Factors influencing return to work after a cardiac incident and the development of a return to work intervention programme for individuals with cardiac diagnoses in the Western Cape, South Africa

A thesis submitted in fulfilment of the requirement of the degree

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DECLARATION

I, Zakeera Ganie, hereby declare that this thesis, titled "**Factors influencing return to work after a cardiac incident and the development of a return to work intervention programme for individuals with cardiac diagnoses in the Western Cape, South Africa",** is an original work written by me (except where acknowledgements indicate otherwise), and that neither the whole work nor part of it has been , or is to be submitted for another degree in this or any other university.

ZAKEERA GANIE

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I thank The Almighty for giving me the strength and courage to pursue further studies, guiding me through the journey and keeping me strong.

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ABSTRACT

Background: Cardiovascular disease is amongst the top three leading causes of mortality in South Africa and the world. The effects of cardiovascular disease can be seen in limitations of function within all spheres of life, including work function. Cardiac rehabilitation programmes have been documented to improve functional abilities, but little is known about the return to work rate after cardiac rehabilitation. Access to cardiac rehabilitation programmes in the Western Cape is limited. This study aimed to determine the return to work rates and influencing factors after cardiac rehabilitation as well as to design an intervention programme that is accessible and could facilitate return to work for individuals with cardiovascular disease.

Method: A mixed methodology was employed for this study. The participants in the study consisted of 63 individuals who completed a cardiac rehabilitation programme and 10 experts involved in the management and rehabilitation of individuals with cardiac conditions. The proposal for this study was approved by the Higher Degrees Committee and Ethics Committee of the University of the Western Cape. A cross-sectional survey was used to determine return to work rates. Statistical analysis using the IBM SPSS program was done to analyse the quantitative results. Semi-structured interviews were used to establish activity limitation, participation restrictions, facilitators and barriers of return to work. Thematic analysis of the qualitative data was completed. A scoping review was conducted to determine strategies and methods used for return to work with individuals with cardiovascular disease. Experts in the field of cardiac rehabilitation, vocational rehabilitation and cardiology were surveyed to develop a return to work intervention programme through the use of an e-Delphi method.

Results: RTW rate reported only 30 (47.6%) of the participants RTW successfully after cardiac rehabilitation and 33 (52.4%) of participants did not RTW. The older the individual and the higher the degree of impairment experienced, the less likely RTW would occur.

The semi-structured interviews reported that cardiac conditions negatively affect function, education on one's medical condition enhances insight, return to work is a motivating factor to positive lifestyle change and possible through reasonable accommodation and supportive

colleagues, participation in ADLs enhances one's activity levels and being unemployed affects quality of life. The scoping review highlighted that return to work intervention is depended on (1) intervention at an individual level; (2) intervention at an organisational level and (3) implementation strategies. The e-Delphi aided the development of "The ***Heart Return to Work Intervention Programme*** **(HRTWIP)"**, which presents a structured pathway to facilitate the RTW of individuals with CVD. The HRTWIP consists of four phases that are interconnected and guided by implementation strategies. Accommodations for fluid movement between the phases in a forward or backward motion (if needed) are made.

Conclusion: The study concluded that only 47.6 % of individuals completing cardiac rehabilitation return to work. Being older and the degree of impairment impacts on one's ability to return to work. Lifestyle modification and reasonable accommodation enables successful return to work after a cardiac incident. The developed HRTWIP envisions to facilitate the process of return to work for individuals with cardiovascular disease.

Keywords: cardiovascular disease, cardiac rehabilitation, vocational rehabilitation, return to work, mixed methodology, programme development.

CHAPTER ONE: BACKGROUND AND ORIENTATION OF THE STUDY

1.1 Introduction

This chapter presents the background of the study. The problem statement explains the need and importance of a return to work (RTW) intervention programme for individuals with cardiovascular disease (CVD) in the Western Cape, South Africa. The chapter also describes the aim of the study, the research questions and the study objectives. The contribution this study aims to make with regard to the existing knowledge of CVD is detailed in the significance of the study section. The chapter concludes with a definition of terms, operation definitions, abbreviations used within the thesis and a summation of all the chapters.

1.2 Background

Cardiovascular disease (CVD) is amongst the top three leading causes of mortality in South Africa and the world. Rapid urbanisation is believed to have increased the amount of CVD found amongst low- to middle-income countries, resulting in a rise in the burden of diseases on healthcare systems and developing world economies (Cappuccio & Miller, 2016).

In 2008, 17 million deaths worldwide were caused by CVD and 80% of these deaths occurred in the low- to middle-income countries (WHO, 2011). The World Health Organisation (WHO) report further states that there is a decline in CVD deaths in high-income countries due to effective measures being put into place but has an increase in CVD deaths in low- to middle-income countries attributed to increasing socio-economic costs as a loss in productivity exacerbates poverty (WHO, 2011). The impact that cardiovascular disease has on the economy is said to be substantial as it is increasingly affecting individuals in their productive years of life (Cappuccio & Miller, 2016). This burden of disease heeds calls to a more comprehensive approach for prevention and management of CVD, particularly in low- to middle-income countries such as South Africa (Cappuccio & Miller, 2016). Upon investigating the impact of evidence-based cardiac rehabilitation (CR) programmes it was found that participation in such a preventative programme does have an impact on decreasing CVD mortality and re-hospitalisation, as well as having an impact on an individual's ability to return to work (Babu et al.,2016).

1.3 Problem statement

It was predicted that within the next decade, the increase of incidence of CVD would burden developing countries (Waxman, 2003). In 2011, CVD was the leading cause of death globally (WHO, 2011). Health economic research identifies the burden of disease as a result of CVD is growing (Bloom et al., 2012). Therefore, the need to increase awareness and establish preventative and management strategies is imperative (Schamroth, 2012). The need for CR and its benefits has been well established through research but its pursual by individuals with cardiac diagnoses remains minimal. International statistics reveal that less than 30% of appropriate candidates for CR actually participate as a result of accessibility, socio-economics, and psycho-social issues (Mampuya, 2012). In the Western Cape, South Africa, available programmes are limited and restrictive in terms of financial accessibility. To a large degree referral to CR is also limited due to the physician's lack of understanding of the role of the occupational therapist. The development of an intervention programme for CR that includes a RTW element and is available to pursue in any health setting will enable more individuals to participate in the process of CR and safely return to their worker role, thus reducing re-hospitalisation as a result of cardiac challenges. The use of such an intervention programme will also render a better understanding of the OT's role in CR and its place within the multi-disciplinary team.

1.4 Research questions

1. What is the return to work rate of individuals with CVD after a cardiac incident, in the Western Cape?
2. What are the impairments, limitation in activities and participation restrictions and socio-demographic factors that individuals with CVD experience when returning to work, in the Western Cape?
3. What influences the resumption of the worker role for individuals with CVD, in the Western Cape?
4. What effective intervention strategies are used in returning individuals with CVD to work after a cardiac incident?
5. What components are needed to design and develop a successful return to work intervention programme for individuals with CVD in the Western Cape?

1.5 Aim of the study

The study aims to design a return to work intervention programme for individuals with CVD after a cardiac incident.

1.6 Objectives of the study

1. To determine the RTW rate of individuals with CVD after a cardiac incident
2. To determine the impact of impairment and socio-demographic factors on an individual's ability to RTW after a cardiac incident
3. To determine and explore the barriers and facilitators of RTW for individuals with CVD
4. To conduct a scoping review to identify the components of RTW interventions for returning individuals to work with CVD to their worker role after a cardiac incident
5. To design and develop a return to work intervention programme for individuals with CVD after a cardiac incident

1.7 Significance of the study

CVD more commonly affects individuals within the working age group, resulting in unemployment. In the Western Cape, South Africa, there are currently no CR programmes that focus on RTW. Babu et al. (2016) states that with established CR benefits that result in fewer recurrent cardiac events and hospitalisation, and greater return to work and productivity, it then also yields significant economic benefits to government. This study therefore adds to the growing body of knowledge around CR, particularly in low- to middle-income countries, through including work-related aspects as part of a comprehensive CR programme. Data from this study provides information on RTW rates after cardiac rehabilitation for individuals with CVD in the Western Cape, South Africa, which to our knowledge has not been documented before. Furthermore, through this study, information concerning impairments, activity limitations and restriction in participation amongst individuals with CVD is also for the first available to inform disability, economic and health policies in the future. The outcome of this study is a RTW intervention programme that can be used amongst CR and vocational rehabilitation (VR) practitioners in various settings. The programme is aimed at promoting good cardiovascular health and RTW in order to lower the social and health-related economic burden on governments and to advocate for good quality of life for individuals with CVD.

1.8 Definition of terms

Cardiovascular disease (CVD): The WHO defines cardiovascular disease as a group of disorders of the heart and blood vessels that include hypertension, coronary heart disease, cerebrovascular disease, peripheral vascular disease, heart failure, rheumatic heart disease, congenital heart disease and cardiomyopathies (WHO, 2020).

Cardiac rehabilitation (CR): The WHO defines cardiac rehabilitation as activities performed to manipulate the underlying cause of the disease, facilitate the implementation of healthier physical, mental and social conditions, so that individuals through their own volition may preserve or resume function (WHO, 1993).

Vocational rehabilitation (VR): VR refers to intervention provided to individuals within the working age group experiencing health-related impairment, limitations or restrictions in work functioning, with the aim of improving work participation (Escorpzio et al., 2011).

Return to work (RTW): RTW can be defined as restoration of injured workers to their former lifestyle in the safest and most effective manner possible (Return to work, n.d.).

1.9 Abbreviations

ADL	Activity of Daily Living
AMI	Acute Myocardial Infarction
bADL	Basic Activity of Daily Living
CAD	Coronary Artery Disease
CHF	Congestive Heart Failure
CR	Cardiac Rehabilitation
CVD	Cardiovascular Disease
HRTWIP	Heart Return to Work Intervention Programme
iADL	Instrumental Activity of Daily Living
ICF	International Classification of Functioning, Disability and Health
IM	Intervention Mapping
MI	Myocardial Infarction
MOOSE	Model of Occupational Self-Efficacy
MDT	Multi-Disciplinary Team

OT	Occupational Therapist
RTW	Return to Work
VHW	Victoria Hospital Wynberg
VR	Vocational Rehabilitation
WHO	World Health Organisation
WORQ	The Work Rehabilitation Questionnaire

1.10 Overview of chapters in the thesis

Chapter one: Background and orientation of the study

The first chapter of this thesis described the background to the study. The problem statement explains the need to address and establish a RTW programme for individuals with CVD in the Western Cape, South Africa. The chapter also clarifies the aim of the study, the research questions and its objectives. The significance of the study is highlighted. The concluding section of the chapter outlines the definition of terms, abbreviations and the synopsis of the chapters.

Chapter two: Literature review

The literature review focuses on the epidemiology of cardiovascular disease and the functional impact after a cardiac incident that affects return to work. It highlights CR programmes as done internationally and compares it to CR programmes done in the Western Cape, South Africa. The theoretical framework for this study namely, the International Classification of Function (ICF), is discussed in conjunction with the practice-based Model of Occupational Self-Efficacy (MOOSE) that was used as guide for the development of this study's intervention programme to aid RTW of individuals with CVD after a cardiac incident.

Chapter three: Research methodology

Chapter three describes the methodological process followed in order to achieve the objectives. It details an overview of the description of the research questions, aim of the study, objectives and research setting. Furthermore, comprehensive details regarding the research design, study population and sampling, methodological

framework, phases of data collection and analysis are captured. Lastly, the reliability, validity and rigour for the study are detailed with the ethical considerations taken during this study.

Chapter four: Quantitative findings and discussion

This chapter presents the results of the quantitative strand of the study, which aims to answer the first two objectives of the study. The first objective was to determine the RTW rate of individuals with CVD after a cardiac incident. The second objective was to determine the impact of impairment and socio-demographic variables on the individual's ability to RTW. A cross-sectional survey, namely the work rehabilitation questionnaire (WORQ) was used to gather the information. The IBM SPSS software was used to conduct the statistical analysis. CR participants between the ages of 18 and 64 years made up a sample of 63. Within the sample 27 female participants and 36 male participants were represented with reference to their socio-demographic factors and degree of impairment. The methodological process is captured in an overview followed by a representation of the results after statistical analysis. Reported findings are summarised in text, table and graphs, concluding with the predictors to RTW and factors associated with it.

Chapter five: Qualitative findings and discussion

This chapter presents the findings of the qualitative phase of the study which aimed at exploring the impact of impairment, as well as barriers and facilitators on the return to work for individuals after a cardiac incident (objectives two and three). The methodological process is captured in an overview followed by the findings as presented in five themes namely: 1) Cardiac conditions negatively affects function: *"I get tired very quickly."* 2) Education on one's medical condition enhances insight: *"It's very important to understand your body and its signs."* 3) Return to work: *"I think I'm one of the lucky few."* 4) Participation in ADLs enhances one's activity levels: *"I don't have time for exercise."* and 5) Being unemployed: *"Now I don't have any income."*

Chapter six: Method and strategy (Scoping review)

This chapter presents the outcomes of the scoping review which intended to answer the fourth objective of identifying the components of RTW intervention for individuals with CVD who are able to restore their worker role. The scoping review aimed to identify literature content that described RTW strategies within VR programmes for CVD individuals. The chapter presents a summary of the demographic characteristics of the studies reviewed, as well as an in-depth description of the synthesised findings. The chapter also discusses the findings with relevant theoretical assumptions.

Chapter seven Delphi survey

The seventh chapter reports the results of the third and final stage of the study. A Delphi survey was used to guide the development of RTW intervention programme for individuals with CVD. A brief background on which the study was built is provided. The methodology used to achieve the objectives of the chapter is presented. The results of the participants responses to the various rounds of the Delphi survey is described, together with conceptualisation and drafting of the proposed intervention programme. Finally, the draft RTW intervention programme is presented.

Chapter eight: Executive summary

Chapter eight is the concluding chapter of this thesis, where the summary of the findings from all the phases of the study are described. The limitations to the study and further recommendations for future studies are provided.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

The literature review focuses on the epidemiology of cardiovascular disease and the functional impact after a cardiac incident that affects return to work. Heart disease refers to a number of conditions that affect the functioning of the heart and defects of the blood vessels. Cardiovascular disease (CVD), which is used interchangeably with the term heart disease, largely refers to the narrowing of blood vessels due to the presence of plaque that can lead to a heart attack, chest pain (angina) or a stroke. It highlights cardiac rehabilitation programmes as done internationally and compares them to cardiac rehabilitation programmes done in the Western Cape, South Africa. The theoretical framework for this study namely, the international classification of function (ICF), is discussed in conjunction with the practice-based model of occupational self-efficacy (MOOSE) that was used as a guide for the development of this study's intervention programme to aid RTW of individuals with CVD after a cardiac incident.

2.2 Epidemiology of cardiovascular disease (CVD)

The prevalence, incidence, risk and mortality rates of CVD internationally, in Sub-Saharan Africa, South Africa and locally in the Western Cape give rise to much concern. Gender and age factors play an integral role in both management of risk factors and identification of CVD early on. CVD's role in the economic burden to the state must be considered as it has become a leading cause of death in low- to middle-income countries.

In the United Kingdom, acute myocardial infarction (AMI) is the most common cause of death and is associated with 188,000 hospital admissions every year (Sumner, Harrison & Doherty, 2017). The American College of Cardiology published statistics in February 2019 estimating an expected 1,055,000 individuals to be affected by coronary events, comprising 720000 new events and 335000 recurrent coronary events (American College of Cardiology, 2019). Thus, the global epidemic of CVD is at a critical juncture.

When comparing international statistics to the prevalence of CVD on the African continent, it is documented that more than 1 billion individuals in Sub-Saharan Africa are affected by the CVD epidemic. In 2013 an estimated 1 million deaths were as a result of CVD in Sub-Saharan Africa, which represented 5.5% of all CVD-related deaths globally and 11.3% of all deaths in Africa. Between 1990 and 2013, Sub-Saharan Africa was the only geographical region to document a rise in CVD-related deaths (Kuznetsova, Prange, Glass, & De Winther, 2020). The outcome of a Sub-Saharan survey of heart failure conducted from June 2007 to June 2010 suggested that heart failure occurs in middle-aged adults, where the mean age for the total population was 54 years and equally in men and women, with a high mortality rate (Damasceno et al., 2012)

Statistics relating to mortality rates in South Africa released February 2017, confirm that heart diseases have contributed to the 60% of non-communicable diseases resulting in natural causes of death in 2015 (Stats SA, 2017). A study conducted in Soweto, South Africa, looked at how migration, urbanisation and socio-economic factors have determined consequences of high levels of risk but poor awareness of lifestyle choices, with Soweto being at a crossroads between historically prevalent and newer forms of heart disease due to epidemiological changes (Stewart, Carrington, Pretorius, Methusi, & Sliwa, 2011). A cross-sectional study conducted in South Africa with randomly selected adults between the ages of 15 and 65 from the Asian Indian population in Durban, found an exceptionally high CVD risk factor prevalence, particularly in teenagers and young adults (Prakaschandra, Esterhuisen, Motala, Gathiram, & Naidoo, 2016). Another study in KwaZulu-Natal in 2015, identified that acute myocardial infarction, associated with ischaemic heart disease is increasing in South Africa (Chetty & Ross, 2016). In 2016 the Western Cape government published statistics that indicate 210 people die from heart disease every day in South Africa (Western Cape Government, 2016).

There are numerous causes that result in CVD, namely: plaque in the arteries, high blood pressure, diabetes, smoking, excessive use of alcohol or caffeine, drug abuse, stress, medications (prescription or non-prescription), coronary artery or valvular heart disease or congenital causes. Some of the risk factors associated with CVD are older age, being male,

family history of CVD, physical inactivity, obesity and lifestyle disease that is mentioned above (Mayo Clinic, 2020).

According to the age and gender specific trends in coronary heart disease mortality in France, results indicate that, in general, CVD prevalence is decreasing. However, of the current statistics it is evident that amongst young people it is rising (Wagner et al., 2014). Along the same trend, a study done in Iran on the evaluation of the return to work and its duration after myocardial infarction (MI), identified that five percent of MI cases in the study were under the age of 40 years, while 45% of the sample were under the age of 65 years thus indicating that a considerable number of MI individuals are within their employment years (Mirmohammadi et al., 2014).

When more specific gender differences were studied it became apparent that in the male population modifiable life risk factors should be addressed and within the female population the prevention of rheumatic heart disease and improved nutrition were important factors to address (Ogah et al., 2015). Traditionally, CVD has been associated with men but since 1984 the annual CVD mortality rate for women has been higher than men in the United States (Mozaffarian et al., 2015). Merz and Cheng (2016) report that gender-specific patterns of cardiac and vascular ageing that begin early in life, play an important role and in relation to age-related cardiac remodelling, there is a greater prevalence in women than men. Additionally, a study investigating gender differences in age-related cardiovascular mortality found that in men, heart disease mortality accelerates at a younger age as compared to women who only show an increase from about 60 years. Hence, the need to identify and prevent risk factors for CVD in women should start in their mid-life years (Mikkola, Gissler, Merikukka, Tuomikoski, & Ylikorkala, 2013). Survival rates have improved when CVD diagnosis has been established and therapy or preventative interventions have been put in place; however, it remains underdiagnosed and undertreated in women (Mehta et al., 2016).

CVD not only impacts on individuals and families but places great economic burden on the state. The costs of hospital inpatient care, outpatient physician visits and medication were calculated to be the highest cost of health conditions (American Heart Association, 2019). The global burden of CVD has great impact on low- to middle-income countries and even with

differing population issues, CVD remains one of the greatest health challenges (McAloon et al., 2016).

2.3 Conceptual framework: The international classification of functioning, disability and health (ICF)

Historically the medical model of disability described disability as an individualised problem that was diagnosed and resolved through the application of medicine, by medical professionals (Cameron, 2013). However, in the 1970s the medical model came under critique for its definition of disability as it was viewed as limited and limiting of individuals with disabilities (Thompson, 2016). Thus, the emergence of the social model of disability arose, shifting the attention from an individual with a medical problem to disability being a product of an unaccommodating society (Hogan, 2019). Then in 2001, The World Health Assembly presented the international classification of functioning, disability and health (ICF) as a means to align the core features of the medical and social models into a singular spectrum that looked at multiple dimensions of human functioning (Kostanjsek, 2011). The ICF is based on the biopsychosocial model and aims to capture the individual holistically by looking at the person, the context, his or her health condition and its dynamic interactions that develops into function (Wenzel & Morfeld, 2018).

The ICF is dynamic as it consists of multi-dimensional concepts relating to body functions and structures, activities, participation and environmental factors, which forms the foundations of function or disability. Body function and structure refers to the impairments experienced at the body level. The activities of people refer to functioning and limitations experienced on an individual level. Participation refers to either the involvement of people in all areas of life and/or participation restrictions that the individual experiences as a member of society. Lastly, environmental factors refer to the facilitators or barriers within the environment that affect experiences of the individual. Personal factors such as race, gender, age, and educational level that are reflected in the model are not as yet classified due to great social and cultural difference (Kostanjsek, 2011).

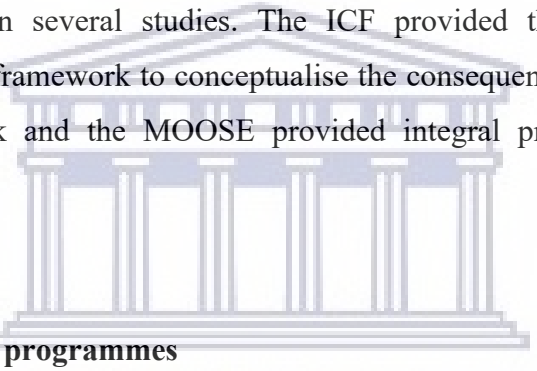
WHO found that a fast and accurate instrument was needed for the ICF to be used within clinical practice and therefore core sets were developed (Ruaro, Ruaro, & Guerro, 2014). The core sets comprise a selection of ICF categories relevant to an individual's function, disability and health for specific diseases and environments (Maini, 2008). Similarly, Kostanjsek (2011) identified the ICF as being useful when applying to documenting and coding of functional status information for the purpose of assessing patients' needs, planning health and social care and measuring the changes brought by interventions across a multitude of dimensions from body functions, personal activities, societal participation and environmental factors.

A collaborative study aimed at identifying ICF core sets for chronic ischaemic heart disease, identified the following imperative categorical inclusions: 89 categories on body functions, 25 categories on body structures, 82 categories on activities and participation and, 57 categories on environmental functions (Cieza et al., 2004). In a scoping review and mapping exercise comparing the content of patient-reported outcome measures (PROMs) across heart disease-specific scales, it was found that the development of a comprehensive PROM that included additional ICF cores sets of 10 body function categories, 13 activity and participation categories and 2 environmental categories, would better capture patients experience from a biopsychosocial perspective (Alguren et al., 2020).

A study examining the extent to which the ICF could capture work disability found that it was reflective of the medical expert's functional interpretations of the individual but lacked a understanding of the connection between functional capacity and the health condition, which limited the medical experts understanding of its influence on work participation (Anner, Schwegler, Kunz, Trezzini, & Boer, 2012).

Practice models are very useful in guiding intervention strategy development. In this study, The Model of Occupational Self-efficacy (MOOSE) was used. The MOOSE was originally developed by Soeker (2012), as a practice model use with clients who have experienced traumatic brain injury. The model is driven through dynamic stages developing a strong belief in functional ability, use of self, creation of competency through occupational engagement and capable individual, which could easily be applied to any diagnosis such as CVD. The aim of

each stage is to produce goal-orientated steps that motivate the client towards becoming and maintaining an independent worker role. Stage 1 called *Introspection* facilitates a reflective process whereby the individual explores their lifestyle, capabilities and limitations. This aims to develop insight and prepare for realistic goal setting. Within stage 2, known as *Use of self*, the therapist and the individual work to improve functional components which are client-centred and goal-driven. Through improvement of functional components, the individual's self-efficacy strengthens as their participation increases. Stage 3, *Creation of competency through occupational engagement* explores occupational engagement and independent work-related skills. Work practice placement, job analysis and employer education are key factors in this stage. Lastly, in stage 4, *Capable individual,* the individual is comfortable in their worker role and engagement in meaningful and gainful employment, allowing the therapist to step back in his/her role. These stages incorporate imperative components of the return to work process which is found in several studies. The ICF provided this study with a very comprehensive theoretical framework to conceptualise the consequences of CVD in terms of general function and work and the MOOSE provided integral practical implementation guidelines.



2.4 Cardiac rehabilitation programmes

The World Health Organisation (WHO) defined cardiac rehabilitation (CR) in 1993 as being the activities that positively influence the underlying causes of the disease so that individuals may preserve, or resume their lives within communities (WHO, 1993).

CR programmes aim to improve cardiovascular health after myocardial infarction, congestive heart failure, angioplasty or heart surgery. Traditionally, the main components of the rehabilitation programme are exercise counselling and training, education for heart healthy living and counselling to reduce stress. In low- and middle-income countries the benefits of CR participation have been seen in improvements in lipid count, body mass index, blood pressure, as well as quality of life and functional capability (Babu et al., 2016). Furthermore, Babu et al. (2016) states that with established CR benefits that result in fewer recurrent cardiac events and hospitalisation, and greater return to work and productivity, it then also yields significant economic benefits to government. Dalal, Doherty and Taylor (2015) note that when the CR programmes are designed more holistically, limiting the effects of the cardiac illness, vocational status will be improved.

CR programmes in Africa and internationally

In a study done to determine CR in Africa, it was found that there were only 32 programmes in 47 countries, which is the lowest of all WHO regions (Heine et al., 2019). Furthermore, Heine et al. (2019) also found that of the 32 programmes, 23 were located in South Africa and all programmes that participated in the study survey were privately funded. Heine et al. (2019) found that the key characteristics of these CR programmes were that it was offered in an urban context, it was hospital-based, it was facilitated through physical medicine and rehabilitation departments and served few patients.

In a scoping review researching cardiac rehabilitation in low- and middle-income countries it was found that fewer programmes were available, and the study postulated that policies need to be implemented for CR models specifically for low- to middle-income countries (Shanmugasegaram, Perez-Terzic, Jiang, & Grace, 2014). Grace et al. (2016) determined that the costing for a CR programme in a low-resourced setting was not feasible if delivered in the same manner as in a high resourced setting and therefore suggested adapting the delivery of the CR model through the work of non-physician healthcare workers in a non-clinical setting.

In a prospective observational study done in Ontario, Canada, where 1490 coronary artery disease (CAD) patients participated in a CR programme, it was concluded that age, education level and income influenced participation and that participants of shorter programmes (less than six months) attended more sessions than those in longer programmes (longer than six months). However, it was found that regardless of the duration of the CR programme, physical activity and quality of life improved through participation (Leung et al., 2011.)

Very early on the United Kingdom (UK) National Service Framework recognised CR as a secondary prevention for CVD and therefore established 12 standards of management for CVD (UK Department of Health, 2000). In the study on the analysis of barriers to entry of cardiac rehabilitation which used data from The National Audit it is documented that uptake in CR in the UK had reached 50% in 2016 (Harrison, Doherty, & Phillips, 2018). Bjarnason-Wehrens

et al. (2017) state that in Europe access to a CR programme is made available to an estimated 2 million patients but less than 40% participate. Adherence to CR programmes is influenced greatly by psychological well-being, geographical location, access to transport and dislike of group-based rehabilitation (Mampuya, 2012). Similarly, Ruano-Ravina et al. (2016) found in their systematic review on participation and adherence to CR programmes that older patients, women, patients with co-morbidities, unemployment, lower education levels, lower income, living further away from where the CR programme was hosted and limitations in transport were factors that contributed to lower participation. Furthermore Ruano-Ravina et al. (2016) states that these factors were found to be similar in the USA and Europe. Thus, internet and mobile services are emerging as innovative means of providing CR (Varnfield et al., 2014). However, a Cochrane review on interventions to promote utilisation of CR found that face-to-face contact with healthcare providers increased enrolment (Santiago de Arauji Pio, Chaves, Davies, Taylor, & Grace, 2019). Further Santiago de Arauji Pio et al. (2019), found that there was not enough evidence to support woman-tailored programmes, but motivating women was a beneficial strategy and for older patients, peer support suggested improved enrolment.

CR programmes in the Western Cape, South Africa

Upon investigation on the availability of CR programmes offered in the Western Cape, it was discovered that mainly physiotherapists offer CR programmes within the private and public sectors, consisting of a calculated exercise regime to improve physical endurance after a cardiac incident. Through verbal communication with occupational therapists (OTs) in the private sector, it was found that OTs do not receive referrals from cardiologists or cardiothoracic surgeons (J. Kidd, personal communication, March 14, 2017). This is dissimilar to that of international trends, where occupational therapists form part of the multi-disciplinary team (MDT) for CR. Within the public sector in the Western Cape the OT resources at the two main tertiary hospitals are stretched to capacity and therefore there is no involvement in CR.

However, since 1990 Victoria Hospital Wynberg (VHW) in the Western Cape has offered a CR programme, which aims to change behaviours and lifestyles of patients soon after they experience a MI (Sampson, 2014). VHW can only provide this service to patients living in the residential district of the southern suburbs who are admitted to the hospital as an inpatient. The

CR programme can only accommodate 22 individuals in the three-week cycle. Attendance varies between 10 and 18 individuals per session. The above programme does not include the work skills rehabilitation for return to work, however it is attended by individuals within the working age group. There is therefore a need to have a programme that includes work skills as part of the intervention package. Traditional work hardening which relates to the use of graded work tasks that simulate a person's job, in combination with cognitive work hardening that aims to improve mental and cognitive capacity in order to develop coping strategies assists with the development of self-efficacy and thus promotes successful RTW (Wisenthal & Krupa, 2014).

2.5 Occupational therapist's role in cardiac rehabilitation

Typically, studies identify the cardiac rehabilitation team as the cardiologist, physical therapist, nurse, psychologist, dietician, social worker and rehabilitation physician (Gude et al., 2016). The role of the occupational therapist as part of the CR team is emerging but not well known or used much as yet. In a multicentre retrospective study on the quality and outcomes of cardiac rehabilitation programmes in India, it was documented that only one of the four centres had an OT as a part of the CR team (Chockalingam, Rajaram, Maiya, & Contractor, 2020).

Heart failure impacts on functional outputs within routine activity of individuals within their context, therefore an occupational view can enhance occupational performance (Fathipour-Azar, Akbarfahimi, Vasaghi-Gharamaleki, & Nader, 2017). Occupational therapy models such as the person environment occupation model (PEO) enables occupational therapists to view occupational performance within the context of the person, his/her environment and occupations (Law et al., 1996). Fathipour-Azar and Shirmard (2018) investigated the usefulness of the PEO model when applying it to interventions with CVD patients and found it to significantly guide treatments that improved physical function and quality of life.

When an individual experiences a disruption of daily routines and a need to reconstruct their occupational self, due to a health diagnoses, occupational therapists play a key role in navigating this process and therefore are considered an important team player in the cardiac rehabilitation team (White & Buyting, 2011).

Occupational science identifies that occupation is more than activity and can be described as the participation of individuals in activity despite their illness or disability (Hocking & Wright, 2011.) The role of the occupational therapist in CR has long been taught at many universities in South Africa that train this profession. Through occupational engagement, occupational therapy can facilitate the rehabilitation of instrumental activities of daily living (iADLs) such as employment and maintaining function in the long term, which is the ultimate aim of CR (Woodruffle, Neubeck, & Clarke, 2015.) Occupational therapists use holistic approaches in the assessment and skills development for the management of barriers to participation in activities (Toglia, Rodger, & Polatajko, 2012). Thus, aiding better adaptation to illness consequences. Similarly, in a review of literature to determine the role of OT in addressing lifestyle behaviours of patients with chronic illness such as cardiac conditions, it was found that because OT professional practice addresses concerns of consequence to illness on self-management, environment and skillset, OTs are ideal for CR (Alcorn & Broome, 2014). Furthermore, Alcorn and Broome (2014) propose that through performance coaching from occupational therapy practice where the focus is on overcoming physical, emotional and cognitive barriers to practical integration of health recommendations into patient lives, OTs can contribute more positively to outcomes of CR.

The study of Stewart et al. (2011) noted that home-based intervention with heart failure patients is associated with decreased hospital stay and consequently lower healthcare cost. This advocates for greater inclusion of OT services in CR, as OTs include home-based intervention as part of their service offering. A study examining the RTW of patients with heart failure, noted that CR that includes vocational counselling which involves engagement with employers may be instrumental in the process (Cowie, 2016). Vocational counselling being a specialty of the occupational therapy profession therefore places occupational therapists as integral CR team members.

Referral to OT for CR is dependent on the physician, cardiologist, cardiac surgeons, and primary care specialist's familiarity with the unique skillset of OTs in contributing to positive outcomes and thus it is an important task for OTs is to educate other health professionals as to how occupational therapy can contribute (Austermiller, 2012). Research indicates that participation in leisure time physical activities in conjunction with structured exercise, helps

reduce CVD mortality (Contractor, 2011). This illustrates the need for the occupational therapist to play an important role in CR as leisure pursuits are part of the OR process.

2.6 Facilitators of return to work after a cardiac incident

A number of factors have been identified as facilitators of RTW in individuals with a cardiac condition, these include being discharged directly home, perceived job satisfaction in a positive work environment and encouraging family relationships. Furthermore, having the physical and cognitive ability to resume the work tasks, with encouragement from a doctor also played a role in RTW. Financial obligations also aided RTW.

In a retrospective analysis of factors associated with return to work amongst survivors of out-of-hospital cardiac arrest it was found that overall health-related quality of life and functional outcomes were significantly higher amongst participants who were discharged directly home from the hospital and resulted in successful RTW (Kearney, Dyson, Andrew, Bernard, & Smith, 2020). A prospective study conducted with 83 patients of working age during their cardiac rehabilitation found that job satisfaction and a positively perceived work environment resulted in early RTW after cardiac intervention and may have economic benefits and improve quality of life (Fiabane et al., 2013.)

