

**DETERMINANTS OF RETURN TO WORK AND THE
DEVELOPMENT OF A RETURN TO WORK PROGRAMME FOR
STROKE SURVIVORS IN OSUN STATE, NIGERIA**

**A THESIS SUBMITTED IN FULFILMENT OF THE
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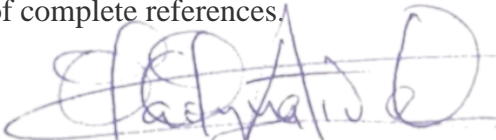
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DECLARATION

I, Olumide Ayoola Olaoye, hereby declare that the work on which this thesis titled “The determinants of return to work and the development of return to work programme for stroke survivors in Osun state, Nigeria” is an original work written by me (except where acknowledgements indicate otherwise), and that neither the whole work nor any part of it has been, or is to be submitted for another degree in this or any other university.

The sources that I have used or quoted have been indicated and acknowledged by means of complete references.



OLUMIDE AYOOLA OLAOYE



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DEDICATION

To all stroke survivors out there, who strive daily to make the best use of their residual abilities, be rest assured that there is light at the end of the tunnel;

&



*To my wife, Oluwatobi and son, Inioluwa. Even though this Ph.D. sojourn did keep us apart for a while, you have been my inspiration throughout the course of the journey.
May our smiles be everlasting.*

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ABSTRACT

Background: Stroke is acknowledged globally and among Nigerian rehabilitation researchers as a public health problem that leave half of its survivors with significant neurological deficits. The attendant sequelae of stroke affects the functional ability, limits activity performance and participation of stroke survivors within the community. The inability to re-establish pre-existing roles after stroke further poses additional challenges on the society, friends and families of the stroke survivor with regards to cost and burden of care. Although stroke disrupt the career pathway of working age survivors briefly, recurrently or permanently; a systematic pathway that facilitates job placement and retention at work for stroke survivors could reduce the devastation and burden caused by unemployment following stroke. As this vocational rehabilitation pathway and programme is currently unavailable for stroke survivors, this study aimed to design a RTW intervention programme that could facilitate the work re-entry for stroke survivors in the state of Osun, Nigeria.

Method: The study utilized a multi-phase mixed method research design that was guided by the Intervention Mapping (IM) framework to achieve its objectives. This consisted of three iterative phases that informed one another with the findings culminating into the developed return to work programme for stroke survivors in Osun State. Phase one used a convergent mixed method parallel approach to obtain baseline information on the RTW process, the impairments, activity limitation, and the participation restrictions experienced by stroke survivors in Osun state, Nigeria in two distinct stages that involved a cross-sectional survey and qualitative interviews. The cross sectional survey administered questionnaires that included the Work Rehabilitation Questionnaire, the International Classification of Functioning, Disability and Health (ICF) Brief Core Sets for vocational rehabilitation (VR) and the Work Impact Questionnaire (WIQ) using the face to face method. Descriptive statistics such as measure of central tendencies and frequencies as well as inferential statistics such as logistic regression analysis were performed on the questionnaire data. The qualitative study involved concept mapping using in-depth interviews with stroke survivors who have and those that have not RTW. The transcripts from the in-depth interviews were analysed using the thematic content method. Phase two entailed a scoping review of literature that reported on interventions aimed at facilitating

RTW of stroke survivors. The last phase of the study involved a Delphi study with experts in the field of stroke and vocational rehabilitation. The Delphi survey was conducted over three rounds with the final draft of the RTW programme emerging at the third round.

Results: Two hundred and ten stroke survivors with mean age 52.90 ± 7.92 responded to the quantitative stage of the phase thereby yielding a response rate of 76.36%. Sixty three point eight percent of the respondents had returned to work with half of them in full time employment (32.9%) while 36.2% had not returned to work. The majority of the respondents identified that travel to and from work (43.8%) and access at work (43.3%) had an impact ranging from 'quite a bit' to 'extreme' on their ability to work on the WIQ. The results from the quantitative stage further showed that more than ten percent of the respondents experienced complete problem in four components of activity and participation domains of the ICF brief core sets for VR and these include remunerative employment (21.4%), acquiring new skills (17.1%), non-remunerative employment (16.7%), as well as acquiring, keeping and terminating jobs (14.3%). Similarly, energy and drive functions (41.9%) and higher level cognitive function (36.2%) were indicated as culminating in moderate to severe problems in more than a third of the respondents while the "performance of complex interpersonal relationship" and "exercise tolerance function" resulted in no or little difficulty for the respondents.

The findings from the logistic regression analysis showed that the combination of side of body affected by stroke (left), type of vocational rehabilitation programme, symptoms of stroke, environment, body function impairments as well as activity and participation problems were the factors that predict RTW after stroke. The logistic regression model significantly explained 55.0% to 75.4% of the variance in RTW after stroke and correctly classified 89.0% of all the cases/respondents.

Results from the qualitative stage of the first phase suggests the lived experience of returning to work after stroke to have entailed three themes that was represented by a concept map. The first theme revealed that "it was difficult to live with stroke" for the survivor. The second theme revealed that the stroke survivors' environment could either worsen or lessen the difficulty experience while the third theme highlighted the various issues that directly impacted on the resumption of worker role of the participants.

The scoping review phase (phase two) identified that RTW interventions for stroke survivors falls into three core components which includes 1) intervention components that interface with the stroke survivor; 2) intervention components that interfaced with the workplace and; 3) components that describe strategies of implementation. These core components are interventions that could guarantee an effective RTW for strokes survivors when included in a RTW programme.

In the third phase which was the concluding phase of the study, 13 experts in the field of stroke and vocational rehabilitation unanimously agreed at the third round of Delphi that the content of RTW programme for stroke survivors should include an assessment phase, work intervention training phase, work test placement phase and clients full participation in worker role phase that will span a 12 week duration. The developed RTW programme, conceptualized as Stroke Return to Work Intervention Programme (SReTWIP) was designed to be individually tailored to meet the need of the stroke survivor and implemented by an interdisciplinary team that will include the OT and PT as key members. Equally, the stroke survivor is expected to be involved in the decision making process throughout the duration of the SReTWIP. And finally, the programme is to be coordinated by a case manager who will be a member of the interdisciplinary team.

Conclusion: It can be concluded that 63.9% of stroke survivors in Osun State, Nigeria return to work. Problems pertaining to lack of energy and drive functioning; higher level cognitive functioning; acquiring new skills; handling stress and psychosocial demands; travel to and from work and access were the common body impairments and problems with activities and participation restrictions that the stroke survivors encountered. Similarly, the study concludes that a multi-faceted programme, the SReTWIP, comprising of four interconnected phases of interventions that targets multiple factors such as personal and environment factors influencing work resumption is likely to be more effective in facilitating quick RTW after stroke.

Keywords: stroke; stroke survivor; return to work; Osun state, Nigeria; programme development; mixed method research; intervention mapping protocol.

CHAPTER ONE

BACKGROUND AND ORIENTATION TO THE STUDY

1.1 INTRODUCTION

This chapter presents the background of the study. The statement of problem which clarifies the importunate need to establish a return to work (RTW) programme for stroke survivors in the state of Osun, Nigeria was explained. Furthermore, the chapter described the aim of the study, which was subsequently followed by the description of the research questions and the research objectives. The contribution that the present study made to existing knowledge and scholarship in stroke rehabilitation was provided through a section on the significance of the study. The concluding section of the chapter outlines the definition of terms, operation definitions, abbreviations within the thesis and a synopsis of the chapters within the thesis.

