27 respondents out of 41 not receiving an invitation in the 80+ year age group. The only person in 20-34 age group did not receive an invitation to attend CR and did not attend CR as an outpatient.
Ethnicity

Fifteen of 17 Māori respondents were invited to attend CR and from those nine participants went to CR programme.

How did you find out about CR?

In Q16, the respondents were asked how they found out about CR and were offered tick boxes for ‘nurse’, ‘cardiologist’, ‘cardiac rehabilitation nurse’, ‘family or friend’, ‘didn’t receive any information’. A total of 176 respondents answered this question. The health professional that got the most respondents to attend CR was the CR nurse. A total of 66% (n=44) of respondents who went to CR were contacted by the CR nurse. The next most consistent health professional was the ward nurse with a total of 18% (n=12) respondents attending CR. The cardiologists successfully invited five (8%) respondents. Seven (10%) respondents had an invitation from all health professionals. The total number of respondents invited to attend CR by a ward nurse was 34 patients out of 177 respondents.
Gender

From a total of 65 respondents, 23 women said they didn’t receive any information about CR, and none of these women attended CR. From the 29 men who didn’t receive an invitation only one person attended CR. From the 23 females who did receive an invitation 17 attended CR (73% success rate). The men had a 90% success rate with 36 male attending CR from 40 men receiving invitations.

![Figure 17: CR Invitation to Women by Health Professionals.]

Age

In the 20-34 year and the 35-49 year age groups combined, three respondents were invited by the nurse and did not attend CR, and three respondents were invited by the CR nurse and all attended CR. In the 50-64 year age group a range of health professionals invited respondents but the most successful was the CR nurse with nine respondents accepting the invitation. The remaining three respondents who attended CR were invited by the nurse and cardiologist. In the 65-79 year age group 25% (n= 20) of respondents did not receive any information and therefore did not attend CR. The most successful invitation came from the CR nurse with 32% (n= 26) respondents attending CR. In the 80+ age group 43% (n= 20) did not receive an invitation. The CR nurse was the most successful with 13% (n= 6) respondents attending CR.

Ethnicity

From the 17 Māori respondents, 29% (n= 5) respondents were invited by the CR nurse and three respondents did not get any information. The remaining 52% (n= 10) were.
9) respondents were invited by the nurse or the cardiologist and 29% (n= 5) attended CR.
SECTION 3: Qualitative Question

Introduction

The respondents were asked why they chose to attend or not attend CR. The majority of respondents who answered this question did not attend CR (n=108, 93%). There were four main themes which emerged from the information and these were cardiac rehabilitation and exercise, perceived benefits of attending CR, cardiac knowledge, and barriers for attending CR. These were further broken down into sub-themes.

Cardiac Rehabilitation and Exercise

For patients who associated cardiac rehabilitation with exercise, the reassurance provided by supervision and the type of exercise were predominant issues. Positive associations between exercise and cardiac rehabilitation included the opportunity to learn about exercise.

*To get fit again*

*To help start exercising*

*I thought exercise might benefit me*

*To get an idea on different exercises that I may implement myself at home*

*I wanted support and guidance as I felt nervous about exercise and general living*

Attending the cardiac rehabilitation course did not meet the exercise requirements of other respondents.

*I thought it might be of benefit to me. Most of the speakers were good but the exercise programme was a bit useless.*

*At the time I was playing outdoor bowls 3 days a week*

Some of the more negative comments were from a female in the 65-79 year age group who said she attended the programme for;
The physical fitness aspect of the programme but I ceased to return as I found the discussion group repetitive and superficial, I could attend to my own physical wellbeing

Other female respondents did not appear to understand the content of the programme

I am a RN who has spent many years in acute nursing I would have wasted their time and mine

I find I do enough exercise looking after myself and I’m always on the go

Perceived potential benefits of attending Cardiac Rehabilitation

In contrast to specific concerns and worries, some patients perceived general and specific potential benefits of attending cardiac rehabilitation. One woman in the 35-49 year age group said:

To understand what happened, why it happened and what I could do to prevent it happening again and what signs to look for

Most respondents provided general comments that suggested CR as a form of treatment in its own right and felt that generally it was a ‘good idea’ but did not mention specific components. In the group of 50 – 64 year old males, years five of the respondents said:

I felt it would be of benefit to me

Common statements in the 80+ age group were:

For Health’s sake

To stay alive

[for] health benefits

Māori patients expressed a need to take care of themselves and to regain past health by increasing their knowledge.

To learn more about it

Need to know and prevent further sickness
To take better care of myself

Comments made by women suggested they sought not just physical recovery but also emotional or psychological support, even friendship.

To meet other people and find out more information

Because I feel I have been given a lot of help and I want to be of help to others if I can

CR were positive and persistent now more confident to exercise, enjoying the team support

Two patients expressed doubt about attending due to the social interaction and needed more time to gather confidence to attend CR.

It took me 5 months to go, I was too embarrassed to go earlier

Needed time to think things out

Some patients will attend CR because they are told to go either by their family or by a health professional.

I was told to go

To satisfy my family members and myself

My family wanted me to go

Barriers to Attendance.

Practical barriers were evident and difficulty with transport was mentioned by 17 people. Other frequent comments were about timing of the programme.

Too busy

The times clashed with other commitments

Meant to attend but with other family medical problems just never got there.

Transport was a major issue amongst the respondents with several people acknowledging the distance from one of the rural districts to the city programme.
too busy, would take an hour to travel there, and did my own research

I have no transport

I don’t know if there is a group here in northern rural area 1

I would have liked to have attended but I live in northern rural area 1 and the programme is in city 1. I had to go back to work, I emailed the cardiac nurse and he replied

Couldn’t find the place in rural area 2 programme also at this stage I feel it is unwarranted

Several patients were concerned about taking more time off work following their hospitalisation and recovery period in order to attend the CR sessions.

I couldn’t get time off work (self-employed)

Work commitments and too far to go for two hours

The most common response across all age groups was that the respondent was not aware of the programme or not given an invitation, with responses such as:

Was unaware

No information on when to attend nothing sent out

I was in the cardiac ward and never told about it

No invitation given

Knowledge of what Cardiac Rehabilitation involves

The lack of perceived need for CR arose partly from a poor understanding of the programme and therefore an inability to appreciate the benefits.

I felt really good and thought I could get a good handle on it

Didn’t really need to, have good family support and regular visits to the doctor

My wife is a nurse so we are managing it ourselves
Did not believe that the programme would be suitable also have work "

Because I felt I had sufficient knowledge.

Did not think it would be any good

Respondents with previous experience of cardiac problems had led participants to believe they hold sufficient knowledge on their condition and did not require any further information from cardiac rehabilitation despite their knowledge being incomplete. Also previously coping with a cardiac condition and perceiving themselves to be different to other attendees were barriers.

I attended a CR programme with her husband [who] had his heart event 10 years earlier and I have been on a heart diet since then and I have a good family doctor

Boring repetition been there done that

Surrounded by negative people

Participants with declining health due to co-morbidities also chose not to attend but there were only three people that that mentioned health as a reason for not attending.

I have dialysis on the same day

In Wellington at the time awaiting aortic valve replacement

Vision very poor, dangerous to cross roads without help

I have a hearing problem
Chapter 5

DISCUSSION

*We can't solve problems by using the same kind of thinking we used when we created them*

(Albert Einstein)

**Introduction**

This chapter will discuss the results of the research, whether cardiac patients admitted to hospital with ACS are adequately prepared for discharge and to establish if the Phase One inpatient CR programme influences patients to attend outpatient CR programme. The results will be again grouped into the sections and sub-sections identified during data analysis. The demographics and locality of the sample and respondents will be discussed. Patients’ perceptions and emotions in relation to their hospital stay and how that impacts on attendance at CR programmes will be considered. The perceived level of understanding of educational material a patient receives while in hospital will also be discussed and whether this is a barrier for attendance to CR. The value of an invitation to CR will be discussed as well as who might be the most appropriate health professional to offer an invitation to patients. The respondent’s views from the qualitative analysis will be discussed thorough out this chapter.