Slebus et al. (2012) further explored facilitating factors for RTW and identified the following: no signs and symptoms of the disease, work contentment, positive relationships at work, ability to participate in work activities, information from the doctor that encouraged RTW, medical care was working well, family relationships were positive, financial motivation and intrinsic motivation to work. Similar results from a qualitative study of perpetuating factors for long-term sick leave and promoting factors for RTW, through which five focus groups of 27 patients with long-term sickness found that illness perceptions and self-efficacy expectations can be promoting factors for RTW (Dekkers-Sanchez, Wind, Sluiter, & Frings-Dresen, 2010).

Financial obligations and culture are also contributing factors of RTW as was found in the study of changes in employment status after MI among men, where the men stated that they did not want to take advantage of their wives earning an income and that it was their

responsibility as the breadwinner to provide for their families (Sahan, Demiral, Kilic, & Aslan, 2016.)

2.7 Barriers related to return to work after a cardiac incident

The literature had described a number of barriers to RTW. Functional limitations being reported in many studies related to fatigue as well as memory impairment and some cognitive processing deficits. Anxiety and depression are also factors that have been identified. Side effects of medication together with work demands, particularly in more physically demanding occupations have also been recognised as a barrier to RTW.

In a Danish cohort study examining RTW after hospitalisation for heart failure, the authors speculate that a lack of return to work was due to functional limitations as a result of the disease as well as the psychological effects of having the heart failure diagnosis (Rorth et al., 2016). Kearney et al. (2020) also observed that fatigue was most frequently reported as a barrier to RTW, followed by mild cognitive impairment such as impaired memory and cognitive processing. Similarly, a study with patients who had implantable cardioverter defibrillators (ICDs) estimated that 75% of patients experience mild to severe short-term cognitive impairment, with roughly 33% of these expected to be prolonged at 6 months (Kim, Pressler & Groh, 2013.) The mild cognitive impairment after a cardiac incident generally implies that basic activities of daily living (bADLs) are not affected but challenges with more complex activities requiring a higher level of cognition are experienced and results in difficulties completing iADLs such as work activities (Norris, 2018.)

Patients suffering from anxiety or emotional distress following the cardiac incident have been found to have increased difficulty in lifestyle modification and less likely to complete CR (Huffman, Celano, & Januzzi, 2010.) This could have a negative impact on the individual's prospects of RTW and successfully maintaining employment. Similarly, in a prospective cohort study examining the associations between depressive episodes and anxiety disorder with RTW after MI at 3 and 6 months found that the presence of a depressive episode and anxiety disorder during the first 3 months after the MI was a significant predictor of not returning to work by 12 months (De Jonge, Zuidersma, & Buitmann, 2014.)

A retrospective study by Slebus et al. (2012) on the RTW after an acute coronary syndrome from the patient's point of view, found that during semi-structured interviews individuals identified that their physical and mental capacity was debilitating, having a co-morbid disease such as diabetes prohibited RTW, terms of employment were not ideal, motivation to participate in work activities was low, side effects of medication play a negative role, symptoms of the disease was worrying, work demands too high and treatment from fellow colleagues was discouraging. Kearney et al. (2020) also found that patients in occupations such as labourers, tradesman and in the transport industry were less likely to RTW as their jobs were labour-intensive and that their illness had a greater impact on their ability to perform their work tasks.

2.8 Consequences of unemployment among individuals with a CVD diagnosis

Important indicators of health post MI are generally viewed in terms physiological functioning, however RTW and being able to maintain employment are equally important indicators of functional status and societal costs (Smedegaard et al., 2017).

In a follow-up study of 200 MI patients younger than 65 years old in Iran, from September 2007 until 2010, it was found that 45% of the participants were between the ages of 18 and 65 and were therefore still eligible for employment and the consequences of the MI was seen to have considerable negative socioeconomic consequences for these individuals (Mirmohammadi et al., 2014). Smedegaard, et al. (2017) also reports that despite the large number of patients (91%) who return to work after the cardiac incident, 24.2% were detached from their employment within a year and supported by social services. Furthermore, Smedegaard et al. (2017) states that risk factors were identified in the younger age group of 30-39 years and therefore CR should have a specific focus on this age group to reduce detachment from employment. The prospective cohort study on the cumulative effect of unemployment on risk for AMI, demonstrated that exposure to unemployment was a significant risk factor for AMI (Dupre, George, Liu, & Petersen, 2012). Thus, inferring that unemployment after AMI can result in re-hospitalisation.

2.9 Policies regarding CVD

At the World Health Assembly in 2012, 194 WHO member states endorsed the global target to reduce non-communicable disease by 25% by 2025 with CR being the central strategy in addressing CVD risk factors (WHO, 2012). The WHO and its member states plan to help reduce the global burden of CVD through the provision of counselling and drug treatments for at least 50% of eligible people by the year 2025 (WHO, 2012).Working toward solutions for CVD has been in the pipeline for a number of years. The EquiFrame was developed in 2011 to (1) evaluate how policies were addressing the 21 Core Concepts of human rights and (2) how the policies supported the 12 vulnerable groups. South Africa was one of the participating countries and it was found that the policies that include ischaemic heart disease scored low in the quality of the policy and indicated that there is no equal opportunity for accessing healthcare for vulnerable groups (MacLachlan et al., 2012).

Healthcare 2030 plan

The UN sustainable development goals (SDGs) aim to reduce premature mortality from non-communicable diseases such as CVD by a third by the year 2030 (United Nations, 2019). Every country now has the responsibility to address this growing epidemic. In order to address the burden of disease in South Africa, the 2030 healthcare plan is focused on improving the wellness of communities and ensuring patient-centred quality care. The four pillars of the 2030 healthcare plan advocates for a 1) person-centred approach; 2) integrated provision of care (i.e., various health professionals working in a cohesive manner with the patient); 3) continuity of care (i.e., continued support for the patient and a life course perspective, meaning a holistic approach); and 4) continuing treatment for patients throughout their lives (not just once-off interactions). Through the 2030 healthcare plan, individuals with CVD should have better access to immediate rehabilitative care. With better rehabilitative programmes, individuals with CVD will have a better chance of restoring their worker role. (Western Cape Government News, 2013). Therefore, this study has the potential to play an important role in facilitating the mandate of the Healthcare 2030 Plan as its intervention programme is designed toward accessible rehabilitative services for individuals with CVD and enabling RTW.

2.10 Conclusion

CVD is estimated to have caused 1 million deaths in Sub-Saharan Africa in recent years and has added significantly to the global epidemic. In South Africa it is stated the 210 people die from heart disease daily. More men than women are affected, and CVD appears to be occurring in the 42-84 age category which is still within the working age years. The ICF model is encompassing of both the medical and social models of disability and therefore ideal for addressing the CVD epidemic. In conjunction with the ICF framework, the MOOSE contributes practical guidelines to finding solutions for more successful RTW for individuals with CVD. Studies show that CR programmes have significantly positive impacts on individuals with CVD and in relation to this study they have encouraging effects on RTW. However, CR is not readily available in the Western Cape and studies reveal that the uptake of CR is still low even when available. Occupational therapists play an integral role in the MDT team for CR as the profession has a unique perspective on occupational performance.

Work participation is associated with better overall health. Disease and lifestyle management in conjunction with favourable employment are facilitators for successful RTW. However, functional limitations, psychological and cognitive deficits as a result of the CVD can hinder RTW. The WHO has committed to reducing non-communicable diseases such as CVD by 25% by 2025 by addressing CVD risk factors. In line with the WHO, the South African Healthcare Plan 2030 is focused on addressing the CVD epidemic through access to immediate rehabilitative care. Through this study, information regarding RTW for individuals with CVD in the Western Cape, South Africa, is a contribution made to the growing body of knowledge that could benefit CVD individuals locally and internationally where there are similarities in context.

CHAPTER 3: METHODOLOGY

3.1 Overview

Chapter three describes the methodological process followed in order to achieve the objectives. Below is an overview of the aim of the study, research questions, objectives and research setting. Furthermore, comprehensive details regarding the research design, study population and sampling, methodological framework, phases of data collection and analysis are captured. Lastly, the reliability, validity and rigour for the study are detailed with the ethical considerations taken during this study.

3.2 Aim of the study, research questions and objectives

As mentioned in chapter one, the aim of the study was to design a RTW intervention programme for individuals with CVD after a cardiac incident. In order to design this programme, the researcher first needed to establish the RTW rate after participants completed a cardiac rehabilitation programme. Pertinent information regarding impairments, limitations and participation, as well as socio-demographic information was key to understanding the participants experiences. Facilitators and barriers of RTW, as described by the participants would guide the design process, in conjunction with the findings of effective strategies used in other intervention programmes.

3.3 Research setting

The Western Cape provided the setting for the study. Being the fourth largest of the nine provinces in South Africa, it is located in the south-western part of the country (Stats SA, 2012). It has a population of 5.8 million people. Results of the last conducted South African census reported the racial distribution in the Western Cape is 49% Coloured, 33% Black, 17% White and 1% Indian. Afrikaans, IsiXhosa and English are the dominant languages spoken in the Western Cape (Stats SA, 2012).

In the Western Cape there are 428 public primary care facilities, 32 district hospitals, 6 regional hospitals and 3 tertiary hospitals. Victoria Hospital Wynberg (VHW) is a district hospital situated in the Wynberg area. It services the suburbs of Wynberg, Hout Bay, Phillipi, Mitchell's Plain, Masiphumelele and Simon's Town. It is known for its high standard of care and sees an average of 330 outpatients a day and 3000 emergency patients a month. VHW is currently the only public health facility that offers a CR programme. All patients admitted to the hospital

with a MI, are stabilised. Further medical management is determined by the doctors. The patient will be managed in the ward by the nursing staff and/ or transferred to Groote Schuur Hospital for an angiogram. If any procedures are required as determined by the results of the angiogram, it will be performed at Groote Schuur Hospital. The patient will be transported back to VWH when the procedure is done and cared for at VHW until discharge. Before discharge, all MI patients are given a pamphlet with information on MI, medication, exercise and ADLs that are safe to do. All patients with MI are referred for CR. At this stage other CVD are not included in this CR programme. The CR programme at VHW is an education-based programme, aimed at lifestyle modification. Weekly talks are arranged in a three-week cycle, which focuses on education on the use of medication, healthy eating, graded exercise that can be done at home and participation in activities of daily living, as well as psychological aspects that can arise after a cardiac incident. The programme is facilitated by the occupational therapist and physiotherapist. Talks by consultant physicians and dieticians are included in the programme.

3.4 Research design: **Explanatory sequential design**

An explanatory sequential design was applied in this study. The intention of the explanatory sequential design was to begin with quantitative data collection and then proceed to using a qualitative finding to explain the quantitative results. It is understood that the quantitative data will provide the researcher with a general overview of the research question and therefore for more specific analysis to refine the information, the qualitative data is used (Subedi, 2016). The advantages of the mixed methods research are that it strengthens result finding, provides a more thorough understanding of the research problem and can aid the development of more context-specific instruments (Mixed methods research, 2016). However, this design method is time-consuming and can be complicated in the different stages (Hanson, Creswell, Plano-Clark, Petska, & Creswell 2005).

The procedure that was followed, commenced with the collection and analysis of the quantitative data. This was followed by the examination of the results to determine: (a) what results needed further exploration in the second qualitative strand and, (b) what questions to ask the participants in the qualitative strand. Thereafter qualitative data collection and analysis took place to help explain the quantitative results. This was followed by a scoping review in to gather information on strategies and methods used in programme implementation and lastly a Delphi study was conducted when designing the programme.

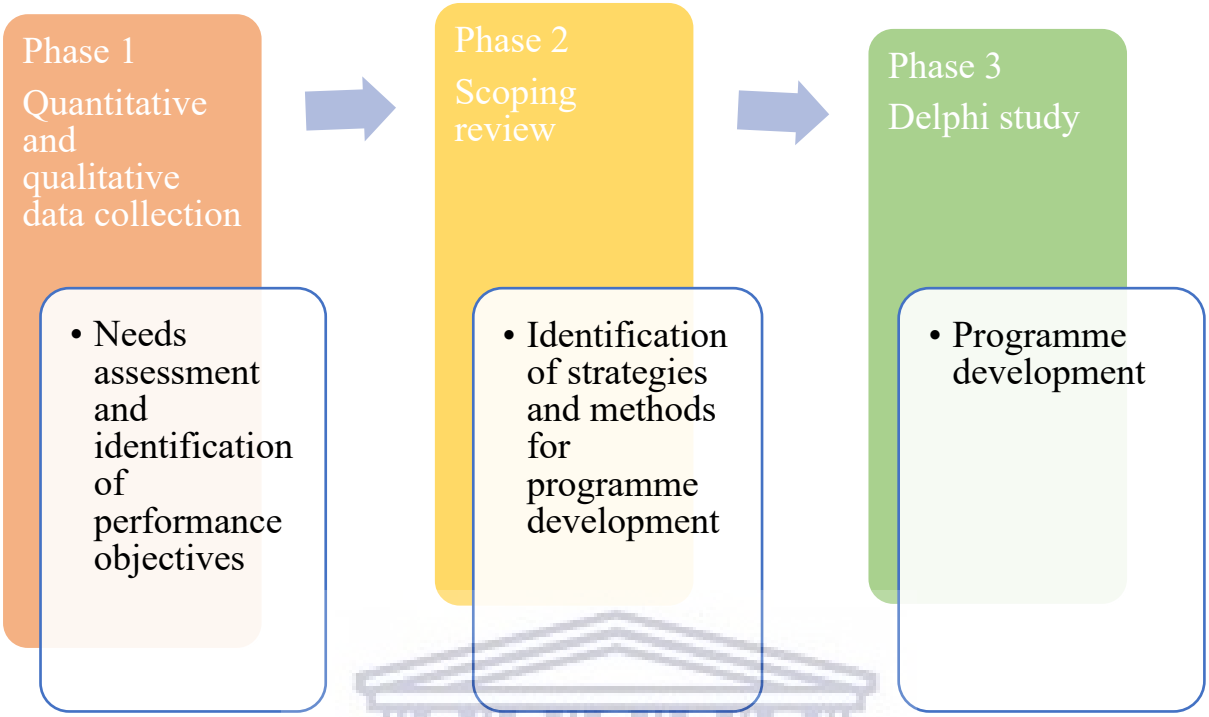


Figure 3.1: Methodological framework of the study

3.5 Methodology for the quantitative data collection

3.5.1 Study population and sampling technique

The sampling technique utilised in this study was convenient sampling. Convenient sampling is the technique used when participants are selected because of their convenient accessibility (Maree, 2007). A convenient sample was selected at the data collection site, Victoria Hospital Wynberg. This type of sampling was suited for the study as all the participants between the age of 18 years and 64 years who attended the CR programme were eligible to be selected as part of the sample. This sampling strategy was utilised in order to answer objectives one and two. The calculation of the sample was based on the Yamane Formulae which is determined by: *n= sample size, N= population size and e= the error of five percentage points.*

$$n = \frac{N}{1 + N(e)^2}$$

The Yamane Formulae is appropriate for this study as it has a finite population, of which the size of the population is known. The Yamane formulae assumes a normal distribution.

Statistics available have indicated that an average of 72 patients complete the cardiac rehabilitation programme over a 12-month period.

$n = 72/ 1 + 72(.05)^2$

With a confidence level of 95% and p= 0.05, the formula yields a sample size of 61 participants. This study however, used 63 participants. It could be argued that the results could be generalisable to the entire population that is commonly seen at Victoria Hospital because after 63 interviews the sample was saturated as no new information came through.

3.5.2 Design

Cross-sectional surveys were used to determine prevalence, which is an important aspect of research as it influences the predictive value of the investigation (Mann, 2003). A survey can produce quantifiable data that can be analysed statistically in order to predict behaviours and relations (Garbarino & Holland, 2009). During a cross-sectional survey only one group is used for data collection at one point in time and multiple outcomes can be studied, thus making this form of investigation appropriate for this study (Mann, 2003). For this part of the study information regarding RTW and degree of impairment was collected through a survey, from the cardiac rehabilitation participants at the hospital over a one-year period.

3.5.3 Data collection instrument

The Work Rehabilitation Questionnaire (WORQ) was used to ascertain the information needed to fulfil the first and second objectives (Appendix 4). The purpose of the WORQ as an instrument is to assess work functioning in individuals participating in a vocational rehabilitation programme. It can be administered at any point within the continuum of the RTW process and can be used with any health condition. It is aimed at gaining a fast, yet comprehensive overview of the functional problems experienced during the RTW process. The questionnaire is made up if two parts, part one being the sociodemographic and background

information and part two a functional impairment section, comprising various health characteristics. The sociodemographic and health characteristics are described through the ICF core sets. Ninety of the core sets have been included, namely, forty activities and participation items, thirty-three environmental items and seventeen body function items.

In the study conducted by Finger, Escorpizo, Bostan and De Bie (2014), to identify the psychometric evidence for the use of the WORQ as a valuable instrument, they concluded that the WORQ showed a high test-retest reliability and good internal consistency. Psychometric properties of the WORQ were discussed in Finger et al. (2014) as well as in Bergamaschi, Escorpizo, Staubli, and Finger (2014). Finger et al. (2014) reported WORQ to have a high level of internal consistency (Cronbachs alpha=0.88) and interlinker agreement (kappa=0.82). The WORQ also exhibit acceptable levels of test retest reliability (r= 0.79) and good face, content and criterion validity.

For the purpose of this study, the WORQ could be used in its English form as all participants were able to converse adequately in English. This questionnaire was completed through self-administration when face-to-face appointments were possible, as well as an interview questionnaire when done telephonically. This instrument provided information regarding how many individuals RTW after their cardiac incident (objective one), as well as socio-demographic factors (gender, age, marital status and education level) and impairments experienced after the cardiac incident (objective two).

3.5.4 Data collection procedure

3.5.4.1 Time frame

The pilot study was conducted over a two-month period between October and November 2017. Data collection for the study was conducted over a one-year period from January to December 2018.

3.5.4.2 Administration of the questionnaire

The researcher liaised with the head of department of internal medicine at the research site to get approval and gain access to contact information of participants in the CR programme.

Contact information for eligible participants was provided by the records department of the hospital.

The pilot study was completed with six participants to determine the practicability of the tool and outcome measure when used with the bigger sample. The participants were contacted telephonically or by face-to-face interviews and it was found that they were able to understand and appropriately complete the questionnaire through both means of communication with the researcher. As some questions required more explanation it was found that interviews were better than self-administration of the questionnaire. No changes to the questionnaire were necessitated. The pilot study also gave the researcher an idea of the time frame required for administration of each questionnaire. It was determined that a maximum of twenty was required per survey. The researcher and the researcher supervisor were satisfied with the results of the pilot study and proceeded to commence with the main study.

Eligible participants were contacted either telephonically or face to face after the last CR session at the research site. Information sheets describing the study and consent forms were provided for those interested in participating in the study (Appendices 2 and 3). Once consent was obtained, the researcher administered the surveys. Face-to-face interviews took place either at VHW occupational therapy department or at the researcher's private office. Telephonic interviews were conducted from the researcher's private office. Questions that some participants chose not to answer were considered as incomplete surveys and were not included in the final sample. Incomplete surveys can result in bias of overall results (Gitlin, n.d.) and therefore were not included.

3.5.4.3 Quantitative data analysis

The IBM SPSS software (version 25) was used to analyse, manage and generate descriptive statistics. The IBM SPSS software package is a well-established program used for batched and non-batched statistical analysis within health sciences research. Measures of central tendency, frequency and percentages for the variables describing rate of RTW were calculated. Binary logistical regression was used to explore the participant's level of impairment and socio-demographic factors affecting RTW after the cardiac incident. The level of significance accepted in this study was $p = 0.05$.

3.5.4.4 Description of dependent and independent variables

The independent variables selected for this study were acquired directly for the WORQ survey. The socio-demographic variables included age, sex, civil status and level of education. Work and health-related variables from part two of the questionnaire were collated to calculate an impairment score. RTW status was captured as the dependent variable. Return to work status is described as the resumption of work in the open labour market, including formal employment, informal employment and self-employment. This was captured through a yes or no answer regarding return to work after participating in a cardiac rehabilitation programme. Furthermore, the capacity of RTW included full-time work, part-time work, changes in work type or adaptation to accommodate cardiac condition.

3.5.4.5 Univariate/ descriptive statistics

To summarise sociodemographic, work and health characteristics in relation to RTW ability, descriptive statistics of central tendency, frequency and percentages were used. Summary statistics of key independent variables were also calculated.

3.5.4.6 Bivariate analysis

Pearson's Chi-square test:

In order to assess the association between the independent variables (age, gender, civil status, level of education, degree of impairment) and dependent variable (RTW status) Chi-square was conducted. Chi-square is a test of association used to explore if there is a relationship between categorical variables. It measures the goodness of fit as it looks at how well the observed data fits in with the distribution that is expected if the variables are independent. Significance level was set at $p \leq 0.05$. Variables that were statistically significant (with a p value that is less than or equal to 0.05) were further explored in the qualitative phase of the study.

3.5.4.7 Binary logistical regression

Logistic regression is used when the dependent variable is dichotomous for the purpose of predictive analysis and is not dependent on normal distribution of data. The descriptive data is used to explain the relationship between one dependent binary variable and one or more nominal/ ordinal independent variable.

Thus, to determine the variables that influence the ability to RTW for participants with cardiac conditions, binary logistical regression was conducted. For the purpose of this study the probability of RTW after a cardiac incident was projected based on participants socio-demographics, work- and health-related characteristics. The four socio-demographic variables were age, gender, civil status and level of education. The work, health and activity restriction characteristics that formed the impairment score was derived from part 2 of the WORQ, of which 37 questions from of the following ICF categories: body functions, activities and participation and environmental factors, were used. This study's sample of n=63 could support the binary logistical regression analysis with a 95% confidence interval.

3.6. Methodology for the qualitative data collection

3.6.1 Study population and sample

The sampling technique utilised in the qualitative strand of the study was also convenient sampling, at the data collection site. This type of sampling was suited for the study as all the participants who attended the CR programme were eligible to be selected as part of the sample. Ten participants who were willing and available were selected from the sample of 63 for the semi-structured interviews to help determine the impact of impairment and socio-demographics factors on an individual's ability to return to work, as well as the barriers and facilitators in the process.

3.6.2 Design

The intention of the explanatory sequential design is to begin with quantitative data collection and then proceed to using qualitative data in order to explain the quantitative results.

The procedure for this design commenced with the collection and analysis of the quantitative data. This was followed by examination of the results of the quantitative analysis to determine: (a) what results need further exploration in the second qualitative strand and (b) what questions to ask participants in the qualitative strand. Thereafter, qualitative data collection took place and analysis in the second phase to help explain the quantitative results. Finally, the researcher drew inferences about how the qualitative results explain the quantitative results (Creswell, 2015).

3.6.3 Data collection methods and procedure

The interview schedules were predetermined and facilitated the line of enquiry. The researcher needs to be focused and observant to the responses in order to identify new emerging themes that are related to the study (Maree, 2007). When using this technique, the researcher should encourage the participant to offer information actively and drive the discussion. (Ulin, Robinson, & Tolley, 2005). In this study at least one semi-structured interview was conducted with each one of the 10 participants and these interviews were continued until no further new themes or patterns emerged and data saturation occurred. The themes that consistently emerged were 1) Cardiac conditions negatively affects function; 2) Education on one's medical condition enhances insight; 3) Return to work; 4) Participation in ADLs enhances one's activity levels; and 5) Being unemployed.

The semi-structured interviews allowed the researcher to obtain depth and detailed information about the barriers and facilitators related to RTW. The quantitative findings of the study provided the researcher with guiding probes for the semi-structured interviews. The semi-structured interviews questions were the following:

1. Can you describe any challenges/problems that you experienced after the cardiac incident?
2. Can you describe the challenges that you experienced when returning to work after the cardiac incident?
3. Can you describe the factors that have helped you in the work environment?
4. What processes did you follow when returning/adapting to your worker role?

5. What suggestions do you have to enable other cardiac patients to better adapt to their worker role?

6. Could you describe the coping strategies that you have used to enable your return to work?

7. Describe the strategies that could be used in order to improve an individual's ability to find employment.

The interviews were audiotaped during face-to-face interviews which took place at the VHW occupational therapy department or the researcher's private office, as well as during telephonic interviews. Interviews varied between one hour and one and a half hours. The researcher also utilised a reflective journal.

3.6.4 Data management

Research data management refers to the organisation of data from the inception of the research project, through the collection of raw data until the final results are archived, (Whyte & Tedds, 2011). The five principles applied in data management are: formatting, cross referral, indexing, abstracting and pagination, which allows for systematic storage and retrieval of information (Huberman & Miles, 1994). The researcher conducted all interviews and transcribed it verbatim. This ensured proper management of the data and facilitated an active role for the researcher to play, immersing herself in the process. The raw data, the audio-recording of the semi-structured interviews, transcriptions and the reflective journal was stored on a password protected computer that only the researcher and supervisor had access to.

3.6.5 Data saturation and data analysis

When doing qualitative data analysis, the researcher must explore participant's perceptions, attitudes, understanding, knowledge, values, feelings and experiences in order to try and construct the phenomenon (Maree, 2007).

In this study Tesch's eight steps of data analysis guided the analysing of the data. Tesch believes that data analysis is an eclectic process (Tesch, 1990).

The process commenced with the researcher reading through all the transcripts, noting down ideas that were emerging. This was proceeded by the selection of one interviewee's transcript at a time to extract meaning from the information. This resulted in similar topics being grouped together. Abbreviating the topics as codes, with the codes being noted next to the appropriate segment of text. The organised data led to new categories and codes emerging. Descriptive wording for the topics was used to develop categories. The abbreviation of each category and codes were arranged alphabetically. Preliminary analysis was performed with each information from each category. The process concluded with the data being recorded.

3.6.6 Trustworthiness and rigour

Guba's Model of Trustworthiness of Qualitative Research, adapted by Kreftling (1991), formed the foundation of the trustworthiness for this study. The four basic criteria according to the model are truth-value, (credibility) applicability, consistency and neutrality. *Truth value*, according to Kreftling (1991) refers to the truthfulness of reporting the results emerging from a research project. Credibility in this study was assessed through member checking, triangulation, interviewing techniques and reflexivity by using an audiotape to record interviews with participants and transcribing the audio recordings verbatim. Member checking was done by verifying the findings with the research participants for validation or amendments if needed. A summary of the findings was sent to each participant via WhatsApp which was the medium available to all participants, for comment or agreement. The researcher practised reflexivity by documenting and discussing personal bias that may influence the research process through discussions with the supervisor and the use of a reflective journal. The use of a reflective journal also enabled the researcher to gain a better understanding of the research topic and participant responses. *Applicability* according to Guba (1981) was referred to as 'fittingness' of a study. Through adequate description of the study population, research methods, context, participants and their lived experience, comparison and applicability in similar context was sought. *Consistency,* Krefting (1991) reports that dependability is the principle used to assess consistency. In this study consistency was achieved through peer debriefing and detailed description of the research methods. A detailed description of the different phases of the study used by the researcher concerning exploratory and descriptive research was provided. The proposal for the study was approved by the Higher Degrees and Ethics Committee of the University of The Western Cape. Furthermore, the researcher also

presented her finding of the study to her supervisors. *Neutrality* implies that findings of the study were exclusively derived from the participants and not from any other bias or perspective (Guba 1981). The researcher used member checking and reflexivity to achieve neutrality.

3.7 Methodology for the scoping review

This phase of the study focused on reviewing literature that explored RTW strategies, models and programmes. The purpose of the scoping review was to map key concepts relating to the research area, through examining the sources and evidence available (Mays, Roberst, & Popay, 2001). A scoping review addresses broader topics where many different study designs may be applicable. Four common reasons why a scoping review is beneficial are: to examine the extent, range and nature of research activity, to determine the need to undertake a full systematic review, to summarise and disseminate research findings and to identify research gaps in the existing literature (Arksey & O'Malley, 2005).

Stages in conducting a scoping review include 1) identifying the research question, 2) identifying relevant studies, 3) study selection, 4) charting the data and 5) collating, summarising and reporting the results.

The question that guided the review was to determine which strategies are used to facilitate RTW of individuals diagnosed with CVD. The information would be obtained from existing literature. The scoping review question gave rise to core terminology which aided theoretical clarity in the scoping review process. This facilitated the forming of key search terms, as well as inclusion and exclusion criteria.

3.7.1 Study population and sampling

Research studies that included samples of individuals with CVD constituted the study population for the scoping review. Articles published within the last decade (2009-2019) were given priority, with a focus on RTW strategies or vocational/work rehabilitation programmes (interventions, protocols, guidelines, etc) for individuals with CVD. The following inclusion and exclusion criteria were used:

3.7.1.1 Inclusion criteria

The researcher included all full-text articles written in English including qualitative and quantitative research studies that focused on cardiac rehabilitation programmes, the designing and implementation thereof, as well as its challenges and benefits. Studies published in peer-reviewed journals in the last decade (2009-2019) were prioritised above publications from other sources, however, the articles selected for the scoping review was not limited to those years of publication.

3.7.1.2 Exclusion criteria

Articles that were excluded were those published in a language other than English or required payment for reviewing.

3.7.2 Data collection process

The process of data collection for this phase of the study consisted of three phases, namely: 1) key concepts and search terms, 2) database identification, and 3) search process.

3.7.2.1 Key concepts and search terms

The key concepts utilised in this study were cardiovascular disease (CVD), return to work (RTW), vocational rehabilitation (VR), intervention development. Definitions for these key concepts are described below.

Cardiovascular disease (CVD)

Cardiovascular disease (CVD) refers to disease of the heart and of the blood vessels. Two common consequences of CVD are myocardial infarction (MI) and congestive heart failure (CHF). MI is diagnosed when the arteries of the heart become too narrow or a clot forms, thus restricting blood supply to the heart muscle. This results in the heart muscles being deprived of oxygen, causing death to a segment of the muscle and subsequently unable to pump

sufficient blood to the rest of the body (Fourie, 2007). Congestive heart failure is a clinical syndrome diagnosed when the heart is unable to pump sufficient blood to accommodate the needs of the body (Thornhill, Lyons, Nouwen, & Lip, 2008). The researcher included studies that focused on either MI, CHF or both.

Return to work (RTW)

Return to work (RTW) can be defined as the returning to a formal or informal means of employment after a period of injury or illness (Return to work, n.d.). RTW is essentially the outcome measure for vocational rehabilitation programmes. Synonymous with the term RTW, return to employment, work resumption, employment/work status were also used in the search process.

Cardiac rehabilitation programmes

The World Health Organisation defined cardiac rehabilitation in 1993 as being the activities that positively influence the underlying causes of the disease so that individuals may preserve, or resume their lives within communities (WHO, 1993).

Cardiovascular rehabilitation programmes aim to improve cardiovascular health after myocardial infarction, congestive heart failure, angioplasty or heart surgery. The main components of the rehabilitation programme are exercise counselling and training, education for heart healthy living and counselling to reduce stress. The search terms used to conceptualise cardiac rehabilitation programmes were CR programmes, vocational rehabilitation, work rehabilitation and work re-integration. The researcher included studies under these terms that included rehabilitation addressing CVD and the factors that would enable the return to work process.

Intervention development

Intervention refers to a systematic process to remediate or prevent a problem (Intervention, 2007). Therefore, the concept of intervention development refers to protocols or processes

developed specifically for the RTW of individuals with CVD. The terms programme, strategies and treatment were also used.

3.7.2.2 General search strategies

Databases used in this study focused on social science research, healthcare intervention research and the topic of the current research study. In consultation with a librarian, nine research databases were identified to achieve the scoping review objective. The databases were 1) Cochrane Library, 2) Ebscohost (Academic Search Complete; CINAHL; Health Source), 3) MEDLINE, 4) PsychArticle and 5) Ovid (AMED; EMBASE; PsycINFO).

3.7.2.3 Search process

The key terms and its synonyms were each searched in the nine databases as either a keyword or medical subject heading. Boolean connectors "OR', "AND" and "NOT" were used to separate potentially relevant articles. The database searches were executed in March-April 2019. No time frames were specified upon initial search. Full-text articles available in English post January 2009 were reviewed first. Relevant articles published earlier were included if the information was pertinent. Target searches for grey literature were included. The Google search engine and websites of agencies that fund or conduct knowledge synthesis were explored.

Preliminary searches were performed, using the inclusion and exclusion criteria in each of the databases and websites, as the initial screening of literature. The search strategy was then refined based on appropriate terms used in the databases. Following the completion of the database searches an excel spreadsheet was created with titles, authors, year of publication and abstract.

Independent assessment of the research abstracts was done by the researcher and research supervisor in order to select the most relevant articles which could answer the scoping review question. This ensured credibility for the sorting of articles. Once the full-text articles were retrieved the process was repeated by the researcher and research supervisor and a more critical

selection of articles was done to extract articles that describes interventions that aided RTW. A similar procedure was followed to acquire the grey literature. The literature search was supplemented by scanning the reference lists (reference mining) and contacting methodological experts in each field, until no new studies met the inclusion criteria.

3.7.3 Data abstraction/Extraction and charting

A data extraction sheet (Appendix 6) was used to capture research articles and grey literature describing interventions used for RTW intervention for individuals with CVD. The TIDieR checklist and guide (Hoffman et al., 2014) guided the preliminary extraction process. This was also used in a trial process to determine consistency in the research question and the purpose of the review. A final data extraction sheet was agreed upon in consultation with the research supervisor. This process facilitated the analysis process of the interventions described in the literature.

3.7.4 Data synthesis /Analysis

A descriptive numerical summary and thematic analysis (Peter et al., 2015) was applied. The descriptive summary contained demographic characteristics of the study (year of publication, sample size, study design) and thematic analysis involved a meta-synthesis of identified RTW intervention strategies used with CVD individuals. The thematic analysis was guided by the ICF framework.