1.2 BACKGROUND

Stroke is a public health conundrum that is used to describe neurological deficit resulting from acute focal injury that occur in the central nervous system (CNS) which is of vascular origin (Markus, Pereira, & Cloud, 2016). It is one of the foremost cause of global morbidity and mortality that leaves half of its survivors with permanent disability. The rise in global prevalence/epidemic of stroke arises from environmental and behavioral changes amongst the general population which are precipitated by a rise in the prevalence of the risk factors for stroke (O'Donnell et al., 2016). There exist an epidemiological shift in the incidence and prevalence of stroke from the developed countries to the developing countries due to urbanization (Owolabi et al., 2015). According to Akinyemi et al. (2015), more than 15% of people worldwide will experience a stroke within their lifetime, with sub-Saharan Africa (SSA) bearing a huge and disparate burden of poor stroke outcomes. Stroke is now recognized to be the foremost cause of neurological disability in developing nations such as Nigeria. Although recent statistics grounded on extensive population based studies on stroke in Nigeria is unavailable, stroke is the major cause of neurological admission and the principal cause of in-hospital death in Nigeria (Arodiwe, Nwokediuko, Ike, Ulasi, & Ijoma, 2017; Desalu et al., 2011; Sanya, Kolo, Adekeye, Abiodun, & Olanrewaju, 2011; Ekenze, Onwuekwe, & Ezeala, 2010).

For individuals that survived a stroke, the attendant sequela of stroke affects their functional ability, limits their activity performance and their participation within the community. The World Health Organization (WHO) (2015) reported that about 50% to 83% of stroke survivors have some residual physical disability while more than a fifth of this group among the Nigerian population have severe difficulty in reintegrating into the community (Obembe, Johnson, & Fasuyi, 2010). The implications of the departure from normal body functions caused by stroke results into limitations in the capacity to carry out daily activities and restriction experienced in the active involvement of the survivors in controlling their lives to fulfill personal and societal roles. The difficulty/restriction experienced when participating in community activities such as gainful employment impacts on the wellbeing, life satisfaction, self-confidence and occupational identity of survivors (Akinpelu & Gbiri, 2009; King & Olson, 2009; Vestling, Tufvesson, & Iwarsson, 2003).

Majority of stroke survivors who are most times within the working age group have difficulty in resuming premorbid occupational/worker roles (Trygged, Hedlund, & Kåreholt, 2011; Wolf, Baum, & Conner, 2009; Vestling et al., 2003). The inability to re-establish these pre-existing roles further poses additional challenges on the society, friends and families of the stroke survivor with regards to the cost and burden of care. Substantive evidence suggest that people who survived a stroke event experience lower quality of life (Akinpelu & Gbiri, 2009) and worse psychosocial outcomes (Roding, Lindstrom, Malm & Ohman, 2003; Vestling et al., 2003) compared to apparently healthy controls. As work serves as the most central component in a person's adult life (Ross, 2013), RTW can improve these outcomes by contributing to life satisfaction, social identity and self-worth of stroke survivors, partly through the independence acquired from income generation (Medin, Barajas, & Ekberg, 2006; Vestling et al., 2003). Similarly, obtaining and sustaining gainful employment after experiencing a disease condition like stroke functions as a vital rehabilitation outcome measure (Duff, Ntsiea, & Mudzi, 2014; Giaquinto & Ring, 2007; Hofgren, Björkdahl, Esbjörnsson, & Stibrant-Sunnerhagen, 2007; Treger, Shames, Giaquinto, & Ring, 2007). However, majority of individuals with disability still struggles with this important domain of life.

In developing economies, there is an unprecedented increase in unemployment and poverty rates across countries especially in SSA, with Nigeria leading globally with a poverty population of 87 million persons (World Data Lab, 2018) and a high unemployment rate. The Osun state, one of the 36 states of Nigeria, is home to 2.5% of the nation's population; and has an unemployment and poverty rates of 19% and 57% respectively (National Bureau of Statistics, 2018). However, about two-third of the Nigerian population who are with one form of disability (stroke inclusive) are unemployed (Smith, 2011), which is an ample gap from the apparently healthy population. Return to work lessens the devastation of unemployment which is closely connected with financial difficulty and the inability to meet basic needs after experiencing a distressing health condition like stroke.

Although vocational retraining has not usually been a common facet of post-stroke rehabilitation in SSA (Ntsiea, Van Aswegen, Lord, & Olorunju, 2012; Peters, Buni, Oyeyemi, & Hamzat, 2013); available evidence recommends that a separate process is vital to enhance RTW opportunities for stroke survivors. Attaining independence in this performance area for the stroke survivor will definitely be to the best interest of all.

1.3 PROBLEM STATEMENT

The World Report on Disability predict an impending increase in the population of people living with disabilities (PWDs) in the next three decades due to an upsurge in the prevalence of chronic conditions like motor neurone diseases and stroke (Jerome Bickenbach, 2011). This has also been attributed to improvement observed in health and rehabilitation services which has increased the life expectancy of individuals with such chronic conditions thereby inadvertently leading to an upsurge in the burden of care and disability. Although stroke has in the past been construed as a disease of the aged, a significant number of new stroke cases occur amongst individuals younger than sixty-five years (Danesi, Okubadejo, Ojini, & Ojo, 2013; Baldwin & Brusco, 2011; Gabriele & Renate, 2009). This incidence among working aged group has risen in the past decade with five percent of survivor being under the age of forty-five (Roding et al., 2003), thereby increasing prevalence. Since younger individuals that survived a stroke are likely to live longer due to an improvement in health services, they will have to engage in gainful and competitive employment in order to be financially independent.

Employment however has been a major problem amongst PWDs including stroke survivors. In Nigeria, 61% of PWDs are reported to be unemployed (Smith, 2011) which is similar to South Africa with a 30% employment ratio (Mitra, 2008). Half of the PWDs in Nigeria indicated that their disability was the reason they were unemployed (Smith, 2011). The economic recession experienced globally, that is a cause of high unemployment rates has compounded the low employment rates for PWDs, resulting in intense competition for the limited number of scarce jobs that are available. The National Bureau of Statistics of Nigeria (2011) for instance reported a four percent increase in the unemployment rate from 19.7% in 2009 to 23.9% in 2011. Stroke survivors that are of working age are forced into early retirement due to their self-perception that they might not be able to perform and successfully compete at work. This perception is sometimes reinforced by the employer, caregiver and even healthcare providers (Soeker & Olaoye, 2017). While vocational rehabilitation (VR) programme has been applauded globally to offer a systematic pathway that facilitates job placement and retention for stroke survivors (van Velzen, van Bennekom, van Dormolen, Sluiter, & Frings-Dresen, 2016), there is however no standardized vocational rehabilitation protocol for stroke survivors in Nigeria. Rehabilitation services are hospital based and is offered with the primary focus on functional recovery with minimal attention towards work re-entry by the occupational and physical therapists. Significant deficiencies have been averred to exist with these rehabilitation services (Adika, Nzewi, & Apiyanteide, 2011; Morris, 2011; Biodun Ogungbo, Mendelow, & Walker, 2004). Having a standard vocational rehabilitation protocol in Osun state will furnish a structured pathway that focuses on work re-entry and placement during stroke rehabilitation. In addition, such protocol will facilitate an interdisciplinary and systematic focus on RTW during rehabilitation of the stroke survivors. For these reasons, the need therefore arose for the development of a RTW programme/intervention that can facilitate quick resumption of worker role for the stroke survivors in the State of Osun, Nigeria.

1.4 RESEARCH QUESTIONS

The following research questions guided the different stages of inquiry, analysis, and reportage of the study.

- I. What is the RTW rate of stroke survivors in Osun state of Nigeria?
- II. What are the impairments, activity limitation and the participation restrictions that stroke survivors in Osun state experience when returning to work?
- III. What are the determinants of RTW for stroke survivors in Osun state, Nigeria?
- IV. What effective intervention strategies are used in returning stroke survivors to work?
- V. What factors are required to design and develop a successful RTW programme for stroke survivors in Osun state, Nigeria?

1.5 AIM OF THE STUDY

The aim of the study was to explore the determinants of RTW and to design a RTW intervention programme that could facilitate work re-entry for stroke survivors in the state of Osun, Nigeria.

1.6 OBJECTIVES OF THE STUDY

The objectives of the study were:

- To determine the RTW rates of the stroke survivors;
- To explore and identify the impairments, activity limitation, participation restrictions that the stroke survivors experienced;
- To determine and explore the determinants of RTW of stroke survivors in the state of Osun, Nigeria;
- To determine the content of RTW interventions reported in literature for stroke survivors through a scoping review;
- To develop a RTW intervention programme for stroke survivors.