**The Hospital Audit**

The hospital audit produced a sample of cardiac patients from all locations throughout the regional hospital. The sample included people who were discharged with different cardiac diagnoses. It covered a wide range of ages and included Māori. All patients in the sample were appropriate to attend CR from the criteria set out in the New Zealand Guidelines for CR programmes (The New Zealand Guidelines Group, 2002). The proportion of persons that identify themselves as Māori in the study district is approximately 25% which is higher than the overall New Zealand population of 15% (Statistics New Zealand, 2006a). Māori tend to have lower levels of socioeconomic status, poorer levels of health and a higher incidence of heart disease (Central Regions Technical Advisory Services, 2008; Howell, 2012).
A document by Central Regions Advisory Services (2008) states Māori receive fewer interventions for heart disease and have a higher mortality rate than Pakeha. In this research 76 (18%) Māori were part of the sample in the hospital audit. The majority of Māori in this sample lived in areas are associated with lower socioeconomic status. One of the rural districts additionally has reduced access to public transport and telephone services which lessens the ability to access health and other services (Ministry of Social Development, 2006). This rural district has no CR programme currently running in it, with the closest CR programme a 90-minute drive.

The two rural districts studied are communities that would benefit from the use of the Heart Guide Aotearoa (HGA) (Eadie & Tane, 2010). The HGA is a home based 8-12 week CR programme, which is coordinated by a specialist nurse who monitors the progress of individual patients by home visits and/or telephone calls. The HGA would be a solution to the problem caused by the wide geographical nature of the total study district as it is a proven, cost effective tool for reducing the incidence of heart disease and increasing the uptake of CR for groups of people that historically do not attend traditional CR programmes. The benefits of the HGA are the flexibility of not having to attend a structured programme, the ability to fit into an individual’s free time and pitching it at the right level for the patient.

Although a minority (13%) of the sample live rurally, and would have difficulty accessing CR services, the majority live less than 30 kilometres from a local hospital. For this reason the researcher felt transport may not have been the main issue for not attending a CR programme. In this district the CR nurse provides transport via taxi chits to the local CR programmes which reduces the transport issue, although this is not widely known amongst patients. The difficulty for younger working patients is getting sufficient time off work to attend a CR programme and this is an issue clearly revealed in the qualitative answers, with many people stating getting time off work as a barrier to attending CR.

Another issue raised from the hospital audit is the ward location patients were discharged from after their hospital admission. Patients were discharged mainly from cardiac orientated wards with the majority of patients (38%) discharged from Floor One of the DHB, followed by 34% from the Regional CCU. Nurses in these areas are regarded as specialists in the field of cardiac nursing. Many courses are available to improve cardiac knowledge and care of cardiac patients. Part of supportive care for cardiac patients is the information component. The evidence
based guidelines for CVD recommends all eligible patients should receive an invitation to a CR programme: information about their heart health; and how to manage on going risk factors prior to leaving hospital (The New Zealand Guidelines Group, 2002; World Health Organization, 1964). In recent times nurse’s skills have expanded and responsibilities involve care coordination, health coaching, disease management and community liaison (Howell, 2012). Howell (2012) states it is the role of health care administration in the DHBs to provide ongoing education for nurses as well as employing leaders in each area to facilitate information and quality care. In a case study carried out in Western Australia, Conway, McMillian and Soloman (2006) examined the work practice of nurses in a cardiac step down unit. The results of the study show that a need exists for greater alignment between the practice and educational preparation of nurses who work in a cardiac unit. The study also indicated a need to educate nurses who work in CR about the diversity of patient needs during the rehabilitative phase of their admission. They proposed a need to increase nursing skills to include patient education, counselling and referral skills as well as an increased knowledge about issues of concern to patients who are about to be discharged (Conway et al., 2006).

The 38% of the sample who were not discharged from a Floor One or Regional CCU would need to be identified and offered heart health information, and contact with a specialty cardiac nurse, ideally prior to leaving hospital. The Acute Assessment Unit (AAU), where 16% of the patients were discharged, could accommodate a patient education and referral system as they do not currently have one in place.

**Demographics and ethnicity of respondents**

The research respondents made up a total of 43.3% of the hospital audit sample. The majority of the respondents were of Pakeha descent and this is consistent with the demographics of the district. There was a relatively small response rate by Māori (9%) from the sample surveyed. The researcher thought this could be attributed to the format of the questionnaire as Māori may have preferred a verbal discussion rather than written questionnaire (Whitinui, 2011). The median age of the respondents was 71 years which is close to the sample group which was 70 years. Therefore there are a larger number of respondents who fall into the retirement age group of over 65 years. Approximately two thirds of the respondents were male. The majority of respondents were married or widowed and did not live alone. Social support is seen as an important risk factor in the rehabilitation of patients with CVD.
and there is evidence that patients with relatively higher levels of social support are more likely to benefit from CR (Husak et al., 2004). Social support was recognised as an enabler to attending CR in the qualitative responses, and comments made by women suggested they sought emotional and psychological support, even friendship from the CR programmes.

Attendance at Outpatient cardiac rehabilitation

The respondent’s attendance rate (37%) at the CR programme is low but is similar to national and international results (Beswick et al., 2005; Doolan-Noble et al., 2004). Inequalities in health status between different groups for age, gender, ethnicity, and socioeconomic groups are found internationally and nationally (Bramley, Hebert, Tuzzio, & Chassin, 2005). This research has focused on age, sex and ethnicity in analyzing any disparities in care, and what influence these may have in attendance at CR programmes.

The findings of this research have been organized to reflect attendance for women, the older age group and Māori. Given the different attendance patterns for men and women it is likely that there are multiple factors that come into play that cause women not to attend CR. These will be discussed in different sections throughout the discussion chapter. In this research, 66 women responded to the questionnaire and of those, 23 attended CR. Research suggests non-attendance rates for women is due to lower referral rates (Ades et al., 1992; Stiller & Holt, 2012). In this research the lower attendance rate amongst women supports the findings of many previous studies of both low referral and low attendance rates (Scott et al., 2003; Worcester, Murphy, Mee, Roberts, & Goble, 2004). The women respondents here, on average, were older than men, a factor associated with non-attendance and many women lived alone or were widowed, two factors suggesting reduced social support which has also been identified as a barrier (K. M. King & Teo, 2012).

The poorer attendance by older patients, both men and women, is consistent with previous studies, despite the evidence that older patients can improve significantly by attending CR (Lavie, Milani, & Arena, 2011). This trend was seen in this research, with many respondents over 80+ years agreeing to their health improving since their cardiac event. In the qualitative responses, a common statement from those who attended CR was to gain improvement to their health. The failure of many older patients to attend CR in this research may be explained by a slower recovery
and a higher incidence of complications among older patients following acute cardiac illness, as well as reduced referrals for older patients as illustrated in a study by Cushman et al (2005). No women in the 80+ year age group attended CR in this research. Women are more likely to be widowed than men of similar age, or have an elderly spouse for whom they are the primary caregiver. Elderly women are also less likely to drive and are therefore more reliant on others or public transportation and this reliance impedes attendance at CR (Grace et al., 2002).

The gap between Māori and non-Māori in the majority of health categories remains glaringly unacceptable (Durie, 2003). Disparities exist for Māori in CVD in New Zealand, with many studies identifying a higher incidence of heart disease and a greater mortality rate from CVD for Māori than non-Māori (Bell et al., 1996; Chan et al., 2008; Tobias, Sexton, Mann, & Sharpe, 2006). This research supports other research findings of poor attendance by Māori at CR programmes. Due to the small number of respondents, there is no clear reason for Māori non-attendance at CR, although the structure and venue of CR may have an impact on attendance. Whitinui (2011) discusses a solution to narrowing the gap between Māori health and non-Māori is not solely relying on mainstream health institutions to meet the health needs of Māori, but proposing to offer a culturally connected health ideology. Whitinui (2011) advocates operating Māori healthcare in Māori domains such as marae based services, having iwi endorsement, and cultural affirmations such as the use of Māori language, culture and customary practices, with content to be linked to Māori models of health such as Te Wheke, and where possible utilization of Māori community resources such as Māori health providers and Māori health professionals (Whitinui, 2011).