3.8 Methodology for the Delphi process

For this study, an e-Delphi was used to gather information to develop a RTW intervention programme for individuals with CVD. According to Green (2014), the e-Delphi technique is a communication structure that generates critical examination and discussion. Furthermore Green (2014) states that the Delphi technique aids in the formulation of guidelines, standards, and in predicting trends. The e-Delphi has given rise to communication amongst experts that are able to engage online, in their own time and from anywhere in the world (Msibi, Mogale, De Waal, & Ngcobo, 2018). Experts in both the fields of CR and VR that are either practising professionals or working in academia, were selected. The e-Delphi facilitates the sourcing of a

wide range of opinions, which reduces the element of bias and was therefore an appropriate technique for this study. Within this e-Delphi process, the researcher used evidence from previous phases of the study as outlined by the Intervention Mapping (IM) protocol together with opinions from the experts as expressed in the first round of the Delphi and then subsequent feedback in more controlled second and third rounds. The design and conceptualisation of the RTW programme developed from this process. An overview of the methodological process for the e-Delphi is outlined in figure 3.1.

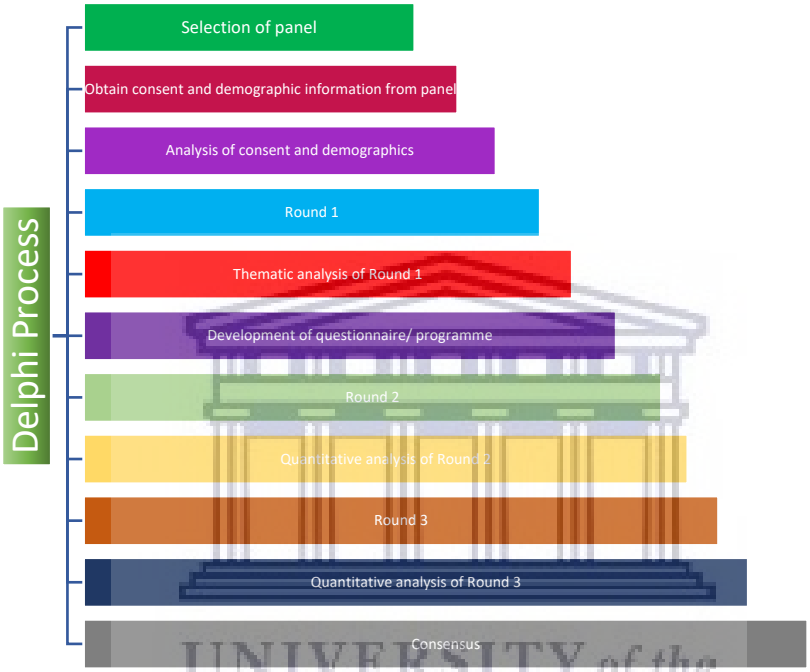


Figure 3.2: Delphi process

3.8.1 Delphi rounds

The Delphi is an iterative process which entails initial feedback, collation of feedback, followed by the distribution of collated feedback for further review by an expert panel until consensus is reached (Green, 2014). This study consisted of three rounds in the Delphi process. It spanned over a three-month period. Consensus was reached at the end of the third round.

3.8.2 Selection of experts

According to Avella (2016) the Delphi experts should be diverse, and the researcher should identify the panel through scholarly publications, as well as practitioners in the field of interest. Furthermore Avella (2016) states that identified experts should have an interest in the topic, have time available to dedicate to panel activities and be articulate in written positions. For this study scholarly publications were used to identify experts and professional practitioners in the fields of both CR and VR were identified. The panel included occupational therapists, physiotherapists, an occupational health doctor, RTW coordinators and rehabilitation researchers. This selection allowed the researcher to capture diverse knowledge from different contexts around the world.

3.8.3 Procedure/process

An invitation to participate was sent to 20 identified experts via email. Some experts were sought through a network of practising clinicians in South Africa and others through publications in the field of cardiac rehabilitation or vocational rehabilitation. One of the experts forwarded the invitation, with the researcher's permission, to other experts in the field with publications on the topic. An information sheet (Appendix 6) accompanied the invitation. Twelve experts initially consented to participate, however, two recused themselves due to work strains caused by the Covid-19 pandemic. A questionnaire (Appendix 7) to acquire demographic details of the experts and round one of the Delphi questions followed. The demographic questions sought information regarding age, gender, highest qualification, country of practice, current position/ occupation, year of experience, years of experience in CR/VR and role in CVD management. Questionnaires for round two and three subsequently followed (Appendices 8 and 9). Consent forms, the demographic questionnaire and three Delphi surveys were designed using Google forms and administered online using the email addresses of the panellists.

The questions posed to the experts in the first round were open ended, seeking opinions on implementation strategies and essential elements of a RTW programme for individuals with CVD. These questions can be viewed in Appendix 8. At the end of four weeks 10 experts responded and the results were then triangulated with findings from previous phases of the

study. The initial concept map developed into a draft RTW programme which was then presented to the experts in round two of the Delphi.

The second round consisted of questions the experts were requested to rate according to a degree of agreement on the draft RTW intervention programme. A three-point scale was used with 0-agree, 2-indifferent and 3-disagree. Delphi consensus is considered to be typically set at 70% in agreement (Vernon, 2009). This study applied the 70% rule for agreement, with a higher number indicating level of importance and appropriateness of the intervention component. Additional information that the experts felt should be considered in the designing to this programme was also requested.

The third round was developed from questions that did not receive a minimum of 70% consensus in the second round. Revisions were made based on the percentage of agreement and the additional comments made by the experts. On this survey, experts were requested to choose between two options and 70% or above consensus was applied in this study.

3.8.4 Data analysis

The Delphi survey presented both qualitative and quantitative results, therefore measures of central tendency was applied to quantitative data and thematic analysis was applied to qualitative data. The first round offered qualitative data which was analysed thematically into categories and subsequently into themes, which informed the initial drafting of the return to work programme. The second and third round responses were presented descriptively and presented using means of central tendency. This provided statistical information needed by the researcher to draft the final intervention programme. Below, the results of each Delphi round as well as the process of drafting the intervention programme for the second round has been detailed.

3.9 Methodological framework of the study

Within the health sciences the application of theoretical frameworks is important for developing, evaluating and implementing intervention (Campbell et al., 2014). The

intervention mapping (IM) framework by Eldredge, Markham, Ruiter, Kok and Parcel (2016) was used to guide the data collection process. The purpose of intervention mapping is to provide a framework for effective decision making in the phases of planning, implementation and evaluation (Eldredge et al., 2016). The framework employs an ecological procedure to assess and intervene in health and community participation through the development of theories and evidence-based programmes (Eldredge et al., 2016). This was key in the process of achieving the objectives of the study. There are two core components to this framework, namely 1) the use of appropriate theories and evidence and, 2) a social ecological approach.

The IM framework is underpinned by the application of appropriate theories and evidence as one of its core components. In conjunction with theories is the appropriate use of evidence, which Eldredge et al. (2016) refers to as scientific literature and stakeholders' opinions and experiences.

The ecological approach has two levels of dimension, the individual micro level and the structural macro level. This is seen to influence human health and quality of life. The IM framework which is based on the ecological approach incorporates a more social ecological approach whereby health is recognised as a function of the interaction between individual and his/her environment (Eldredge et al., 2016). The individual is made up of biological, psychological and behavioural attributes. The environment includes social, physical, institutional and cultural aspects. It is believed that multiple interactions could occur across levels and it is through these interactions that interventions to promote health can be implemented.

There are six fundamental steps in the IM framework that are dynamic and allow for moving back and forth between steps, as required. The steps are, 1) Analysis of health problems through needs assessment; 2) Identification of outcome and performance objectives; 3) Identifying and selecting theory-based methods as well as practical strategies through the appraisal of existing literature that is relevant; 4) Creation of an organised programme plan; 5) Creation of an adoption and implementation plan and 6) Evaluation of programme plan. The IM framework was applied to this study as it presented the researcher with a guide to developing a RTW intervention programme that is theoretically sound and ecologically applicable. This study applied the first four steps of the IM framework in the development of the RTW intervention programme for individuals with CVD after a cardiac incident.

The summary of the methodological approach using the IM framework is presented in table 3.1. The first and second steps combined, aimed to determine the RTW rate after cardiac rehabilitation as well as determinants of RTW. The third and fourth steps were conducted separately. The finding of each phase was used to inform the next phase. In total the study comprised three phases, each with its own methodological features namely, Phase 1) mixed methods study, Phase 2) scoping review and, Phase 3) Delphi survey.

Table 3.1: Summary of the methodological approach of the study using the Intervention Mapping Framework

Research Question	**Objective**	**Research Approach and Design**	**Data Collection Instrument**	**Sample**
1. What is the return to work rate of individuals with CVD after a cardiac incident, in the Western Cape?	To determine the RTW rates of individuals with CVD after a cardiac incident	Quantitative	Cross-sectional survey using the WORQ-SR	*Participant-cardiac patients from Victoria Hospital's cardiac rehabilitation programme. Using the Yamane formula, a sample 61 participants are required.*
2. What are the impairments, limitation in activities, participation restrictions and	To determine the impact of impairment, socio demographic and	Quantitative	Cross-sectional survey using the WORQ-SR	*Participant-cardiac patients from Victoria Hospital's cardiac rehabilitation*

socio-demographic factors that individuals with CVD experience when returning to work, in the Western Cape?	environmental factors on an individual's ability to return to work after a cardiac incident.			*programme. Using the Yamane formula, a sample 61 participants are required.*
3. What influences the resumption of the worker role for individuals with CVD in the Western Cape?	To determine and explore the barriers and facilitators of RTW for individuals with CVD after a cardiac incident	Qualitative	Semi-structured interview	*10 participants taken form the above sample*
4. What effective intervention strategies are used in returning individuals with CVD to work after a cardiac incident?	To conduct a scoping review to identify the components of RTW interventions for returning individuals with CVD to their worker role after a cardiac incident.	Quantitative (frequency of methods) and Qualitative content analysis of the methods)	Scoping review	All full text articles written in English including qualitative and quantitative research studies that focused on cardiac rehabilitation programmes, the designing and implementation

				thereof, as well as its challenges and benefits. Priority will be given to peer reviewed published articles in the last decade (2009-2019), however, the scoping review will not be limited to the year of publication.
5. What factors are needed to design and develop a successful return to work intervention programme for individuals with CVD in the Western Cape?	To design and develop a return to intervention programme for individuals with CVD after a cardiac incident.	Quantitative	Delphi- minimum of 10 participants from professional group. Practitioners and academics. International and local.	

3.10 Phases of data collection

3.10.1 Phase 1: Needs assessment and identification of performance objectives

3.10.1.1 Step 1: Needs assessment

According to the IM framework, the needs assessment determines the health problem. In this study it was the health problems associated with individuals with CVD after a cardiac incident. As a result of identifying these factors, the problem, its influence on functioning and determinants of RTW could be established. Through the use of the mixed methodology approach, information relating to RTW status, impairments, activity limitations and participation restrictions was obtained. This mixed-method approach uses multiple ways of exploring the research problem in order to thoroughly explore the data for enhancement of interpretation. Within the last decade this approach has proven to be valuable in social and human research as it is believed that a combination of the two methods leads to additional insights (Creswell, 2015).

The focus of mixed methodology is to gain an understanding of real-life contextual issues that have multi-level influences. The application of quantitative methods gives the researcher a better understanding of magnitude and frequency, while the qualitative methods renders meaning and the understanding of constructs (Creswell, Klassen, Plano Clark, & Smith, 2011). The use of mixed methodology in biomedical and health research is respected as the complementary strength of each approach can yield greater insights into complex phenomena. (Curry et al., 2013). The quantitative results were derived from a cross-sectional survey and the qualitative phase used semi-structured interviews to gain insights.

3.10.1.2 Step 2: Identification of performance objectives

The focus of the second step was to identify elements that must change through intervention. Performance objectives that could facilitate the change at the individual and societal level were identified in this step. The cross-sectional survey used in step 1 helped determine health-related and work characteristics. The qualitative interviews further explored RTW after a cardiac incident and when going through the CR programme. Modified concept mapping (CM) was used to identify qualitative concepts from the interviews. According to Kane and Trochim (2007) concept mapping is a structured methodology that forms a framework from the organisation of thoughts formed from a diverse group or organisation that can be used for planning. The CM structure consists of five stages, 1) an idea generation stage; 2) statement reduction stage; 3) a structuring phase where statements are sorted; 4) a rating stage where

statements are valued based on their importance and contribution to the study; and 5) an analysis phase which results in a concept map (Hackett et al., 2016). Thematic analysis was used to analyse the transcripts. The fourth and fifth chapters provide details of the methodological processes followed to gain insights into the performance objectives that needed to be addressed.

3.10.2 Phase II: Methods and strategies (IM step 3)

This phase is depicted by the third step of the IM. Within this phase theoretical methods and practical strategies applied in the field of CR was identified. For this study, a scoping review was done. The purpose of the scoping review is to map key concepts relating to the research area, through examining the sources and evidence available (Mays, Roberts, & Popay, 2001). A scoping review addresses broader topics where many different study designs may be applicable. Four common reasons why a scoping review is beneficial are: to examine the extent, range and nature of research activity, to determine the undertaking of a full systematic review, to summarise and disseminate research findings and to identify research gaps in the existing literature (Arksey & O'Malley, 2005).

Stages in conducting a scoping review include 1) identifying the research question, 2) identifying relevant studies, 3) study selection, 4) charting the data and 5) collating, summarising and reporting the results. Further details regarding the scoping review can be found in chapter 6.

3.10.3 Phase III: Programme development (IM step 4)

This step corresponds with the third phase of the study. Within this phase scope and sequence of intervention, completed programme resources and the programme protocol were formed. Stakeholders, decision makers and implementers of intervention play an active role with regard to the scope, themes and components of the programme. The e-Delphi survey was used to develop the structure for the intervention programme in conjunction with information from previous steps. The Delphi technique developed by Dalkey and Helmer (1963) is a widely accepted tool for converging knowledge solicited from experts within specific topic areas and using it to achieve many objectives such as the development of programmes (Hsu & Sandford, 2007). This study sought to use the e-Delphi technique, which utilised electronic

communication with experts, to gain a better understanding of the elements required within an intervention programme to safely restore the worker role for individuals who have experienced a cardiac incident. Experts were identified through practices of CR and VR (locally and internationally), as well as researchers in academia with an interest in the fields of CR or VR or both. Through the e-Delphi technique, consensus of ideas and opinions from professionals in the field of CR and vocational rehabilitation was obtained with rounds of questions. In the first round the experts were presented with open-ended questions pertaining to CR and VR. Information from the first round was then collated and synthesised. This resulted in the formulation of questions for round two which the experts then ranked, evaluated and commented on. The mean rank for each response was then calculated in order to come to consensus amongst the expert panel. The summary of the consensus was then sent back to the experts for further review in the third round. These reviews were repeated until consensus was reached concerning all issues. In this study, three rounds on the e-Delphi surveys were completed until agreement regarding the strategies for RTW after a cardiac incident was reached. Through this method the experts were able to provide input regarding the scope of the programme, its content, approaches and strategies. Chapter 7 further details the methodological procedure followed for the e-Delphi.

3.11 Ethical statement

The WHO (2011) ethical guidelines help promote ethical conduct of research, through the enhancement and protection of the rights of the research participants and communities. The World Medical Association Helsinki Declaration (2008) guided this study that involves human participants. These ethical guidelines provided internationally were applied particularly within the low- to middle-income countries such as South Africa (Van Delden & Van Der Graaf, 2017). Prior to participation in this study, participants gave their informed consent through a signature or verbally for telephonic surveys and interviews. Participants were informed of their right to stop participating in the study at any point, which preserved autonomy. Through safely storing audio interviews and transcription of data on a password-protected computer, confidentiality was guaranteed. Audiotaped recordings will be safeguarded for a period of two years before destroying them. Pseudonyms were used to ensure participants' anonymity in all documentation related to the study. Counselling was made available to participants who experienced distress during participation in the study. Participation was voluntary and participants were allowed to withdraw from the study at any stage. The researcher commenced with the study only after approval from the University of Western Cape's Research Ethics

Committee and the Department of Health (Western Cape) was obtained. Please see Appendix 1.

3.12 Summary of chapter

In this chapter the methodological framework of the study was described. The study was conducted with individuals who have completed cardiac rehabilitation as well as with health practitioners who were involved in the management and rehabilitation of individuals with cardiac conditions. Quantitative and qualitative methods of research enquiry were conducted through the use of cross-sectional surveys, semi-structured interviews and a scoping review. Experts in the field of cardiac rehabilitation, vocational rehabilitation and cardiology were surveyed to develop a RTW programme using an e-Delphi method. The subsequent chapters describe the various phases, methodologies and results in detail.

CHAPTER 4: QUANTITATIVE RESULTS AND DISCUSSION

4.1 Overview of the chapter

This chapter presents an overview of the methodology and details the results of the quantitative phase of the study, which aims to answer the first two objectives of the study. The first objective was to determine the RTW rate of individuals with CVD after a cardiac incident. The second objective was to determine the impact of impairment and socio-demographics on the individual's ability to RTW. A cross-sectional survey, namely the work rehabilitation questionnaire (WORQ) was used to gather the information. The IBM SPSS software (version 25) was used to manage the statistical analysis. Cardiac rehabilitation participants between the ages of 18 and 64 years made up a sample of 63. Within the sample, 27 women and 36 men were represented with reference to their socio-demographic factors and degree of impairment. The methodological rigour precedes a representation of the results after statistical analysis. Reported findings is summarised in text, table and graphs, concluding with the predictors to RTW and factors associated with it.

4.2 Methodology

All participants were patients of VHW, who were admitted due to a cardiac incident between 2017 and 2018. Each participant was referred to CR as an outpatient. The sampling technique utilised in this study was convenient sampling. A convenient sample was utilised at the data collection site, to all patients attending CR. The advantage of using this sampling technique is that it is inexpensive, and results can be sorted quickly. However, there is a risk of the sample not being representative (Maree, 2007). This study yielded a sample of 63 participants. Cross-sectional surveys in form of the WORQ were used to achieve objective one of determining the RTW rate after participation in the cardiac rehabilitation programme. Furthermore, the survey provided information regarding gender, age, marital status, education level and an impairment score. After a trial that took place in two months, the researcher collected data over a one-year period. Data was collected through face-to-face interview and telephonically. The IBM SPSS software was used to conduct measurements of central tendency, frequencies and percentages of variables. Levels of significance were determined through binary logistic regression analysis and Pearson's Chi-square test was used to determine the association between the independent

variables and dependant variables. A comprehensive description of the methodology used for the quantitative phase can be found in chapter three.

4.3 Results

The results of the quantitative study detail the description of the study population, looking closely at the demographics and clinical characteristic of the study sample. Furthermore, it highlights the participants' responses to the WORQ questionnaire, which helped determine the RTW rate, factors associated with RTW and the work characteristics of the study sample.

4.3.1 Description of the study population

The population for this quantitative phase of the study comprised individuals attending the CR programme at the research site, Victoria Hospital Wynberg (VHW) in the Western Cape. VHW only accommodates patients residing in the southern suburbs, who have been admitted to the hospital as inpatients. Inclusion criteria for participation was an age of 18-64 years and active employment prior to the cardiac incident. Seventy-seven copies of the questionnaire were administered, however only 63 surveys were accepted for analysis. Fourteen surveys were incomplete and therefore voided.

4.3.2 Demographics and clinical characteristics of the study sample

The study sample comprised 27 female and 36 male participants, with a mean age of 54 years and a standard deviation of 5.95. Most (60.3%) of the participants in the sample were in the 51-60 year age group. Forty-two of the participants were married, 12 divorced, 7 never married, 1 widowed and 1 was cohabiting. The majority (73%) of participants had a secondary school education. Forty-two participants completed secondary school, with 8 graduates from college/university, 2 had completed post-graduate studies and 7 primary school only. All the participants had experienced a myocardial infarction (MI) between 2016 and 2018 and received medical and therapeutic intervention. Nineteen participants were receiving government support in the form of social grants. During admission, all patients received the first part of the cardiac rehabilitation process, which was educational reading material regarding their condition and precautions to take upon discharge. Once all the participants were discharged, they completed

a three-week cardiac rehabilitation programme as outpatients, as well as a self-administration course of cardiac medication.

Table 4.1: Demographics of the participants

Variable	n(63)	%
Gender		
Female	27	43
Male	36	57
Age (years)		
≤ 40	1	1.6
41-50	16	25.7
51-60	38	60.3
≤ 61	8	12.7
Marital status		
Single	7	11
Married	42	67
Divorced	12	19
Widowed	1	1.6
Co-habiting	1	1.6
Education level		
Primary school	7	11
Secondary School	46	73
Tertiary	8	13

Postgraduate	2	3
Received medical or therapeutic intervention		
Yes	63	100
No	0	0
Government support		
Yes	19	30
No	44	70

4.3.3 Participants response to the WORQ

4.3.3.1 Summary statistics of the RTW rate

Results of the bivariate analysis conducted to determine the RTW rate of individuals with CVD (objective one of this study), yielded the following results:

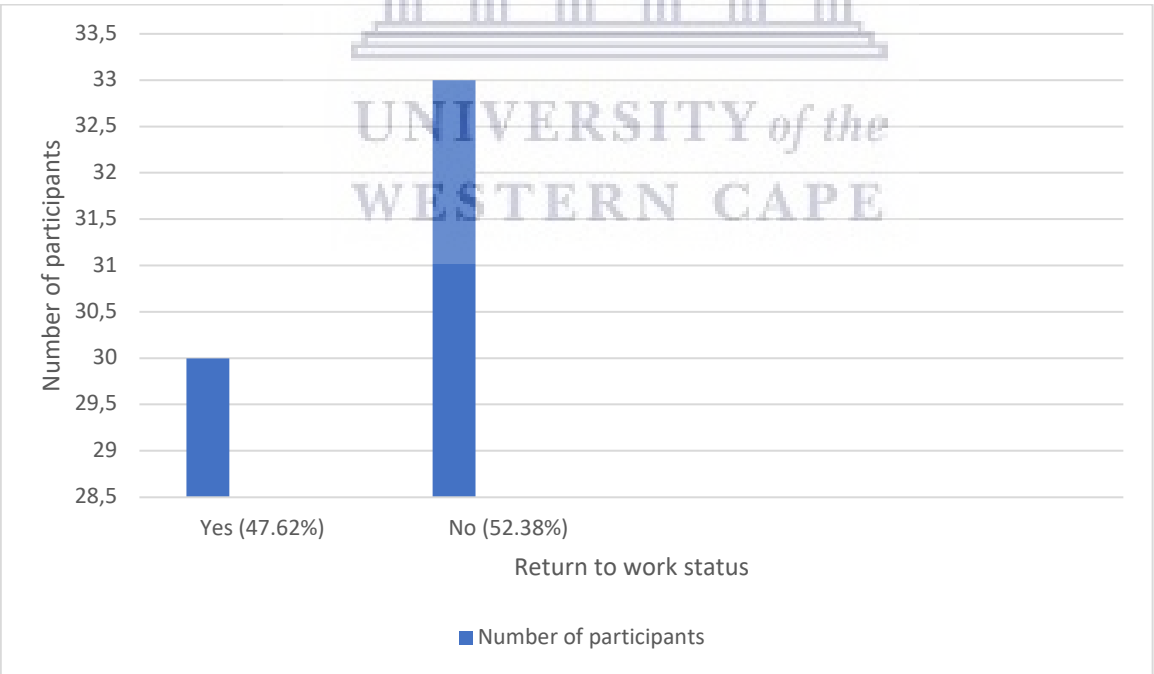


Figure 4.1: Rate of return to work

Only 30 (47.6%) of the participants reported RTW successfully after cardiac rehabilitation and 33 (52.4%) of participants did not RTW, as indicated through answering of questions four and five in the WORQ questionnaire.

Information regarding work characteristics were also obtained from the survey. Participants were either self-employed or employed in the formal private sector or public service or were homemakers. Pre and post classification of work was captured. Changes were noted at most levels of classification, except the one person doing heavy duty work. Many participants (90.5%) indicated that their families were supportive, which was a necessary factor for successful RTW. While less than half (33.3%) reported that their employers/colleagues were supportive upon RTW after the cardiac incident. Sixteen (25.4%) participants indicated that they wanted to change jobs.

Table 4.2: Work characteristics

Variable	n(63)	%
Pre-injury classification		
Sedentary	14	22.2
Light	35	55.5
Medium	11	17.5
Heavy	2	3.2
Unemployed	1	1.6
Current work classification		
Sedentary	11	17.5
Light	24	38.1
Medium	5	7.9
Heavy	2	3.2

Unemployed	21	33.3
Supportive families		
Yes	57	90.5
No	4	6.3
Not applicable	2	3.2
Supportive employer/colleague		
Yes	21	33.3
No	5	8
Not employed	37	58.7
Want to change jobs		
Yes	16	25.4
No	13	20.6
Not applicable	34	54

4.3.3.2 Factors associated with return to work

Logistic regression was performed to determine the participant's ability to RTW and each of their socio-demographic, work and health characteristics were analysed using Pearson Chi-square test, with a significant p-value that is equal to or lower than 0.05.

The model contained five independent variables. Three of the socio-demographic variables, namely civil status, education level and gender had no significant association with ability to RTW. From the logistic regression it was found that age ($p \leq 0.004$) and impairment score ($p \leq 0.034$) were significant in influencing RTW.

Table 4.3: Logistic regression of socio-demographic factors and impairment score

Variable	p-value
Gender	0.088
Age (years)	**0.004***
Marital status	0.465
Education level	0.693
Impairment score	**0.034***

***statistical significance**

4.3.3.2.1 Age

From the logistic regression it was understood that the older you get the less likely you are to return to work after a cardiac incident. Most of the participants in the study sample were in the 57-year-old age group. The second highest number of participants were found in the 56-year-old and 58-year-old age groups. More participants in the 57-year-old age group did not RTW than those who did RTW. All the 56-year-old participants did not RTW. An equal amount of 58-year-old participants RTW and did not RTW. All participants 44 years and under returned to work. Figure 4.2 represents the age groups that did RTW and did not RTW. Age is represented by how many individuals in specific age groups returned to work and how many did not.

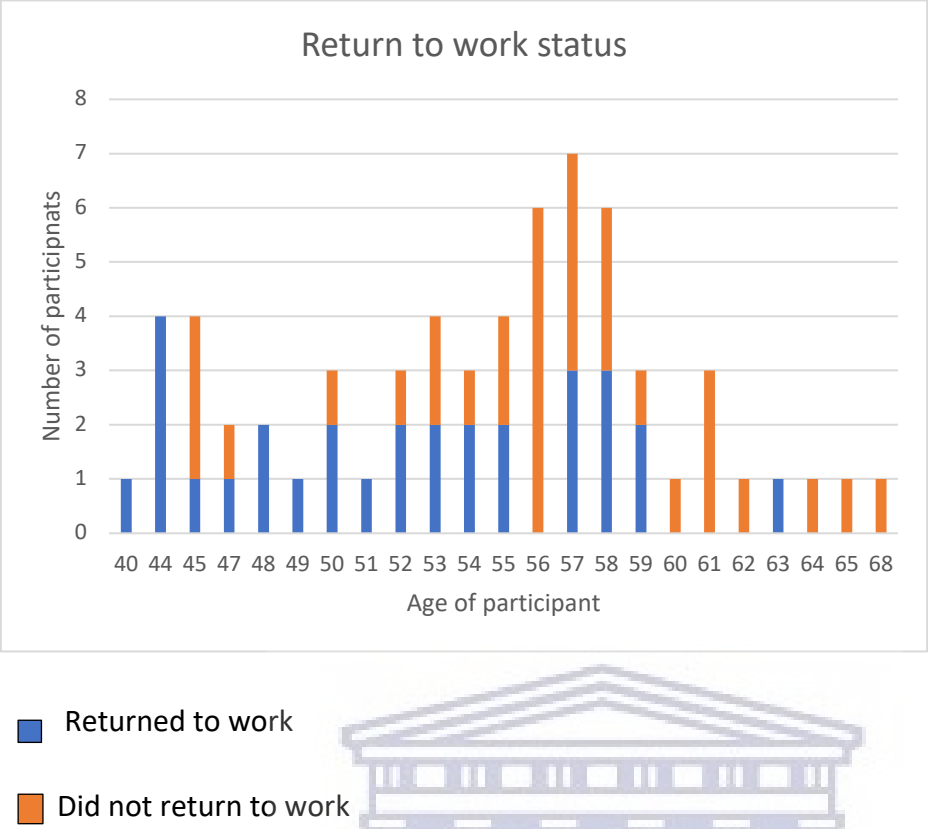


Figure 4.2: Age in relation to return to work

4.3.3.2.2 Impairments and activity restrictions of study sample

A collective score from part two of the WORQ survey was calculated in order to obtain an impairment score. The survey found the impairment score to have a p-value of p=0.034, which informed the researcher that if you experience a higher degree of impairment, the less likely you are to return to work successfully. As mentioned previously, the ICF core sets that make up part two of the WORQ are body functions and activities and participation. Participants scored their impairment and restriction degree according to the Likert scale (1-10).

Sixteen categories of body function are represented in the WORQ and figure 4.3 below details responses that scored 8-10 on the Likert scale for each category. Problems related to sleep, body aches and pains and endurance rated amongst the highest in the participant responses.

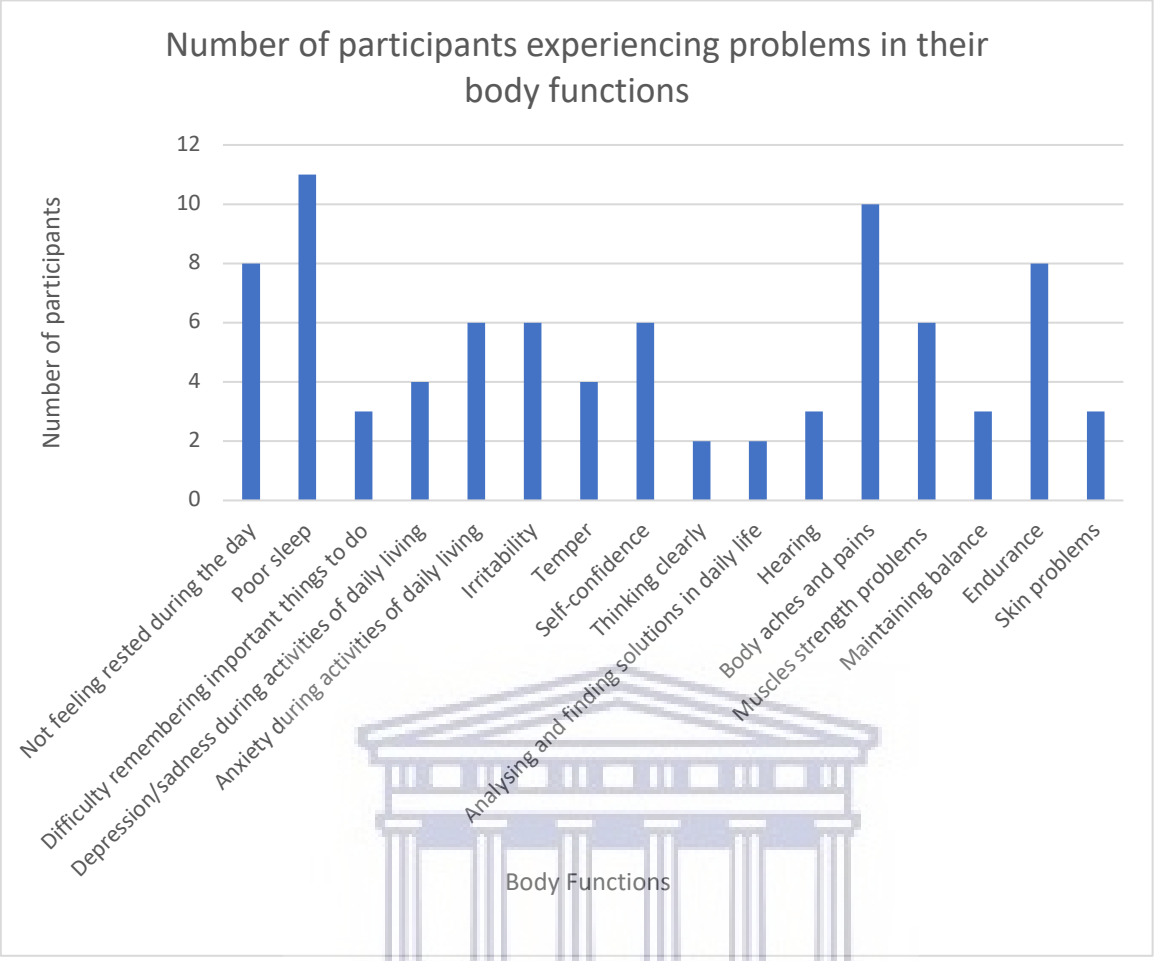


Figure 4.3: Number of participants experiencing problems in their body functions

Twenty-one categories of activities and participation are represented in the WORQ and figure 4.4 details responses that scored 8-10 on the Likert scale for each category. Lifting items more than 5 kg, walking more than a kilometre and crawling, climbing or running were identified as some of the most difficult activities to participate. All of the participants found it challenging (in varying degrees) to participate in work activities, due to affected body functions or affected activities and participation or both.