1.7 SIGNIFICANCE OF THE STUDY

Although stroke disrupts the career pathway of working age survivors briefly, recurrently or permanently; a systematic pathway that facilitates job placement and retention at work for stroke survivors could reduce the devastation and burden caused by unemployment following stroke. As this vocational rehabilitation (VR) pathway and programme is

currently unavailable for stroke survivors in the Osun state of Nigeria, this study helped to bridge the gap through the development of a RTW programme. Similarly, this study added new knowledge to the already existing international RTW programmes that attempt to facilitate work re-entry for stroke survivors globally. Furthermore, the baseline information from this study provided empirical data on RTW rates, impairments, activity limitation, and restriction in participation among stroke survivors in Osun state of Nigeria which could eventually inform disability, economic and health policies. The ultimate outcome of this study was a diverse RTW programme that could be employed by various stroke VR team within and outside the hospital settings.

1.8 DEFINITION OF TERMS

Stroke: is defined by the World Health Organisation (WHO) as a “rapidly developing clinical signs of focal (at times global) disturbance of cerebral function, lasting more than 24 hours or leading to death with no apparent cause other than of vascular origin” (WHO MONICA Project Principal Investigators, 1988).

Vocational Rehabilitation: is a multi-professional intervention that is provided to individuals of working age with health-related impairments, limitations, or restrictions in work functioning with a sole focus on optimizing work participation (Escorpizo, et al., 2011).

Return to work: Return to work as a concept is defined as returning to a vocation either on full time or part time in competitive employment in a former or new job following (Saeki & Toyonaga, 2010).

1.9 ABBREVIATIONS

ABI: Acquired Brain Injury

AF: Arterial fibrillation

AHA: American Heart Association

CNS: Central Nervous System

CVA: Cerebrovascular Accident

DALYS: Disability-Adjusted Life Years lost

E.V.R.: Early Vocational Rehabilitation

HS: Haemorrhagic stroke
ICF: International Classification of Functioning, Disability and Health
IS: Ischaemic stroke
O.A.U.T.H.C: Obafemi Awolowo University Teaching Hospital Complex
R.N.L.I: Re-integration to Normal Living Index
R.T.W: Return to Work
REGARDS: Reasons for Geographic and Racial Differences in Stroke
SReTWIP: Stroke Return to Work Intervention Programme
T.I.A: Transient Ischaemic Attack
TIDieR: Template for Intervention Description and Replication
U.N: United Nations
U.W.C: University of the Western Cape
VR: Vocational Rehabilitation
WHO: World Health Organization

1.10 OVERVIEW OF CHAPTERS IN THE THESIS

This section provides an overview of the eight chapters that make up the thesis.

Chapter One: Background and orientation to the study

The first chapter of this thesis provides the background of the study. The statement of problem which clarifies the importunate need to establish a RTW programme for stroke survivors in the state of Osun, Nigeria was explained. Furthermore, the chapter described the aim of the study, which was subsequently followed by the research questions and the research objectives. The contribution that the present study made to existing knowledge and scholarship in stroke rehabilitation was provided through a section on the significance of the study. The concluding section of the chapter outlines the definition of terms, abbreviations within the thesis and a synopsis of the chapters within the thesis.

Chapter Two: Literature review

The second chapter reviewed extensively the literature on the current trend on the epidemiology of stroke in SSA and globally. The chapter further discussed the sequela and burden of stroke using the International Classification of Functioning, Disability and

Health (ICF) of the WHO. The ICF framework which serves as the theoretical framework for this study was similarly employed to understand work disability after stroke. The concluding section of the chapter described the existing discourse in stroke rehabilitation with an emphasis on vocational rehabilitation post stroke.

Chapter Three: Research methodology

The third chapter discussed the methodological process used to accomplish the study objectives. A comprehensive description of the research questions, aim, objectives and research setting of the study were provided. Similarly, the chapter describes the study design, population and sampling, methodological framework, data collection process and data analysis. Finally, the process used to achieve reliability, validity and rigor for the study are outlined bearing in mind ethical consideration pertaining to the study.

Chapter Four:

This chapter presented the results for the baseline quantitative assessment of RTW rates and determinants of RTW after stroke. Prior to presentation of results, the methodological rigor utilized to realize the baseline assessments were described. The chapter further provided an overview of the demographic profile of the study participants, their work and health related characteristics. The difficulties participants experienced due to symptoms of stroke, environmental factors, body function and structure, activity and participation while re-integrating back to work as revealed by the research instruments were then described. The reported research findings are summarized using text, tables and charts. In addition, the chapter described the respondents' factors that were correlated with RTW as well the predictors of RTW. Lastly, the results were discussed with relevant literature.

Chapter Five:

Chapter five sets out to answer the second and third objectives of this study. This chapter described the detail methodological process that was used to collect and analyse the qualitative data of the study. The chapter further described the study concept map. Subsequently, the chapter presents the findings of the qualitative stage with themes that comprises: "life is difficult with stroke"; "I can't do one or two things" and; "factors that

influences resumption of the worker role”. Lastly, the findings were put into perspective with current literature in a discussion section.

Chapter Six: Method and strategy (Scoping Review)

The sixth chapter described the methodological process of the scoping review (phase II of the study) that was used to identify RTW interventions for returning stroke survivors to their work role. The findings of the scoping review were similarly described in this chapter followed by a discussion on how the findings informed the designed stroke RTW intervention programme.

Chapter Seven: Delphi survey

The seventh chapter presented the results from the third phase of the study. The third phase utilized a Delphi survey to develop an appropriate RTW intervention programme for stroke survivors. The chapter provided a brief background on which the study was built. This was subsequently followed by the methodology utilized to accomplish the chapters’ objective. Consequently, the results detailing the responses of participants to the different rounds of the Delphi survey and the conceptualization and drafting of the proposed RTW intervention programme were discussed. Finally, the adjustment made to the initial draft of the developed RTW intervention programme was described.

Chapter Eight: Executive summary

This is the concluding chapter of the thesis where an integrated summary of findings from all the phases of the study were described. Similarly, the chapter provided the limitations related to the study and recommendation for future studies.

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

This chapter reviewed extensively the literature on the current trend on the epidemiology of stroke in SSA and globally. The chapter similarly described the sequela as well as the burden of stroke using the WHO ICF. The ICF framework which serves as the theoretical framework for this study was similarly employed to understand work disability after stroke. The concluding section of the chapter described the existing discourse in stroke rehabilitation with an emphasis on vocational rehabilitation post stroke.

2.2 STROKE EPIDEMIOLOGY

According to the WHO, stroke is a cerebrovascular disorder that is characterized by “rapidly developed clinical signs of focal or global loss of cerebral function, with no evident cause other than vascular origin, which last for more than 24 hours or leads to death within 24 hours” (Kaur, Khurana, Sachdev, & Mohan, 2017; WHO MONICA Project Principal Investigator, 1988). Stroke occurs when there is interruption of blood flow to the brain cells that are usually vulnerable to ischemia or hemorrhage. This disruption of blood supply results in a cessation in the transfer of essential nutrients and oxygen to the brain which leads to irreversible brain tissue damage (Caplan, 2007). The conventional definition provided by the WHO was expanded by Sacco et al. (2013) to accommodate for developments in neuro-imaging with the authors describing stroke to be characterized by neurological deficit from an acute focal injury of the CNS by a vascular cause. In the following sub-sections, the sub-types, incidence, prevalence, mortality as well as the risk factors of stroke are explored to gain insight into stroke epidemiology.