A CR programme in the northern rural district that is more culturally inclusive may increase participation by Māori. In addition, the use of HGA for the more rural Māori may increase participation. A local iwi provider uses the HGA for residents of the two main cities. A relationship could be strengthened with this Māori health provider and a referral service created for all Māori, especially rural Māori wanting specific support. Wilson (2003) discusses how the role of a nurse is important to improving Māori health by exposing and eliminating prejudice and advocating for equity of health care for Māori. The nurse should identify Māori and prioritise care making sure all appropriate referrals are made in a timely manner and if inequalities occur with the medical team the nurse should advocate for Māori to improve outcomes (Wilson, 2003). A ward nurses’ role is to promote and advocate Māori health needs
in cardiac care and discuss barriers relating to non-attendance at CR. A priority should be directed towards Māori participation in CR programmes and reducing CVD risk for all Māori.

**Emotional Responses**

As part of adapting to living with a chronic disease, individuals develop a unique illness representation which enables them to "make sense" of their predicament (Leventhal et al., 1980). In this research 73% of respondents thought, their heart event was a shock and this was reflected in increased attendance to CR. The respondents who disagreed their heart event was a shock were less likely to attend CR. It is known that a patient’s perception of their illness as having serious consequences subsides over time and this may function in both a positive and negative way (French et al., 2005). Those patients with a belief that their illness is less serious may be more optimistic, and optimism is known to be associated with a more favorable recovery than pessimism (Weinman & Petrie, 1997). This was illustrated with respondents in the qualitative section of the research, who commented ‘to prevent it happening again’ as a reasoning for attending CR. Equally Weinman and Petrie (1997) state perception of an illness as being less serious, may negatively influence making positive behaviour changes to reduce coronary risk. This research shows a trend where a patient’s illness perception or beliefs after myocardial infarction were seen as important but did not influence attendance at CR. Literature on illness perceptions measured on admission and discussed with a patient are associated with attendance at rehabilitation programmes, speed of return to work, reduced sexual difficulty and recovery of social and domestic functioning (Petrie et al., 1996).

A patients beliefs may not be fully understood by doctors, as they often do not necessarily correspond with a medical model of disease. Patients may hold beliefs and illness perceptions about heart disease from past family distress. Medical staff may not be aware of a patient's beliefs, particularly as patients are generally reluctant to ask questions or discuss their personal views of their illness in short consultations (Almerud-Osterberg, Baigi, Bering, & Fridlund, 2011). Nurses are frequently in a better position to advocate a patient's views to medical staff and correct patient's misconceptions about heart disease. Nurses should have an understanding from sound evidence based information on cardiac symptoms and risks so that they can educate patients accordingly and in particular can correct
commonly held misconceptions about the illness prognosis and suitable lifestyle changes. It is also important that there is coordination of information and education for patients between individual nurses and across professional groups. Information provided not only must be consistent but should be based on evidence rather than individual experience or personal opinions. The early identification of negative illness perceptions could improve the attendance at CR programmes.

This research did not find a difference between emotional responses to illness and attendance at CR in different age groups or in Māori. This may have been due to the small response rate and it is possible that other barriers to attendance may have a large influence on attendance rather than the impact of illness perception on an individual’s decision to attend CR.

_My heart problems will continue forever_

Cure/control represents a component in Leventhal’s illness representation to danger model, which describes both the patients’ belief in an available cure for their illness and their perception of having control over the course of their illness (Leventhal et al., 1980). This component has been shown to influence patient’s attendance at cardiac rehabilitation after a cardiac event (A. Cooper et al., 2007). Patients with a strong belief that their illness could be controlled or cured were more likely to attend cardiac rehabilitation (Goulding, Furze, & Birks, 2010). The majority (72%) of the respondents in this research thought their heart event would last forever, however this did not appear to impact on their decision to attend CR. On the other hand, the respondents who did not think their heart event would last forever were less likely to attend CR. This was repeated in the qualitative responses with respondents stating, “I felt really good and thought I could get a good handle on it” and another stating, “I have sufficient knowledge”. These respondents held misconceptions that their heart disease could be cured or controlled and therefore did not attend CR.

The results of this research show a trend toward a higher percentage of women attending CR than men when they believed their heart event would last forever, which is similar to a previous study where women were more likely to attend CR when they had a level of control over their illness and an understandable cause for the heart event (MacInnes, 2006).
Although this question had only a small impact on attendance to CR, it also has large impact on how a person might manage their heart condition by changing risk factors and modifying behaviour.

**My lifestyle has changed since my heart event**

A total of 68% people agreed to their lifestyle changing since their heart event, but no obvious difference in lifestyle changes for women, elderly or Māori was noted in this research. However, a qualitative approach might have provided more answers on the respondent's lifestyle had changed and if this had an impact on risk factor modification.

**Beliefs**

Emotional support and a feeling of control are very important to a patient’s wellbeing while in hospital. In Q8 and Q11, most people felt emotionally supported in hospital and they felt their beliefs were respected while in hospital. These questions had no relationship on attendance to CR but the researcher was interested in any ethnicity differences and if this had an impact on health perceptions in hospital and attendance. In a New Zealand study looking at Māori attitudes, Jensen, Bacal and Crengle (2008) talked to Māori in a qualitative study regarding attitudes towards health services, and participants voiced opinions about experiencing disrespect from staff when having whanau with them in the hospital. Common themes by participants were about poor communication and feeling like a child when spoken to by a health professional (Jansen et al., 2008). These issues were not obvious in this research.

**Feel safe to go home**

In this research the majority of respondents felt safe to go home (92%). This question was included in the research to see how many older patients were sent home before they felt ready. Four out of sixteen respondents who indicated they did not feel safe to go home were under the age of 65 years. Although this number is small, clinically this is a concern and could be addressed during the hospital stay. Preparing to go home (discharge planning) is a process that should begin as soon as a patient is admitted, especially with the older age group. All patients should feel
safe to go home and issues should be highlighted prior to actual discharge. This question was focused more on patient satisfaction than attendance to CR.

**Anxiety and Depression**

Symptoms of anxiety and depression are associated with increases in cardiac events (Strik, Denollet, Lousberg, & Honig, 2003). Depression in cardiac patients can lead to an increased risk of morbidity and mortality, and women are twice as likely to suffer from depression as men (Jackson, Leclerc, Erskine, & Linden, 2005). Anxiety alone is associated with increased health care consumption as a patient's emotional distress can increase cardiac symptoms, leading to more health care visits (Strik et al., 2003). Despite these facts there is very little known about the impact of depression on the participation of female cardiac patients in CR with one study affirming depressed patients are twice as likely to drop out or not attend CR (Turner, Bethell, Evans, Goddard, & Mullee, 2002), while another stated depression in women did not affect attendance (Gallagher et al., 2003). In the current research women were less likely to attend CR if they were depressed (13 out of 26) compared to being anxious (5 out of 13). There was no difference for age or ethnicity. The total of people admitting to depression (21%) and/or anxiety (36%) in this research is similar to previous studies (Casey, Hughes, Waechter, Josephson, & Rosneck, 2008; Cortés & Arthur, 2006) and shows a need for cardiac services to include emotional support for cardiac patients. Early recognition of patients who are suffering from anxiety and/or depression prior to leaving hospital would be beneficial to patients and health services.

This is a concern for patients with anxiety and/or depression following a cardiac diagnosis, as patients are less likely to attend CR if they are depressed. At present there are no psychological services attached to the CR programme/hospital. At a very minimum patients should be given a short questionnaire in hospital called Hospital Anxiety and Depression questionnaire (HADS). HADS has been shown to predict psychosocial and physical outcomes after MI (Turner et al., 2002), and can identify patients who may have high depression/anxiety scores prior to leaving hospital. Some primary health care organisations offer referrals to psychologists for cardiac patients. An early referral to the general practitioner can be made and early follow up by a CR nurse put in place prior to discharge from hospital. Exercise programmes as part of CR can be a positive additional treatment for emotional distress and should be encouraged as part of the recovery from a cardiac event (Kugler, Seelbach, & Krüskemper, 2011).
Cardiac Rehabilitation will benefit me

In the literature, many studies demonstrate patients’ lack of knowledge of the components of cardiac rehabilitation programmes and how they express concerns about attending CR (AF Cooper et al., 2005; A. Cooper et al., 2007; Petrie et al., 1996). In this study, the majority of respondents thought CR would benefit them (119 out of 167) but this was not reflected in the attendance rate at CR. The researcher believes this is because participants may be unaware of CR course content, assuming it is exercise only and misunderstanding the role of exercise in their recovery. This was a common theme in the qualitative narrative section. Some participants thought CR would consist of exercise only and would be unsuitable for those who are previously fit, but others thought exercise could be harmful following a heart event and they would not be able to participate in exercise. Cooper et al. (2005) found patients who were unsure of how CR could help were more likely to cite possible barriers to attendance such as difficulty with transport even though these difficulties were not unsurmountable (AF Cooper et al., 2005).