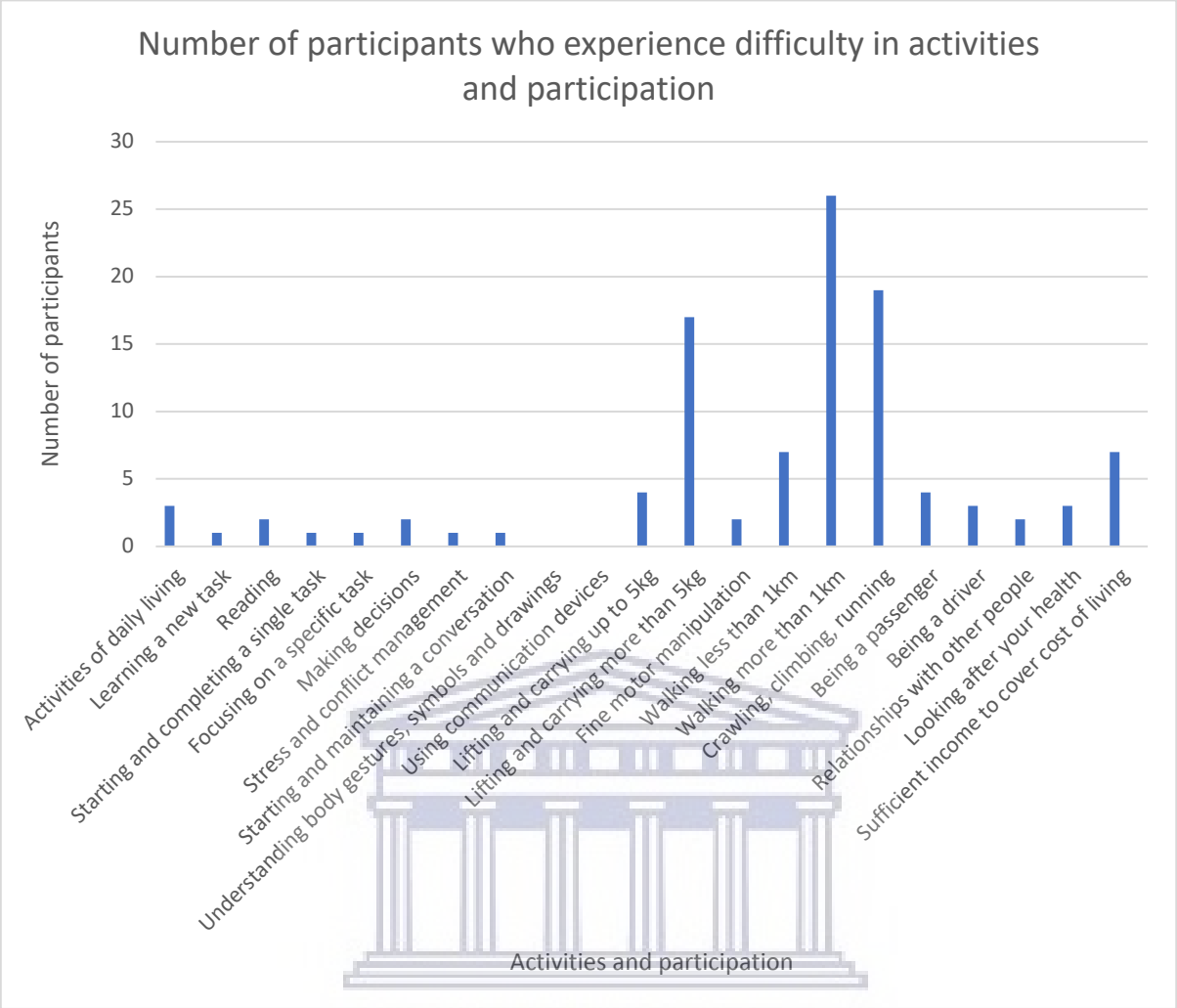


Figure 4.4: Number of participants experiencing problems in their activities and participation

4.4 Discussion

Results of the quantitative phase of this study emphasised that more than half of the participants did not RTW, despite having had cardiac rehabilitation. Factors that significantly impacted on the participants' ability to RTW were age and impairment score.

Return to work rate after a cardiac incident

The survey established that the RTW rate for this group of participants was only 47.6%. Similarly, in the study examining factors associated with return to work after acute myocardial

infarction in China, it was found that almost half of previously employed Chinese patients did not return to work within 12 months of the incident, with the researchers stating that CR availability was low and quality of rehabilitation poor (Jiang et al., 2018). Within this study context all survey participants had attended CR, which raises questions about the quality of the programme. Contrary, to the latter and the current study, a Malaysian study that predicted return to work after a cardiac event, reported that after participating in a CR programme the prevalence of RTW was 66.1% and that a focus on mental health during CR may improve the RTW of these individuals (Mustafah, Kasim, Isa, Hanapiah, & Abdul-Latief, 2017). Even more inspiring, in a Danish nationwide register follow-up study, 76.6% of patients RTW by the median time of 4 months post incidence; however, in Denmark all citizens have access to education and social benefits that contributed positively (Kragholm et al., 2015). This yields the belief that RTW after a cardiac incident can be increased successfully, taking lessons from other programmes and applying it context appropriately.

Socio-demographic factors that impact RTW after cardiac incident

-Age

As reported from the quantitative results, the older you get, the less likely it is for you to return to work after a cardiac incident. Similarly, in an Italian review on the return to work after an acute cardiac incident, it was found that several studies reported that older age was an adverse factor for RTW (Fiabane, Omodeo, Argentero, Candura, & Giorgi, 2014). Jiang et al. (2018), in a more recent study in China, indicated that this notion of being older is still a negative factor for RTW.

In another Danish study exploring the RTW and subsequent detachment from employment after myocardial infarction, it was also found that the 60-65-year-old age group were at the highest risk of detachment from employment. Second to this age group was the youngest age group of 30-39 years, while their analysis reported that the 40-49-year-old age group had the lowest risk of detachment from employment (Smedegaard et al., 2017). This study is similar as all participants under the age of 44 years, RTW. Furthermore, the Smedegaard et al. (2017) study stated that within the 50-59-year-old age group, 51.7% of participants did not RTW and 48.3% of the participants did RTW. This age group's statistics are very similar to the results of

the current study with the mean age being 54 years and the rate of RTW being 47.62% and 52.38 % of participants not returning to work.

In a study on the transition to retirement and the risk of CVD, it was found that there was an elevated risk of CVD during the first year of retirement (Moon, Glymour, Subramanian, Avendano, & Kawachi, 2012). In this study many participants still within the working age group in the 50-59-year-old category, were found to not RTW even though they were many years away from retirement. Therefore, early retirement should be discouraged and RTW in a safe manner encouraged, despite the CVD diagnosis.

-Gender

As reported in the finding of the quantitative results, in this context, gender did not play a significant role in determining RTW after a cardiac event. However, in the review of Fiabane et al. (2014) it was found that studies reported women to be at greater risk of not returning to work and that married women, in particular, were discouraged. The studies of Kragholm et al. (2015) and Jiang et al. (2018) also stated that gender (i.e., males) were significantly associated with successful RTW. Within the context of this study, being located in a suburb where women are often forced to work in order to support or contribute towards the household, is a possible reason for the insignificance.

-Marital status

In this study 67% of the participants were married; however, marital status was not a significant factor in the RTW of this study population. Similarly, the systematic review of Cancelliere et al. (2016) on factors affecting RTW after injury or illness, revealed that marital status had no association. Contrary, Dreyer et al. (2016) postulates that being married, having a professional or clerical job and having no prior coronary problems were seen as more likely to RTW successfully.

-Education level

This study also reported that educational level was not a significant factor. Contrary to these results the Italian review found that with a higher educational level and higher socio-professional category supported RTW, while blue collar workers were more at risk of not returning to work (Fiabane et al., 2014). Similarly, the prospective cohort study on predicting return to work after acute myocardial infarction found that socio-occupational factors such as self-employment, higher educational level and lower levels of depression, were predictors of RTW (Stendardo et al., 2018). The study by Smedegaard et al. (2017) on employment after myocardial infarction also found that higher education was associated with successful RTW but only for men, not women. In this study, participants' education level ranged from primary school to post-graduate level, with a majority of the study population having secondary education, however no significance was found. This could be related to the fact that blue collar work is dominant in South Africa due to education levels being lower than developed countries such as the studies mentioned above.

Impact of impairment score on RTW after cardiac incident

According to the Farlex Medical Dictionary (2012), the WHO defines impairment as a psychological, physiological or anatomical loss in function.

Impairment in this study was classified according to the ICF functional domains of (1) body functions and body structures, (2) activities and (3) participation. Body functions describe the physiological functioning of the body. The body structures refer to the anatomical parts of the body and organs. Activities and participation describe the execution of a task or action by an individual or involvement in a life situation (WHO 2001). This study's calculated impairment score of p=0.034, proved to be a significant contributor to not returning to work. The higher the degree of impairment, the more likely it was for the individual to not RTW. Impaired cardiac functioning was reported to have an impact on various aspects of body functions and activities and participation which collectively affected the participants' ability and motivation to RTW.

In a study that compared young men and women returning to work after AMI, it was found that 63% of those not returning to work could be attributed to deteriorating health from impairments (Dreyer et al., 2016). In another study that compared differences between younger

and older adults with multiple conditions, it was found that individuals with comorbidities were more likely to report impairments related to CVD (Adams, 2017). Thus, the degree of impairment must be established at the initial point of assessment and addressed within rehabilitation for it not to have such a negative influence on RTW.

Work characteristic factors that influence RTW after cardiac incident

The type of work the individual is returning to, needs to be addressed early on in the rehabilitation process so that more individuals have the opportunity to prepare for RTW, regardless of the type of work they do. In this study, work ranged from sedentary to heavy classifications of work. Sedentary work refers to work that involves sitting, some standing and walking with minimal lifting. Light work requires walking, standing, some pushing and pulling objects of about 5 kg. Medium work involved frequent lifting or carrying objects up to 25 kg. Lastly, heavy work is defined as frequent lifting and carrying of objects up to 50 kg (Dictionary of occupational titles, n.d.). Grace et al. (2016) notes that it is imperative to discuss timing of the return to work of clients and that consideration should be given to the family's financial situation, as well as the work characteristics.

Within this study participants worked in offices doing clerical work to heavy work that involved carrying concrete slabs. Pre-injury work classification in the survey indicated that the majority (55.5%) of the participants were employed in light jobs. However, only 38.1% of participants returned to light jobs post cardiac incident. Interestingly the 3.2% of participants employed doing heavy work, returned to the same type of work. This necessitates further investigation regarding extrinsic factors to work classification that have an influence on RTW. Jiang et al. (2018) highlighted that long working hours and lack of overtime pay were contributing factors for not returning to work. These are possibly the type of extrinsic factors that have influenced the participants in this study.

4.5 Conclusion

The inference of these results suggests that factors associated with age and impairment and its influence on ability to RTW must be addressed more aggressively in cardiac rehabilitation programmes. The significance for an intervention programme being developed is that these variables must be part of an integrative CR programme which includes RTW preparation and strategies.

CHAPTER 5: QUALITATIVE FINDINGS AND DISCUSSION

5.1 Introduction

This chapter presents the findings of the qualitative phase of the study which aimed at exploring the impact of impairment, as well as barriers and facilitators upon RTW for individuals after a cardiac incident (objectives two and three). The methodological process is captured below to illustrate how data was collected, managed and analysed. Furthermore the chapter presents the findings as presented in five themes namely 1) Cardiac conditions negatively affects function: *"I get tired very quickly";* 2) Education on one's medical condition enhances insight: *"It's very important to understand your body and its signs";* 3) Return to work: *"I think I'm one of the lucky few";* 4) Participation in ADLs enhances one's activity levels: *"I don't have time for exercise";* and 5) Being unemployed: *"Now I don't have any income."*

5.2 Methodology

The sampling for the qualitative data collection was also convenient sampling. Ten participants from the quantitative sample were selected. Semi-structured interviews guided by pre-determined probing questions were conducted face-to-face and telephonically. The data was managed through audio-recording of the interviews and verbatim transcriptions done by the researcher. Tesch's (1990) eight steps of data analysis was used to determine emerging themes. Trustworthiness and rigour was established through the application of Guba's model of trustworthiness, as adapted by Kreftling (1991). A comprehensive description of the qualitative methodology was presented in chapter three.

5.3 Results

5.3.1 Demographic data of the participants

One individual semi-structured interview was completed with 10 participants from the CR programme. Their ages ranged between 39 and 56 years. Only one participant was under forty. Four participants were between the ages of forty and fifty, five between the ages of fifty and sixty and none above sixty years of age. Seven of the participants were men and three were

women. All of the participants were employed in a full-time capacity in the open labour market at the time of the cardiac incident. The primary diagnoses of seven participants were acute myocardial infarction (unspecified), two participants had acute transmural myocardial infarction of the anterior wall and one participant was diagnosed with an unstable angina. With regard to job characteristics, three were employed in sedentary classified jobs, 2 in light classified jobs and 5 in medium classified jobs. Consequently, seven returned to work and three did not. The length of time away from work after the cardiac incident varied, with one returning after three months, 3 returning after 1 month, 2 returning after 2 weeks and one returning after 1 week.

Table 5.1: Description of the demographics of participants for semi-structured interviews

P*	Age	Gender	Primary diagnosis description	Employment status at time of MI	Pre- MI occupation	Classification of occupation	RTW after MI
1	39	Male	Acute myocardial infarction, unspecified	Fulltime Employed	Manager of an automotive workshop	Light	1 week post MI
2	53	Male	Unstable angina	Fulltime Employed	Carpenter	Medium	1 month post MI
3	54	Male	Acute transmural myocardial infarction of anterior wall	Fulltime Employed	Architect	Sedentary	2 weeks post MI

4	40	Male	Acute myocardial infarction, unspecified	Fulltime Employed	Driver and warehouse tasks	Medium	1 month post MI
5	53	Female	Acute transmural myocardial infarction of anterior wall	Fulltime Self-Employed	Driver (PDP)	Sedentary	Did not RTW
6	52	Male	Acute myocardial infarction, unspecified	Fulltime Employed	Blockman	Medium	Did not RTW
7	45	Female	Acute myocardial infarction, unspecified	Fulltime Employed	Fundraising and marketing	Sedentary	1 month post MI
8	47	Male	Acute myocardial infarction, unspecified	Fulltime Employed	Paving and fencing	Medium	3 months post MI
9	45	Female	Acute myocardial	Fulltime	Food retail	Light	2 weeks post MI

			infarction, unspecified	Employed			
10	56	Male	Acute myocardial infarction, unspecified	Fulltime Employed	Fitter and turner	Medium	Did not RTW

P*- Participant

5.3.2 Emerging themes

The participants described the barriers and facilitators of their RTW process and the factors that were of critical importance in the resumption of the worker role or the result of unemployment. Themes 1 and 5 represent the barriers, while themes 2, 3 and 4 represent the facilitators of RTW. The five major themes as represented in the concept map are namely: 1) Cardiac conditions negatively affect function: *"I get tired very quickly";* 2) Education on one's medical condition enhances insight: *"It's very important to understand your body and its signs";* 3) Return to work: *"I think I'm one of the lucky few";* 4) Participation in ADLs enhances one's activity levels: *"I don't have time for exercise";* and 5) Being unemployed: *"Now I don't have any income."*

5.3.2.1 Cardiac conditions negatively affect function: *"I get tired very quickly."*

Theme:	Categories:
Cardiac conditions negatively affect function: *"I get tired very quickly*	• **An individual's cardiac condition limits his or her work ability** • **The cardiac condition causes an increase in anxiety and stress**

This theme represents the participants' physical and emotional journey after the cardiac incident and the change in their health and need to adapt in order to return to functional work activities. One participant despondently described this change of being when he said,

"...before I did all the work, now I have to manage and do less physical work and I have someone with me all the time." P2

This quote captures the sense of loss of former self and independence that was brought about by the cardiac event.

Another participant reflected on his abilities after the cardiac incident by saying,

"I definitely have to take things slower; I can't lift things like I used to." P4

This reflection describes the changes in functional abilities.

5.3.2.1.1 An individual's cardiac condition limits his or her work ability

After a cardiac incident, changes to one's health is not overtly apparent as many experienced no challenges performing bADLs. However, often the first sign of distress is when returning to work, the demands on the body and mind were aggravated. Most participants expressed that work performance was impacted on negatively as they could not execute job tasks in the same manner.

- **Returning to work was the first indication of the negative impact the cardiac condition had on the body**

Upon discharge from hospital, it was apparent that participants instinctively took things in their stride while at home recovering. Within the home environment the space and time to pursue functional activities was more optimal. However, when participants returned to work, they physically felt the effects of the cardiac incident.

Two of the participants described their experience by saying:

"*Once I went back to work, I tired more easily." P1*

"I'm short of breath and I can't work the way I use work…" P2

This was for most of the participants the first indication that changes in the work environment was eminent. When asked about challenges upon RTW, some expressed the following:

"Tiredness mostly … I definitely had to take things slower, I can't lift things like I use to." P4

"Well, I do events and include Sunday events, which requires working long hours and obviously that took its toll on me. I just couldn't work 15 hours a day. I can't work from the early hours of the morning till late at night. I was feeling very tired, it was draining." P7

"It is quite tiring with lifting of the heavy bowls and stuff. There's a lot of up and down and being on your feet the whole day. It is quite tiring, and I feel quite sleepy. More than usual." P9

- **The negative impact of the cardiac condition on an individual's work performance**

For some participants, the effects of the cardiac condition resulted in inability to resume previous work tasks and as a result they felt the negative connotations brought about in the South African work climate.

"I used to work at a butcher as a blockman. But now because of the heart problem I can't work anymore. The carrying of the meat is too much and in and out of the cold freezer is too much for me to handle." P6

"I couldn't do the work physically anymore and they couldn't get someone to help me." P2

5.3.2.1.2 The cardiac condition causes an increase in anxiety and stress

Anxiety that emerged as the fear of having another heart attack or losing one's job due to a change in work performance was very real. This had a significant impact on the participant's wellbeing and ability to adapt.

- **Anxiety of having another heart attack can be debilitating for individuals with cardiac conditions**

Some participants highlighted that the cardiac incident had as much of an emotional effect as it did a physical one. One participant pointed out:

"Once I came home, you know you tend to slow down, thinking that you know you don't want to experience another heart attack… So, as I said my physical condition was more determined by my mental condition." P3

As part of the CR process participants are encouraged to engage in exercise as part of the healing process, however this was a very daunting thought for one participant.

"I actually got my heart attack while I was on a treadmill… So now I'm a bit scared of the gym." P5

Another participant described with much frustration that anxiety has become part of her life.

"The only thing that I have been experiencing for the past year is that I get anxiety attacks…" P9

As a result of living with the anxiety, she felt that her cardiac condition has been impacted on negatively as it has a knock-on effect.

- **Fear of losing one's job causes an increase in stress**

For one participant, her inability to perform work tasks as she previously did, provoked much stress as she worried how this reflected on her ability to be an asset to the company.

"I didn't want them to think I was weak or damaged goods. And I stressed about the fact that I couldn't work as I did before and worried about being medically boarded." P7

For many working in South Africa, providing for one's family is the main priority and responsibility placed on the breadwinner, which often supersedes any health concerns. This results in individuals stressing about time away from work, which has an impact on healing time.

"Well, I have to provide for my family, so I had to go back to work." P4

5.3.2.2 Education on one's medical condition enhances insight: *"It's very important to understand your body and its signs."*

Theme:	**Categories:**
Education on one's medical condition enhances insight: *"It's very important to understand your body and it's signs."*	• **Understanding the cardiac condition** • **The cardiac rehabilitation programme's focus on understanding and adapting to changes after the cardiac incident facilitated the adaptation to the worker role**

The above theme represents the participants' responses to the educational component of the CR programme. It was well received as a facilitator toward positive lifestyle changes. One participant enthusiastically expressed that:

"…it was very helpful. I learnt how to change my diet and take things a bit easier, manage my stress and stop smoking." P5

The knowledge empowered the participants to make the necessary changes that led to lifestyle modification and successful adaptation.

5.3.2.2.1 Understanding the cardiac condition

Information about the body and how it works was not something known to most of the participants, regardless of their educational background. Therefore, gaining an understanding of basic human anatomy and physiology was necessary before cardiac conditions were explained. This formed a good foundation for adaptive responses and acceptance of their condition.

- **Learning about the body and cardiac conditions**

To the lay person understanding the complex functioning of the body, in particular the cardiovascular system, is vital when the expectation is that the individual has to change their previous form of functioning and must understand symptoms and causes for their cardiac condition. One participant expressed his eye-opening experience when hearing about this when he said:

"Firstly, they taught me about what the cause of the heart attack is and how it feels to have a heart attack. That was something I didn't know. How to prevent it, knowing the symptoms." P4

Knowledge being the most powerful tool to bring about change was illustrated when a participant said:

"Oh yes it was very helpful. They teach things like what to eat, because a lot of people don't know what cholesterol is and how you get it. That was very important for me because I never had a cholesterol problem or a BP (blood pressure) problem before, so I had to learn about managing it." P5

- **Learning about the heart helps with the acceptance of having the condition**

The symptoms that participants experienced while having the cardiac incident varied and often, they did not know the extent of damage to the heart. To prevent more catastrophic results and to bring about change in lifestyle, education played a significant role for many, as conveyed by the P7 when she said:

"I think that most people who have had a heart attack are in denial. For me it was definitely the case. The doctor actually had to sit me down and explain it to me… He brought the heart model out and explained things to me." P7

The one participant found the doctors medical information at one of the CR sessions very helpful in accepting her new self and she was of the opinion that information or insight from a psychologist would be helpful in adding to the CR programme.

5.3.2.2.2 The cardiac rehabilitation programme's focus on understanding and adapting to changes after the cardiac incident facilitated the adaptation to the worker role

The nature of the CR programme that the participants attended was educationally based. Thus, its focus revolved around functioning after a cardiac incident and was viewed as a preparatory measure for the longer term goal of returning to work.

- **Education about how one's abilities after the cardiac incident change and how this relates to work abilities**

Having a better understanding of what one's body can safely manage to do, helps in resuming the worker role and making the necessary adaptations. P1 felt that this was vital information for cardiac patients and said the following:

"I would say that the people returning to work also need to be informed of what the possibilities are or the shortcomings of the person who just had a cardiac incident might be because I was uneducated about what the physical shortcomings might be, and the next person may know less than I did. So, education for cardiac patients." P1

When asked how the education from CR could aid successful RTW, P10 said,

"I think being more observant of your body general health because obviously you realise that you are tiring much quicker than you normally do. So, for example if I am to sweep the house,

it's very tiring, even though it such a mundane job. So, you should become selective in the activities that you can do." P10

A self-employed survey participant commented that now that he understands his condition better, he can regulate his work and do it more safely.

- **Dietary changes, breathing techniques and other stress management techniques were integral to cardiac rehabilitation**

Practical and concrete advice rendered in CR were some of the first steps toward lifestyle modification as explained by P5:

"That was very helpful. So, for example, we were given a card from the dietician that shows you what to eat or buy and what not to eat and buy. It's recommended that we take this card with us shopping, so it small enough to fit in our wallets. We learned how to read the labels before we buy items. I learned a lot about how to eat better." P5

Learning the different stress management and breathing techniques and practising them during cardiac rehabilitation were useful and easy to implement outside of the therapeutic environment.

"I think the breathing one actually worked. That is something I would do." P1

"I have had to burn the mid[night] oil after the heart attack, but the focus has been to not be stressful or rather manage my stress better… It is key and that is one of the things that they highlighted at the cardiac rehab as well." P3

"You see there is some helpful information from there but the one thing that helped me the most is to learn how to calm down and rest." P6

A survey participant concurred when he expressed that work stress played a big role in his MI and that the CR sessions on stress management was very useful.

5.3.2.3 Return to work: *"I think I'm one of the lucky few."*

Theme:	**Categories:**
Return to work: *"I think I'm one of the lucky few."*	• **Work conditions that support the individual in the workplace after the cardiac incident** • **Reasonable accommodation in the workplace**

This theme is an illustration of how a supportive and adaptive work environment can aid the resumption of work successfully. One participant explained that his managers understood his work participation had to change, when he said,

"Yes, they do (understand). They fully support me. When I need to relax and take it slow then they understand." P4

5.3.2.3.1 Work conditions that support the individual in the workplace after the cardiac incident

Participants who were able to return to work successfully, all noted that supportive employers and colleagues that understood the cardiac condition, as well as the positive impact of attending the CR programme helped them to adapt to their worker role.

- **Employers and colleagues who had a better understanding of the medical condition aided the individual with the cardiac condition in returning to work**

Having an employer and colleagues that understands one's medical condition and the impact of work conditions, is a facilitator that participants felt supported their RTW.

"Yes, they were. They actually got me an assistant. I think I'm one of the lucky few. Now that I think about it… the conditions have changed. They actually did realise that it was a contributing factor to the heart attack. The stress, the hours and I have a huge portfolio and they realised that this was one of the reasons why I had the heart attack." P7

- **Employers that understood the importance of attending cardiac rehabilitation aided adapting and returning to the worker role.**

Absence or leave from work is mostly viewed as a luxury. However, when employers understood the impact that CR would have on participants' health, as well as work, they were more accommodating.

"Well, he allowed me to attend the rehab programme…that definitely helped. My boss was very accommodating." P1

"I first completed all my sessions (cardiac rehab), then I went back (to work)." P4

Another survey participant felt that her employer was very supportive and understanding, for allowing her the time to attend cardiac sessions during work hours, which helped her RTW successfully.

5.3.2.3.2 Reasonable accommodation in the workplace

Fundamentally when returning to work after a cardiac incident, one is not always able to resume the same pace of work and sometimes a change of task is necessitated. When this type of reasonable accommodation is possible and implemented, individuals with cardiac conditions transition back into their worker roles with ease.

- **Working at a pace that is safe for the cardiac condition**

With a better understanding of how the heart works it was easier to implement measures that still allowed participants to pursue work tasks.

When asked about adaptation of task to accommodate him upon RTW the one participant (P4) said,

"It wasn't really changed but I'm allowed to do things slower." P4

Changing one's mind-set played an integral role for a participant who in the past worked quickly at his tasks, as well as having an employer who understood that tasks may not be done at the same time frames any longer.

"I am doing things differently. I am actually trying to work slower. So normally I try to work to just get the work early done so that I can get home but now it takes a bit longer because I try to slow things a bit down." P8

- **Changing work tasks enables the adaptation to the worker role**

When returning to work it is vital that one is realistic about the demands that specific tasks will have on the body and mind and employers that can make adjustments to tasks, aid successful RTW and ultimately the retention of the worker role for participants.

"Doing lighter jobs now because I can't do the heavy work… now I have to manage more and do less physical work." P2

"...he tried to streamline the work so that there is less physical strain on myself… And even sharing tasks divided the stress amongst those who work in the office." P1

5.3.2.4 Participation in ADLs enhances one's activity levels: *"I don't have time for exercise."*

Theme:	**Categories:**
Participation in ADLs enhances one's activity levels: *"I don't have time for exercise."*	• **Participation in bADLs was the first step toward becoming active** • **Graded physical activities positively influenced their adaptation to their medical condition**

Theme four represents the process participants pursued toward more active lifestyles after the cardiac incident. A participant illustrated his process of returning to functional activity by saying,

"I sort of eased into the daily routine after about two weeks." P3

This revealed that participation in ADLs, being integral to life, was an important phase in returning to function.

5.3.2.4.1 Participation in bADLs was the first step toward becoming active

Participating in bADLs is often done without much thought as it comprises activities that one has to perform daily, which provides a platform to use one's physiological capacities. The participation in bADLs was also enhanced by the use of cardiac medication.

- **bADLs provided the motivation to engage in occupations after the cardiac incident**

During hospitalisation, participation in bADLs is very limited and therefore for many participants when they returned home it was their first time engaging in functional activity after the cardiac incident. That first engagement is crucial in initiating return to function and provided many with the stepping-stones to pursue more.

"When I got home, I showered and did everything else, and it wasn't too much of a problem." P3

"I could still bath and dress but had to do things very slowly with lots of resting." P6

- **The use of cardiac medication aided participation in bADLs**

Compliance to cardiac medication is key to better cardiac function, which in turn enables better function in other areas of life. This was evident when participants expressed:

"Since I have been on that medication, it did help a lot" P8

"I felt good with the medication, so it was fine at home." P9

5.3.2.4.2 Graded physical activities positively influenced their adaptation to their medical condition

Exercise can be described as an activity that requires physiological capacities and may be in the form of prescribed exercise, work tasks or leisure. Many of the participants exclaimed that their work was very physical, and this replaced a need to exercise. Participants also found more incentive in leisure pursuits that were physically demanding than prescribed exercise regimes.

- **Participation in work activities were seen as a form of exercise**

Other survey participants, who were homemakers, felt that the work they did in the home and playing with children kept them active and therefore exercise was not a priority.

A number of survey participants commented that their jobs involved walking, carrying and lifting, which kept them active.

- **Leisure activities were more appealing to participate in than exercise in order to keep active**

Survey participants enjoyed activities such as gardening, walking the dog and carpentry, instead of exercise and felt that it was better.

5.3.2.5 Being unemployed: *"Now I don't have any income."*

Theme:	Categories:
Being unemployed: *"Now I don't have any income."*	• **Legal requirements and its effect related to having a cardiac condition** • **Process of applying for a disability grant**

The above theme represents the barriers experienced after the cardiac incident when participants were not able to return to work. One participant said that,

"The doctor said that I was medically unfit to work but I don't receive a disability grant, so now it's very difficult financially." P10

Without any form of income, there tends to be a knock-on effect of the financial constraints experienced and this spirals into occupational dysfunction.

5.3.2.5.1 Legal requirements and its effect related to having a cardiac condition

In some instances, participants were not able to return to work, either due to their condition or as a result of the amount of time off work for recovery from the cardiac event. In South Africa you only qualify for a temporary disability grant if you are not able to work for a period of 12 months. This time frame does apply to many recovering from a cardiac event. Recovery time can vary from 2 weeks to 3 months. In this time of recovery some participants lost their jobs, as sick leave for extended time was not available, while others had to endure great financial strain as they had no income during this time.

- **When returning to work at the time of cardiac incident is not possible**

The law in South Africa has regulations that aim to protect all that could be affected by certain events. One participant (P5) did not have the opportunity to explore what other work options she could have pursued, and the law prevented her from returning to her previous job. However, she was one of the fortunate few with a cardiac condition, to qualify for a disability grant.

"I had a PDP license but now I know I won't qualify now. It's dangerous because you can get a heart attack behind the wheel, then what about the passengers… I now receive a disability grant." P5

P6 is one of the participants who has experienced very severe consequences due to financial constraints. He was unable to retain his work after having a heart attack. As a result, he cannot afford to get to the clinic for his medication and therefore his cardiac function is growing weak. He believes that with some financial assistance from government, he can ultimately return to work as access to medication can better his cardiac function.

"Now I don't have any income. I am supposed to get my tablets every month, but I can't afford to get to the clinic so now I don't take tablets and my heart is not doing well… maybe getting a grant at least then I pay transport to get to the clinic to get my tablets to go for my appointments. Maybe if I take my tablets my heart will be better and then I can work." P6

- **The general time out of work after cardiac incident is too short to apply for a temporary disability grant**

To qualify for a temporary disability grant in South Africa, one needs to be incapacitated for a period longer than six months. After a cardiac incident recovery can vary but often for those who can return safely to work, the rehabilitation period is less than six months. This does not however mean that the amount of time away from work is sanctioned by employers as sick leave. Often this results in a loss of income or loss of job.

A survey participant mentioned that he lost his job as he was home for a month after admission for an MI. Many survey participants could only return to work after a month or more and felt the financial pressures during that time. Some choose to return earlier than a month as they needed to earn an income and did not have jobs that paid for sick days.

5.3.2.5.2 Process of applying for a disability grant

There appears to be misinformation and a lack of information regarding the process of applying for a disability grant, which has resulted in confusion for some participants and inconsistencies in the decision-making processes.

- **Inconsistency in the assessment of the disability grant process**

Disability grants in South Africa are administered through the South African Social Security Agency (SASSA). A doctor for the agency should do an assessment and a medical report will be generated either granting a temporary or permanent disability grant. Sometimes further assessments from occupational therapists are requested before a decision is made.

Within the CR sessions, information regarding disability grants and the process to follow when applying for one was not covered. This left one participant (P8) very confused and anxious and prompted him to ask one of the attending doctors. The response was atypical as illustrated below:

"I asked the doctor, explain to him what type of work I do, asking him if it was safe for me to go back to work. He just said that after the rehab it was fine, but I was scared." P8

P8's work involves lifting pavers of 30-40 kg each and working with heavy poles that need to be erected.

Another participant working in the private sector, who also approached an attending doctor at cardiac rehabilitation was given a different response, albeit atypical as well.

P10, does not receive a disability grant and was not referred for an assessment.

"I didn't go back to work. I was medically unfit to do that work… The doctor actually said so." P10

- **Information regarding applying for a disability grant**

Lack of information regarding the process of applying for a disability grant from both health professionals and patients is apparent as demonstrated by participant (P6):

"I have been trying (to find out) at the Mitchell's Plain office but there the doctor couldn't give me an answer." P6

A number of survey participants asked the interviewer how to go about applying for a disability grant as they could not get the information at their clinics and it was not covered during the CR programme.

5.4 Discussion

As mentioned in the methodology chapter, with an explanatory sequential design, the qualitative data is used to explain the quantitative findings. Semi-structured interviews were conducted to explore the barriers and facilitators that contributed toward RTW. Emergent themes from the interviews revolved around facilitators of RTW *(education on condition, participation in bADLs and iADLs, supportive colleagues and employers, reasonable accommodation and attending CR),* and barriers of RTW *(fatigue, stress and anxiety legislation and financial stress)*. Over the span of time, employment has been an indication of good health and wellbeing and unemployment has been known to have negative effects on an individual's

physical and mental health (Artazcoz, Benach, Borrel, & Cortes, 2004). Thus, the information obtained is pertinent to facilitating a better understanding of RTW after a cardiac incident.

5.4.1 Facilitators of RTW after cardiac incident

5.4.1.1 -Education about the condition

All the participants expressed that learning about the cardiac condition was an important factor in the journey toward lifestyle modification and was seen as a positive influence in the RTW process. The VHW CR programme, as an education-based programme focused heavily on teaching participants how to manage their diets, facts about their condition and medication, stress and anxiety management. However, this educational programme does not directly address any work aspects.

Having a better understanding about how the body changes and its effect on function, including function in the work context aided adaptation more positively. Learning about dietary changes, breathing techniques and other stress management techniques were integral to cardiac rehabilitation. In the study on the evaluation of standardised patient education programmes for inpatient cardiac rehabilitation that explored the impact of illness knowledge and self-management behaviours up to one year, it was found that programmes that ran in smaller groups of about 5 patients yielded better results than lecture-based education for big groups of patients (Meng et al., 2014). In the article on the cardiac rehabilitation delivery model for low-resource settings, it is suggested that information communicated during CR must be tailored to the healthy literacy levels of the participants (Grace et al., 2016). This too would be an important factor in the Western Cape and South Africa as a whole, as literacy levels and education levels vary.