2.2.1 Stroke sub-type and classification

In understanding the different descriptions available in literature of the disorders resulting from cerebrovascular accidents, Robinson, (2006) suggested three broad classification categories for stroke, namely: classification grounded on the etiologies of underlying anatomical–pathological processes; classification grounded on the mechanism through which the vascular pathological process manifests itself; and lastly a classification grounded

on the parenchymal deviations that happened within the brain. Classification centered on the etiologies of underlying anatomical–pathological processes comprise an expansive list of ailments, such as those with infectious, connective tissue, neoplastic, hematological, pharmacological, and traumatic causes while the classification grounded on the mechanism of vascular pathological processes consist of the shared effects of atherosclerosis and systemic elevated blood pressure on the pliability of arteries and integrity of blood vessel lumens. In this literature review, the third classification postulated by Harvey, Roth, Yu, and Celnik (2011) and Robinson (2006) identified two major classes of stroke based on the parenchymal changes that occur within the brain and this is used within this literature review to describe in detail the subtypes of stroke. These are ischemic stroke sub-type and hemorrhagic stroke sub-type.

The two major classes of stroke, ischemic and hemorrhagic, are contrasting conditions. While ischemic stroke (IS) occurs when there is an acute occlusion of cerebral blood flow leading to tissue anoxia (Bartels, 2011), hemorrhagic stroke (HS) occurs from the rupture of cerebral blood vessels that results in bleeding into brain tissues or extra-cerebral intracranial spaces (Warlow, Sudlow, Dennis, Wardlaw, & Sandercock, 2003). Basically, in IS, too little blood is available to meet the oxygen and nutrient need for an area within the brain while in HS, too much blood is contained within the cranial cavity. The reasons for the occlusion in IS could further be utilized to classify it into different sub-types, namely, embolic and thrombotic strokes. Embolic stroke develops from blockage of narrow cerebral blood vessels by a mass (which are usually blood clots from the heart) that travels through the blood vessels. However, thrombotic stroke develops from the thickening of the walls of arteries and narrowing of arteries from deposit of cholesterol which leads to disruption of blood supply to the brain (Harvey et al., 2011). With hemorrhagic stroke, the site of bleed is further used in classifying it into different subtypes namely, subarachnoid and intracerebral hemorrhages. Sacco et al. (2013) described subarachnoid hemorrhagic stroke to be characterized by bleeding within the subarachnoid space (the space that is flanked by the pia mater of the brain or spinal cord and the arachnoid membrane), while intracerebral hemorrhagic stroke was described by the above authors as to be characterized by a focal collection of blood within the brain ventricular system or parenchyma. The two major classes of stroke are ascribed to have somewhat varying causes, clinical presentation

and different treatment strategies. Ischemic and hemorrhagic stroke are documented to occur in 15% and 80% of stroke population respectively. The severity of symptoms is determined by the extent of the brain damage resulting from the stroke.

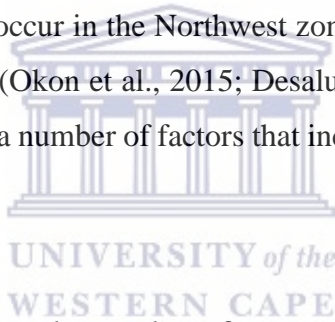
2.2.2 Incidence of stroke

The incidence of stroke refers to the estimate of individuals within a population who develop or experience a new occurrence of stroke event over a particular time period which often times is estimated annually (American Heart Association, [AHA], 2016). This has been revealed to differ across gender, age, race, and even geographical location (Stansbury, Jia, Williams, Vogel, & Duncan, 2005). Although, initially attributed as a disease affecting men and older adults, stroke is now established to be a health concern in women and younger population (Go et al., 2014). With respect to gender, stroke incidence is documented to be higher in male when compared to female (ratio 2:1) with male experiencing their first-ever stroke earlier (Barker-Collo et al., 2015) and having a 30 percent higher chance of experiencing a stroke compared to women (Meirhaeghe et al., 2018; Wolfe, 2000). Specifically, the 2013 Global Burden of Disease study reported an incidence rate of 133/100,000 persons for IS and 65/100,000 persons for HS in men as compared to 99/100,000 persons for IS and 45/100,000 persons for HS in women (Feigin, Norrving, & Mensah, 2017). This age-specific incidence however reverses in 85 years and above to become lower in men than women (AHA, 2016).

Across lifespan, stroke incidence is observed to increase progressively with age. In children, it is documented to range from 1.2 to 13 in 100,000 persons (Baird & Smith, 2018) while in adults aged 45 years and below, it occurs annually with an incidence rate of 0.14 per 1000 and increases to 12-20 per 1000 per persons in population aged 75 and above (Feigin et al., 2017). A recent population based study by Aked, Delavaran, Norrving, and Lindgren (2018) established similar trends in stroke epidemiology across lifespan. The above study revealed an upsurge in age-adjusted stroke incidence from 8.3 to 400 per 100,000 persons in population below 75 years of age to 798 to 1584 per 100,000 persons in aged 75 years and beyond.

Similarly, across racial lines, stroke is established to differ with whites being reported to have a lower stroke incidence rate compare to blacks in literature. The REGARDS

longitudinal study revealed a crude-incidence rates of 7.2 per 1,000 persons and 4.8 per 1,000 between the black and white populations of the region regarded as the stroke belt of the USA respectively (Howard et al., 2017). A forty percent black–white incidence disparity has been established in literature for stroke incidence. In general, the trend in the stroke incidence differs across regions and continents. A five decade report by Feigin et al. (2017) showed a fall in the trend of stroke incidence in developed countries as opposed to a surge in the trend of stroke incidence in developing countries. Sub-Saharan Africa presently bears the greatest burden of stroke world-wide with an age-standardized incidence rates of 3.16 per 1000 (Sarfo et al., 2018). Also, differences in the stroke incidence are observed in different counties of the same countries. For example, Nigeria with a stroke annual incidence of 25.2 per 100,000 persons (Adeloye, 2014) has a stroke hospital based incidence that varies across the regions of the country. A lower case admission rate of 0.36 percent occur in the Northwest zone as compared with 1.3% in the Southwest zone of the country (Okon et al., 2015; Desalu et al., 2011; Njoku & Aduloju, 2004). This may be ascribed to a number of factors that include lower risk factors and case fatalities in the different zones.



2.2.3 Prevalence of stroke

The prevalence of stroke denotes the number of persons within the population that had experienced stroke at a given point in time (American Heart Association, 2016) and this is estimated to range from 536 to 8000 per 100,000 of the world population (Feigin et al., 2017). When adjusted by age, stroke is established to be more prevalent in people aged 65 years and above as compared to younger adults that accounts for about 5 to 20 percent of global stroke population. In the same vein, the gendered specific stroke prevalence is higher in men compared to women (Barker-Collo et al., 2015) while across regions, stroke is more prevalent in developing nations (Krishnamurthi et al., 2015). The global perspective to the high prevalence of stroke in the developing nations is quite diverse with some researchers linking it to ongoing industrialization of Africa and Asia which promotes unhealthy life-styles that put the population of the regions at risk of cardiovascular diseases such as CVA (Sarfo et al., 2018; Kim & Johnston, 2011). Consequently, the highest rates of stroke disability-adjusted life years (DALYs) lost is seen in the developing countries (Kim & Johnston, 2011). In Nigeria, a population based study by Danesi, Okubadejo, and Ojini

(2007) reported a prevalence of 1140 per 100000 with a lower prevalence in females (69/100000) compared to males (151/100000). This prevalence however increases to 2414/100000 in people above 65 years of age. The relative lower stroke prevalence recorded for Nigeria when compared to high income countries could be due to high case fatality or lower incidence.