Health improvement

Many studies have observed an increase in quality of life for patients after they attend CR. In a systematic review, Taylor et al. (2004) found an increase in quality of life was evident in 12 different studies. In this research 85% of respondents said their health improved after their heart event, however there was no difference in attendance at CR by Māori or women. In the older (80+) age group the majority of respondents (65%) felt their health had improved following their cardiac event, reflecting the results of a previous report from Lloyd-Jones et al. (2009), who also noted greater longevity, and better quality of life for the people in the older age group currently on treatment for CVD, compared to those who are not on treatment. The clinical treatment for CVD is regarded as very effective for improving overall health and reducing symptoms in cardiac patients. This could be the reason for the majority of patients agreeing to health improvements following their heart event. Investigating the benefits of CR programmes on health improvement would be useful for further research.

Knowledge and Understanding
Information was overwhelming

Research has shown that information plays a vital role in patient’s recovery and prevention of further MI. In this research 50% of people thought the information provided in hospital was overwhelming, and this in part could be due to the way the information is delivered. It is unclear how easily information is absorbed following what is for many a physically and psychologically devastating experience. Chan (1990) stated that the information given to cardiac patients did not necessarily meet the realistic needs of what the patient wanted to learn. A patient’s learning requirements need to be assessed and education planned individually. The education delivery method should be chosen specific to the patient, taking into consideration the patients’ needs, preferences, resources and capabilities.

Although information packages appear to be a good idea and encourage ease of use, research recommends individualised patient education programmes need to be developed to assess each patient’s initial knowledge and learning needs so a plan can be made for future education, eliminating an overwhelming amount of education given to a patient (A. Cooper et al., 2007). Families are an important aspect of a patient’s care and information should be discussed both with the family and patient eliminating doubling up on information or misinterpretation of information. Specific recommendations for Māori and women should be included for the referral process and discharge planning.

Would respondents like more information?

In this research a third of respondents wanted more information in this research which is a substantial number who did not think they received enough information about their heart event. According to research, mortality rates can be greatly reduced by offering comprehensive education and psychological support that is tailored to the individual patient (National Health Service, 2000). A recent study by Smith and Liles (2007) about patient knowledge requirements after an MI asked patients to rank the least to the most important information. The study stated that patients wanted information about their heart event and how it affects their lives, and what they should do to prevent further problems. Patients then ranked information regarding medications, complications and symptoms to be of the next highest importance (Smith & Liles, 2007).
In this research, there was no gender difference in the respondents wanting more information, which shows no prejudice for women respondents. Women generally are not aware that CVD has the highest mortality rate for women, and most consider heredity to be the main reason for heart disease (Schuster & Waldron, 2012). There is an international drive for the Go Red for Women campaign which aims to raise awareness of heart disease within women (World Heart Federation, 2008). A study by Pullen et al. (2009) states the reasons why women do not attend CR is related to their beliefs about their illness and their beliefs about cardiac rehabilitation as not being beneficial to them. Evidence suggests women should be offered a clear explanation of their medical condition and reasons why CR should therefore be attended. A strong determinant of women not attending CR is related to their social support, especially if it is limited. Pullen, Povey and Grogan (2008), found women who lived alone felt they had greater independence and self-reliance, and this affected their decision to not attend CR. Similarly, this research found no widowed women attended CR. Health professionals should address these issues to increase participation at CR.

**Easy to ask Questions**

It is reassuring to know medical staff are approachable with 91% of the respondents able to ask questions, but from the questions 9, 10, and 17 it appears not all patients are receiving all the information they wanted. Information and understanding are paramount to a patient attending CR (Arena et al., 2012). The majority (12 out of 15) of the patients who found it difficult to ask questions did not go to CR.

Nurses face many barriers in their role to educate patients. Some nurses may think that it is the responsibility of other health professionals to educate patients about certain topics (for example exercise and diet). Nurses assume responsibility for the day-to-day care of the patient, including monitoring of vital signs, cardiac arrhythmias, and potential complications. Their role as a nurse is to be able to recognize key teachable moments and form a professional relationship with each patient, allowing for opportunities to discuss all types of information.

In a study looking at nurses working in a Coronary Care Unit in Australia, barriers to education were investigated. The pressure of time was the primary barrier, followed by the staffing profile and patient fatigue were examples why nurses did not complete education of cardiac patients (Murphy, George, & Driscoll, 2007).
study offered solutions of the development of a clinical leader position and a systematic process of a checklist and care maps to assist the nursing staff with guidelines of Phase One CR.

In this research, it is apparent that patients recognize the medical team as experts and they have time available to offer information. It is the responsibility of the staff to educate the patients adequately. This may be a further research project: to assess nursing barriers to education more closely.

**Understanding of information presented**

A study in Australia by Conway et al. (2006) about issues of nurses working in a CCU and a cardiac step down unit found that the nursing staff activity reflected an immersion into a biomedical model of care. The nurses in the ward who were involved in ongoing education, such as critical care courses, viewed advanced knowledge in pathophysiology, pharmacology and physiology as equating with advanced nursing practice. However, their practice did not reflect application of nursing knowledge that was consistent with best practice in CR (Conway et al., 2006). Historically the DHB has a similar nursing model where advanced nursing knowledge is not necessarily in the cardiac rehabilitation realm.

In this research, 25% of the respondents did not receive any information or did not get any information in hospital and only one of those respondents attended CR as a result. This could have been due to 28% of the respondents being in different locations other than the main cardiac wards (Floor One and CCU) of the hospital. Although comments in the qualitative question did not fully back this up, they were about receiving no information from the cardiac ward. Therefore continuing education is required to develop the range of cardiac nursing skills to include patient education, counselling, referral skills and increased knowledge about issues of concern to patients who are about to be discharged. A nursing framework needs to be developed to align cardiac nurses’ roles, education and nursing care required to meet patient needs.

**What type of information were respondents given?**
In this research, the respondents were asked what type of media (types of education material, i.e. video, written material, conversations) they were given while in hospital regarding their heart condition. The respondents had four options to choose from: ‘video’; ‘pamphlets’; ‘discussion with a ‘health professional’; and ‘cardiac folder’. A total of 91% of the respondents answered this question. The results indicate 25% (n=48) did not get any information about their heart event. As described earlier in this chapter information is paramount for the recovery and prevention of further heart. The results also indicate the pamphlet and video are the least preferred media but work considerably better when combined with discussion with a health professional.

A total of 66 respondents who received information did not have a discussion with a health professional. New Zealand guidelines and the majority of studies (Beswick et al., 2005; The New Zealand Guidelines Group, 2002; R. J. Thomas et al., 2007; World Health Organization, 1964) advocate patients have an initial assessment by a health professional and an individualised plan of care formulated while in hospital. It is clear from this research that 114 (69%) of respondents did not have an individualised plan by a health professional prior to leaving hospital. This research has identified that formulating a care plan for patients is not standard practice in the hospital where the research was undertaken. Even though 66 respondents did not have a discussion with a health professional, 23 of those respondents attended CR. This may indicate respondents have a desire to find out information as seen in the qualitative discussion in this chapter. Another explanation for the low numbers of discussion with the health professional could be respondents misunderstanding the question, regarding a health professional as a specialist in cardiac education.

Of note to health professionals from this research is that women are influenced to attend CR most by a discussion with a health professional (86%) and men prefer written material when deciding to go to CR (76%).

**How much information is enough?**

The respondents were asked about the quantity of information presented to them over the course of their hospital stay. They were given a Likert scale to choose from with choices of ‘too much’, ‘enough’, ‘some but not enough’ or ‘no information was given’. Five key questions were asked regarding exercise, chest pain management, diet, medications and their side effects. These are all key topics to be covered while
in hospital (The New Zealand Guidelines Group, 2002). The results again show some people not receiving enough information with approximately 30% of people indicating they did not believe they got the right amount of information in all five questions.