In the Canadian study on health outcomes and policy, it states that patients and communities should be empowered through access to information for patients to maintain healthy living (Arthur et al., 2010). Within the current study, the new knowledge helped with the acceptance of the condition. Anderson and Emery's (2014) study on irrational beliefs postulates that

cardiac relevant education helps to address irrational beliefs. Thus, this would assist with better adaptation with lifestyle changes.

5.4.1.2-Resuming participation in bADLs and iADLs

The majority of participants said that re-engaging in occupation after a cardiac incident started with the participation in bADLs, which led to the participation in iADLs, namely work and leisure.

Dreyer and Dickson's (2018) editorial on return to work after myocardial infarction, states that emerging research highlights the imperative nature of being able to RTW after AMI as being a motivating factor in recovery and day-to-day self-care. Within this study it was also highlighted that needing to return to work encouraged study participants to begin their journey by first participating in bADLs and then progressing to iADLs, once stronger.

The use of cardiac medication enables the participation in bADLs and iADLs. The understanding and use of these medications are therefore integral to adapting after the cardiac incident. As mentioned in the results interview. participants found that active use of medication to control their cardiac conditions was a positive contributing factor. Also mentioned above, information regarding medication is part of the education programme at VHW. Bahall and Khan's (2018) study found that improved quality of life was linked to surgical intervention and the use of medication.

The participation in work activities was positively viewed as a form of exercise. Many also found that participation in a leisure activity such as carpentry or gardening, was more motivational than a formal exercise programme. The VHW programme however, discouraged the substitution of formal exercise with leisure activities. In the article discussing cardiovascular disease prevention and implications for worksite health promotion programmes in Brazil, healthy physical activity was described in terms of participation in work, locomotion, household tasks and recreational activities, since these activities could yield moderate intensity

energy expenditure that maintains cardiovascular health and in turn return to functional lifestyle and maintenance of the worker role (Cipriano, Neves, Cipriano, Chiappa, & Borghi-Silva, 2014). In line with these findings and the study participants' expression of work and leisure activities being more motivating to participate in, it would be valuable to encourage such participation as it supports cardiovascular health.

5.4.1.3-Supportive employers and colleagues

Employers and colleagues that support the individual with the cardiac condition in the workplace are significant facilitators to the RTW process as reported by the study participants. Similarly, Fiabane et al. (2014) describe employer social support and the presence of a supportive social environment as positive factors for RTW. For employers and colleagues to be supportive, they need to be educated regarding cardiac conditions. In a study researching traumatic brain injury, employers expressed the need to learn more about the condition in order to have realistic expectations of the individual and to accommodate the worker's needs (Soeker & Ganie, 2019). This can be applied to any debilitating condition in the workplace and in this research setting it would refer to cardiac conditions. Therefore, employer and colleague education would be an important part of the RTW process and must be included in the rehabilitative process.

5.4.1.4 -Reasonable accommodation in the workplace

Study participants who were afforded reasonable accommodation in their work all echoed sentiments of this being valuable to the RTW process. A change in work pace was usually necessitated upon return to work after a cardiac incident, which allowed the easing into returning to work for participants and sometimes changing work tasks. Smedegaard et al. (2017) found that employers were more willing to accommodate employees in senior positions, who have been with the company for a longer period but stated that this was not the same for the younger employees who had more employable years ahead while being at risk. According to The Job Accommodation Network (JAN) people with heart conditions may develop some limitations but not necessarily all and therefore accommodations must be considered on an individual basis (JAN, n.d.). Furthermore JAN (n.d.) states that accommodations to be

considered for individuals with heart conditions are related to 1) fatigue, 2) balance, 3)lifting, 4) medication, 5) walking, 6) dizziness, and 7) temperature.

5.4.1.5-Attending CR

The findings of the qualitative interviews reported that participants felt employers who understood the role of attending CR in the process of restoring the worker role aided the re-establishment of this function. In a systematic review on the barriers for nonparticipation and dropout of women in cardiac rehabilitation programmes it was found that in the last decade employment restrictions were a concerning barrier to CR participation (Resurreccion at al., 2017). In the current study, the study population consisted of more men than women who attended the CR at VWH and one of the reasons provided by a female participant during the semi-structured interviews was having to work and not being given time off to attend CR.

In the randomised controlled trial on the employment status and participation in CR, it is stated that CR participation does not influence RTW, however vocational rehabilitation does (Pack et al., 2015). This implies that a merger between the two would be beneficial to individuals with cardiac conditions. Furthermore, in the study on patients' expectations of returning to work, comorbidities and work capacity from cardiac rehabilitation it was found that for participants of an employable age, comprehensive CR with a focus on work capacity and vocational re-integration was a fundamental step in coping with disease (Salzwedel, Reibis, Hadzic, Buhlert, & Voller, 2019). By the same token, the study on return to work after acute coronary syndrome states that participants of CR are more likely to RTW if work-related factors are addressed in CR programmes (Bresseleers & De Sutter, 2019).

Pack et al. (2015) also noted that being employed and being insured were predictors of CR in the USA. In this study context and amongst study participants, all of whom were employed, none of the participants had access to insurance and only a few had sick leave to use for CR attendance. In the Pinkstaff et al. (2014) article on the Affordable Care Act, which is still currently implemented in the USA, they state that partnerships between employers and CR programmes are mutually beneficial as it helps reduce time off from work and still achieve

objectives from CR, when the programme is implemented at the workplace. Bresseleers and De Stutter (2019) express that a contributing factor to the successful RTW is communication between the healthcare providers and company physicians. Within the current study there were no company physicians; however, communication between healthcare providers and employers could serve as a bridge between the CR and vocational re-integration process.

5.4.2 Barriers of RTW after a cardiac incident

5.4.2.1 -Fatigue

After a myocardial infarction, fatigue is the most common symptom influencing health-related quality of life (Fredriksson-Lasson, Alsen, Karlson, & Brink, 2015). Fatigue post MI is associated with illness-related symptoms such as breathlessness and chest pain (Alsen et al., 2010). Returning to work for many in this study was the first indication of the negative effects the cardiac incident had on their function. Upon discharge many participants thought they were adjusting well, until they returned to work. For some study participants the negative effects of the fatigue on work performance resulted in the loss of jobs.

In a retrospective cohort study, fatigue after a cardiac incident is seen as a typical response to the physiological healing process but is also related to psychological functioning and proper therapeutic remediation of fatigue relies on identifying underlying factors (Williams, 2017). Allen and Spertus' (2013) study on the end point for comparative effectiveness research in heart failure also found that symptoms such as fatigue impair quality of life, inhibit the individual's ability to perform activities of daily living, and may contribute to a poorer prognosis.

5.4.2.2 -Stress and anxiety

Increased levels of stress and anxiety after the cardiac incident were acknowledged during the qualitative interviews as a factor that affected RTW by participants. In a mid-western and southern USA multi-centre comparative study of 1167 participants to determine the prevalence of anxiety, depression and hostility among elderly cardiac patients, with a reference group of

healthy elders, it was found that a higher prevalence of anxiety, depression and hostility was associated with cardiac patient groups rather than with healthy elders, thus asserting that the higher levels of emotional distress was related to the cardiac condition and not part of normal aging (Moser et al., 2010). Furthermore, Moser et al. (2010) have stated that women cardiac patients experienced higher levels of anxiety and depression than men. In a study conducted by Dreyer et al. (2016) it was found that it was less likely for women to RTW due to more compromised psychosocial (depression, stress and social support) risk profiles and having more caregiving and household demands.

The stress of having another cardiac incident resulted in debilitating anxiety and impacted on the resumption of function. An article on the patient's perspective of return to work after acute myocardial infarction, articulates that AMI is life-changing and is often accompanied by complex emotions, anxiety being one of them, which can impact successful recovery and return to work (Dreyer & Dickson, 2018). Furthermore, a study done on the importance of RTW for acute coronary syndrome patients found that occupational re-integration is negatively affected by the fear of harming oneself because of work-related physical or emotional stress (Reibis et al., 2019). The VHW CR programme allowed for active practice of the stress and anxiety minimising techniques during sessions and the brainstorming of how to handle real life stressful situations. The participants in the current study commented that stress and anxiety management was very helpful in preparing them for reality. The results of the current study in conjunction with studies on stress and anxiety after a cardiac event, reinforces the need to address stress and anxiety in the early stages of rehabilitation and carry it through till the end stages as the stress and anxiety manifests itself in different ways in different contexts of life. Reibis et al. (2019) likewise state that vocational re-integration of patients after AMI is less affected by the cardiac disease but rather by the psychosocial aspects such as stress, anxiety and depression and therefore suggest that psychometric testing be done in the early stages of CR.

5.4.2.3 -Legislation

Legislation in South Africa regarding the return to work after injury or hospitalisation does not support the RTW process and time required for rehabilitation of individuals with cardiac

conditions. As a result, study participants had to risk losing their jobs while recovering or attending CR, while others returned to work when they were not yet fit to do so. Temporary disability grants are only awarded to individuals who are not fit to work for 6-12 months. Recovering from an acute cardiac incident and RTW ranged between 1 week to 3 months for this study population. This meant that individuals on the recovery journey went to work immediately without consultation from a doctor, some took sick leave whereby others lost their jobs. During the period of recovery some individuals do not receive paid sick leave, which has a profound financial impact on their lives. Dreyer and Dickson (2018) state that financial constraints in affording medication impacts on health status, which refers to symptoms, functioning, psychological factors and quality of life.

5.4.2.6-Financial stress

Many participants made reference to the financial stress accompanied by incapacitation after the cardiac incident. For some this resulted in RTW very early after the incident in order to maintain an income. For others this meant losing their job due to no sick leave benefits and no financial support. As mentioned above, there is no accommodation in the legislation that would allow government financial support after a cardiac incident as the recovery period is too short to qualify for a temporary disability grant. In a study done in Durban, South Africa to determine the associations between depressive symptoms in patients with myocardial infarction, it was found that 51% experienced financial stress (Sookan, Ranjith, Satorius, & Ramlall, 2018).

5.4.3 Policies

Policies in South Africa and abroad are very supportive of the cardiac rehabilitative process. The World Health Organisation (WHO) has pledged to address CVD head-on through its commitment to reduce non-communicable disease by 25% by the year 2025. In 2019 the WHO published CVD risk charts for 21 global regions to help enhance accuracy, predictability and sustainability of effects to reduce the burden of CVD (WHO, 2019). The South African Healthcare 2030 plan is the visionary process toward comprehensive healthcare for all in the country. Brazil has implemented the Cardiovascular Disease Prevention Plan, while Finland has implemented the Finnish Heart Plan. Canada trialled the Cardiac Rehabilitation Pilot Project in 2001-2002 to implement and evaluate a comprehensive model for CVD. The 2030

healthcare plan aims to tackle the burden of disease through improving the wellness of communities and guaranteeing patient-centred quality care. The four pillars of the 2030 healthcare plan advocates for a 1) person-centred approach; 2) integrated provision of care (i.e., various health professionals working in a cohesive manner with the patient); 3) continuity of care (i.e., continued support for the patient and a life course perspective, this relates to a holistic approach) and 4) continuing treatment for patients throughout their lives (not just once-off interactions). The 2030 healthcare plan can facilitate the process of individuals with CVD accessing immediate and rehabilitative care. Access to rehabilitative programmes can enable individuals with CVD to work towards resuming their worker role (Healthcare 2030, 2013). The CR programme at VHW aligns with this vision to provide continuation of care.

In their article on Brazil's cardiovascular disease prevention programmes, Cipriano et al. (2014) state that the Brazilian government has an emergent interest in developing and promoting CVD preventative strategies through worksite health and wellness programmes as a viable means to address the increase of disease burden in Brazil. Information from such projects is valuable to assisting countries such as South Africa in developing their own strategies for low-middle income communities. In Canada (2001-2002), the Cardiac Rehabilitation Pilot Project (CRPP) was established to evaluate the effectiveness of a regional model of CR service, using satellite centres and it was found that 60% more patients received CR services, with an improvement in overall cardiac risk profiles (Arthur et al., 2010). The move from larger hospitals, to facilities based in communities would eliminate the travelling aspect that is fundamental for a successful CR programme in the Western Cape and South Africa as a whole.

In Finland, the North Karelia Project was launched in 1972 and it was found that by the year 2014, CVD mortality was reduced by 84%, through the implementation of population-based prevention with cost-effective and sustainable control of CVD. The focus of the Finnish Heart Plan is on:

- Improved continuity of care by developing co-operation between special and primary health clinics.
- Developed CR for primary care.

- Well-planned cardiac media strategies combined with community activities, involving primary healthcare, voluntary organisations, the food industry, worksites, schools and local media.
- Psychosocial recovery for patients.
- Support from formal decision makers and informal opinion leaders.
- Differences in healthcare users, looking at education level and socioeconomic status of patients; and
- Social and physical environments in the community to be more conducive to healthy lifestyles.

  (Finnish Heart Association, 2005).

The findings of the current study highlighted many of the above factors that the Finnish heart plan addressed, therefore lessons taken from this project will be very valuable. Much discussion and policy formulation is happening around CVD and implementation of these ideas should be of highest importance.

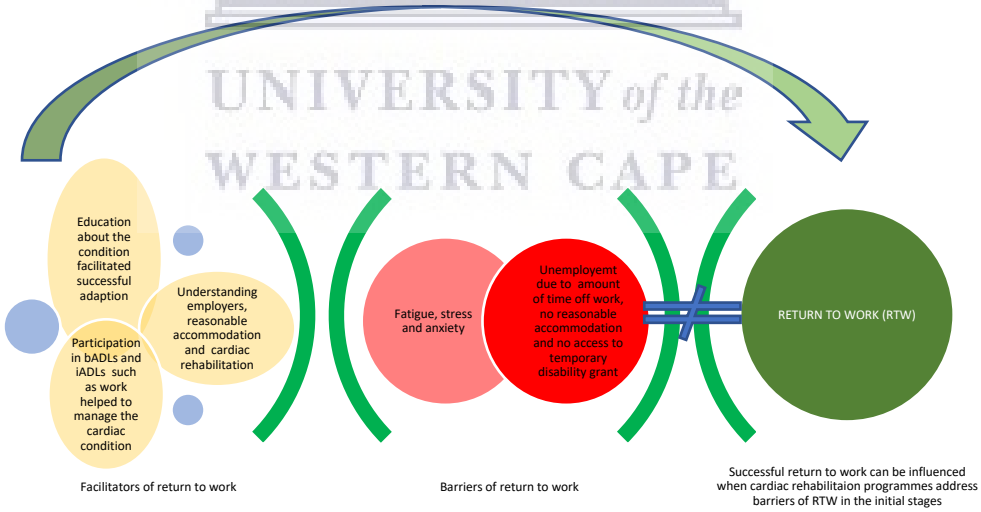


Figure 5.1: Graphical representation of the emerging themes

5.5 Concept Map

Through the information that emerged from the themes, a concept map was developed. The concept map consists of a matrix of five concepts, grouped together to either represent a facilitator of RTW or a barrier of RTW. Within each group there is a dynamic exchange between themes as represented by the overlapping of spheres. The above concept map suggests that education about the condition, participation in bADLs and iADLs and having an understanding employer who is able to employ reasonable accommodation and understands the value of CR attendance, will result in successful RTW. On the contrary, fatigue, stress and anxiety and too much time off work or no reasonable accommodation and no access to financial assistance while away from work, results in unsuccessful RTW.

5.6 Conclusion

In conclusion, the themes derived from the semi-structured interviews illustrate the barriers and facilitators of RTW after a cardiac incident. Physical and emotional effects of the condition can hinder one's return to functionality and therefore it is vital to address within CR. However, education regarding the condition, how to accept the changes that need to take place and learning strategies of coping has aided many individuals diagnosed with a cardiac condition in the successful RTW. Employer support is a much-needed facilitator in the process and is demonstrated to be an integral part of the return to work journey. Participation in bADLs was a steppingstone to becoming more active, and participation in work and leisure activities was a means of maintaining a healthy lifestyle. Understanding the laws and correct adherence to its implementation is vital going forward. This chapter and the information gained from the participants regarding RTW, was used as a guide in the subsequent chapter that explores effective intervention strategies that are being used in RTW for individuals after a cardiac incident through a scoping review.

CHAPTER 6: METHODS AND STRATEGIES (SCOPING REVIEW)

6.1 Introduction

This chapter presents the outcomes of the scoping review which intended to answer the fourth objective of identifying the components of RTW intervention for individuals with CVD who are able to restore their worker role. The scoping review aimed to identify literature content that described RTW strategies within vocational rehabilitation programmes for CVD individuals. The chapter presents the methodology for the scoping review, a summary of the demographic characteristics of the studies reviewed, as well as an in-depth description of the synthesised findings. The chapter also discusses the findings with relevant theoretical assumptions.

6.2 Methodology

A review of the literature to determine the intervention strategies, models and programmes was performed through a scoping review. The study population that formed the scoping review included studies with samples of individuals with CVD, with a focus on RTW strategies or vocational rehabilitation programmes. Inclusion and exclusion criteria were applied in the search process. The process was guided by three phases: key concepts and search terms, database identification and search process. A data extraction sheet and the use of the TIDieR checklist was used during this process. A descriptive numerical summary and thematic analysis was applied. A comprehensive description of this methodology can be viewed in chapter three.

6.3 Results

6.3.1 Overview of abstractions

In pursuit of literature, after applying the inclusion and exclusion criteria in the nine databases and grey literature, 309 titles were identified. Further cleaning of the selection yielded 99 abstracts to be reviewed and 10 grey literature articles. Subsequently 21 articles were included in the full-text review and the 10 grey literature articles. Figure 6.1 below describes the review process.

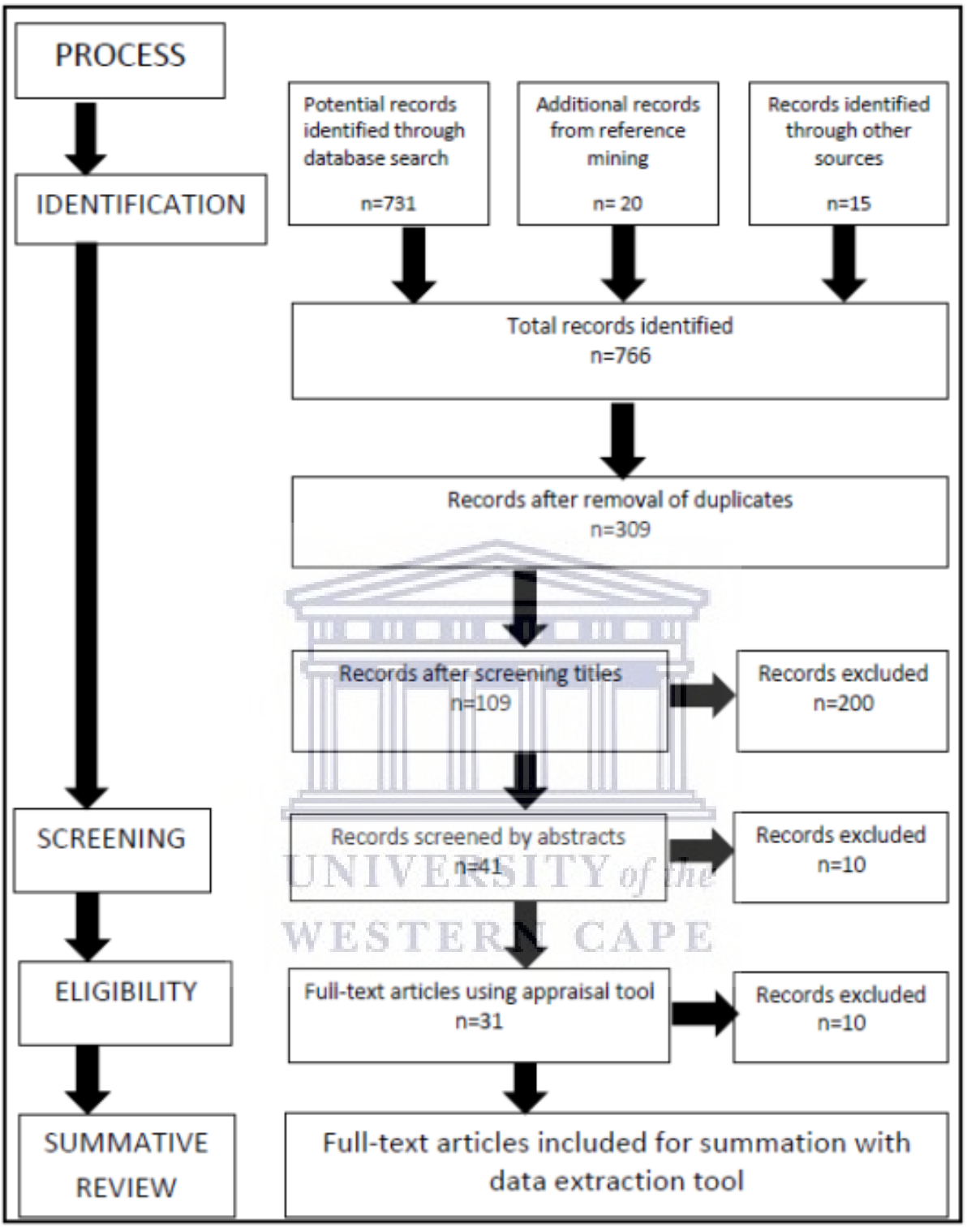


Figure 6.1: Diagram of the review process

6.3.2 Characteristics of included studies

The following subheading will be used to describe the included studies: authors, authors' location and journals that articles are published in as an indication of discipline, year of publication, year of data collection, study site and methodological design.

6.3.2.1 Authors, location, journals, year of publication and methodological design

The results of the scoping review revealed that each author contributed to at least one publication. The country of the authors' affiliation span across Asia, Australia, Europe, United Kingdom and North America. North America being the leading continent to publish articles relevant to the review. Authors from Australia, Canada, Malaysia, Sweden and the UK contributed two articles, respectively. Authors from Belgium, Denmark, Germany, Italy, Iran, Japan and Poland contributed one article each. Lastly, four articles from authors in the USA were selected.

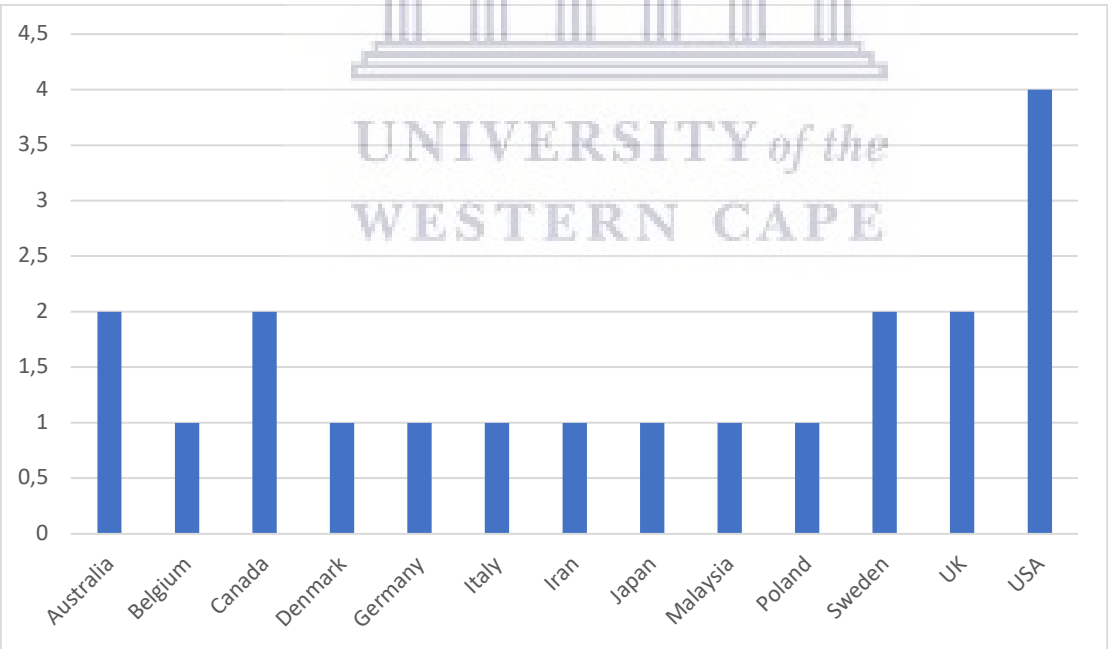


Figure 6.2: Country of affiliation of authors

The authors came from various disciplines, however all with an interest in cardiac rehabilitation. The journals in which the selected articles were published catered for a wide range of audience in many fields working with cardiac rehabilitation.

The year of publication in the various journals ranged from pre-2009 until 2019. Four articles (19%) pre-2009 were included due to their relevance in this present day. Most of the articles were published between 2015 and 2019, twelve articles (57%) and five (24%) articles were published between 2009-2014.

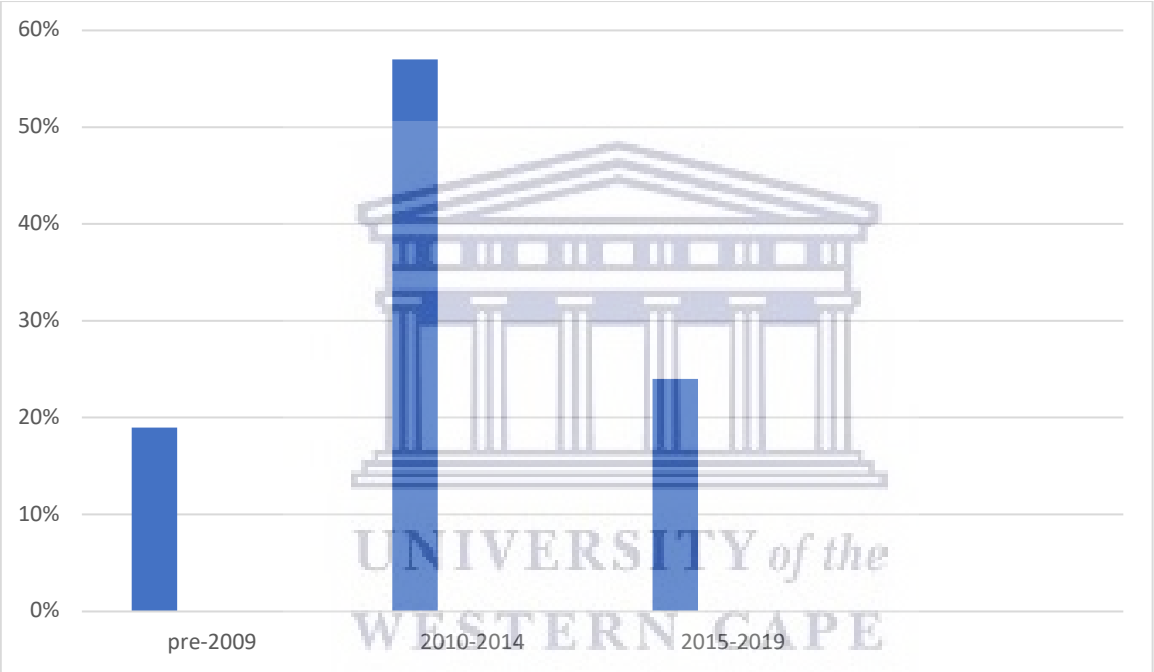


Figure 6.3: Year of publication of articles selected for scoping review

The methodological designs consisted mainly of quantitative studies, 15 (71%) articles, namely randomised controlled trials, retrospective institutional cohort study, quasi-experimental study, cross-sectional study, prospective study and experimental design. Two (9.5%) systematic reviews and one (4.8%) Cochrane review were included. Only one (4.8%) study was a mixed methods study. Two (9.5%) articles did not specify the design.

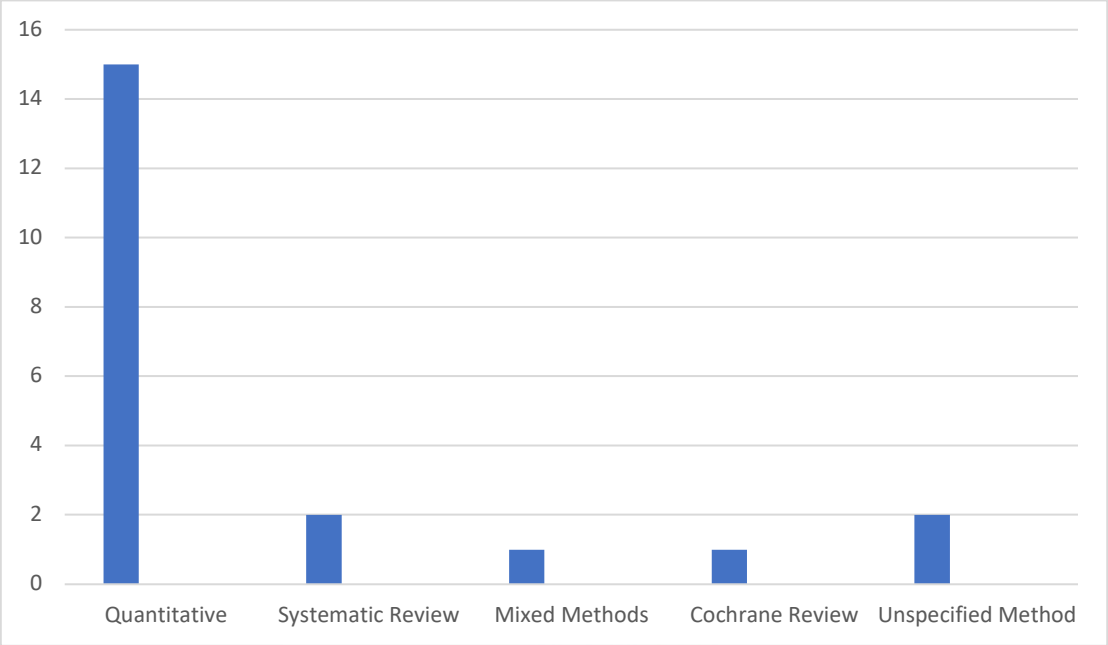


Figure 6.4: Study methodologies represented in scoping review

Table 6.1: Overview of study characteristics of included studies

SN	Author	Year	Title	Methodological design	Outcome measured	Geographical location
1	O'Brien L; Wallace S; Romero L	2018	Effect of psychosocial and vocational interventions on return-to-work rates post-acute myocardial infarction: A systematic review.	Systematic review	RTW rate	Australia

2	Young, AE	2010	Employment maintenance and the factors that impact it after vocational rehabilitation and return to work.	Mixed methodology	RTW rate	USA
3	Dugmore LD; Tipson RJ; Phillips MH; Flint EJ; Stentiford NH; Bone MF; Littler WA	1999	Changes in cardiorespiratory fitness, psychological wellbeing, quality of life, and vocational status following a 12 month cardiac exercise rehabilitation programme.	RCT	Therapy that had an indirect impact on RTW	UK
4	Szalewska D; Niedoszytko P; Gierat-Haponiuk K.	2015	The impact of professional status on the effects of and adherence to the outpatient followed by home-based telemonitored cardiac rehabilitation in patients referred by a social insurance institution.	Retrospective institutional cohort study	Therapy that had an indirect impact on RTW	Poland

5	Steca P[1], Greco A, Cappelletti E, D'Addario M, Monzani D, Pancani L, Ferrari G, Politi A, Gestra R, Malfatto G, Parati G.	2015	Cardiovascular management self-efficacy: Psychometric properties of a new scale and its usefulness in a rehabilitation context.	Prospective study	Therapy that had an indirect impact on RTW	Italy
6	Mendell J[1], Bates J[2], Banner-Lukaris D[3], Horvat D[2], Kang B[4], Singer J[5,6], Ignaszewski A[7,8], Lear SA[1,7,8].	2019	What do patients talk about? A qualitative analysis of online chat sessions with healthcare specialists during a 'virtual' cardiac rehabilitation programme.	RCT	Therapy that had an indirect impact on RTW	Canada

7	Delui MH; Yari M Khouyinezhad G Amini M Bayazi MH	2013	Comparison of cardiac rehabilitation programmes combined with relaxation and meditation techniques on reduction of depression and anxiety of cardiovascular patients.	Quasi-Experimental study	Therapy that had an indirect impact on RTW	Iran
8	Gordon-Larsen P Boone-Heinonen J Sidney S Sternfeld B Jacobs DR Jr Lewis CE	2009	Active commuting and cardiovascular disease risk: the CARDIA study.	Cross-sectional study	Therapy that had an indirect impact on RTW	USA
9	Mital A; Shrey DE; Govindaraju M; Broderick TM; Colon-Brown K; Gustin BW	2000	Accelerating the return to work (RTW) chances of coronary heart disease (CHD) patients: part 1 -- Development and validation of a training programme.	Experimental design	RTW rate	USA

10	Buys R; Claes J; Walsh D; Cornelis N; Moran K; Budts W; Woods C; Cornelissen VA;	2016	Cardiac patients show high interest in technology enabled cardiovascular rehabilitation.	Cross-sectional study	Therapy that had an indirect impact on RTW	Dublin and Belgium
11	Korzeniowska-Kubacka I[1], Bilińska M[2], Piotrowska D[3], Wolszakiewicz J[4], Piotrowicz R[5].	2019	Impact of exercise-based cardiac rehabilitation on attitude to the therapy, aims in life and professional work in patients after myocardial infarction.	*Not specified*	RTW rate	Poland

12	Yonezawa R; Masuda T Matsunaga A Takahashi Y Saitoh M Ishii A Kutsuna T Matsumoto T Yamamoto K Aiba N Hara M Izumi T	2009	Effects of phase II cardiac rehabilitation on job stress and health-related quality of life after return to work in middle-aged patients with acute myocardial infarction.	Questionnaire and survey	RTW rate	Japan
13	Mustafah NM[1,2], Kasim S[3], Isa MR[4], Hanapiah FA[1,5], Abdul Latif L[2].	2017	Predicting return to work following a cardiac event in Malaysia.	Cross-sectional study	RTW rate	Malaysia

14	Fors A[1], Swedberg K[2], Ulin K[3], Wolf A[3], Ekman I[3]	2017	Effects of person-centred care after an event of acute coronary syndrome: Two-year follow-up of a randomised controlled trial.	RCT	RTW rate	Sweden
15	Bitsch BL[1], Nielsen CV[2,3], Stapelfeldt CM[2,3], Lynggaard V[4].	2018	Effect of the patient education - Learning and Coping strategies - in cardiac rehabilitation on return to work at one year: A randomised controlled trial show (LC-REHAB).	RCT	RTW rate	Denmark
16	Keith Petrie;Linda Cameron;Chris Ellis;Deanna Buick;John Weinman	2002	Changing illness perceptions after myocardial infarction: An early intervention randomised controlled trial.	Prospective study	Therapy that had an indirect impact on RTW	*Not specified*

17	Budnick K[1], Campbell J, Esau L, Lyons J, Rogers N, Haennel RG.	2009	Cardiac rehabilitation for women: A systematic review.	Systematic review	Therapy that had an indirect impact on RTW	Canada
18	Kovoor P[1], Lee AK, Carrozzi F, Wiseman V, Bythk K, Zecchin R, Dickson C, King M, Hall J, Ross DL, Uther JB, Denniss AR.	2006	Return to full normal activities including work at two weeks after acute myocardial infarction.	RCT	RTW	Australia
19	NinaJohnstonMD, PhD[a]JohannBodegardMD, PhD[b]SusannaJerströmMSc[b]Jo	2016	Effects of interactive patient smartphone support app on drug adherence and lifestyle changes in myocardial infarction patients: A randomised study.	RCT	Therapy that had an indirect impact on RTW	Sweden

	hannaÅkessonMSc[b] HiljaBrorsson[c]JoakimAlfredssonMD, PhD[d]PerA.AlbertssonMD, PhD[e]Jan-ErikKarlssonMD, PhD[f]ChristophVarenhorstMD, PhD					
20	Kim YJ[1], Rogers JC[2], Raina KD[3], Callaway CW[4], Rittenberger JC[5], Leibold ML[2], Holm MB[2].	2017	Solving fatigue-related problems with cardiac arrest survivors living in the community.	*Not specified*	Therapy that had an indirect impact on RTW	USA
21	Hegewald J, Wegewit	2019	Cochrane review:	Cochrane review	RTW rate	Germany

	z UE, Euler U, van Dijk JL, Adams J, Fishta A, Heinrich P, Seidler A		Interventions that help people return to work after a heart attack, bypass or stent.			