2.2.4 Stroke mortality and DALYS

Mortality of stroke refers to the estimated number of deaths that is accounted to stroke in a specific period of time. Globally, stroke is the second and third primary cause of death and disability respectively. Fifteen million people are projected to die from stroke annually, thus accounting for nearly 10 percent of global death (Johnson, Onuma, Owolabi, & Sachdev, 2016). Over eighty percent of the death and disability resulting from stroke occur in developing nations with an upsurge in the trend of fatalities over the preceding two decades. In SSA, the comparative influence of stroke-related mortality to all death ranges from three to eleven percent (Feigin et al., 2017). As further revealed by the 2013 Global Burden of Disease, the fatality of stroke is highest at the foremost weeks after the stroke event and this ranges from 20% to 50% in the first month. This fatality is indicated to be dependent on the sub-type of stroke, the age and co-morbidity of the stroke survivor; as well as the effectiveness of management of the complications from the stroke (Lloyd-Sherlock, 2010). Similarly, in global disability-adjusted life years lost (DALYS), developing nations have a 6.5 fold total DALYS higher compared to developed countries (Krishnamurthi et al., 2015). In Nigeria, available statistics from hospital based studies revealed mortality rate of stroke as 1.3 per 1000 persons and case fatality ranged from 28% to 45% (Adika et al., 2011; Desalu et al., 2011; Komolafe, Ogunlade, & Komolafe, 2007). Table 2.1 presents the summary of stroke epidemiology considering the incidence, prevalence, mortality as well as DALYS after stroke.

Table 2. 1: Summary of the epidemiology of stroke

Parameters	Global /10,000	Nigeria /10,000
Incidence	4.5-13.3	2.5
Male	6.5-13.3	2.8
Female	4.5-9.9	2.1
Prevalence	53.6-80.0	11.4
Male	13.6-34.6	15.0%
Female	10-26	6.9
Mortality	2.3-3.9	13.0
Male	2.02-6.2	-
Female	4.5-5.2	-
Fatality	20-50	28-45%
DALYs	-	-
Male	922-1212	-
Female	675-836	-


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2.2.5 Risk factors of stroke

The risk factors for stroke could be categorized into two groups based on existing literature, namely: modifiable risk factors and non-modifiable risk factors. The identified risk factors for stroke that are categorized as modifiable include high blood pressure, heavy alcohol consumption, smoking, physical inactivity, diabetes, dyslipidemia, psychosocial stress, obesity, and cardiac diseases (O'Donnell et al., 2016). These are risk factors that intervention strategies aimed at reducing them could significantly decrease the risk of stroke and as such are of utmost importance to stroke prevention. Modifiable risk factors could be further categorized into medical conditions and behavioural factors (Boehme, Esenwa, & Elkind, 2017). With the diverse evidence on the modifiable risk factors, O'Donnell and colleagues estimated that over 80% of first stroke incidence are preventable (O'Donnell, et al., 2016). Some of the modifiable risk factors that are well documented and

extensively discussed in literature (hypertension, diabetes, smoking, heavy alcohol, and cardiac diseases) are described in the paragraphs that follow.

High blood pressure often known as hypertension or elevated blood pressure is recognized as the major determinant of risk for stroke (Meschia et al., 2014) and the most significant modifiable risk factor for stroke in the general population (Benjamin et al., 2017). The risk of stroke increases consistently with a rise in blood pressure. A higher lifetime risk that ranges from 21% to 26% for stroke has been linked with hypertension in older adults (Seshadri & Wolf, 2007). Similarly, the reduction of elevated blood pressure is one of the successful approaches used for preventing both the two major sub-types of stroke-ischemia and haemorrhagia (Meschia et al., 2014; Salter, Teasell, Foley, Bhogal, & Speechley, 2011). Another well-recognized risk factor that is modifiable for stroke is diabetes. Existing literature established a greater vulnerability of diabetic patients to atherosclerosis, hypertension, obesity and dyslipidemia (Salter et al., 2011; Emerging Risk Factors Collaboration [ERFC], 2010). Similarly, a two-fold risk of experiencing stroke was identified to exist in diabetic patients without a previous stroke history (ERFC, 2010). To decrease the risk of stroke resulting from diabetes, Boehme et al. (2017) indicated the use of combined behavioral modification as well as medical therapy as an effective management principle for individuals with diabetes.

Smoking and heavy alcohol intake (which amounts to the drinking of >60 g/day and >40g/day of alcohol in men and women respectively [Iacovoni, De Maria, & Gavazzi, 2010]) is documented in literature to be a significant independent risk factor of stroke. An increased risk of stroke ranging from two to four folds has been established to exist among individuals who smoke 20 or more cigarette sticks per day compared to non-smokers (Bagnardi, Zatonski, Scotti, La Vecchia, & Corrao, 2008). Similarly, the REGARDS longitudinal study described a 30% increase in the risk of stroke among second-hand smokers (often referred to as passive smokers) compared with non-smokers (Malek, Cushman, Lackland, Howard, & McClure, 2015). This risk progressively declines over a five year period after smoking cessation. Among alcohol consumers, the risk of stroke varies with stroke sub-types. The risk for stroke caused by ischemia for instance has a J-shape relationship with alcohol consumption while a linear relationship exist between risk of haemorrhagic stroke and alcohol intake (Klonoff et al., 2007; Patra et al., 2010). In

essence, heavy alcohol intake increases the risk of consumers to either of the two major sub-types of stroke.

Another well recognized and documented modifiable risk factors for stroke are cardiac diseases namely arterial fibrillation (AF), cardiac failure and coronary heart disease (Cope, Clemens, Hammès, Noack, & Jansen, 2015; Salter et al., 2011). For instance, the Framingham Heart study reported a five-fold surge in risk of stroke among individuals with AF while a two and four-fold increase in the risk for stroke was similarly reported among individuals with cardiac failure and coronary heart disease respectively (Cope, et al., 2015). Among people younger than 50 years of age, cardiac diseases were established by Owolabi and colleagues as the dominant risk factors for stroke in Ghanaian and Nigerian cohort (Owolabi et al., 2018). Salter et al. (2011) reported a 70% reduction in the risk of experiencing a stroke by individuals with AF when treated with anticoagulation.

Non-modifiable risk factors of stroke are the predisposing factors in an individual for stroke that cannot be changed or altered. These factors are gender, previous history of T.I.A or stroke, age, and race. Gender is documented as the second most significant non-modifiable predisposing factor for stroke after age (Miah et al., 2012). Although stroke risk is reported to be 1.5 times greater in men compared to women in a recent study by Saha et al. (2018); the gender difference was however found to be 1% in a study conducted by Chambless et al, (2000). It is largely felt that the protective effects of female sex hormones, the differences in diet and smoking are contributory to the gender differences in the risk of stroke (Krishnamurthi et al., 2015; Petrea et al., 2009; Seshadri & Wolf, 2007). The case-control INTERSTROKE study by O'Donnell et al. (2016) provided a clear depiction of the gender distribution of risk factors that are modifiable for stroke. The distribution varied significantly between males and females. More men compared to women had elevated blood lipids, were current or former smokers, while fewer women were alcohol consumers (O'Donnell et al., 2016).

With a family history of stroke, the risk of having a stroke has been established to increase in both men and women (Petrea et al., 2009). This shows that stroke is conceivably a hereditary disease (Adams, 2007). Adams (ibid), reported that individuals with a positive family history of stroke have approximately a three to five times increased risk of an

aneurysmal rupture which could result in stroke. Ovbiagele and Nguyen-Huynh (2011), contrariwise revealed that first-degree relatives have a twofold increase in risk for stroke.

Age is acknowledged as the most influential and most common non-modifiable risk factors for stroke (Owolabi et al., 2018; Walker et al., 2010). According to the above authors, the risk of having a stroke surges with an increase in age. For every decade after 55 years of age, the risk increases by two-folds (Petrea et al., 2009). While in connection to race, Blacks and Hispanics have a greater risk of having a stroke compared to Whites (Howard et al., 2016, 2017). Although this difference is most times linked to genetic factors, it may essentially be due to disparity in the burden of other risk factors for stroke that are modifiable across these populations.

The impact of gender, age and race as risk factors of stroke that are not modifiable was discussed in the previous discussion on the incidence, the prevalence and the mortality of stroke. As regards to a previous history of stroke or T.I.A., there exist a higher risk of recurrent stroke among stroke or T.I.A. survivors when compared to the general population. Specifically, this risk is 15 folds greater and prevalent in the first year after experiencing a stroke (O'Donnell et al., 2016; van Wijk et al., 2005).