Recommendations to improve this would include a tick list of necessary information needed prior to a patients discharge, especially for wards where cardiac nursing is not the specialty area and as a guide for new staff. Tick lists are not ideal as an individualised plan is seen as best practice and this should be advocated in the cardiac wards. A facilitator/coordinator in the inpatient role would be useful to increase awareness of outpatient CR performance measures, improve and track referral rates, adopt tools to improve enrollment and assess and improve quality of care.

Results of Q20 discussed the quantity of information a patient was given about exercise and heart disease, 32% said ‘no information was given’, or ‘some but not enough information’. There is convincing evidence that a combination of regular exercise with interventions for lifestyle changes and modification of risk factors positively alter the outcome of CVD (Jolliffe et al., 2001). With continuing shortening of length of hospital stay, deconditioning is usually minimal but the time spent in hospital may no longer be adequate to teach the knowledge required to monitor exercise activity. Recommendations to include structured programmes in different time frames and venues are needed to meet patient requirements, especially when the current outpatient CR has so few enrollments. The availability of ‘Green Prescription’, a Ministry of Health initiative, aims to have a structured and monitored exercise programme for people with chronic illnesses. This is a very positive service but underutilised for cardiac patients. Every patient who is not intending to participate in a CR outpatient programme should be offered a ‘Green Prescription’ to improve cardiorespiratory fitness in a monitored way with prescribed amounts of exercise.

In Question 21, patients were asked how much information they received on the use of glycerin trinitrate spray, and 73% of respondents stated they received enough information regarding the management of chest pain. Patients experience chest pain after a coronary event for a multitude of reasons and can end up in the emergency department, but this can be an avoidable problem. There is not only an increase of health care costs, but it also reduces quality of life for the patient, with
the addition of worry and anxiety (Petrie et al., 2002). Commonly chest pain is a symptom of anxiety but occasionally can be a feature of ongoing cardiac problems that require either medication or further intervention. With correct information, the patient can resume a normal life and be able to manage chest pain, with the appreciation of when to contact a health professional.

In Q22, respondents were asked about information they were given about dietary advice. Given the poor nutritional patterns of a large percentage of patients suffering a cardiac event, education on diet is an essential component of CVD management. In this research, only 55% of respondents received enough information about diet and heart disease. Registered dieticians are uniquely qualified to provide medical nutrition therapy for cardiac patients. Dieticians are involved in the inpatient setting and are in a position to educate patients on the value of outpatient CR. Unfortunately, in the hospital researched, not all patients are referred for dietician input nor are there available resources for all patients to be seen by a dietician. Nurses need to be able to give advice according to New Zealand Cardiac Rehabilitation Guidelines, to use available media to reinforce these dietary changes and encourage patients to attend CR for more dietary advice.

Studies show that on discharge from hospital, patients lack knowledge about the medicines they have been prescribed, including the dose, duration and side effects (Auyeung, Patel, McRobbie, Weinman, & Davies, 2011). In this research 29% of respondents wanted more information about medications and 56% wanted to know more about side effects of their medications. It is clear that this hospital does not deliver the amount of education a patient wants about their medications. A study recognised that health care workers were unclear of the responsibility of each professional with regard to the provision of information about medications (Auyeung et al., 2011). Was it the doctor, the nurse or the pharmacist providing this information in the hospital setting? These results suggested a need to have a more patient focused individualised programme, as well as a checklist as a record of medication and side effect information provided to the patient. Role responsibilities should be coordinated from admission to discharge including a sign off when information about medicines is provided by different health practitioners.

**Referrals**

**Contacting the cardiac rehabilitation nurse**
In this research a total of 36% of people did not receive the contact details of the CR nurse. This affected attendance with only three respondents who did not receive contact details attending CR. Ideally, there should be a smooth transition from inpatient to CR outpatient programmes. The benefits of having a contact person when a patient leaves hospital is regarded as useful in terms of answering questions or belying worries in the first few days following discharge. Johnson, Inder, Nagle and Wiggers (2010) suggest that patients who attend CR are more likely to recall the CR nurse's advice to attend CR. This may be related to a consequence of enthusiasm of CR nurses when describing or recommending CR. In this study, for each category of gender, age or ethnicity, if the respondent did not get details of the CR nurse they were less likely to attend CR.

As part of an automatic referral system and discharge planning, the patients should receive information about the CR programme, and how to contact the coordinator of the programme. An automatic referral system involves the use of electronic health records to flag eligible cardiac patients and refer them to a CR programme at a site close to home. This system has been proven to increase referral and participation in CR internationally (Fischer, 2008; Grace, Evindar, Kung, Scholey, & Stewart, 2004). Previous research demonstrates that women, older cardiac patients and ethnic minorities are less likely to be referred to and participate in CR (Cortés & Arthur, 2006).

A recommendation for primary health organisations would be for the patient's general practitioner and practice nurses to be included in the discharge process. This would develop a closer relationship between primary and secondary care with coordinated patient care. A discharge letter is currently sent to the general practice. This research suggests it would be useful to include information about the CR programme and Green Prescription details. A directory of CR services available should be developed for distribution to the PHO’s and DHB. The coordinator of inpatient care and the CR nurse should be available for discussions with PHO’s and practice nurses for management strategies for patients who may 'fall through the gaps'.

*Who received an invitation to CR?*
In Q18, respondents were asked if they received an invitation to CR while in hospital. Respondents were offered three tick box choices of ‘yes’, ‘no’ and ‘don’t know’. When looking at health care utilisation amongst individuals who have already gained access to a service, it is also necessary to identify the extent which individuals are excluded from opportunities. In this case, cardiac patients are admitted for ACS but then not offered a referral to CR as an outpatient. Previous research refers to women, elderly cardiac patients and ethnic minorities missing out on an invitation to CR (K. M. King & Teo, 2012). In this research the researcher believes patients from different locations in the hospital may have also not received a referral but this was not examined. The results of this research however show all 17 women in the 80+ age group did not receive a referral to CR. These results are the same as a previous New Zealand study (Doolan-Noble et al., 2004) where older women were not referred to CR. Patients who were not given adequate information about their heart event did not attend outpatient CR.

Only one person who did not receive a referral attended CR. Therefore, it is important to have an automatic referral system in place, as this could improve attendance by up to 30% by offering everyone with a cardiac diagnosis a referral to CR. No difference was found for Māori in this research regarding referral and attendance.

How did the respondents find out about cardiac rehabilitation?

In Q16, respondents were offered a choice of health professionals who may have told them about CR. The health professional who was most consistent with the invitation to CR was the CR nurse. In this research, 65% of respondents were invited to attend CR by the CR nurse. From personal communication with the CR nurses who work within the hospital there is no contact with the patients in the hospital setting. Patients receive their invitation by a phone call after discharge. This information means that the majority of the patients find out about CR after discharge. Greater efforts must be made to reinforce the importance of outpatient CR among healthcare providers, The CR nurse ideally should not be the only person inviting a patient to CR. Only 34 patients received an invitation from the nursing staff. Nursing staff have the majority of contact with patients and it appears that very
few nurses are discussing CR programmes with their patients. The information to attend CR should be offered by all of the health professionals patients meet during their stay in hospital. It may also be useful to promote the cardiac rehabilitation group by advertising in the hospital and through the PHO’s to general practice.

In this research, only five people attended CR who were invited by the cardiologist. This does not support evidence from other research. This evidence suggests the best person to invite patients to attend CR is the physician and on the strength of their recommendation, more patients attended CR (Ades et al., 1992; AF Cooper et al., 2002; Jackson et al., 2005; Johnson et al., 2010). Literature recommends a physician’s endorsement to attend CR and a positive attitude by the physician toward CR are the main predictors to attending CR for patients with CVD. Ideally, the cardiologists at the DHB should be encouraged to recommend CR as part of an automatic referral system for all of their patients as this may increase participation rates.

It follows that system-wide changes are needed to improve both referral and uptake of CR after MI. Although the CR evidence-based guidelines say all patients discharged to home should be referred to a specific CR programme, it is clear that this was not done.
Chapter 6
SUMMARY AND CONCLUSIONS

Introduction

In this final chapter, the researcher will summarise what is already known about the factors that influence people to attend CR. Discussions around what this thesis adds will be included. The strength and the limitations of this research will be examined and provide recommendations for nursing education, practice and research.