6.3.2.2 Participants, intervention focus, implementation method and outcome measure

Within this review, twenty of the articles included participants who had existing cardiac conditions, either MI or CHF. One article that was included had a general focus on vocational rehabilitation and return to work for individuals with varying diagnoses.

Seven different intervention focuses were identified. One (4.8%) article focuses on psychological and vocational rehabilitation. Two (9.5%) articles focused purely on vocational rehabilitation which included job simulation. Three (14.3%) articles looked at only physical/exercise programmes, while four (19.0%) articles looked at only psychological interventions. Another four articles (19.0%) targeted intervention toward both physical/exercise and psychological programmes. Six (28.6%) of the articles used hybrid CR methods. Lastly the Cochrane review looked at articles that focused on three components, namely vocational rehabilitation, psychological and physical interventions combined.

Fifteen (71.4%) articles used conventional face-to-face methods as part of either in-patient or out-patient programmes that spanned between two weeks to several year follow-up programmes. Six (28.6%) articles made use of virtual CR programmes through telephonic conversations between participant and healthcare provider or smart apps on mobile phones or electronic devices.

Ten (47.6%) of the articles looked specifically at RTW and eleven (52.4%) focused on therapy/treatments that had an indirect impact on RTW.

6.3.4 Meta-synthesis of RTW intervention (key findings)

The aim of the scoping review was to describe strategies used to facilitate return to work after a cardiac event, thus the finding of the review will be presented thematically. The synthesis of the findings will be presented in three themes namely, intervention at an individual level, intervention at an organisational level and implementation strategies.

6.3.4.1 Theme 1: Intervention at an individual level

This theme revolves around the individual and components of intervention at the level of self and family. Two articles explored the benefits of weekly aerobic exercise and found that it promoted adaptation to cardiac functioning after the cardiac event thus contributing to functional activities such as RTW, in both men and woman. This was further corroborated in the article that described how biking or walking to work improved cardiovascular health and psychological health. An article exploring the difference in cardiovascular health and mental health found that meditation groups yielded better results than relaxation therapy. Energy conservation techniques was noted to combat fatigue which was integral upon RTW. Person-centred care was found throughout a number of articles to improve health outcomes and lifestyle modification. Setting realistic goals that included supportive family members was fundamental to the RTW process.

Table 6.2: Summary of articles related to intervention at the individual level

SN	Article	Intervention	Result
3	Changes in cardiorespiratory fitness, psychological wellbeing, quality of life, and vocational status following a 12 month cardiac exercise rehabilitation programme	62 patients were randomly allocated to a regular weekly aerobic training programme, 3 times a week for 12 months, and compared with 62 matched controls who did not receive any formal exercise training. A five year follow-up questionnaire/interview was subsequently conducted on this population to determine selected vocational/ lifestyle changes.	Significant improvement s in cardiorespiratory fitness psychological profiles, and quality of life scores were recorded in the treatment population when compared to with their matched controls. Although there were no significant differences in mortality, a large percentage of regular exercises resumed full time employment and they returned to work earlier than the controls. Controls took lighter jobs, lost more time from work and suffered more non-fatal reinfarctions.
7	Comparison of cardiac rehabilitation programs combined with relaxation and meditation techniques on reduction of depression and anxiety of cardiovascular patients	Group 1: Jacobson's Progressive muscle relaxation Group 2: mindfulness meditation techniques Group 3: control	There was a significant reduction on depression, systolic blood pressure and heart rate in the Meditation group compared with the control group. Our findings suggest that meditation techniques have better outcomes in cardiac patients for improving depression, reduction of systolic and diastolic blood pressure, and heart rate than relaxation techniques.

8	Active commuting and cardiovascular disease risk: the CARDIA study.	Walking or biking to work	Active commuting was positively associated with fitness in men and women and inversely associated with BMI, obesity, triglyceride levels, blood pressure, and insulin level in men. Active commuting should be investigated as a modality for maintaining or improving health. Active commuting was positively associated with fitness in men and women and inversely associated with BMI, obesity, triglyceride levels, blood pressure, and insulin level in men. Active commuting should be investigated as a modality for maintaining or improving health
11	Impact of exercise-based cardiac rehabilitation on attitude to the therapy, aims in life and professional work in patients after myocardial infarction.	Exercise based CR- 24 interval cycle ergometer training sessions, 3 times a week	Physical training beneficially influenced post-MI men's and women's attitude to the aims in life, professional work and attitude to the therapy in women.
13	Predicting return to work following a cardiac event in Malaysia	CR for 11 months	The prevalence of returned to work (RTW) was 66.1% Factors associated with work resumption were age, diabetes mellitus. Patients with single vessel and two vessel disease were 8.9 times and 3.78 times more likely to return to

			work compared to those with 3 vessels. It is proposed a cardiac rehabilitation programme to emphasise mental health as it may improve successful return to work after cardiac event
20	Solving fatigue-related problems with cardiac arrest survivors living in the community	Following an introduction to the intervention process outlined in a Participant Workbook, participants engaged in the telephone intervention by identifying one to two fatigue-related problems. They then brainstormed with the interventionist to identify potential strategies to reduce fatigue, tested them, and either modified the strategies or moved to the next problem over three to five sessions	Eighteen cardiac arrest survivors with chronic fatigue identified instrumental activities of daily living and leisure activities as fatigue-related activities more frequently than basic activities of daily living. Energy Conservation strategies used most frequently were plan ahead, pace yourself, delegate to others, and simplify the task. Post-cardiac arrest adults living in the community with chronic fatigue can return to previous daily activities by using energy conservation strategies such as planning ahead, pacing tasks, delegating tasks, and simplifying tasks.

6.3.4.2 Theme 2: Intervention at an organisational level

This theme revolves around the workplace and the environment. Environmental strains must be considered when planning RTW and ways of assisting workers to achieve RTW success. Liaison with an occupational health and safety officer (doctor or nurse) can help with the adjustment. The OT can be very helpful when educating employers about cardiac conditions and how to reasonably accommodate returning employees. Early RTW, if safe within two weeks helps with the avoidance of adapting the 'sick role' and is an important part of the

recovery process. Thus, working with the employer or supervisor to implement reasonable accommodations is an important step to follow through.

Table 6.3: Summary of articles related to intervention at the organisational level

SN	Article	Intervention	Result
2	Employment maintenance and the factors that impact it after vocational rehabilitation and return to work.	The vocational rehabilitation services include vocational counselling, vocational testing, job seeking skills training, job development services and vocational exploration. The services provided varied depending on the recipients' physical capabilities, pre-injury weekly wage, prior training, work experience, education and age.	Although most participants were working at the time of interview, almost all were experiencing functional- or activity-based restrictions. Factors differentiating those employed from those not, were largely contextual and included relationships with supervisors, economic climate, and working conditions. The findings stress the importance of considering environmental strains when planning return to work and indicate ways to assist workers to achieve return-to-work success.
17	Cardiac rehabilitation for women: A systematic review	To identify programme components that may yield improvements in physiological and psychosocial outcomes in women.	Thirty-seven articles were included with a combined sample of 3,807 subjects. Ten studies included an analysis of physiological effects of exercise. Aerobic, resistance, and combined exercise interventions all yield physiological benefits. CR yielded favourable health-related quality of life outcomes and women benefited from

			psychosocial support in both formal and informal environments.
18	Return to full normal activities including work at two weeks after acute myocardial infarction	Return to normal activities 2 weeks after AMI, including RTW, without formal rehabilitation. Patients were contacted over the telephone by the nurse co-ordinator once per week for 5 weeks. Both groups of patients were encouraged to exercise at home on a regular basis.	There was no significant difference in the incidence of re-infarction, revascularisation, left ventricular function, lipids, body mass index, smoking, or exercise test results at 6 months. In conclusion, return to full normal activities, including work at 2 weeks, after AMI appears to be safe in patients who are stratified to a low-risk group. This should have significant medical and socio-economic implications.
21	Cochrane Review: Interventions that help people return to work after a heart attack, bypass or stent.	People recovering from a heart attack or from a procedure to improve heart disease may have problems returning to work. These procedures could be a bypass (a surgical procedure to bypass narrowed coronary arteries, also called coronary artery bypass graft or CABG) or a nonsurgical intervention, including implanting stents (called percutaneous coronary interventions (PCI)), for example. Physical weakness and emotional problems resulting from heart disease	We found a total 39 studies that looked at return to work among people with heart disease in programmes designed to support the recovery process or encourage return to work compared to patients receiving usual care. No studies were found that made changes to the workplace or workplace policies to ease the return to work, for example by reducing patients' working hours or tasks, and gradually increasing the working hours and tasks as health improves.

		may result in long absences from work or lead to disability retirement. Conditions at work may also make it difficult for patients to return to work. This can have a lasting impact on their quality of life. We looked at programmes that made it easier for people to return to work, for example by modifying their working conditions, or addressing the anxiety that often accompanies heart disease by educating patients on heart health, helping them to exercise or applying a combination of counselling and exercise to help them become healthy enough to return to work.	Eleven studies were found evaluating programmes that addressed the fears and depression that often accompany heart disease, by teaching patients about heart disease. It is not known if these counselling and health education programmes increase the number of patients who returned to work or shorten the time patients are away from their jobs (low- to very low-certainty evidence). Four studies were found using programmes that recommended when people with heart disease should return to work or provided counselling to co-workers to address their concerns regarding the causes of the heart attacks and the patient's ability to resume working. Work-directed counselling interventions may make little to no difference to the time patients need to return to work (low-certainty evidence).

6.3.4.3 Theme 3: Implementation strategies

This theme revolves around components of implementation that contribute toward the successful RTW. It was noted in many articles that a combination of psychosocial and vocational interventions improved RTW rates. In four articles, hybrid cardiac rehabilitation programmes that used technologies were found to be feasible, safe and had a high adherence to the programmes. Similarly, home-based programmes that were carefully monitored and included resistance training, education and social support have a successful return to functional

activities. However, it was also found that initial in-hospital intervention addressing illness perception could result in improved function adjustments, which makes the home-based or hybrid programme more successful. The cardiovascular self-efficacy (CSE) scale was also found to be beneficial when used at the start of a CR programme as it was helpful in monitoring differences during intervention and improved good disease management. Job simulation was found to be superior to conventional CR in RTW preparation. At least two articles emphasised that phase two rehabilitation was imperative for the maintenance of work function and longevity, with an emphasis on mental health in this phase.

Table 6.4: Summary of articles related to implementation strategies

SN	Article	Intervention	Result
1	Effect of psychosocial and vocational interventions on return-to-work rates post-acute myocardial infarction: A systematic review.	Psychosocial and vocational interventions delivered in the first 3 months post-acute myocardial infarction (AMI)	Eighteen studies of varying quality were analysed. Individually delivered psychosocial and vocational interventions may improve work rates at 3 months (relative risk = 1.17; P = .05) when compared with usual care but there was no difference at 6 or 12 months. People receiving group or individual psychological/vocational counselling returned to work 6.11 days sooner than those who received usual care.

4	The impact of professional status on the effects of and adherence to the outpatient followed by home-based telemonitored cardiac rehabilitation in patients referred by a social insurance institution.	Hybrid cardiac rehabilitation	Hybrid cardiac rehabilitation is feasible and safe with high adherence to the program regardless of the patient's professional status. Professional status did not influence the beneficial effect of HCR on exercise tolerance.
5	Cardiovascular management self-efficacy: psychometric properties of a new scale and its usefulness in a rehabilitation context.	Cardiovascular Management Self-efficacy scale	An Exploratory Structural Equation Model showed that the Cardiovascular Management Self-Efficacy Scale has three factors: Cardiac Risk Factors, Adherence to Therapy, and Recognition of Symptoms. They all showed high internal consistency, and good convergent, discriminant, and predictive validity. Furthermore, these factors showed significant relations with CVD severity indicators. The Cardiovascular Management Self-Efficacy Scale could be a helpful instrument to monitor differences during interventions to improve good disease management.
6	What do patients talk about? A qualitative	vCRP intervention	From the 122 chat sessions between participants and HCP

	analysis of online chat sessions with healthcare specialists during a 'virtual' cardiac rehabilitation programme		during the vCRP, the main themes identified were Managing Health and Lifestyle, Continuity of Care, and Getting Care from a Distance. Within each theme, sub-themes were also identified. The vCRP chat sessions fulfilled the role of face-to-face consultations with HCP that are standard in hospital-based CRP and addressed patient concerns, facilitating remote patient-provider interaction and covering topics on exercise, diet, and positive behaviour changes to limit risk factors for future heart problems.
9	Accelerating the return to work (RTW) chances of coronary heart disease (CHD) patients: part 1 -- development and validation of a training programme	Job simulated CR programme	All patients participating in the low-intensity job-simulated CR programme returned to the same job they held at the onset of myocardial infarction (MI). In contrast, only 60% of the control group patients returned to work; at least one-third of these did not go back to the same job they held at the onset of M1. Patients in both groups achieved the same level of physiological conditioning. The physical functional capabilities of the experimental group patients improved significantly throughout training.

			The results of this field-study lead to the conclusion that a low-intensity phase II cardiac rehabilitation programme that simulates elements of work may be far superior to conventional endurance exercise-based cardiac rehabilitation programmes in terms of returning patients to work. Such a programme also strengthens patients, improving their physical capabilities, without compromising their physiological conditioning.
10	Cardiac patients show high interest in technology enabled cardiovascular rehabilitation.	A technology usage questionnaire was developed and completed by patients	CVD patients show interest for technology enabled home-based CR. Our results could guide the design of a technology-based, virtual CR intervention.
12	Effects of phase II cardiac rehabilitation on job stress and health-related quality of life after return to work in middle-aged patients with acute myocardial infarction	Exercise training and counselling for 1 hour, once a week	These findings suggest that discontinuing a phase II CR program induced chronic psychosocial stress after return to work in these middle-aged post-AMI patients.

14	Effects of person-centred care after an event of acute coronary syndrome: Two-year follow-up of a randomised controlled trial	Person-centred care (PCC) in patients with acute coronary syndrome (ACS)	Implementation of PCC results in sustained improvements in health outcome in patients with ACS. PCC can be incorporated into conventional cardiac prevention programmes to improve equity in uptake and patient health outcomes.
15	Effect of the patient education - Learning and coping strategies - in cardiac rehabilitation on return to work at one year: A randomised controlled trial show (LC-REHAB)	The intervention was developed from an inductive pedagogical approach consisting of individual interviews and group based teaching by health professionals with experienced patients as co-educators.	No difference in RTW status was found at one year across arms (LC arm: 64.7% versus control arm: 68.8% Addition of LC strategies in CR showed no improvement in RTW at one year follow-up.
16	Changing illness perceptions after myocardial infarction: An early intervention randomised controlled trial	An intervention designed to alter their perceptions about their MI or usual care from rehabilitation nurses.	The intervention caused significant positive changes in patients' views of their MI. Patients in the intervention group also reported they were better prepared for leaving hospital and subsequently returned to work at a significantly faster rate than the control group. At the 3-month follow-up, patients in the intervention group reported a significantly lower rate of angina symptoms than control subjects. There were no significant differences

			in rehabilitation attendance between the two groups. An in-hospital intervention designed to change patients' illness perceptions can result in improved functional outcome after MI.
19	Effects of interactive patient smartphone support app on drug adherence and lifestyle changes in myocardial infarction patients: A randomised study	Randomised to either an interactive patient support tool (active group) or a simplified tool (control group) in addition to usual post-MI care.	In MI patients, use of an interactive patient support tool improved patient self-reported drug adherence and may be associated with a trend toward improved cardiovascular lifestyle changes and quality of life. Use of a disease-specific interactive patient support tool may be an appreciated, simple, and promising complement to standard secondary prevention.

Table 6.5: Description of core components of the RTW interventions for individuals with CVD

Theme	Intervention components	Basic description
Theme1: Intervention at an individual level	• Aerobic exercise • Energy conservation techniques • Mental health • Setting goals • Supportive families • Lifestyle modification	Evaluation of functional capacity in order to advise and give guidance to individuals as well as their families. Management of emotional and behavioural changes that may affect RTW. Setting of realistic goals that encompass

		exercise, energy conservation and lifestyle modification.
Theme 2: Intervention at an organisational level	• Early return to work • Employer education • Reasonable accommodation	The encouragement of safe, early RTW while working with employers with regard to reasonable accommodation and education regarding the condition.
Theme3: Implementation strategies	• Combined psychosocial and vocational rehabilitation strategies • Cardiovascular Self-Efficacy Scale • Job simulation • Hybrid Programmes • Supportive rehabilitation team	CR interventions to address psychosocial and vocational aspects of RTW. The use of a self-efficacy scale, in conjunction with job simulation to aid realistic preparation for RTW. Hybrid programme with a supportive rehabilitation team for cost effective implementation of intervention and longevity of the CR process.

6.4 Discussion

The scoping review studied 21 articles, all of it originating outside of the African continent. Even though there is an increasing number of cardiovascular studies emerging from research institutions in Southern Africa, not much work is done in the space of RTW within cardiac rehabilitation research. South African and African studies could have added much needed contextual information that would influence strategies used on this developing continent. Within this review, the majority of the articles used quantitative methodologies. However, the value of qualitative research should not be overlooked as it has the unique ability to provide

the researcher with insights into "why" people behave the way they do or engage in particular actions (Rosenthal, 2016). Thus, qualitative methods can complement scientific evidence and yield more meaningful results.

Exercise has long been the basis of CR programmes. This review highlights that it is still a fundamental part of the process but cannot be viewed in isolation. Physical health and mental health should not be viewed as separate, as the one has a great influence over the other. According to a study exploring the relationship between physical and mental health it was concluded that there are strong cross-effects on physical and mental health and that a better mental status can lead to improved physical health (Ohrnberger, Fichera, & Sutton, 2017). Setting of goals and family support are crucial within the initial stages of rehabilitation. Rose and Smith (2018) have found that working toward a goal and goal achievement are motivating factors at whatever point the person is within the recovery journey. It also helps define realistic steps to take toward recovery of function. While family support is important throughout the process as well. In the study exploring motivational factors of adherence to cardiac programmes it was found that the participants' supporters were a valuable source for changing patients' behaviours (Shahsavari, Shahriari, & Alimohammadi, 2012).

Engagement in work is described as being an important part of the recovery journey and therefore should be included in the process. Early return to work with reasonable accommodation was identified within this review as being a protagonist in the CR process. In a systematic review conducted to assess RTW outcomes across health conditions, which include cardiovascular conditions, it was found that positive outcomes included the workplace in the multi-disciplinary team (Cancelliere, Donovan, Stochkendahl, Biscardi, & Ammendolia, 2016). Thus, engagement with the employer and supervisors should form part of the rehabilitation process. The emergence of hybrid therapy programmes has given light to newer and possibly more cost-effective means to implement CR programmes. It allows the participants to engage in CR education and activity programmes from home, which reduces travelling cost for them and economic costs to the state . In a study to determine the efficacy of alternative delivery models for cardiac rehabilitation in low-middle income countries, it was found that a well-designed hybrid CR programme can be a viable alternative (Farid & Mahdi,

2015). The review describes adherence to this type of programme to be good and it could aid in the designing of a longer rehabilitation programme as recommended in the review.

6.5 Conclusion

Results from this review presented that currently quantitative methodologies are most often used when exploring RTW or return to function research within the field of cardiac rehabilitation. The majority of the evidence originated from North America and none from the African continent. A total of 21 articles were included in the review. From the articles identified three main themes emerged, (1) Intervention at an individual level; (2) Intervention at an organisational level and (3) Implementation strategies. These core components of intervention could contribute to the designing of an intervention programme aimed at RTW for individuals with cardiac diagnoses in the South African context.

6.6 Limitations

Given the flexibility of the scoping review, even though RTW did not have to strictly be the outcome measure, a limitation could be that it was not the focus in many articles reviewed for this scoping review. There were also no studies found within the African or South African context. Finally, there were limited qualitative research that were available for the review.

CHAPTER 7: THE DEVELOPMENT OF A RETURN TO WORK INTERVENTION PROGRAMME FOR INDIVIDUALS WITH CVD: A DELPHI STUDY

7.1 Introduction

The third phase of the study is presented in this chapter. A Delphi survey was conducted to develop a RTW intervention programme for individuals after a cardiac incident. A brief background on which the study was designed is presented first. This is followed by methodology used to implement the Delphi survey and complete the fifth objective of the study. The results of the Delphi survey from its various rounds are detailed before the conceptualisation and drafting of the proposed RTW intervention programme. To conclude, adjustments to the initial draft programme are described.

7.2 Background

CVD, being amongst the leading causes of mortality in South Africa and around the world, contributes toward the growing concern regarding its effect on the health and social systems (Cappuccio & Miller, 2016). According to quantitative and qualitative results from this study the prevalence of CVD is increasing amongst individuals in the working age group and less than half (47.62%) of individuals from this study, affected by CVD do not return to work or struggle to cope with work demands upon RTW.

The benefits of RTW after illness has been documented over the past decades. Similarly, research on CR and VR benefits have been published. However, in the Western Cape, South Africa there are no programmes that focus on both CR and VR together. Most affected individuals with CVD do not get referred for any intervention. For a few fortunate individuals, a referral is sometimes made for CR but the one CR programme available within the public sector in the Western Cape does not focus on RTW. Generally, VR programmes do not cater for individuals diagnosed with CVD. Therefore, this research aims to add to the growing body of knowledge in the CVD field and bridge the gap between the two types of intervention programmes.

Through the use of a Delphi survey, the researcher was able to reach a consensus regarding essential elements of the RTW intervention programme for individuals with CVD. The Delphi technique is used to collect perspectives from experts in the field of interest (Lindell & Demi, 2018). Health and social research have employed this technique as a means to strengthen decision-making processes and reach consensus (Msibi, Mogale, De Waal, & Ngcobo, 2018).

7.3 Methodology

The e-Delphi was used to gather information from experts in the fields of cardiac rehabilitation and vocational rehabilitation, in order to design the RTW intervention programme. Practising professional and research professionals were invited to participate. This e-Delphi was made up of three rounds, after which consensus was reached. The first round sorted to gather demographic information and open-ended questions to gain insights on implementation strategies and essential elements of a RTW programme. The second round contained elements of a draft programme which the experts had to rate according to degree of agreement. A 70% rule of agreement was applied. The third round comprised questions that did not attain a 70% agreement in the second round. The qualitative data from the first round was analysed using thematic analysis and the quantitative data from rounds two and three were analyses through measures of central tendency. A comprehensive presentation of the e-Delphi methodology was detailed in chapter 3.

7.4 Results

7.4.1 Demographic characteristics of panel of experts (n=10)

Table 7.1 details the demographic characteristics of the expert panel. The mean age of the expert panel was 45.7 years. Five (50%) of the panel was from South Africa, two (20%) experts were from the Netherlands, one (10%) from Ireland, one (10%) from Germany and one (10%) from Australia. The majority of the experts were women (80%) and occupational therapists (70%). Experts had varying degrees of experience in VR or CR or both.

Table 7.1: Demographic characteristics of panel of experts

ID	Age	Gender	Highest Qualification	Country of practice	Current occupation or position	Years of experience in VR	Years of experience in CR	Role in VR/ CVD management
1	46	Female	PhD	Germany	Scientist (rehabilitation research)	8	13	Assessment, intervention, monitoring/follow-up, research
2	55	Male	PhD	Netherlands	RTW coordinator, physiotherapist, researcher	25	0	Assessment/Case Management
3	34	Female	BSc	South Africa	Occupational Therapist	5	5	Assessment, monitoring/follow-up, case management
4	40	Female	BSc	Ireland	Occupational Therapist	0	14	Advice, support, advocacy through recommendations made to employer
5	40	Female	Masters	South Africa	Occupational Therapist	12	0	Assessment, intervention, case management
6	30	Female	BSc	South Africa	Occupational Therapist	7	0	Assessment/Case Management
7	72	Male	MD	Netherlands	Occupational Health Doctor	43	40	Assessment, intervention, monitoring/fo

								llow-up, case management
8	24	Female	BSc	South Africa	Occupational Therapist	2	2	Assessment, intervention, monitoring/follow-up, case management
9	55	Female	PhD	Australia	Occupational Therapist in research academia	20	Limited	Assessment/ intervention/ Case management
10	61	Female	Masters	South Africa	Occupational Therapist	Limited	0	Assessment, intervention, monitoring/follow-up, case management, work hardening

* Limited was a description chosen by the participants themselves and no further details available. However, all participants did have exposure to both VR and CR, even if not working directly in those areas.

7.4.2 Results of the first round Delphi survey

From the experts that consented to participate in the Delphi, 10 (n=10) responded, yielding a response rate of 83.3%. Thematic analysis of the qualitative responses gave rise to three major themes namely, 1) Intervention components addressing functional capacity and work skills of individuals with CVD, 2) Strategies and implementation, 3) Essential elements of RTW intervention programme. A summary of the themes is detailed in table 7.2.

Table 7.2: First round of Delphi survey themes

Theme 1: Intervention components addressing functional capacity and work skills of individuals with CVD	**Category:** 1. Assessment of base line function (physiological and ADL) 2. Psychological support and education for individual, family and employers 3. Work skills training 4. Modified work resumption during rehab
Theme 2: Strategies and Implementation	**Category:** 1. Team approach 2. Individualised assessment to determine rehabilitation goals 3. Education 4. Early implementation for activity participation and RTW
Theme 3: Essential elements of RTW Intervention Programme	**Category:** 1. Teamwork with open communication 2. Work skills and job analysis 3. Work skills intervention 4. Employer liaison

7.4.2.1 Theme 1: Intervention components addressing functional capacity and work skills of individuals with CVD

The expert panel described various interventions that should be considered when addressing work limitations resulting from functional capacity after a cardiac incident. The four categories that present the interventions are, namely, assessment of base line function (physiological and ADL), risk factor modification, psychological support and education for individual, family and employers, work skills training and modified work resumption during rehabilitation.

- **Assessment of base line function (physiological and ADL)**

Experts expressed that it would be fundamental to have information regarding the individual's baseline functioning, relating to physiological aspects, as well as functional components of function. This is described in the following quotes:

"*Monitor blood pressure and heart rate throughout assessment."- Expert 5*

"Before starting your treatment you need to assess the client to determine what their limitations/baseline function is… Optimal medical management, assessment"- Expert 5

- **Psychological support and education for individual, family and employers**

The journey toward recovery and life changes after a cardiac incident can be overwhelming for the individual, his or her family, as well as the employer. Experts expressed that support should be made available in the form of psychological care and very importantly education for all affected, directly or indirectly as part of the intervention programme. The following quotes describe this view:

"Psychological support, social work as needed"- Expert 1

"Addressing fear-avoidance behaviour"- Expert 10

"Education, advice, support and advocacy"- Expert 3

- **Work skills training**

Work skills training in the form of a work hardening programme was identified as one of the intervention components to be included in the RTW programme. Work hardening is a therapeutic intervention using simulated tasks designed to help the patients regain enough

function and prepare for the safe transition back into their work environment. One of the experts commented:

> *"Work hardening programme can be started once optimal medical management has been achieved and the client's condition is considered to be stable."- Expert 6*

- **Modified work resumption during rehabilitation**

Experts strongly acknowledged the benefits of modified work resumption as an important step of the RTW programme. Modified work resumption can be defined as graded work within the real work environment. This can take the form of working less hours, sharing responsibilities or changing work tasks. It has been reported that a graded return to work programme is an effective intervention strategy when introduced early during rehabilitation as it facilitates the RTW process faster (Kool & Koning, 2018). The experts expressed the following regarding modified work resumption:

> *"Adaptations of work tasks during return to work"- Expert 5*

> *"Start of modified work resumption during rehab."- Expert 2*

> *"Graded return to work (depending on the client's performance) during the therapeutic treatment programme."- Expert 6*

7.4.2.2 Theme 2: Strategies and implementation

Upon discussion regarding the strategies an implementation of the RTW intervention programme, four categories arose, namely, the use of a team approach, individualised assessment to determine rehabilitation goals, education and early implementation of activity participation and RTW.

- **Team approach**

The team approach was a strongly share view when addressing strategies and implementation. The team can be regarded in the form of multidisciplinary or interdisciplinary, depending on what is available in the context of the rehabilitation. The importance of a team approach was expressed by the experts as follows:

"1 plan shared by all key stakeholders."- Expert 2

"An integrated programme consisting of physical, social, psychological, educational, occupational and relaxation parts"- Expert 7

- **Individualised assessment to determine rehabilitation goals**

The formulation of rehabilitation goals for individuals was strongly expressed to be of vital importance to the success of a RTW programme. The active participation of the client in determining the rehabilitation goals is perceived as integral as expressed by the following quotes:

"Patient interview with rehabilitation target agreement upon admission"- Expert 1

"Individualised assessment in order to establish the main elements for intervention to ensure optimised performance"- Expert 3

- **Education**

Education is a key feature in all cardiac rehabilitation programmes and according to ten panel of experts, it is a strategy that should remain as part of the RTW programme. The following quotes were communicated by the experts:

"Group education sessions"- Expert 9

"Education of parties listed above"- Expert 8

- **Early implementation of activity participation and RTW**

The introduction of activity participation was noted as being part of the foundation of the RTW programme. With regard to individuals with CVD this participation should be guided by energy conservation techniques and have the purpose to increase endurance levels. The following quotes express this view:

"As an OT I would recommend energy conservation techniques while I am doing therapy with the client who is starting to resume participation in their ADLs"- Expert 6

"Early intervention with regard to a graded activity participation programme to enhance endurance levels is needed"- Expert 10

"Pacing of activities with aim to return to work full time"- Expert 5

"Gradual re-integration into work with regards to work hours, amount of job tasks, suspension of non-essential job tasks (during graded period), flexibility in terms of where the job is done (office/home) and at which times (to allow for frequent rests or a late start if required)."- Expert 8

"Increasing endurance levels through activities of daily living"- Expert 10

7.4.2.3 Theme 3 Essential elements of the RTW Intervention Programme

The expert panel were asked what each one felt to be essential elements of a RTW programme for CVD individuals and the following categories were identified, teamwork with open communication, work skills and job analysis, work skills intervention and employer liaison.

- **Teamwork with open communication**

In all rehabilitation teams, teamwork is a key element. Within a RTW programme the 'team' expands from the typical medical or allied health professionals to include employers who can contribute greatly to the success of RTW programme. The expert panel articulated this by saying:

> *"Overarching: close collaboration between 'healthcare' and 'work'."- Expert 2*

> *"Within close cooperation between the cardiac rehabilitation team and the occupational medical department."- Expert 7*

> *"A team-focus, considering the employer, colleagues, HR, other health professionals and family members."- Expert 8*

> *"Constant communication within the team listed in the previous answer to ensure that employers, health professionals, HR and the client are all on the same page."- Expert 9*

- **Work skills and job analysis**

In order to best plan for an individual's RTW programme goals, an understanding of what his/her job entails is necessary. This will make the RTW programme more realistic and allow for structuring of attainable goals. The following quotes refer to this:

> *"Work site visit"- Expert 6*

> *"A thorough job analysis to determine possible risk areas as well as areas/tasks that can be modified"- Expert 10*

- **Work skills intervention**

As it was expressed above that work skills intervention should be a strategy to be considered, it was further elaborated to be an essential part of the RTW programme as conveyed in the following quote:

> *"Work hardening in a safe environment that targets the job tasks that are essential/key requirements of the client's job"- Expert 9*

- **Employer liaison**

In order to transition the individual from the rehabilitation setting to the work setting, employer liaison is an essential element to implement. Panel experts expressed this very strongly in the following quotes.

> *"...with regards to reasonable accommodations and supports required; that support does not mean undue strain or financial cost especially."- Expert 8*

> *"Liaison with employers early on to determine what job modifications need to be in place and to negotiate these job modifications"- Expert 10*

> *"Liaising with the client's employer with regard to the reasonable accommodations that the client might need"- Expert 6*

7.4.3 Concept mapping and drafting of the return work programme

As mentioned in previous sections, the IM framework (chapter 3) was used when designing this RTW programme. According to this framework the design for the programme is informed by the need's assessment and identification of performance objectives (chapters 4 and 5) and literature on the methods and strategies that are effective for CVD individuals who are returning to work (chapter 6).