Literature evidence revealed an improvement in the awareness as well as the knowledge of the risk factors for stroke in the last three decades (Feigin et al., 2016; Stroebele et al., 2011). Meanwhile, this trend could be deemed negligible in the developing countries as it has not produced the expected impact of reducing stroke incidence in these countries. There exist a need to not only improve on the knowledge and awareness of stroke risk factors among the populace but also the translation of the knowledge into the actual reduction of stroke incidence in order to lower the stroke burden on the individuals and the society.

2.3 CONSEQUENCES OF STROKE

Common consequences attributed to stroke are hemiplegia or hemiparesis, perceptual, cognitive, sensory, and communication problems. The implication of this departure from normal body functions by the stroke survivors usually translates itself as reduced functioning, limitation in capacity to perform actions, and restriction experienced in the active involvement of the survivors in controlling their life in fulfilling personal and societal roles. The most significant and lasting consequence of stroke is long-term

disability. In addition to the sequelae experienced by stroke survivors, the consequences of a stroke could be enormous at the societal level. Stroke cast a huge burden on the society not just in the cost of care but also when the stroke survivor does not return to work. Stroke care is estimated to cost more than 5% of most countries' healthcare budgets (Palmer et al., 2005). For instance, Pandian, Srikanth, Read, and Thrift (2007) reported that over US\$2,000 is spent per treatment on 'clot busting' thrombolytic drug used to treat stroke in developing countries. Nigeria spends \$400 million annually on non-communicable diseases which includes stroke and heart diseases and this rose to about \$8 billion in 2015 (Vanguard News Nigeria, 2015). The subsequent serious and permanent disability experienced by stroke survivors leads to substantial care need and a lifetime adherence to drug regimens so as to limit the risk of future attacks. This has been attributed to the high cost of stroke (Lloyd-Sherlock, 2010). The individual's disability affects the productivity level of stroke survivors with a resultant effect on the society or country's gross domestic product. A detail description of the consequences and impact of stroke on work ability is provided under the conceptual framework subsection of this chapter.

2.4 CONCEPTUAL FOUNDATION OF THE STUDY

The classification of functioning in humans has led to the formulation of different theories and models in explaining dysfunction and disability in the human body. Such theories and models include among others, the medical and social model of disability, the WHO ICF as well as the theory of occupational science. For this literature review, the ICF will be used to conceptualize the consequences of stroke and work disability that arises from stroke. However, a brief synopsis of the medical and social model from which the ICF was developed will be provided before an exhaustive description of the ICF framework

2.4.1 The Medical and Social Model of Disability

The medical model was described by Vanleit (2008) as a clinically oriented model that view disability as an attribute of the person which may directly result from trauma, disease or other health conditions. The impression that the presence of a disability is caused by the deviation of the body from its normal functioning brought about by the conceptualizing of this model of disablement. With the medical model, disability is assumed to be caused by sequelae experienced by the survivor as a result of the stroke event. Thus, intervention is

directed towards fixing the problem by professionals with the aim of correcting or minimizing impairments through which recovery of function is achieved (Vanleit, 2008; Reed et al., 2005). There is a substantial reliance on health professionals as main gatekeepers for achieving optimal functioning (Humpage, 2007). With the medical model, work disability is assumed to be independent of broader political, physical and/or sociocultural environments. However, some disabilities cannot be removed or ameliorated even with the advances that has been achieved so far in medicine; thus stroke survivors with disabilities could then be viewed as being in need of help under this model (Roush & Sharby, 2011). The above authors further asserted that the depiction resulted in the proliferation of and is frequently associated with disability-related charity. A common critique of the medical model is its association of people with disabilities (PWD) with the sick role. It also discusses disability in a deficit model orientation which subsequently influences how the society interact with and talk about PWD (Mitra, 2006; Brittain, 2004). The failure of the model to acknowledge the impact of contextual factors in the participation restriction experienced by individuals with disability like the stroke survivors is recognized as its major disadvantage (Haegele & Hodge, 2016).

The social model on the contrary do not consider disability as a medical problem that arises from the individual but rather as an outcome of the individual being excluded from participation in ordinary life. This model is a socially oriented model that shifts the problem of disability from the individual to the environment and the society (Kearney & Pryor, 2004; Vanleit, 2008). Thus, the model suggest that solutions to restrictions in participation should be directed towards the society and not to the individuals' impairments. According to Roush and Sharby (2011), impairments present a form of multiplicity that brings divergent perspective to functioning in people and as such should be valued. With an ideal social arrangement, the social model posits that impairments experienced after a health condition like stroke should not significantly decrease a survivor's well-being (Blustein, 2012). From this perspective, the resumption of previous occupational role of the stroke survivor would require political action and social change rather than a change or improvement in body function or structure. Although the social model accounts for environmental inequalities that impacts functioning, a major critique of the model resides in its failure to address impairment as an observable element that influence the lived

experiences of PWDs (Bingham, Clarke, Michielsens, & Van de Meer, 2013; Oliver, 2013; M. Palmer & Harley, 2012).

2.4.2 International Classification of Functioning, Health and Disability

The ICF is a broad and universally recognized framework used in understanding health and health related conditions of functioning and disability in human (WHO, 2001). Functioning is the positive aspect of health and this term as used in the perspective of the ICF comprises of body structures and function, activities, as well as participation. Whereas disability is the negative aspect of health and encompasses impairments, limitations experienced in activity performance and restrictions in participation. The ICF understands and considers the above terminologies within the setting of the person and environment in which functioning and disability occur, thus viewing health as an amalgam of biological, individual, and social factors through a psychosocial perspective. This allows for a better conception and understanding of the impact of environmental factor on human functioning. The acknowledgment of the significant role played by the ICF framework resulted in the design of the ICF Core Sets for different health conditions and rehabilitation specialties such as VR (Escorpizo et al., 2011) and stroke (S Geyh et al., 2004). The core sets for stroke are the different relevant categories within the ICF that describe the symptoms arising from stroke on the basis of the ICF language. Two approaches to characterize stroke related disability are embedded within the ICF and its core sets for stroke namely; the health status measurement and the classification approach (Geyh, 2007). In this current section, the classification approach of the ICF framework is first used to describe the impact of stroke based on body functions, body structures which will be identified as impairments and activity/participation. Subsequently, the approach is further used to understand work disability following stroke.

2.4.2.1 Post-stroke Impairments

Impairments arising from stroke are variable and are dependent on the site and extent of the stroke lesion. Common post-stroke impairments includes one or more of the following: motor and sensory impairments, sensory loss, incontinence, cognitive and perceptual impairments, vision impairments, speech and language impairments (Harvey et al., 2011; Tipping, 2008). Most of the individuals that survived a stroke are left with various form of

neurological impairment at five years post-stroke (Harvey et al., 2011). The impairments caused by stroke are discussed in detail in the subsequent paragraphs.

Motor impairment

Motor impairment after stroke is due to a lesion to the corticospinal tracts or the brain's primary motor cortex and often involves paralysis or paresis of the muscles on the side of the body that is opposite to the side of the lesion. The loss of motor function occur immediately after the stroke event and could last for a long period of time among survivors (Chen, Leys, & Esquenazi, 2013; Lundström, Terént, & Borg, 2008). For instance, Kelly-Hayes et al. (2003) reported that over 50% of stroke survivors in the Framingham study had impairments of motor function that required prolonged rehabilitation. In a similar study conducted by Duncan et al. (2005), 64% of the stroke survivors in their study had motor function deficits ranging from severe to moderate. The motor impairments exhibited by stroke survivors include weakness or loss of voluntary movement, spasticity, and impaired coordination. Deficits in motor function are one of the most common and challenging sequelae of stroke (Andersen & Olsen, 2011). In the Nigerian stroke population, it was reported by Vincent-Onabajo, Hamzat, and Owolabi, (2014) that 20 to 50 % of survivors experienced severe motor impairments in the first year after a stroke event.