Summary

An extensive literature review was undertaken to identify whether the content of an inpatient programme is adequate and if this influences a patient’s decision to attend an outpatient CR programme. Although there are national guidelines available concerning the content of inpatient CR, there does not seem to be a consistent approach at each DHB. Barriers and enablers have been researched and are recognized in the implementation of guidelines in both PHOs and DHBs. The main points of the literature review covered how numerous clinical benefits can be achieved from participation at CR programmes, but these clinical benefits are not being realised, in particular with respect to the current low participation rates to CR programmes (35% in New Zealand studies). The addition of home-based services was likely to lead to greater overall participation and completion of CR programmes among eligible patients. Home based programmes reduce barriers such as still being able to work and attend CR, and solve transport and costs associated with transport and parking. Older women do not attend CR mainly because they are not referred or have poor understanding of the CR programme content. Māori are under-represented at hospital based CR despite being greatly over-represented in CVD statistics. CR needs to be more culturally available and offered at different venues such as marae settings. CR programmes should be in line with guidelines and should offer a more personalised approach. Self-care models should be adopted within the hospital setting. PHO’s need to be involved in discharge planning and ongoing care of the patient. The last main points of the literature review were around patients receiving a CR referral/invitation by a health professional; this was
seen as highly effective, doubling the number of people participating CR. The literature review discussed how an automatic referral system can potentially eliminate any biases made by health professionals who may not invite patients. Although an automatic referral is useful, a verbal referral was still highly effective. Research says a referral by a cardiologist had the most meaning for a cardiac patient and a CR nurse referral also increased attendance rates. Comprehensive New Zealand research still needs to be conducted on smaller cities and the wider rural New Zealand community's on all aspects of CR services.

This thesis is New Zealand research that specifically explores patient's understanding and perceptions of inpatient CR and identifies reasons why the majority of patients do not attend outpatient Phase Two CR. This work provides a platform for further research on issues around nurses understanding and developing their role in promoting and advocating CR. Further research into different options for Phase Two CR would be beneficial, establishing appropriate programmes for all cardiac patients. The findings of this research reflect the literature review and meet the aims of the research.

The research design was a quantitative non-experimental descriptive survey. The data tool was a questionnaire sent out via the post, specifically designed for the age group of the sample. This allowed for a high response rate.

The questionnaire consisted of 30 questions and took approximately 15 minutes to complete. A postage paid self-addressed envelope was also included for participants to return the questionnaire. Although this method was not economical with the cost of the postage, an advantage was it provided complete anonymity and had no interviewer bias.

A total of 181 respondents answered the survey, and from those 66 people attended CR as an outpatient, achieving a 37% attendance rate. From the 66 people who attended CR 35% were women and 9 out of the 17 Māori respondents were female. In the 80+ age group 26% of respondents attended CR. The hospital audit showed 28% of patients were discharged from non-cardiac dominant wards. The researcher believes this had affected the referral/invitation rate as only 34% of respondents were invited to attend CR by a ward nurse, even though nurses have the most contact with patients and are expected to discuss CR with all cardiac patients. The cardiologists also did not appear to routinely invite patients to attend CR; as only five people attended CR admitted to being invited by a cardiologist. The CR nurse invited the majority of people (66%) to CR but this was after the patient was discharged, meaning possible barriers to attendance cannot be addressed while in
hospital. A negative bias toward women over 80 years was evident as no women in this age group received an invitation to attend CR and therefore none of those 17 women attended CR. Respondent’s emotional responses were assessed, with results showing respondents who thought their heart event was a shock were more likely to attend CR than those who did not. The questions relating to whether heart problems continued forever, and whether lifestyles had changed since their heart event, did not appear to have an impact on attendance at CR. However, some respondents felt their beliefs were not respected in hospital or did not feel safe to go home; this was a concern clinically as the hospital is responsible for the safety and emotional support of patients as part of their commitment to quality care.

Knowledge and understanding plays a vital role in recovery from a cardiac event and in this research 50% of people thought the information was overwhelming, a third of the respondents wanted more information, and 25% did not receive any information. This does not follow the New Zealand guidelines for CR as all patients are expected to receive information about their heart event that is presented in an individualised way to meet the patient’s needs.

Although results of this research are consistent with international studies, the findings cannot be generalised due to being undertaken in one single regional hospital. Also some issues highlighted regarding lack of referral to CR may be specific to the hospital where the research was undertaken. Other limitations of this research included the anonymity of the questionnaire, since quite a few of the respondents left their details as they wanted to discuss their answers in more depth. More open ended questions would have provided this capacity and also provided more in-depth data for analysis. A purposeful reminder of Māori would have been more useful than a reminder to those under 65 years of age. This may have provided more specific information on Māori and aspects of attendance, also providing a larger number of respondents for statistical analysis.

Inclusion of a discharge ward code on each questionnaire would have given the researcher more information on the use of guidelines in each ward. The researcher’s assumption that patients who are admitted into wards other than cardiac dominant areas do not receive the same level of education may have been confirmed.
**Conclusions**

A major finding from this research was the content and the delivery of inpatient CR impacted on attendance at Phase 2 CR. Results show respondents did not attend the CR outpatient programme if they had a poor understanding of heart health; did not understand the content of the CR outpatient programme; or did not receive an invitation to attend CR.

In the aims of the research, the following questions were raised for exploration:

- a) cardiac patients admitted to hospital with acute coronary syndrome (ACS) are adequately prepared for discharge with respect to CR;
- b) the inpatient CR programme meets evidence based guidelines;
- c) patient’s satisfaction with the in-patient programme; and
- d) whether the information they receive meets their educational requirements.

This research indicates that not all respondents were adequately prepared for discharge, as some of the respondents said they did not receive enough information about heart disease, exercise, GTN spray use, dietary guidelines or medication and their side effects. From the qualitative responses, it was clear that not everyone knew about the CR programme and many of the respondents did not understand the content of the programme offered. Results showed 36% of the respondents did not receive a referral to CR and this had the biggest impact on non-attendance to CR outpatient programme. Also indicating the inpatient programme at the DHB does not follow all of the guidelines to meet best practice as set out in the New Zealand Guidelines for cardiac rehabilitation (New Zealand Guidelines Group, 2002a).

Many patients were satisfied with the care while in hospital with 85% said their health had improved since their heart event. Emotional support is an integral part of cardiac care with over a third (36%) of patients admitting to being anxious after their heart event and 21% admitting to depression. Responses indicated that 16 respondents did not feel safe to go home and 13 respondents said they were emotionally unsupported while in hospital, which is concerning clinically. Both anxiety and depression are associated with an increase in cardiac events and early recognition and referral of patients who are suffering from either prior to leaving hospital may help speed up their recovery.

The respondents in this study did not appear to have individualised information given to them, as the results show 50% of respondents found the information
overwhelming and 33% of the respondents wanted more information. Another concern was that 25% of patients did not get any information given to them, and the researcher believes these patients may not have been discharged from a ward where cardiac information is readily available. Patient education should be a priority for all nurses.

Low participation rates at CR have been shown for at least 10 years but the nursing environment does not appear to have altered and health professionals do not appear to have embraced promotion of CR. In this research the lack of referral to CR of eligible patients had a big impact on attendance and participation at outpatient CR. The lack of encouragement by medical and nursing staff was another factor that affected respondent’s understanding of what the CR outpatient programme involved, which in turn impacts on attendance at CR. The recommendations of this research could have positive effects on attendance to CR.

**Recommendations for nurse education**

Nurses need to draw on many different skills in order to assess and provide the most appropriate intervention for patients who face an uncertain future with cardiovascular disease. Effective interpersonal skills, especially active listening is essential in gaining vital clinical information. These skills can be developed and learnt through education and clinical practice. Structured education regarding the importance of CR promotion is essential. Nurses need specific patient education information and an understanding of the best methods for CR delivery. Continued education on identification of patients groups who do not attend CR and their individual problems (e.g., many older women who live alone do not attend CR after discharge) is necessary.

Patient’s level of understanding of heart disease and illness perceptions have been demonstrated in this research to have an impact on attendance at CR programmes. This needs to be recognized by employing nursing champions in each ward to promote CR attendance and facilitate information in the ward setting. Rotation of nursing staff into the CR programmes could be considered, so they are aware of programme structure and format, engaging nurses so they can accurately describe CR to the patients they look after.
Recommendations for nursing practice

It is clear from the results of this research that 30% of patients did not get information about their heart event. This may be due to a lack of nursing knowledge and a combination of time restraints. International research discusses how the culture in the ward setting and ward environment can influence how nurses see expert nursing skills, and can affect how nurses carry out their work. A recommendation is to examine the role of an expert cardiac nurse and the expectations he/she has within the ward setting. Their role should include achievements and expertise in patient education, include skills in counselling and referral options, expert knowledge of the CR service, and discharge planning. The effect of a positive role model on a ward environment would be nurses developing self-care models of cardiac care for patients and an increase of the promotion and referral to CR programmes.