Together this information and the results from the first round of the Delphi survey was triangulated and the resultant preliminary concept map developed. The concept map outlines

various concepts stemming from the triangulation of the findings which informed the planned RTW intervention programme. The needs assessment and identification of performance objectives of the first two phases of IM, highlighted the following: the RTW rate is below 50% despite CR attendance, older participants are less likely to RTW and impairment (physical and psychological) are influencing factors of RTW. Furthermore, participants expressed the positive aspects of participation in ADLs, the negative aspects of fatigue, stress and anxiety. Education regarding the condition was seen as a contributing factor toward change in lifestyle. Preparation for RTW, liaising with employers and reasonable accommodation was identified as facilitators of the RTW process. Literature identified methods and strategies on three levels to be addressed, namely, the individual level, an organisational level and implementation strategies.

7.4.3.1 Components of the intervention programme to be considered

The concept map gave rise to five key areas: the programme structure, theories, context, participants and the focus areas. Through the identification of the key areas, the researcher was able to plan a programme that was inclusive of essential elements. Figure 7.2 is a depiction of the concept map used to design the RTW intervention programme followed by an explanation of the key areas.

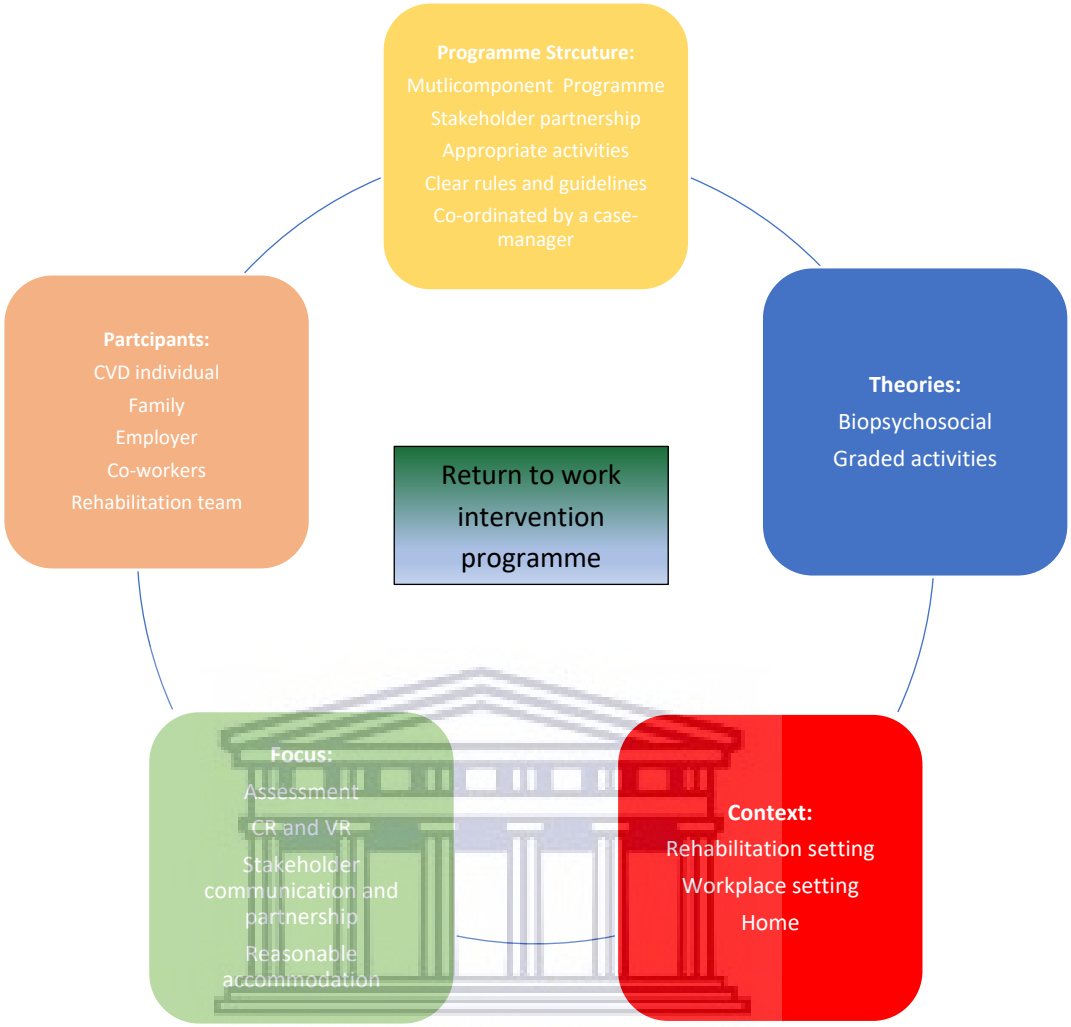


Figure 7.1: Concept map and design of the return to work intervention programme

- **Programme structure**

The programme structure plays a key role in the success of the intervention programme. The effectiveness of the programme depends on a structure that is comprehensive and methodical. The current form of intervention here in the Western Cape is confined to an educational programme focused on CR only and does not yield a high RTW rates after a CVD incident. Information gathered over the different phases indicate that there needs to be alignment between CR and VR in order to address RTW for individuals with CVD.

To address this disparity, the literature suggests a multicomponent intervention programme. A multicomponent programme entails 'complex interventions' which comprises at least two interacting components such as procedures and behaviours (individual or group interventions) or products (medicine) (Lau et al., 2014). Studies have reported that multicomponent interventions offer good results in improving lifestyle behaviours (Grandes et al., 2008).

In order to achieve success in such a programme, there are many entities integrally involved in the healthcare system which form the stakeholder partnership. This comprises patients, physicians, nurses, allied health professionals, employers, insurance companies, pharmaceutical companies and government.

From the scoping review, evidence points toward appropriate activity selection on the individual and organisational levels. On the individual level this would include exercise, energy conservation and psychological and emotional concerns to be addressed. On the organisational level it would be important to liaise with employers or occupational doctors/nurses, review the implementation of reasonable accommodation and to support early RTW of individuals diagnosed with CVD in order to avoid the 'sick role' or losing of jobs. The use of group sessions would be beneficial for educational aspects, particularly relating to CR. However individual sessions are essential for vocational rehabilitation. Maintenance programmes are important for the longevity of the behavioural and lifestyle changes and hybrid programmes have reported much success.

A collaborative process that includes assessment, planning, facilitation, care co-ordination, evaluation and advocacy that aims to meet the healthcare needs to the individual and his/her family should be managed by a case manager. Clear rules and guideline for the individual, the family and all involved professionals, should be defined at the start of the process.

- **Theories**

Using the ICF Framework to guide the design and implementation of the RTW intervention programme, the researchers acknowledge the biopsychosocial model and principles of graded activity embedded in this framework.

The biopsychosocial model considers the relationship between biological, psychological and socio-environmental factors and is viewed widely as an inter-disciplinary model (Borrell-

Carrio, Suchman, & Epstein, 2004). Within occupational therapy, graded activity is a principle to intervention in which activities/tasks are selected according to the individual's level of function and gradually demands are increased as functional abilities improve (Graded activity, n.d.).

- **Context**

The context of the intervention programme will comprise the rehabilitation setting, the workplace and the home. Within the rehabilitation setting, rehabilitation specialists (occupational therapists, physiotherapists, dieticians, physicians/nurses, psychologists) will conduct assessments, set goals for intervention and provide work skill intervention. The vocational rehabilitation specialists (occupational therapists, occupational health doctor/nurse) will conduct work-related assessment, set goals, implement graded RTW within the work environment and facilitate the reasonable accommodation of individuals with CVD. The final phase of the RTW programme involves the maintenance of RTW and lifestyle changes monitored through a hybrid programme and therefore the home will serve as the setting for this phase.

- **Participants**

As mentioned above the stakeholder partnership is vital in a RTW programme. The start of the rehabilitation process would involve the family of the individual as lifestyle changes often affect the whole family unit. Education regarding the condition and aspects like dietary changes are important for all. Further along the rehabilitation continuum, employers and possibly co-workers need to be included to implement aspects of reasonable accommodation within the workplace. In order to do this, participants within the work environment will also need education regarding the condition. The programme that is all inclusive should be facilitated by rehabilitation professionals that are skilled in CR and VR. Each rehabilitation professional and other members of the programme should have a specific role and required skill set to contribute to the RTW of the individual with CVD.

- **Focus**

As identified in the first round of the Delphi survey and the information gained from previous phases the following focus areas should be included in the design of the RTW programme: 1)Thorough assessment procedures, 2)Psychological support and education for the individual, family and employers, 3)Work skills training and 4) Modified work resumption. This should be achieved through a combination of CR and VR. There has been overwhelming consensus that essential to the process of implementation of such a programme is a team approach with open communication amongst all stakeholders being a key aspect to success. Individual assessment and goal setting to ensure active participation from the individual with CVD. Education regarding the condition is an essential focus area as it facilitates acceptance and lifestyle change. The understanding of the individual's work abilities and a job analysis will render very important information for the work skill intervention, which is best done in conjunction with employer liaison.

7.4.3.2 Programme goals

This RTW programme aims to bridge the gap between conventional CR and VR in order to improve the RTW rates of individuals with CVD and improve adaptation in the workplace after a cardiac incident. This programme represented by Figure 7.2 will be known as ***The Heart Return to Work Intervention Programme*** **(HRTWIP),** developed to provide a structured pathway to facilitate the RTW of individuals with CVD.

The HRTWIP is made up of four phases that are interconnected. The initial phase is identified as the **Assessment phase,** which comprises a comprehensive set of assessments (both standardised and non-standardised) to establish functional ability, physiological functioning, psychometric evaluation and work-related assessments. The proposed time frame for this phase would be between 1 and 10 sessions, with a duration of 60 minutes per session. This is followed by **Work intervention phase**. This second phase is made of CR and VR. The CR component will be educationally based and cover topics such as exercise, diet, medication, stress and anxiety management, lifestyle modification and education about the CVD condition. The VR aspects of this phase will entail graded activity and work simulation as a means of preparation for work resumption and vocational counselling. The proposed time frame for this phase is between 5 and 20 sessions of 60 minutes per session. Once competency is achieved in the

second phase, the individual can move onto the third phase called the **Work test placement phase.** During this phase, the focus is on employer liaison and education of the employer and co-workers. The implementation of modified work resumption and reasonable accommodation will be perused. The time frame for this phase will be between 5 and 15 sessions of 60 minutes per session. The final phase is represented by the **Full participation in the worker role** of the individual with CVD. Within this phase the individual with CVD will be independent in his/her participation of all occupations, including work. The maintenance of this phase will be done through a hybrid programme that uses technology as a mean to communicate between the healthcare system and the individual. It will facilitate the accountability of maintaining the lifestyle changes and provide opportunities to seek support when needed. The proposed time frame for this phase could be one month with three contact sessions of 60 minutes each or three contact sessions over a three-month period of 60 minutes each or no limits placed on this phase but will be dependent on availability of the OT. This phase will be geared toward the tapering of support and services gradually.

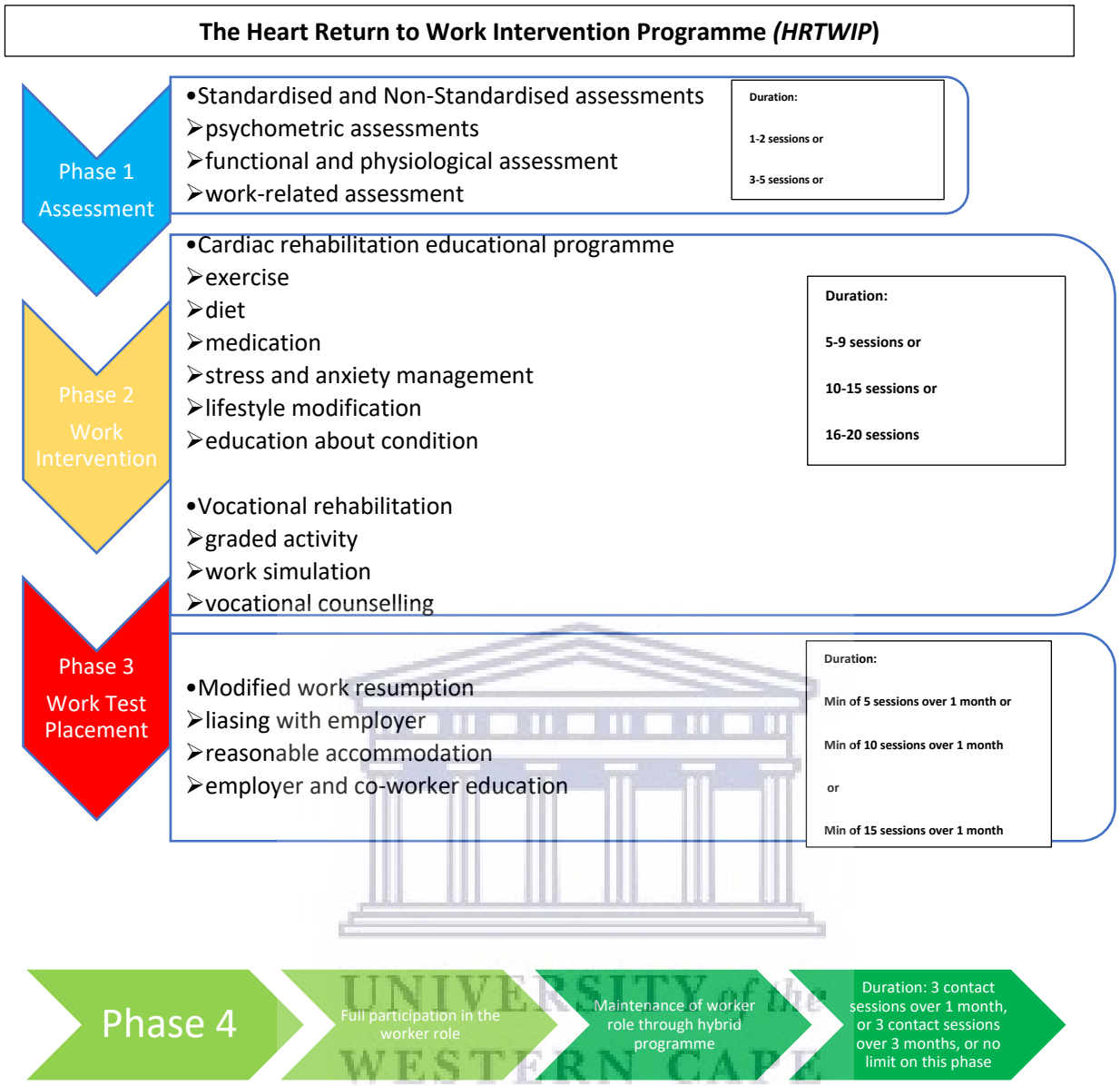


Figure 7.2: The heart return to work intervention draft programme

7.4.4 Results of the second round of the Delphi survey

The results of the second round of the Delphi survey will be presented in Table 7.2. The experts rated the contents of the proposed heart return to work intervention programme (HRTWIP) and made further comments on its structure, components, approaches, implementation strategies and the duration of each phase of the programme. The proposed intervention programme was developed into a questionnaire (Appendix 7) using Google forms and sent to the experts via email. The questionnaire had 23 items that was either rated on a three-point Likert scale of Agree, Indifferent or Disagree, and comments were also requested for suggestions regarding

the content of the programme. The response rate of the second round of the Delphi survey was 100% of the 10 participating experts from round one. As mentioned previously consensus was regarded as 70% agreement from the experts. Items achieving less than 70% agreement, together with comments made were reviewed in the third round of the Delphi survey.

Table 7.3: Delphi round two quantitative results

Phase	**Item**	**% of consensus**
Phase 1: Assessment phase This is the first section of the programme where an interview and standardised assessments are conducted with the individual to seek information regarding physiological baseline, function in ADL, psychological function and work-related information.		100%
The estimated duration required to implement the assessment phase should be?	1-2 sessions of 60 minutes each 3-5 sessions of 60 minutes each 6-10 sessions of 60 minutes each	60% 40% 20%
Phase 2: Intervention/ Training phase **Focus area 1:** Cardiac rehabilitation through education programme to cover the following topics within a group	Exercise Diet	90% 70%

	Medication	60%
	Stress and anxiety management	80%
	Lifestyle modification	80%
	Education about the condition **For individual, family/caregiver, employer*	70%
Focus area 2: Individual vocational rehabilitation	Vocational counselling and career planning	90%
	Work hardening that includes work simulation	90%
The estimated duration required to implement the intervention phase should be:	5-9 sessions of 60 minutes each	40%
	10-15 sessions of 60 minutes each	30%
	16-20 sessions of 60 minutes each	20%
Phase 3: Work test placement This is a continuation of the previous phase, whereby other stakeholders in the RTW process are also engaged. The interventions provided will be both clinical	Preparation of individual and education of family, employer and co-workers on individual's capacity to perform work tasks	80%

and at the workplace. The following interventions should be included in this phase	Work site visit	80%
	Implementation of reasonable accommodation strategies in consultation with employer/ occupational health professional	80%
	Work trials (practise of work skills in real work environment)	90%
	Job coaching and on-going support at the workplace	90%
The estimated duration needed to implement the Work Test Placement phase should be:	Minimum of 5 sessions over a month period (60 minutes each)	50%
	Minimum of 10 sessions over a month period (60 minutes each)	10%
	Minimum of 15 sessions over a month period (60 minutes each)	20%
Phase 4: Full participation in the worker role	Individual is able to make decisions about strengths and weaknesses	80%

This is the final phase of the RTW programme where the individual is fully integrated back at work. The individual is independent and requires minimum support at this stage.	Rehabilitation professional involvement is gradually decreased Maintenance of worker role and control risk factors done through a hybrid programme	90% 70%
The estimated duration needed to implement this should be:	A month duration of 3 contact sessions (60 minutes each) 3 contact sessions over a 3-month period (60 minutes each) No time period linked to this phase (but limited to availability of the OT)	30% 50% 30%
Implementation strategies for the RTW intervention: The following strategies should be utilised when implementing the four phases:	Use of a multi-disciplinary team approach Use of an inter-disciplinary team approach Client-centred approach (client is involved in the decision-making process throughout intervention)	50% 60% 100%

	Interventions are individually tailored to meet clients' needs	90%
Rehabilitation commencement	After the completion of medical intervention by physician	50%
	During in-patient rehabilitation	40%
	During out-patient rehabilitation	60%
	When individual is independent in performing bADL tasks (self-care and mobility)	30%

7.4.5 Results of the third round Delphi survey

The third round of the Delphi was made up of six items that required further deliberation namely, 1) duration of the assessment phase, 2) is medication a relevant topic to be included in the educational sessions, 3) duration of the intervention phase, 4) duration of the work test placement phase, 5) duration of the final phase and 6) rehabilitation commencement. Experts were given the option of the two highest rated options from the second round unless the comments strongly suggested an alternative. The item regarding the multi-disciplinary team and inter-disciplinary team was not included as it was evident form the comments that a team approach was regarded as applicable, but it would depend on what is available in the particular setting. A Google form was once again generated with the relevant questions and emailed to the participants. The response rate was 100% of participating experts form rounds one and two. Table 7.3 represents the results of the third round of the Delphi survey.

Table 7.4: Delphi round three quantitative results

Phase	Item	% of consensus
Assessment phase	Estimated duration required to implement assessment phase: - 1-2 sessions of 60 min each - 3-5 sessions of 60 min each	30 % 70 %
Intervention phase	Education programme topics for group: Medication - Relevant - Not relevant Estimated duration required to implement intervention phase: - 5-9 sessions of 60 min each - Individually determined	90% 10% 10% 90%
Work test placement phase	Estimated duration required to implement work test placement phase: - Min of 5 sessions over a month period (60 min each) - Individually determined	0% 100%
Final phase	Estimated duration required to implement the final stage:	

	- 3 contact sessions over 3 months - Individually determined	20% 80%
Rehabilitation commencement	Rehabilitation commencement: - In-patient phase - Out-patient phase	30% 70%

At the end of the third-round consensus was reached on all items in the proposed RTW intervention programme for individuals with CVD. Experts that participated in all three rounds were notified of the completion of the final round of the Delphi and provided with a copy of the HRTWIP.

7.5 Adjustments to the designed heart return to work intervention programme (HRTWIP)

Upon completion of the third round of the Delphi survey the necessary changes were made to the proposed heart return to work intervention programme. Table 7.4 represents the final draft of the HRTWIP. Changes were made to the duration of each phase of the study and commencement of phases one and two. Taking into consideration the experts views on the duration, individually determined time frames were included. This is further corroborated in published articles. Mampuya's (2012) overview on cardiac rehabilitation in the past, present and future found that CR with individualised services improved participation in CR programmes. The third round of the Delphi also confirmed that education regarding medication for CVD individuals should be included in the programme. Experts agreed that rehabilitation should commence during the outpatient phase. Giulian et al. (2017) suggested from their study on practical guides to enhance patient outcomes through continuity of care in CR, that an informational continuity between the in-patient phase and out-patient phase may optimise

rehabilitation and patient engagement. Lastly, as mentioned previously the implementation of a team approach will rather be defined according to context.

Table 7.5: The heart return to work intervention programme (HRTWIP)

Phase	Description	Components	Number of sessions	Duration of sessions
Phase 1: Assessment	This is the first phase where information regarding function, physical condition, psychological aspects and work-related information is sought through an interview followed by standardised and non-standardised assessments. Team members may include OT, PT, Dietician, Physician/Nurse and psychologist.	Functional assessment of ADL Stress test Work-related assessment Psychometric assessments	3-5 sessions	60 minutes per session

Phase 2: **Work intervention**	This phase comprises 2 focus area: cardiac rehabilitation and vocational rehabilitation. With the CR groups, team members may include OT, PT, Dietician, Physician/Nurse and psychologist. During the VR sessions team members may include the OT and occupational doctor/nurse.	Cardiac rehabilitation educational programme topics: ➢ exercise ➢ diet ➢ medication ➢ stress and anxiety management ➢ lifestyle modification ➢ education about condition Vocational rehabilitation ➢ graded activity ➢ work simulation ➢ vocational counselling	Individually determined time frame	60 minutes per session
Phase 3: **Work test placement**	This phase is commenced once competency is achieved in the previous phase. Intervention is provided within the work	➢ Modified work resumption ➢ liaising with employer ➢ reasonable accommodation ➢ employer and co-worker education	Individually determined time frame	60 minutes per session

	environment. Team members may include the OT, the occupational doctor/nurse and the employer.			
Phase 4: **Full participation in the worker role**	The final phase of the RTW programme is denoted once the individual with CVD is able to fully participate in the worker role. A hybrid programme will be used for monitoring and support. This can be managed by the case manager.	➢ Individual is able to maintain lifestyle changes. ➢ Individual is able to identify when support is required. ➢ Support and services gradually decreased.	Individually determined time frame	According to availability of the OT.
Implementation strategies and overall duration of the RTW	The strategies that govern the various phases.	Implementation strategies: ➢ Use of a team approach	Overall duration of the Programme: +- 12 months	

intervention programme		(OT, PT, MD, Nurse, Dietician, Psychologist) ➢ Client-centred with interventions designed specifically for client and his/her context ➢ Use of case manager Commencement of the rehabilitation programme: ➢ Out-patient rehabilitation ➢ When client is independent in bADLs and iADLs		

7.6 Conclusion

The Delphi method enabled the researcher to sought expert opinion in order to develop a vocational rehabilitation programme aimed at improving the RTW rates for individuals with CVD. This method of enquiry proved to be a useful and appropriate tool in the development process of the RTW intervention programme. Despite the loss of two experts due to Covid-19 pandemic stressors, an expert panel of 10 was maintained throughout the Delphi rounds. The resultant heart return to work implementation programme (HRTWIP) consists of four phases that are interconnected and guided by implementation strategies. Accommodations for fluid movement between the phases in a forward or backward motion (if needed) are made. An executive summary and conclusion will be presented in the next chapter.

CHAPTER 8: SUMMARY, CONCLUSION AND RECOMMENDATIONS

8.1 Introduction

This study endeavoured to design a return to work programme that could improve the RTW rates for individuals with CVD in the Western Cape, South Africa. The WHO international classification of functioning, health and disability (ICF) was used as the conceptual framework for this study. In conjunction with the ICF, intervention mapping (IM) by Eldredge (2016) was used as the methodological framework in order to guide the process within the different phases of the study. A graphical representation of the IM is illustrated in figure 8.1.

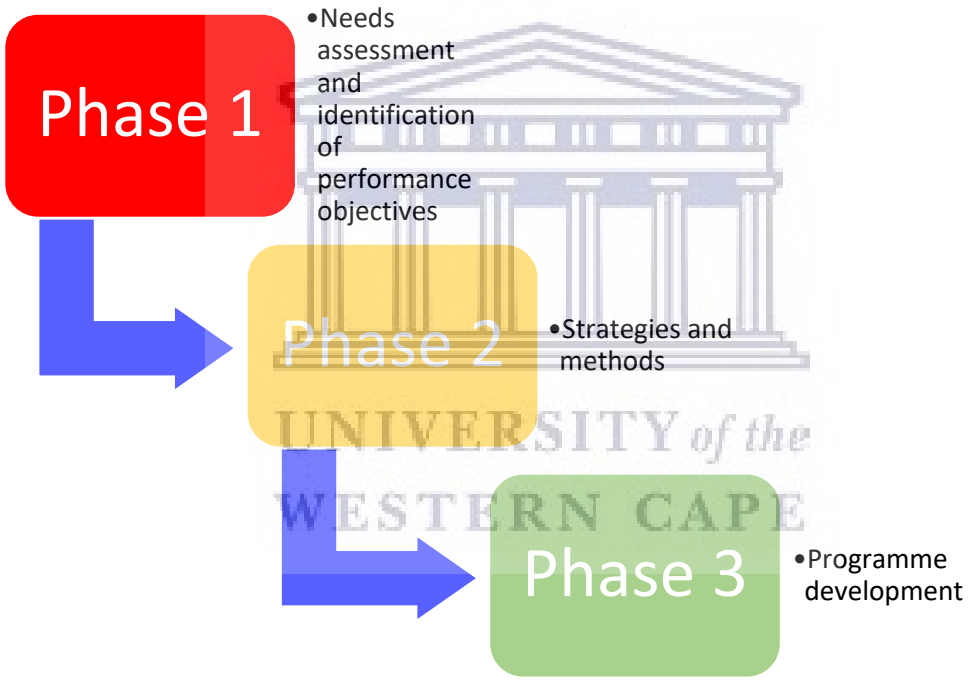


Figure 8.1: Phases of the study

The first phase of the study sought to gain an understanding of the problem. RTW rates after a cardiac incident and identification of impairments, activity limitations and participation restrictions were obtained through a quantitative survey. Further investigation of the impairments, activity limitations and participation restrictions were explored through qualitative semi-structured interviews. In the second phase, the researcher studied the methods and strategies published regarding RTW for individuals with CVD and captured the

information in a scoping review. The third phase gave rise to the development of the intervention programme, through the process of a Delphi survey with an expert panel in CVD and VR. This final chapter seeks to summarise the three phases of the study and its contribution to the body of knowledge in CVD and vocational rehabilitation. Recommendations and limitations are presented in the conclusion of the study.

8.2 Summary of phases

8.2.1 Phase 1: Baseline needs assessment and identification of performance objectives

The aim of the first phase was to explore and answer the first three objectives of the study namely: 1) To determine the RTW rate of individuals with CVD after a cardiac incident, 2) To determine the impact of impairment and socio-demographic factors on an individual's ability to RTW after a cardiac incident, and 3) To determine and explore the barriers and facilitators of RTW for individuals with CVD. This was achieved through a quantitative survey, followed by qualitative semi-structured interviews.

8.2.1.1 Baseline quantitative assessment of the RTW rates, impairment, activity limitations, participation restrictions and determinants of RTW after a cardiac incident

The quantitative phase of the study was aimed at determining RTW rates after a cardiac incident and influencing factors associated with RTW. The demographic characteristics of the quantitative sample comprised 27 female and 36 male attendees of the CR programme hosted at VWH in Wynberg, Cape Town. The mean age of the sample was 54 years. The RTW rate and influencing factors were determined through the logistic regression analysis of the data using the IBM SPSS (version 25) software.

The results of the RTW rate after participation in a typical CR programme reported that only 30 (47.6%) of the participants RTW successfully and 33 (52.4%) of participants did not RTW. Three of the socio-demographic variables, namely civil status, education level and gender had no significant association with their ability to RTW. From the logistic regression analysis, it

was found that age ($p \leq 0.004$) and impairment score ($p \leq 0.034$) were significant in influencing RTW.

These results suggest that factors associated with impairment and its influence on ability to RTW must be addressed more aggressively in cardiac rehabilitation programmes. The significance of this fact for a practice model being developed is that these variables must be part of an integrative cardiac rehabilitation programme which includes RTW preparation and strategies.

8.2.1.2 Baseline exploration of the lived experience of returning to work after a cardiac incident

Within this explanatory sequential design, the qualitative phase of the study was aimed at exploring the impact of impairment, as well as barriers and facilitators on the return to work for individuals after a cardiac incident (objectives two and three). A convenient sample was selected at the data collection site. Ten participants were selected from the sample for the semi-structured interviews. Seven of the participants were male and three were female. Thematic analysis of the data was pursued.

The five major themes emerged, namely: 1) Cardiac conditions negatively affects function: *"I get tired very quickly";* 2) Education on one's medical condition enhances insight: *"It's very important to understand your body and its signs";* 3) Return to work: *"I think I'm one of the lucky few";* 4) Participation in ADLs enhances one's activity levels: *"I don't have time for exercise.";* and 5) Being unemployed: *"Now I don't have any income."*

Theme 1 represents the participants' physical and emotional journey after the cardiac incident and the change in their health that they needed to adapt to in order to return to functional work activities. Theme 2 captures the participants' response related to the educational component of the cardiac rehabilitation. Education was well received as a facilitator toward positive lifestyle changes. Theme 3 is an illustration of how a supportive and an adaptive work environment can

aid in the resumption of work successfully. Theme four represents the process participants pursued toward more active lifestyles after the cardiac incident. Lastly, theme five embodies the barriers experienced after the cardiac incident when participants were not able to return to work.

The information gained from the participants regarding RTW, was used as a guide in the subsequent chapter that explores effective intervention strategies that are being used in RTW for individuals after a cardiac incident through a scoping review.

8.2.2 Phase 2: Strategies and methods

A scoping review was conducted in the second phase of the study, which intended to answer the fourth objective of identifying the components of RTW intervention for individuals with CVD who are able to restore their worker role. Published literature content that described RTW strategies within vocational rehabilitation programmes for individuals with CVD was studied. Stages in conducting a scoping review included 1) identifying the research question, 2) identifying relevant studies, 3) study selection, 4) charting the data, and 5) collating, summarising and reporting the results. Articles published within the last decade (2009-2019) were given priority, with a focus on RTW strategies or vocational/work rehabilitation programmes (interventions, protocols, guidelines, etc) for individuals with CVD being the sample in the study. The scoping review studied 21 articles, all of it originating outside of the African continent. Even though there is an increasing number of cardiovascular research emerging from research institutions in Southern Africa, not much work is done in the space of RTW within cardiac rehabilitation research. From the articles identified three main themes emerged, (1) Intervention at an individual level; (2) Intervention at an organisational level and (3) Implementation strategies. These core components of intervention contributed to the designing of an intervention programme aimed at RTW for individuals with cardiac diagnoses in the South African context.

8.2.3 Phase 3: Programme development

In the final phase of the study the aim of developing a RTW intervention programme was achieved through a Delphi survey which was conducted with 10 experts. Experts in both the fields of CR and VR that are either practising professionals or working in academia were selected. Consent forms, the demographic questionnaire and three Delphi surveys were designed using Google forms and administered online using provided email addresses. Within this e-Delphi process, the researcher used evidence from previous phases of the study as outlined by the intervention mapping (IM) protocol together with opinions from the experts as expressed in the first round of the Delphi and then subsequent feedback in more controlled second and third rounds. This study consisted of three rounds in the e-Delphi process. It spanned over a three-month period. Consensus was reached at the end of the third round. The Delphi survey presented both qualitative and quantitative results, therefore measures of central tendency and thematic analysis were employed. The design and conceptualisation of the RTW programme developed from this process within the first round of the Delphi survey. The ***Heart Return to Work Intervention Programme*** **(HRTWIP)**, was developed to provide a structured pathway to facilitate the RTW of individuals with CVD. In the second round, experts rated the contents of the proposed HRTWIP and made further comments on its structure, components, approaches, implementation strategies and the duration of each phase of the programme. The third round of the Delphi was made up of six items that required further deliberation. At the end of the third-round consensus was reached on all items in the proposed RTW intervention programme for individuals with CVD.

8.3 The developed heart return to work intervention programme (HRTWIP)

The processes and procedures of the different phases of this study informed and guided the development of this intervention programme. The heart return to work implementation programme (HRTWIP) consists of four phases that are interconnected and guided by implementation strategies. Accommodations for fluid movement between the phases in a forward or backward motion (if needed) are made.

The first phase is the assessment phase, where information regarding function, physical condition, psychological aspects and work-related information is sought through an interview

followed by standardised and non-standardised assessments. This is followed by the second phase of work intervention. This phase consists of two focus areas: cardiac rehabilitation and vocational rehabilitation. The third phase is the work test placement phase. This phase is commenced once competency is achieved in the previous phase. Intervention are provided within the work environment. The fourth and final phase of the RTW programme is denoted once the CVD individual is able to fully participate in the worker role. A hybrid programme will be used for monitoring and support.

Implementation strategies to be employed are characterised by the use of a team approach (OT, PT, MD, Nurse, Dietician, Psychologist), client-centred interventions designed specifically for client and his/her context and of a case manager to facilitate the process. Commencement of the rehabilitation programme will be as part of out-patient rehabilitation procedures when client is independent in bADLs and iADLs. A graphical representation of the HRTWIP is shown in figure 8.2.