Sensory Impairment

Sensory deficits are also common impairments associated with stroke and often times results from a lesion to the somatosensory cortex of the parietal lobe. Existing literature reports the prevalence of somatosensory impairments among stroke survivors to range from 25% to 85% (Kessner, Bingel, & Thomalla, 2016). A quarter of the sensory modalities impaired by stroke are partially recovered during the first to six months post-stroke (Kessner et al., 2016). Amongst Nigerian stroke population, sensory impairment is documented to be experienced by more than half of the survivor (Akinpelu, Adejare, & Gbiri, 2012). This could occur either at the ipsilateral and/or contralateral side of stroke affectation. Functionally, somatosensory problems arising from stroke was categorized by Hunter and Crome, (2002) to include impaired detection of sensory stimulus and the erratic presentation of motor tasks performance from the somatosensory input. Complex sensory function such as proprioception, stereognosis and two-point discrimination is documented

to be more susceptible to impairment from stroke compared to simple sensory modalities such as temperature, pain and touch (Klingner, Witte, & Günther, 2012).

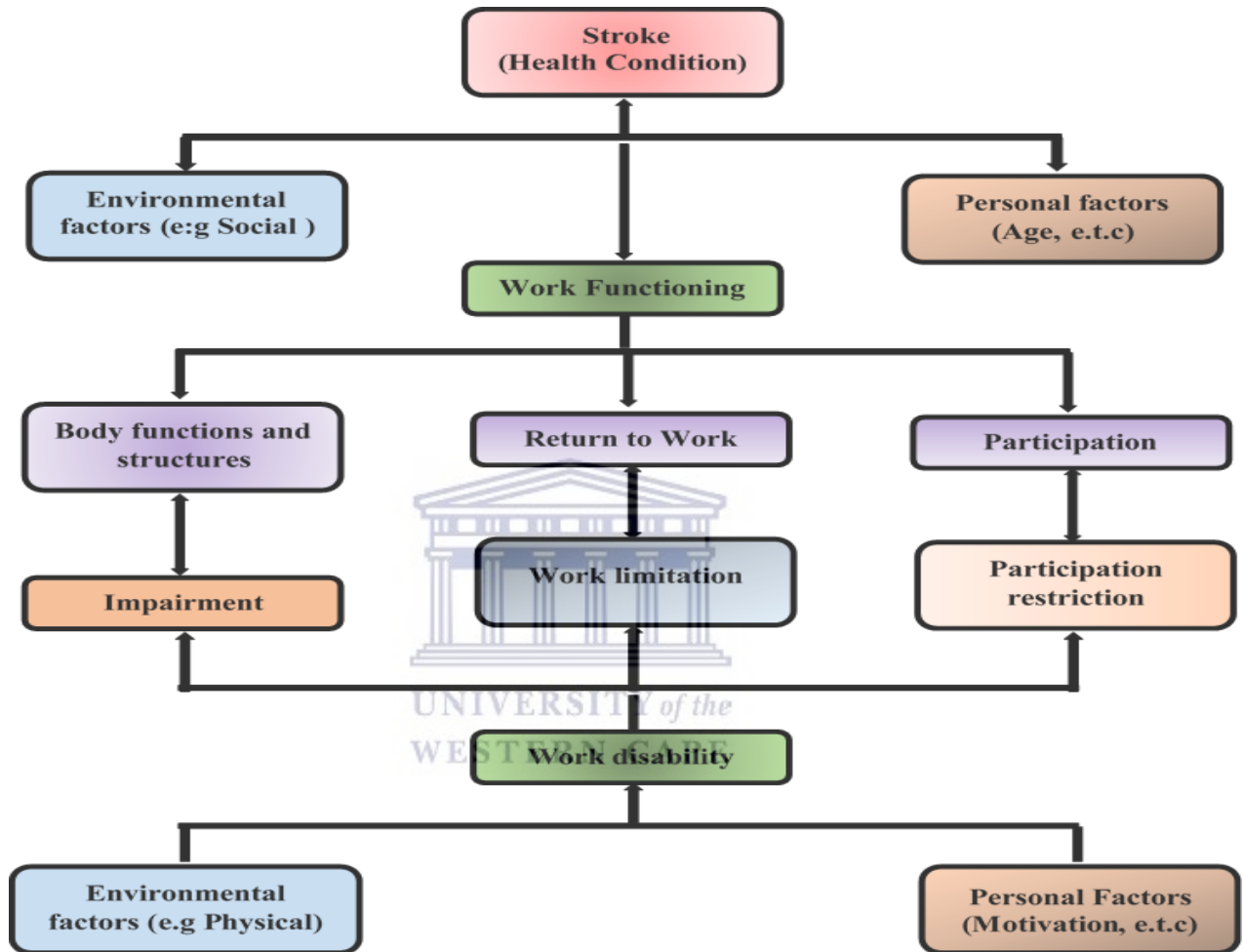


Figure 2. 1: The ICF Framework (adopted for RTW after stroke)

Cognitive and perception impairments

Cognitive and perception impairments usually occur in the acute and post-acute phase after a stroke. Common cognitive problems experienced by stroke survivors ranges from problems with memory, attention, visuospatial ability, abstract thinking and reasoning, task initiation, comprehension and insight while common perceptual deficits include problems with processing and interpretation of sensory information obtained from the environment such as body scheme disorder (Gillen, 2015). Cognitive and perception impairments may be hidden and the stroke survivor (and the family /caregiver) can be unaware of them. The

cognitive and perceptual deficits have been associated to lesions of the cortical limbic areas, areas within the frontal cortex and the white matter of the brain (Zekry et al., 2003). The prevalence of these cognitive and perceptual deficits have been reported to range from 30-92% (Jokinen et al., 2015; Middleton et al., 2014; Jaillard, Naegele, Trabucco-Miguel, LeBas, & Hommel, 2009; Nys et al., 2007; Tatemichi et al., 1994). Some of the deficits experienced immediately after the stroke event often resolves but a significant part of the deficit persist over a longer duration that may span 20 years (Mellon et al., 2015). For instance, a longitudinal study by Douiri, Rudd, and Wolfe (2013) reported a prevalence rate of 22% and 21% of cognitive and perceptual deficits at five and fourteen years post stroke respectively among stroke survivors in the UK. In the Nigerian stroke population, cognitive and perceptual impairments occur in 40% of survivors in the GogFAST hospital based study (Akinyemi et al., 2014). Cognitive impairment is one of the major determinants of long term health outcome such as independent functioning and work ability after stroke (Ntsiea, van Aswegen, & Olorunju, 2013; Vestling, Ramel, & Iwarsson, 2013).

Speech and language impairments

Impairment of speech and language function is the second major disability among stroke survivors (Belopasova, Kadykov, Konovalov, & Kremneva, 2016) and this results from lesion to the language and speech areas of the brain. Speech and language impairment after stroke could manifest itself as aphasia (a disorder of language) which occur in 28% to 40 % of survivors (Dickey et al., 2010; Berthier, 2005;), apraxia of speech (AOS; a disorder of speech motor planning/programming) with a prevalence rate of 16.2% among stroke survivors (Itabashi et al., 2016), and dysarthria (a disorder of speech execution and control) that occur in 27% to 69.5% as a sequela of stroke (Ali, Lyden, & Brady, 2015; Flowers, Silver, Fang, Rochon, & Martino, 2013). In Nigeria, a five year retrospective study of stroke in Sokoto state by Njoku and Aduloju (2004) revealed that speech impairment was a major presenting complaint among 20.4% of stroke survivors. Together with motor and coordination impairment, speech and language impairments have been documented to result in a significant barrier to the social rehabilitation and community reintegration of the stroke survivors (Walsh, Galvin, Macey, & Horgan, 2013).