This research has exposed gaps and opportunities in providing evidence-based guidelines for Phase One CR for patients at the DHB. Therefore, formulation of a multidisciplinary inpatient CR programme is needed, inclusive of the current guidelines to assess, educate and prepare patients for discharge home. A guideline-based programme will help to increase participation to outpatients CR. Nurses may initially need a tick box type of documentation and care maps to assist nursing staff with achieving the guidelines of Phase One.

Nursing workloads need to be addressed when nurses are combining the roles of patient education and clinical practice, giving a nurse more time to discuss care and the ability to formulate individualised care plans for education and discharge.

Within the multidisciplinary team, all health professionals should have the ability to share relevant patient status and progress information during inpatient CR. The development and inclusion of progress notes for purposes of patient education, will decrease duplication and identify educational gaps with individual patients for all health professionals in the multidisciplinary team.

The flexibility and diversity of the CR nurse role provides the ability to cross primary and secondary health care services. CR nurses have the capability of creating links and strengthening relationships in primary health care organisations, such as with practice nurses, mobile iwi nurses and non-government organisations such as The National Heart Foundation and Green Prescription. The outcome would be to promote CR services throughout the community and offer a range of options for cardiac patients who may not want to participate in existing CR programmes or for
those patients who need care that is more specific. Inclusion of electronic tracking of cardiac patients to general practice or Māori health providers may be useful to follow patients who traditionally fall through the gaps or require closer monitoring. This electronic tracking may be useful as an audit tool for evaluation of the use of national guidelines. Electronic tracking would include an automatic CR referral letter sent out to all eligible cardiac patients. An automatic electronic referral letter, generated with the discharge letter from the discharging consultant, would achieve 100% referral of all eligible patients and potentially double the number of patients attending CR programmes.

**Recommendations for further research**

Phase Two outpatient CR is not yet available to all people living in rural regions of the study area. Further research involves an understanding of what is required to enable all patients to attend an outpatient CR. Flexibility in delivery may enable a larger percentage of patients to attend outpatient CR, and possible CR services may include marae-based CR, HGA implementation, practice nurse follow up, or other methods to support patients recovery from their heart event.

The hospital could also consider implementing quality indicators to objectively track outpatient CR referral performance as well as the development of a model of care for discharge planning with a focus on creating a directory of services available to both PHO and the DHB.

**Reflections**

As with nursing practice, the process of reflection is a critical component of practice. My position as an outsider in the current research has meant there is a continual reflection during the research process. The purpose of this section is to provide the reader with insight into some of the reflection that took place, the issues that arose and the way in which I worked through these.

As I no longer worked in the cardiac field, I felt I could maintain objectivity to ensure the reliability and validity of my research. I continually discussed and checked my results with my supervisors to make sure my assumptions and data analysis were transparent and a correct description and analysis of data was given.
My initial concerns was related to past patients identifying me as previously working in CR. From the questionnaires returned, I realised that patients wanted to tell their story; living in a small province and remaining anonymous was less important to them than their journey through their cardiac event. Respondents wrote comments thanking me for including them in my research and wishing me well with my research. In reality, more people that did not attend CR returned the questionnaire.

One of the most difficult aspects of my research is assessing my colleague’s level of patient care. For example, I was surprised that so many nurses did not appear to perceive their role to include preventative care and education of patients about CR. Cardiologists did not appear to promote CR to their patients. Respondent’s comments indicated a desire to know more about CR and heart disease in general.

There were areas I found difficult through the process. As the research project was my first piece of research, I had no experience with the process of data collection and data entry. The questionnaires had to be put into the envelopes individually and posted through New Zealand post. The post shop staff laughed, as I posted 418 letters over two days and then again posted 158 letters two weeks later. I am now a recognized customer. All of the questionnaires had to be manually input into Excel, taking many hours of entering and checking the data was correct. I have now become an expert in Excel and enjoy using the programme for a number of activities.

A sadder moment during my research was receiving a letter from the wife of a person in my sample, telling me her husband had passed away. I had met the couple on one of their many, visits to emergency department and felt I had a personal connection with them. The wife wished me well with my research and said her husband would have loved to take part in my study. I wrote a letter to the wife, apologising for causing further grief for not realising her husband had died prior to sending out my questionnaire. I have included the letter in this research with a pseudonym to protect the participant’s identity.

The one person whom I would have loved to share my research with sadly passed away this year. My friend and mentor Maureen Bent supported me and advised me during my role as a CR nurse. Her knowledge and professionalism will always inspire me and encourage me to continue learning.

Conducting this research has highlighted the need for a more comprehensive CR programme and Phase One. This is a critical part of a patient’s journey. I have enjoyed writing this thesis and have learnt so much about the research process.
Even though I do not work in the cardiac field, my interest remains in patient education.
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APPENDICIES

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Questionnaire for Cardiac Rehabilitation

Hello my name is Pip Hutchinson. I am a Registered Nurse working in the Emergency Department at Hastings Soldiers’ Memorial Hospital. I have a special interest in cardiac care and the education of cardiac patients.

I would like to invite you to participate in this study, which is part of my Masters of Nursing degree research study. This project is about cardiac rehabilitation attendance and effectiveness in Hawke’s Bay. I am looking at how we can improve the cardiac health and rehabilitation information given to people after they have had a cardiac event.

Please concentrate on the time you were in hospital for your most recent cardiac event and answer the questions from your memory of your days of hospitalisation

Your completed questionnaire and information will all be stored in a locked filing cabinet in a locked office and once entered on a computer will be kept on a password protected computer in locked office. Your information will be anonymous. The results of this study will be made available to the staff, Board and the Māori Health Unit of Hawke’s Bay District Health Board, as well as the staff and the Board of The National Heart Foundation. Results will be published in a relevant journal. It will not be possible to identify you or any of your responses from the results.

If you require any further information regarding your rights associated with participating in this research or participating in cardiac rehabilitation programmes you may contact

Paul Schofield
Cardiac Rehabilitation Nurse
Hastings Hospital
Ph. 8788109 ext. 4547

Thank you for considering taking part in this research.

Pip Hutchinson
Registered Nurse

Thinking about the time you were in hospital, indicate your agreement or disagreement with the following statements:
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<th></th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. My heart event was a shock.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>2. My heart problems will continue forever.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>3. My lifestyle has changed since my heart event.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>4. Since my heart event I feel depressed.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>5. Since my heart event I feel anxious.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>6. My family was included in my care.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>7. It was easy for me to accept my heart event.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>8. I felt emotionally supported while in hospital.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>9. The information I received was overwhelming.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>10. I would have liked more information.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>11. My beliefs were respected in hospital.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>12. I felt safe to go home.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>13. I received contact information on how to contact the cardiac rehabilitation nurse.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>14. I felt cardiac rehabilitation would be of benefit to me.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