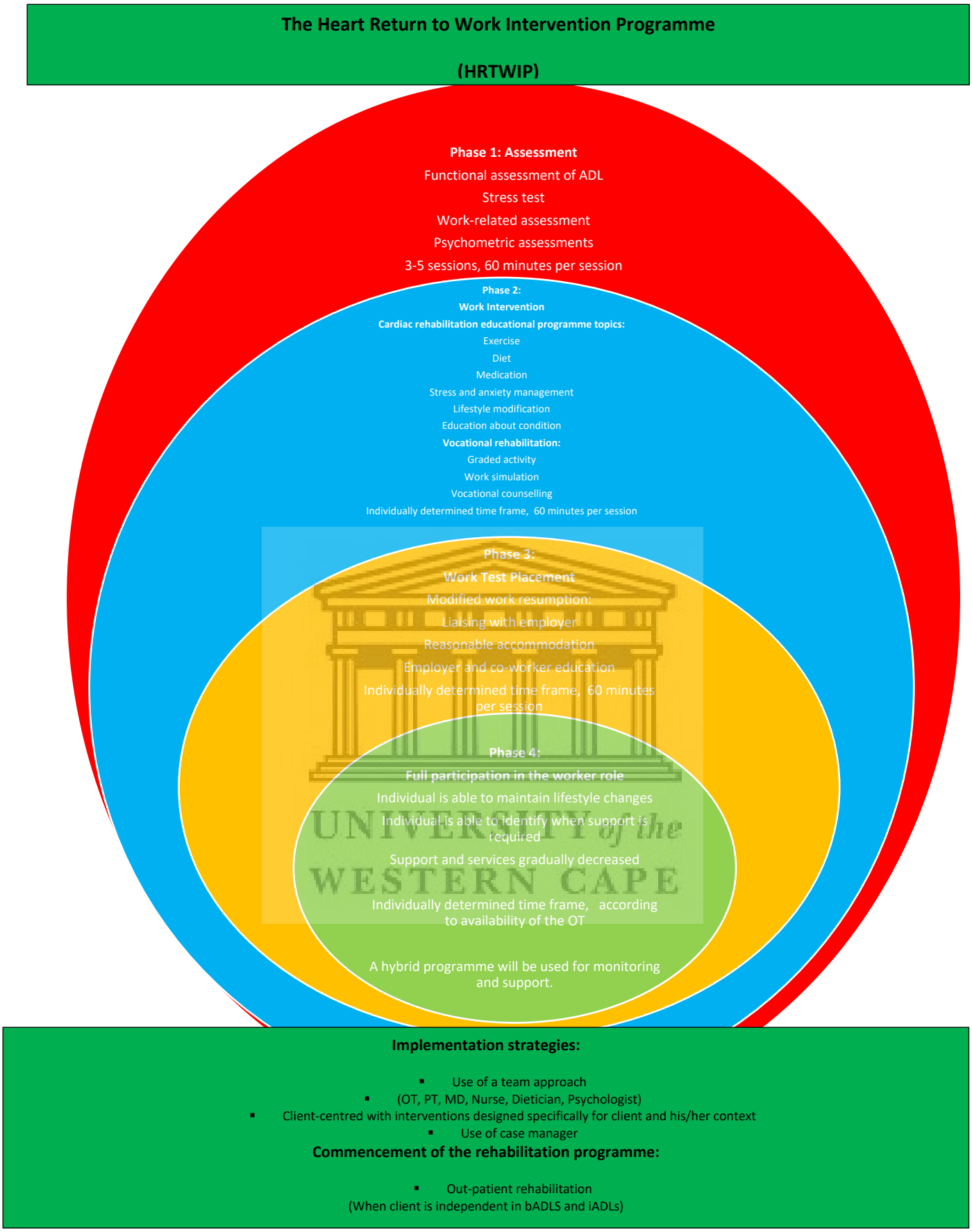


Figure 8.2: The heart return to work intervention programme (HRTIP)

8.4 Conclusion

The following conclusion was drawn from this study:

- RTW rate reported only 30 (47.6%) of the participants RTW successfully after cardiac rehabilitation and 33 (52.4%) of participants did not RTW.
- The older the individual and the higher the degree of impairment experienced, the less likely RTW would pursue.
- Cardiac conditions negatively affect function.
- Education on one's medical condition enhances insight.
- Return to work is a motivating factor to positive lifestyle change and possible through reasonable accommodation and supportive colleagues.
- Participation in ADLs enhances one's activity levels.
- Being unemployed affects quality of life.
- RTW intervention is depended on (1) intervention at an individual level; (2) intervention at an organisational level and (3) implementation strategies.
- The ***Heart Return to Work Intervention Programme*** **(HRTWIP)**, presents a structured pathway to facilitate the RTW of individuals with CVD.
- The HRTWIP consists of four phases that are interconnected and guided by implementation strategies.
- Accommodations for fluid movement between the phases in a forward or backward motion (if needed) are made.

8.5 Study limitations

The study limitations within each phase are presented below, followed by limitations for the study as a whole.

8.5.1 Baseline quantitative exploration of RTW rates, impairment, activity limitation and participation restrictions of individuals with CVD

The study sample was small, however, due to no other CR programmes available in the geographical area there was no other choice.

The study was only conducted at one site in the Western Cape, hence the findings cannot be generalised, even though the title refers to the Western Cape.

8.5.2 Qualitative exploration of the impairment, activity limitation and participation restrictions of individuals with CVD

More men were represented in this sample than women; however, statistical analysis in the quantitative phase indicated that gender was not a significant factor for RTW.

8.5.3 Scoping review

Articles representing methods and strategies on the African continent were not found. Isolating interventions that were specifically geared toward RTW for the individual with CVD was limiting, therefore intervention had to be viewed with a wider spectrum.

8.5.4 Delphi study

Even though a Delphi survey is considered valid with 10 participants, a greater number of experts could add richness to the information sought. The Covid-19 pandemic contributed to experts not being available to participate.

8.6 Recommendations

The findings of this study have highlighted the contribution that the information gained can make in the following areas: recommendations for future studies, education, policy development and clinical practice.

8.6.1 Recommendations for future studies

As the HRTWIP is an evidence-based rehabilitation design, its practicality within different contexts must be established. Due to the design of the programme being long-term, feasibility must also be established.

Studies to ascertain the practically of the HRTWIP will be useful and contribute to the validation of the results. Furthermore, exploration of employers' views on such a programme will be valuable. The implementation of the HRTWIP programme using a randomised control design (RCT) to determine the effectiveness of the HRTWIP programme

8.6.2 Education

Through the findings it was established that individuals with CVD are not priority candidates for VR in South Africa; however, they will definitely benefit from the service. Vocational rehabilitation curricula at the various universities could look into including CVD education aspects that actively explore RTW in cardiac rehabilitation programmes.

8.6.3 Policy development

The findings highlighted the need to relook at financial support provided by government in the form of temporary disability grants. Currently, individuals with CVD do not qualify for temporary assistance as the time frames for recovery and rehabilitation are shorter than that prescribed. Policy development regarding rehabilitation services for individuals with CVD can also use this study's findings.

8.6.4 Clinical practice

The formation of a multi-disciplinary or inter-disciplinary team that can address CVD would be beneficial to the success of such a programme. Vocational rehabilitation and RTW programmes need to broaden their scope of practice and reach out to work with more stakeholders. CR programmes would benefit from smaller group activities. The establishment of hybrid programmes could add much value and success to the return of engagement in various occupations.

8.7 Dissemination of findings

The findings of this study will be drafted into articles for submission to accredited peer-reviewed journals. Furthermore, opportunities for conference presentations will be sought.

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APPENDICES

APPENDIX 1: Study's Ethics Certificate from the Higher Degrees Committee of the University of the Western Cape

UNIVERSITY of the WESTERN CAPE

OFFICE OF THE DIRECTOR: RESEARCH
RESEARCH AND INNOVATION DIVISION

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15 August 2017

Ms Z Ganie
Occupational Therapy
Faculty of Community and Health Sciences

Ethics Reference Number: BM17/6/9

Project Title: The development of a return to work model for individuals with cardiac diagnoses in the Western Cape, South Africa.

Approval Period: 28 July 2017 to 28 July 2018

I hereby certify that the Biomedical Science Research Ethics Committee of the University of the Western Cape approved the scientific methodology and ethics of the above mentioned research project.

Any amendments, extension or other modifications to the protocol must be submitted to the Ethics Committee for approval.

Please remember to submit a progress report in good time for annual renewal.

The Committee must be informed of any serious adverse event and/or termination of the study.

Ms Patricia Josias
Research Ethics Committee Officer
University of the Western Cape

PROVISIONAL REC NUMBER -130416-050

APPENDIX 2: Participants Information Sheet

UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa
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INFORMATION SHEET

Project Title: The development of a return to work model for individuals with cardiac diagnoses in the Western Cape, South Africa

What is this study about?
This is a research project being conducted by Zakeera Ganie who is a post graduate Occupational Therapy student at the University of the Western Cape. I am inviting you to participate in this research project because you have participated in a cardiac rehabilitation programme. The purpose of this research project is to explore the factors that determine return to work after a cardiac incident and to develop a model for return to work for cardiac patients.

What will I be asked to do if I agree to participate?
You will be asked to take part in an interview at Victoria Wynberg Hospital or at your workplace whereby you will asked questions about the various aspects that helped or prevented you from returning to your work that you were doing before your attended Victoria Hospital. This interview will be 45 to 60 minutes long and will take place at a time which is convenient to you and the Occupational Therapist. If you do not feel comfortable with the interview being done at your work place then a home visit can be arranged.

Would my participation in this study be kept confidential?
The researchers agree to protect your identity and your contribution. To ensure your anonymity (this means your ability to be anonymous) your name will not be included on the collected data and a pseudonym will be used instead.

This research project involves audiotape recording interviews, allowing the researcher to gather the data as accurately as possible. To ensure your confidentiality, the voice recordings and transcriptions of the findings gathered in the interviews will be locked away in a cupboard, and only be accessed by the

APPENDIX 3: Participants Consent Form

UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa

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E-mail: msoeker@uwc.ac.za

CONSENT FORM

Title of Research Project:

The development of a return to work model for individuals with cardiac diagnoses in the Western Cape, South Africa

The study has been described to me in language that I understand. My questions regarding the study have been answered. I understand what my involvement will entail, and I agree that my participation is my own choice and free will. I understand that my identity will not be disclosed to anyone. I understand that I may withdraw from the study at any time without reason and without fear of negative consequences or loss of benefits.

___ I agree to be audiotaped during my participation in this study.

___ I do not agree to be audiotaped during my participation in this study.

Participant's name: ……..

Participant's signature: …….

Date: …….

APPENDIX 4: WORQ- Return to Work Questionnaire

WORQ

Work Rehabilitation Questionnaire
Self-Report

Date _____ (Month Day Year)

Full Name _____

ID Number (if applicable) _____

*The Work Rehabilitation Questionnaire (WORQ) is a questionnaire that has been developed to better understand the extent of problems in functioning that people may have due to their health condition(s) and who are undergoing work or vocational rehabilitation. Part 1 of WORQ will ask for sociodemographics and background information. Part 2 will ask you a series of questions concerning your functioning. When answering part 2, think about your **past week,** considering both your good and bad days and the extent of your problem on average in the past week.*

PART 1: SOCIODEMOGRAPHICS AND BACKGROUND INFORMATION

1. **Age (in years)** _____ years **2. Sex** ☐ female ☐ male

3. **Civil status** ☐ never married ☐ married ☐ separated ☐ divorced ☐ widowed ☐ cohabiting/living with somebody

4. **Which best describes your current work status, or if currently not working your last work status?**
   ☐ Employed ☐ Self-employed ☐ Non-paid work such as volunteer
   ☐ Student or in training ☐ Homemaker ☐ Retired ☐ *Not applicable*

5. **Which of the following describes your current work status best?**
   a. If currently working, are you? ☐ Full time ☐ Part time ☐ On modified or light duty
   Or, if currently not working, are you?
   ☐ Not working due to health reason
   ☐ Not working due to ongoing vocational rehabilitation
   ☐ Not working due to other reasons: Please specify

   b) If currently not working, since when have you been off from work? _____ (Day Month Year)

6. **When thinking about your work or vocational rehabilitation program: Are you currently:** (Check all that apply)
   ☐... Engaging in vocational training activities such as in acquiring knowledge and skills for a job, including school training
   ☐... Engaging in programs related to preparation for employment such as apprenticeship or internship
   ☐... Engaging in activities to secure or maintain your current job
   ☐... Looking for a (new) job or work

7. **What is the highest level of education that you have completed?**
   ☐ No formal schooling ☐ Less than primary school ☐ Primary school ☐ Secondary school
   ☐ College / university ☐ Post-graduate degree

8. **What is your current job or profession or if currently not working, what is the last job or profession you worked in (job title)?**
   _____

WORQ was developed by the Swiss Paraplegic Research / ICF Research Branch, Nottwil Switzerland. WORQ was funded by the Swiss Accident Insurance (SUVA) and the Swiss Paraplegic Research.

9. **What kind of business, industry or service is (or was) your job in?**
(e.g., cardboard box manufacturing, road maintenance, retail shoe store, secondary school, dairy farm, municipal government) _____

10. **What kind of work are (or were) you doing?**
(e.g., driving trucks, operating machines, writing letters, answering telephone calls) _____

11. **If a change of job is planned, what future job are you aiming for?**
_____ ☐ *Not applicable*

12. **Are you in medical or therapeutic treatment?** ☐ Yes ☐ No ☐ *Not applicable*
(e.g. with physician, therapists, etc.)?
If yes, please specify: _____

13. **Do you have current restrictions?** ☐ Yes ☐ No ☐ *Not applicable*
(e.g. lifting limited to 5kg, limited weight bearing on your leg or arm)
If yes, please specify: _____

14. **What kind of work or vocational intervention are you receiving now? (list all you know)**
(e.g. physical training, cognitive training, case management, vocational training, work place adaptation, work evaluation etc.)
Interventions: _____

15. **In your current situation, do you get the support you need from your family** ☐ Yes ☐ No ☐ *Not applicable*
If yes, please specify what kind of support you get:
_____

16. **If still employed, do you get the support you need from your supervisor or boss?** ☐ Yes ☐ No ☐ *Not employed*
If yes, please specify what kind of support you get:
_____

17. ***Outside of your current work or vocational rehabilitation program,* do you get the support you need from government or private employment agencies to find suitable work, or looking for different work?**
☐ Yes ☐ No ☐ *Not applicable*
If yes, please specify what kind of support you get:
_____

PART 2: MAIN SECTION

Please rate the extent of your problem in the past week from 0 = no problem to 10 = complete problem.

- Check the box that best reflects your situation, the higher the number you assign, the greater the extent of the problem; The lower the number you assign; the lower the extent of the problem.
- Please answer all questions as accurately and completely as possible, even if you feel that the issue is not relevant for you and you don't have a problem with the respective activity.
- *Make sure that your answer refers to your ability to function or do an activity without any help from anybody or without any assistive device.*

Overall in the past week, to what extent did you have problems with…

1	… not feeling rested and refreshed during the day?	No problem	0	1	2	3	4	5	6	7	8	9	10 Complete problem
2	… sleeping, such as falling asleep, waking up frequently during the night or waking up too early in the morning?	No problem	0	1	2	3	4	5	6	7	8	9	10 Complete problem
3	… remembering to do important things?	No problem	0	1	2	3	4	5	6	7	8	9	10 Complete problem
4	… your usual daily activities because you felt sad or depressed?	No problem	0	1	2	3	4	5	6	7	8	9	10 Complete problem
5	… your usual daily activities because you felt worried or anxious?	No problem	0	1	2	3	4	5	6	7	8	9	10 Complete problem
6	… being irritable?	No problem	0	1	2	3	4	5	6	7	8	9	10 Complete problem
7	… your temper?	No problem	0	1	2	3	4	5	6	7	8	9	10 Complete problem
8	… your self-confidence?	No problem	0	1	2	3	4	5	6	7	8	9	10 Complete problem
9	… thinking clearly?	No problem	0	1	2	3	4	5	6	7	8	9	10 Complete problem

WORQ was developed by the Swiss Paraplegic Research / ICF Research Branch, Nottwil Switzerland. WORQ was funded by the Swiss Accident Insurance (SUVA) and the Swiss Paraplegic Research. No part of WORQ can be used without written permission.

Overall in the past week, to what extent did you have problems with...

10	... analyzing and finding solutions to problems in day to day life?	No problem	0 ☐	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	8 ☐	9 ☐	10 ☐	Complete problem
11	... hearing?	No problem	0 ☐	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	8 ☐	9 ☐	10 ☐	Complete problem
12	... keeping your balance while maintaining a position or during movement?	No problem	0 ☐	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	8 ☐	9 ☐	10 ☐	Complete problem
13	... bodily aches or pains?	No problem	0 ☐	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	8 ☐	9 ☐	10 ☐	Complete problem
14	... general endurance when performing physical activities?	No problem	0 ☐	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	8 ☐	9 ☐	10 ☐	Complete problem
15	... muscle strength?	No problem	0 ☐	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	8 ☐	9 ☐	10 ☐	Complete problem
16	... skin problems, such as broken skin, ulcers, bedsores and thinning of skin?	No problem	0 ☐	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	8 ☐	9 ☐	10 ☐	Complete problem
17	... learning a new task (e.g., learning a new game, learning how to use the computer, learning how to use a tool, etc.)?	No problem	0 ☐	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	8 ☐	9 ☐	10 ☐	Complete problem
18	... focusing attention on a specific task or e.g. filtering out distractions such as noise?	No problem	0 ☐	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	8 ☐	9 ☐	10 ☐	Complete problem
19	... reading?	No problem	0 ☐	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	8 ☐	9 ☐	10 ☐	Complete problem
20	... making decisions?	No problem	0 ☐	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	8 ☐	9 ☐	10 ☐	Complete problem
21	... starting and completing a single task such as making your bed or cleaning up your desk or workplace?	No problem	0 ☐	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	8 ☐	9 ☐	10 ☐	Complete problem

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Overall in the past week, to what extent did you have problems with...

22	... carrying out your daily routine or day to day activities?	No problem	0 ☐	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	8 ☐	9 ☐	10 ☐	Complete problem
23	... handling stress, crises, or conflict?	No problem	0 ☐	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	8 ☐	9 ☐	10 ☐	Complete problem
24	... understanding body gestures, symbols and drawings?	No problem	0 ☐	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	8 ☐	9 ☐	10 ☐	Complete problem
25	... starting and maintaining a conversation?	No problem	0 ☐	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	8 ☐	9 ☐	10 ☐	Complete problem
26	... using communication devices such as using a telephone, telecommunication devices, and computers?	No problem	0 ☐	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	8 ☐	9 ☐	10 ☐	Complete problem
27	... lifting and carrying objects weighing up to 5kg?	No problem	0 ☐	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	8 ☐	9 ☐	10 ☐	Complete problem
28	... lifting and carrying objects weighing more than 5kg?	No problem	0 ☐	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	8 ☐	9 ☐	10 ☐	Complete problem
29	... fine hand use such as handling objects, picking up, manipulating and releasing objects using the hand, fingers, and thumb?	No problem	0 ☐	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	8 ☐	9 ☐	10 ☐	Complete problem
30	... walking a short distance (less than 1 km)?	No problem	0 ☐	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	8 ☐	9 ☐	10 ☐	Complete problem
31	... walking a long distance (more than 1 km)?	No problem	0 ☐	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	8 ☐	9 ☐	10 ☐	Complete problem
32	... moving around including crawling, climbing, and running?	No problem	0 ☐	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	8 ☐	9 ☐	10 ☐	complete problem
33	... using transportation as a passenger ?	No problem	0 ☐	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	8 ☐	9 ☐	10 ☐	complete problem

Overall in the past week, to what extent did you have problems with…

34	… driving a car or any form of transportation?	No problem	0 ☐	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	8 ☐	9 ☐	10 ☐	complete problem
35	… getting dressed?	No problem	0 ☐	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	8 ☐	9 ☐	10 ☐	complete problem
36	… looking after your health such as maintaining a balanced diet, getting enough physical activity and seeing your doctor as needed?	No problem	0 ☐	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	8 ☐	9 ☐	10 ☐	complete problem
37	… your relationships with people?	No problem	0 ☐	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	8 ☐	9 ☐	10 ☐	complete problem
38	… having sufficient money to cover your cost of living?	No problem	0 ☐	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	8 ☐	9 ☐	10 ☐	complete problem

➤➤ **Do you wear glasses or contact lenses?** Yes ☐ / No ☐

Overall in the past week, to what extent did you have problems with…

39	… seeing and recognizing an object at arm's length?	No problem	0 ☐	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	8 ☐	9 ☐	10 ☐	complete problem
40	… seeing and recognizing a person you know across the road (distance of about 20 meters or 66 feet)?	No problem	0 ☐	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐	8 ☐	9 ☐	10 ☐	complete problem

Overall in the past week, how long did it take you…

41	… in the morning to get up and get ready (washed, dressed, have breakfast) to leave the house?	..... **Hours** ..... **Minutes**
42	… to do all the necessary things required **throughout the whole week** for your health, such as attending therapy, or medical consultations, or doing your exercises?	..... **Hours per week**

-End-

Thank you for your participation!

[1] Finger M, Escorpizo R, Bostan C, De Bie R. Work Rehabilitation Questionnaire (WORQ): Development and preliminary psychometric evidence of an ICF-based questionnaire for vocational rehabilitation. Journal of Occupational Rehabilitation.2014 Sep;24(3):498-510.

WORQ was developed by the Swiss Paraplegic Research / ICF Research Branch, Nottwil Switzerland. WORQ was funded by the Swiss Accident Insurance (SUVA) and the Swiss Paraplegic Research.

APPENDIX 5: Data Extraction Sheet

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Data Extraction Sheet

Title of Research: The development of a return to work intervention programme for individuals with cardiac diagnoses in the Western Cape, South Africa

Research Question: What existing studies describe strategies used to facilitate the return to work of individuals with cardiovascular disease.

Article Title	**SN**	**Author**	**Year of publication**	**Country/ Location**	**Status of publication**	**Journal**	**Medical Subject Headings (MeSH) /Keywords**
Sample size	**Population focus /participant**	**Study setting**	**Study design**	**Duration of study**	**Intervention**	**Outcome measure**	**Result**

APPENDIX 6: Delphi information sheet

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INFORMATION SHEET

Project Title: Factors influencing return to work after a cardiac incident and the development of a return to work model for individuals with cardiac diagnoses in the Western Cape, South Africa

What is this study about?

This is a research project being conducted by a post graduate Occupational Therapist at the University of the Western Cape. I am inviting you to participate in this research project because you have participated in a cardiac rehabilitation or vocational rehabilitation programme. The purpose of this research project is to explore the factors that determine return to work after a cardiac incident and to develop a model for return to work for cardiac patients.

What will I be asked to do if I agree to participate?

The proposed time frame for this study is 3 months. The researcher will invite experts in the field of cardiovascular rehabilitation and vocational rehabilitation from academia and clinical practice to participate in this phase of the study. The study will employ a Delphi survey to

design a return to work (RTW) model for individuals with cardiovascular disease (CVD). You will be asked to sign a consent form and will have the opportunity to ask questions prior to giving consent. Also, you will be asked to complete a demographic questionnaire and provide your opinion regarding interventions that could facilitate the RTW of individuals with CVD. You will also be asked to rate the content of the RTW intervention model.

What are the risks of this research?

There are no known physical or psychological risks involved in this study.

What are the benefits of this research?

The research study is intended to inform cardiovascular rehabilitation practice. There's a scarcity of data on return to work rates and standardized rehabilitation protocol for CVD individuals in the Western Cape, South Africa. Having a standard vocational rehabilitation protocol in the Western Cape will provide a structured pathway that focuses on work re-entry and placement of individuals with CVD. In addition, such a protocol will facilitate an interdisciplinary and systemic focus on RTW of individuals with CVD. Information gathered in this study will not help you personally but may help to advance knowledge and intervention strategies in returning CVD individuals to work after rehabilitation.

Do I have to be in this research and may I stop participating at any time?

Your participation in this research is completely voluntary. You may choose not to partake in it. If you decide to participate in this research, you may withdraw from the study at any given time without penalty.

What if I have questions?

This research is being conducted by Zakeera Ganie, Occupational Therapy PhD student at the University of the Western Cape. If you have any questions about the research study itself, please contact Zakeera Ganie:

Cell: 083 369 5544

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Should you have any questions regarding this study and your rights as a research participant or if you wish to report any problems you have experienced related to the study, please contact:

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This research has been approved by the University of the Western Cape's Senate Research Committee. (REFERENCE NUMBER: **BM 17/6/9**)

APPENDIX 7: Delphi Demographic Questionnaire and Round 1 Survey

Return to work intervention for individuals with cardiovascular disease: A Delphi Survey (Experts demographic information)

* Required

1. This survey has 19 questions and takes less that 10 minutes to complete. It seeks to collect your consent, demographic information and opinion on the content of a return to work (RT model for individuals with cardiovascular disease (CVD). *

2. 1. Question 1: Are you willing to participate in this survey?This serves as consent that you a willing to participate in this study. Please note that your participation in this study is volunta In addition, all information provided is protected and anonymous. *

   - ◯ Yes, I would like to participate in the survey. Skip to question 2.
   - ◯ No, I do not want partcipate in this survey. Stop filling the form.

3. 2. Question 2: What is you age?

4. 3. Question 3: What is your sex:

   - ◯ Female
   - ◯ Male

5. 4. Question 4: Which of the following describes your profession: *

- ◯ Occupational Therapy
- ◯ Physiotherapy
- ◯ Psychology
- ◯ Nurse
- ◯ Cardiologist/ physician
- ◯ Occupational doctor/ nurse
- ◯ Other: _____

6. 5. Question 5: For your identified profession what year did you obtain your entry-level degree/diploma: *

_____

7. 6. Question 6: What is your highest level of education: *

- ◯ College
- ◯ Bachelor
- ◯ Masters
- ◯ PhD
- ◯ M.D
- ◯ Other: _____

8. 7. Question 7: Have you obtained any post-graduate training specifically in Vocational Rehabilitation? For example, certificates, workshops, courses.

- ◯ Yes
- ◯ No

9. 8. Question 8: Where is your country of practice:

_____

10. 9. Question 9: Which of these describe or is your main work setting: (more than one optio may be selected)

- ☐ Out-patient
- ☐ Community practice (e.g. community care centre)
- ☐ Private Practice
- ☐ Academia/Research
- Other: ☐ _____

11. 10. Question 10: What is main funding source for your clients with CVD?

_____

12. 11. Question 11: How many years of experience do you have in cardiac rehabilitation?

_____

13. 12: Question 12: How many years of experience do you have in vocational rehabilitation?

_____

14. 13. Question 13: How many years of experience do you have in vocational rehabilitation of CVD individuals?

_____

15. 14. Question 14: In which aspect(s) of Vocational Rehabilitation / RTW do you have experience? (more than one option may be selected)

- [ ] Assessment
- [ ] Intervention
- [ ] Monitoring/Follow up
- [ ] Case Management
- [ ] Other: _____

16. 15. Question 15: After a cardiac incident what are the RTW interventions needed to be addressed:

- [ ] Impairments
- [ ] Activity limitations
- [ ] Participation restrictions

17. 16. Question 16: Within the work environment what are the RTW interventions required to addressed:

- [ ] Impairment
- [ ] Activity Restriction
- [ ] Participation restriction

18. 17. Question 17: How should the RTW intervention you have listed/described in question 15 and 16 above to be implemented during treatment?

19. 18. Question 18: In your opinion, what will you describe as the essential elements of the RT programme that will facilitate the RTW of individuals with CVD?

20. 19. Kindly indicate your email address here to enable tracking of responses. Please be rest assured that all information provided will be confidentially treated and anonymized.

APPENDIX 8: Delphi Round 2 Survey

Development of a RTW Intervention Programme for Individuals with Cardiovascular Disease (Second Round Delphi Questions)

This survey has 20 questions and takes about 10 minutes to complete. It seeks to collect your opinion on the contents of a RTW intervention programme for individuals with cardiovascular disease, (arrived at fron participants' responses to the first round of the Delphi Survey and a scoping review).

* Required

1. 1. Email address *

2. 2. Phase 1: Assessment phaseThis is the first phase of the programme where an interview a standardized assessments are conducted with the individual to seek information regarding physiological base line, function in ADL, psychological function and work-related informati *

Mark only one oval.

- ◯ Agree
- ◯ Indifferent
- ◯ Disagree

3. 3. Kindly indicate any comments/suggestions you have regarding this phase.

4. 4. The estimated duration required to implement the assessment phase should be:

Check all that apply.

	1-2 sessions of 60 minutes each	3-5 sessions of 60 minutes each	6-10 sessions of 60 minutes each
Agree	☐	☐	☐
Indifferent	☐	☐	☐
Disagree	☐	☐	☐

5. 5. Kindly indicate any further comments/suggestions you have regarding the duration of th phase

6. 6. Phase 2: Intervention/ Training phase 6.1. Focus area 1: Cardiac rehabilitation through education programme to cover the following topics within a group

Check all that apply.

	Exercise	Diet	Medication	Stress and anxiety management	Life style modification	Education about the condition (*for the individual, family/caregiver and employer)
Agree	☐	☐	☐	☐	☐	☐
Indifferent	☐	☐	☐	☐	☐	☐
Disagree	☐	☐	☐	☐	☐	☐

7. 6.2 Focus area 2: Individual vocational rehabilitation (More than one answer may be selecte

Check all that apply.

	Vocational counselling and career planning	Work hardening that includes work simulation
Agree	☐	☐
Indifferent	☐	☐
Disagree	☐	☐

8. 7. Kindly indicate any further comments/suggestions you have regarding this phase

9. 8. The estimated duration required to implement the intervention phase should be:

Check all that apply.

	5-9 sessions of 60 minutes each	10-15 sessions of 60 minutes each	16-20 sessions of 60 minutes each
Agree	☐	☐	☐
Indifferent	☐	☐	☐
Disagree	☐	☐	☐

10. 9. Kindly indicate any further comments/suggestions you have regarding the duration of t phase.

11. 10. Phase 3: Work test placement This is a continuation of the previous phase, whereby other stakeholders in the RTW process is also engaged. The interventions provided will be both clinical and at the workplace. The following interventions should be included in this phase:

Check all that apply.

	Preparation of individual and education of family, employer and co-workers on individual's capacity to perform work tasks	Work site visit	Implementation of reasonable accommodation strategies in consultation with employer/ occupational health professional	Work trials (practice of work skills in real work environment)	Job coachin and on-going support at the workplac
Agree	☐	☐	☑	☐	☐
Indifferent	☐	☐	☐	☐	☐
Disagree	☐	☐	☐	☐	☐

12. 11. Kindly indicate any further comments/suggestions you have regarding this phase.

13. 12. The estimated duration needed to implement the Work Test Placement phase should b

Check all that apply.

	Minimum of 5 sessions over a month period (60 minutes each)	Minimum of 10 sessions over a month period (60 minutes each)	Minimum of 15 sessions over a month period (60 minutes each)
Agree	☐	☐	☐
Indifferent	☐	☐	☐
Disagree	☐	☐	☐

14. 13. Kindly indicate any further comments/suggestions you have regarding the duration of this phase.

15. 14. Phase 4: Full participation in the worker role This is the final phase of the RTW programme where the individual is fully integrated back at work. The individual is independent and requires minimum support at this stage.

Check all that apply.

	Individual is able to make decisions about strengths and weakness	Rehabilitation professional involvement is gradually decreased	Maintenance of worker role and control risk factors done throug a hybrid programme
Agree	☐	☐	☐
Indifferent	☐	☐	☐
Disagree	☐	☐	☐

16. 15. Kindly indicate any further comments/suggestions you have regarding this phase.

17. 16. The estimated duration needed to implement this phase should be:

Check all that apply.

	A month duration of 3 contact sessions (60 minutes each)	3 contact sessions over a 3-month period (60 minutes each)	Option 3No time period linked to this phase (but limited to availability of the OT)
Agree	☐	☐	☐
Indifferent	☐	☐	☐
Disagree	☐	☐	☐

18. 17. Kindly indicate any comments/suggestions you have regarding the duration of this phase.

19. 18. Implementation Strategies for the RTW intervention:The following strategies should be utilized when implementing the four phases: 18.1 Role players and strategy

Check all that apply.

	Use of a multi-disciplinary team approach	Use of an inter-disciplinary team approach	Client-centred approach (client is involved in the decision-making process throughout intervention)	Interventions are individually tailore to meet clients' needs
Agree	☐	☐	☐	☐
Indifferent	☐	☐	☐	☐
Disagree	☐	☐	☐	☐

20. 18.2 Rehabilitation commencement

Check all that apply.

	After the completion of medical intervention by physician	During in-patient rehabilitation	During out-patient rehabilitation	When individual is independer in performing bADL tasks (sel care and mobility)
Agree	☐	☐	☐	☐
Indifferent	☐	☐	☐	☐
Disagree	☐	☐	☐	☐

21. 19. Kindly indicate any further comments/suggestions you have regarding the implementation strategies.

22. 20. Kindly indicate any further comments/suggestion you have on the OVERALL STRUCTU of the RTW intervention programme for individuals with CVD.

APPENDIX 9: Delphi Round 3 Survey

Development of a RTW Intervention Programme for Individuals with Cardiovascular Disease (Third and Final Round Delphi Questions)

This survey has 6 questions and takes less than 5 minutes to complete. It seeks to collect your opinion or the contents that were modified from the second round of the Delphi survey.

* Required

1. 1. Estimated duration required to implement assessment phase: *

- ◯ 1-2 sessions of 60 min each
- ◯ 3-5 sessions of 60 min each

2. 2. Education programme topic for group: Medication *

- ◯ Relevant
- ◯ Not relevant

3. 3. Estimated duration required to implement intervention phase:- *

- ◯ 5-9 sessions of 60 min each
- ◯ Individually determined

4. 4. Estimated duration required to implement work test placement phase: *

- ◯ Min of 5 sessions over a month period (60 min each)
- ◯ Individually determined

5. 5. Estimated duration required to implement the final stage: *

- ◯ 3 contact sessions over 3 months
- ◯ Individually determined

6. 6. Rehabilitation commencement: *

- ◯ In-patient phase
- ◯ Out-patient phase

7. Email address: *

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