Again, thinking about the time you were in hospital:
<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>15. How easy was it for you to ask staff questions about your heart?</td>
<td>□ Very easy □ Fairly easy □ Easy □ Not very easy □ Not at all</td>
</tr>
<tr>
<td>16. How did you find out about cardiac rehabilitation groups?</td>
<td>□ Nurse □ Cardiologist □ Cardiac rehabilitation nurse □ Friend or family □ I didn’t receive information about cardiac rehabilitation</td>
</tr>
<tr>
<td>17. Did you understand the information given to you about your cardiac event?</td>
<td>□ All of it □ Most of it □ Some of it □ None of it □ I wasn’t given any</td>
</tr>
<tr>
<td>18. Were you given an invitation to attend cardiac rehabilitation?</td>
<td>□ Yes □ No □ Don’t know</td>
</tr>
<tr>
<td>19. What type of information about your heart event did you receive in hospital?</td>
<td>□ Video □ Pamphlets □ Discussions with a health professional □ Cardiac folder</td>
</tr>
<tr>
<td>20. Did you receive information on exercise and heart disease?</td>
<td>□ Yes, too much □ Yes, enough □ Some, but not enough □ None</td>
</tr>
<tr>
<td>21. Did you receive information on how to use nitrolingual spray or how to manage chest pain before leaving hospital?</td>
<td>□ Yes, too much □ Yes, enough □ Some, but not enough □ None</td>
</tr>
<tr>
<td>Question</td>
<td>Options</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>----------------------------------------------</td>
</tr>
<tr>
<td>22. Did you receive information on diet and heart disease?</td>
<td>☐ Yes, too much</td>
</tr>
<tr>
<td></td>
<td>☐ Yes, enough</td>
</tr>
<tr>
<td></td>
<td>☐ Some, but not enough</td>
</tr>
<tr>
<td></td>
<td>☐ None</td>
</tr>
<tr>
<td>23. Did you receive information on your medications?</td>
<td>☐ Yes, too much</td>
</tr>
<tr>
<td></td>
<td>☐ Yes, enough</td>
</tr>
<tr>
<td></td>
<td>☐ Some, but not enough</td>
</tr>
<tr>
<td></td>
<td>☐ None</td>
</tr>
<tr>
<td>24. Did you receive information about medication side effects?</td>
<td>☐ Yes, enough</td>
</tr>
<tr>
<td></td>
<td>☐ Yes too much</td>
</tr>
<tr>
<td></td>
<td>☐ Some, but not enough</td>
</tr>
<tr>
<td></td>
<td>☐ None</td>
</tr>
<tr>
<td>25. Who discussed your medications with you?</td>
<td>☐ Pharmacist</td>
</tr>
<tr>
<td></td>
<td>☐ Doctor</td>
</tr>
<tr>
<td></td>
<td>☐ Nurse</td>
</tr>
<tr>
<td></td>
<td>☐ Don’t know</td>
</tr>
<tr>
<td></td>
<td>☐ No one</td>
</tr>
<tr>
<td>26. Since your recent heart event has your health?</td>
<td>☐ Improved a lot</td>
</tr>
<tr>
<td></td>
<td>☐ Improved a little</td>
</tr>
<tr>
<td></td>
<td>☐ Stayed the same</td>
</tr>
<tr>
<td></td>
<td>☐ Got worse</td>
</tr>
<tr>
<td>27. Did you attend a cardiac rehabilitation programme after you were discharged from hospital?</td>
<td>☐ Yes</td>
</tr>
</tbody>
</table>

If **Yes**, please can you tell me why you decided to attend?
________________________________________________
________________________________________________________________
________________________________________________________________

If **No** can you please tell me why you decided not to attend?
________________________________________________________________
________________________________________________________________

Do you have any other comments about your hospital stay?
________________________________________________________________
________________________________________________________________

---

**We also need some information about your living situation.**

28. **Do you live alone?**

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>

29. **What is your marital status?**

<table>
<thead>
<tr>
<th>married/civil union</th>
<th>widow/er</th>
<th>defacto</th>
</tr>
</thead>
<tbody>
<tr>
<td>single</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

30. **Which ethnic group do you identify with?**

<table>
<thead>
<tr>
<th>NZ European</th>
<th>Samoan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Māori</td>
<td>Cook Island Māori</td>
</tr>
<tr>
<td>Chinese</td>
<td>Tongan</td>
</tr>
<tr>
<td>Indian</td>
<td>Other</td>
</tr>
</tbody>
</table>

37 **Gender?**

<table>
<thead>
<tr>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
</table>

38 **Age**

<table>
<thead>
<tr>
<th>20-34</th>
<th>65-79</th>
</tr>
</thead>
<tbody>
<tr>
<td>35-49</td>
<td>80+</td>
</tr>
<tr>
<td>50-64</td>
<td></td>
</tr>
</tbody>
</table>

**Thank you for your time in filling out this questionnaire**
Hello,

My name is Pip Hutchinson I recently sent you a questionnaire about your experience while you were in hospital with your heart event.

Thank you for taking the time to read my questionnaire. I ask if you have not filled it out and sent it back yet, can you do this as soon as possible. Your opinion is valuable to my research and without your input my results will not be an accurate view of heart patients.

Thank you very much if you have already completed and returned my questionnaire. I have received some very good feedback and your views will help shape cardiac education given to those in the future. You have made my research valid and interesting and will benefit cardiac patients and nurses working in this area.

If you have lost or misplaced the questionnaire please contact me and leave a message, I will post you another one

Once again thank you for participating in my research.

Kind regards

Pip Hutchinson
Ph 06-8444206
pipee@xtra.co.nz
3 July 2012

Ms Pip Hutchinson
Hawkes Bay District Health Board
117 Kent Terrace
Taradale
Napier

Dear Ms Hutchinson

Ethics ref: CEN/12/EXP/037 (please quote in all correspondence)
Study title: Factors influencing outpatient cardiac rehabilitation attendance

Thank you for your Expedited Review of Observational Studies Application received on the 13th of June 2012 enclosing documentation relating to the above named study. This documentation has been reviewed and noted by the Chairperson of the Central Ethics Committee under delegated authority.

This letter is to confirm that this study does not require an Ethics Review.

Please do not hesitate to contact me should you have any queries.

Yours sincerely,

AWHINA RANGIWAI
ADMINISTRATOR
Central Ethics Committee
25 June 2012

Pip Hutchinson
Registered Nurse
Emergency Department
Hawke's Bay Hospital

Dear Pip

RE: Hawke's Bay District Health Board Research Application - Reference 12/06/110

Thank you for your application to conduct research within the Hawke's Bay District Health Board. I am pleased to advise that your application has been successful, subject to:

1. Obtaining Central Regional Ethical Approval for this study (please forward a copy of this to this office once received)
2. Providing written evidence of Maori consultation.

Your research at HBDHB must not commence, until such time you have received the above information and forwarded that to this office.

Please find enclosed a signed copy of your HBDHB application and the signed locality assessment required for your ethics application. At the conclusion of your research, HBDHB will require a research report (as outlined in your application).

Should you have any queries during your research, please do not hesitate to contact me during normal working hours.

Regards

[Signature]

Sally Houlston RN, BN, MN
On behalf of the
Research Committee
26 June 2012

Pip Hutchinson
Hawke's Bay Hospital Soldiers Memorial
Omahu Road
Private Bag 9014
Hastings

Tēnā koe Pip

RE: Cardiac Rehabilitation Survey

Thank you for the opportunity to review your proposal for the above. I support the evaluation you are undertaking here in Hawkes Bay.

Māori health is available to provide support to participants if required. Any staff member involved in conducting this survey should also complete the cultural perspectives training to ensure cultural competence. This can be accessed via Learning & Development.

I wish you well in your research and look forward to receiving a copy of the final report.

Noho ora mai rā

Lewis Ratapu
Kaiwhakahaere

---

TE WAHANGA HAUORA MĀORI
Corporate Services, Hawke's Bay District Health Board
Omahu Road, Private Bag 9014, Hastings 4156, New Zealand. Telephone (06) 870 1654 Fax (06) 870 1655
Reference Number 27/12

30 July 2012

Pip Hutchinson
Master of Nursing Student
C/- Faculty of Health Science
EIT Hawke’s Bay

Dear Pip

I am pleased to inform you that your research project “Factors influencing attendance at outpatient cardiac rehabilitation” was received and endorsed by the Research Ethics & Approvals Committee at their meeting held on 27 July 2012.

You are reminded that should the proposal change in any significant way, then you must inform the Committee. Please quote the above reference number of all correspondence to the Committee.

Please provide the Committee with a progress report after one year of the project and a brief summary at the conclusion.

The Committee wish you well for the project.

Yours sincerely

Jeanette Fifield
Secretary – Research Ethics & Approvals Committee

cc: Bob Marshall (Supervisor)
Dear,

I am sorry to hear David has passed away and I apologise if I caused you any sadness by sending you the questionnaire about cardiac education. I did several checks to try and avoid this as my goal was to not to send any questionnaires to those patients who may have died, I am very disappointed I didn’t achieve this.

I do remember David as I looked after him in the emergency department a few times in this year. I know he wanted to make it to your wedding anniversary and it was easy to see how happy you both were for many years.

Once again I sincerely apologise for sending the questionnaire about cardiac education, thank you so much for writing to me to let me know.

Kind regards

Pip Hutchinson

APPENDIX