Sexual dysfunction

Sexual impairment after stroke is considerably under-recognized among all other post-stroke impairments and it occurs in approximately 50% of stroke survivors (Bener, Al-Hamaq, Kamran, & Al-Ansari, 2008; Cheung, 2002). Sexual dysfunction is understood to result from both psychosocial factors such as fear of stroke recurrence, loss of self-esteem, role changes and organic factors such as brain lesions and medications (Calabrò & Bramanti, 2014). The organic cause has been frequently associated with stroke lesion to the temporal lobe and cerebellum (Jung et al., 2008; Monga, Monga, Raina, & Hardjasudarma, 1986; Redoute et al., 2000). Often times, sexual impairments after stroke presents as decreased or increased in libido and coital frequency, impotence and arousal problems as well as orgasmic dysfunction among survivors (Calabrò & Bramanti, 2014). Impaired tactile sensation and speech impairment has been attributed to compound sexual dysfunction among stroke survivors (Sikiru, Shmaila, & Yusuf, 2009). For instance, Thompson and Ryan (2009), as well as Ch'Ng, French, and Mclean, (2008) established that speech impairments among stroke survivors interfered with expression of feelings and widens emotional distance between the survivor and spouse and therefore interfere with sexual intimacy after stroke.

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With regards to the prevalence of sexual dysfunction among Nigerian stroke population, Akinpelu, Orose, Odole, and Odunaiya (2013) found that 94% of the stroke survivors had one form of sexual dysfunction with a decline in libido and coital frequency occurring in more than 70% and decline in erection, ejaculation and orgasm affecting over 60% of survivors.

Other impairments of body function and structure caused by stroke

Other impairments of body function and structure attributable to stroke includes fatigue, visual impairment, and urinary dysfunctions. Fatigue is posited by Tseng and Kluding, (2009) as one of the most distressing symptoms of stroke, affecting around 40% to 57% of stroke survivors (Wu, Mead, Macleod, & Chalder, 2015; Choi-Kwon, Han, Kwon, & Kim, 2005) and exerting a huge impact on the survivors' activity performance in the physical domain (Obembe, Olaogun, & Olalemi, 2015).

Visual impairments resulting from stroke includes visual field defects, eye movement disorders, and visuospatial neglect and occurs with varying prevalence that ranges from 20% to 92% among survivors. For instance, a multicenter study by Rowe (2009) reported a 68.4% and 46.1% prevalence of eye movement disorders and visual field defects respectively in a cohort of stroke survivors. A similar study conducted by Olubor, Uhumwangho, and Omoti (2016) to established the prevalence of ocular abnormalities among Nigerian stroke population reported that 95.5% of the study population had one form of ocular abnormalities and that only 10% of the population present with visual complaint after the stroke. Visual impairments has been recognized to influence visual memory, and recognition, as well as decision making in stroke survivors (Ali, Hazelton, Lyden, Pollock, & Brady, 2013). Following stroke, impairments of urinary function is common with an estimate of 50% amongst survivors at the acute stage of recovery. After in-patient recovery, the prevalence is estimated as 43.5%, 38% and 17% at 3months, 1 year and 9 years post stroke respectively (French et al., 2016; Williams, Srikanth, Bird, & Thrift, 2012; Jørgensen, Engstad, & Jacobsen, 2005). In addition to the above mentioned impairments, depression and pain are common psychosocial impairments resulting from stroke. Approximately one third of stroke survivors experience depression either early or late after stroke onset, and depression impedes the rehabilitation and recovery process (Alajbegovic et al., 2014; Kutlubaev & Hackett, 2014; Obembe, Mapayi, Johnson, Agunbiade, & Emechete, 2013). Also, pain is a frequent symptom after stroke, and may affect up to half of the survivors 4-12 months post-stroke (Lundström, Smits, Terént, & Borg, 2009); stroke-related pain is associated with more severe strokes and sensory disturbances (Jönsson, Lindgren, Hallström, Norrving, & Lindgren, 2006; Lundström et al., 2009).

The current literature review shows that the most frequent clinical features for stroke result from the impairments of sensation, motor function, cognition, emotional status, urinary control, and speech. However, the studies are not always in agreement with regard to the prevalence rates of those impairments, and this disagreement could be attributed to methodological differences.

2.4.2.2 Activity limitation arising from stroke

Activity limitation arises when a person experiences either difficulty in carrying out tasks or actions in a predictable manner, or is incapable of performing it at all. This is assessed based on the person's ability to carry out the task and does not take into consideration the influence of external factors such as the environment (Gray & Hendershot, 2000). From the literature on the epidemiology of stroke, the increased incidence and prevalence of stroke and post-stroke impairments as well as the reduction in stroke-related mortality has resulted in an increase in the number of stroke survivors who are functionally dependent. As a result, the ability to perform activities of daily living is most times compromised amongst stroke survivors. Even survivors who are completely independent in activities of daily living (ADL) often have "hidden dysfunctions" that significantly reduce their quality of life and participation (T. L. Green & King, 2010).

Post-stroke impairments that includes cognitive, communication and physical impairments combined with environmental factors have been established to influence stroke survivors' participation in life routines, roles and daily occupations (Clarke, 2003). Frequently reported areas within the activity domain of the ICF that is affected by stroke includes mobility, self-care (such as bladder and bowel control, feeding, bathing), acquisition of skills, leisure and recreation, as well as family and intimate relationships. In a study conducted by Mayo, Wood-Dauphinee, Côté, Durcan, and Carlton, (2002), 39% and 54% of the study participants were found to experience activity limitation in basic and instrumental ADLs respectively at six months post-stroke. At three years post stroke, a follow-up study conducted by Patel et al., (2006) reported that 26.3% and 51% of their study participants experienced limitation in basic ADL and instrumental ADLs respectively. A similar study conducted among South African stroke cohorts by Elloker, Rhoda, Arowoia, and Lawal, (2018) found that over 35% had limitation with bathing and grooming; more than 25% had limitation in each of toilet use, climbing, feeding and transfer while 24% experienced limitation with walking. However in a cohort of Nigerian stroke survivors, Obembe and colleagues reported that over half of the stroke survivors had severe to complete limitation in each of indoor and community mobility, self-care, family roles and personal relationships and presentation of self to others following stroke (Obembe, Johnson, & Fasuyi, 2010). Although, it may be contended that the normal human

aging process and other comorbidities that manifested over time could have accounted for the changes observed in some domains of participation at long term post-stroke among survivors rather than the stroke sequelae (Desrosiers & Bourbonnais, 2005).

2.4.2.3 Participation restrictions following stroke

Participation is defined by the WHO (2001) as the involvement of an individual in life situations and this represents the societal viewpoint of functioning (Stucki, 2003; World Health Organization, 2001). Coster and Khetani, (2008) further explain participation to connote partaking or being involved in an area of life, and being accepted and able to access needed resources within the society. A disease condition such as stroke disrupt the capacity of its survivors to actively participation in various life roles (D'alisa, Baudo, Mauro, & Miscio, 2005; Mayer & Reid, 2004; Mayo et al., 2002). The available literature on some participation restrictions experienced by stroke survivors is provided in detail below.

Restriction with outdoor mobility, transportation use and driving

Ambulation is a strong determinant of community reintegration post-stroke. According to Cohen et al. (2018), among stroke survivors, loss of independence in indoor and communal mobility are considered to be one of the most overwhelming disabling consequences of stroke. Although over 75% of patients regain independent gait function after a stroke event (Obembe, Olaogun, & Olalemi, 2015; Veerbeek, Kwakkel, van Wegen, Ket, & Heymans, 2011), only a smaller fraction are able to walk independently in the community again (Palmcrantz, Holmqvist, & Sommerfeld, 2012; Robinson, Shumway-Cook, Ciol, & Kartin, 2011; Buurke et al., 2008). Community ambulation or outdoor mobility in this regards refers to independent movement outside the stroke survivor's residence, which consist of the ability to confidently maneuver rough terrain, public and non-public venues (Lord, McPherson, McNaughton, Rochester, & Weatherall, 2004). Varying statistics subsist in literature concerning walking difficulty after stroke. For instance, Palmcrantz, Holmqvist, and Sommerfeld, (2014) reported that 40% of Swedish stroke survivors had moderate to severe problem in community ambulation while over 65% of Nigerian stroke survivors were described as having moderate to complete problem with community mobility by Obembe, et al. (2010). Regarding the use of public transportation, Rhoda, Mpofu, and De Weerd (2011), reported similar findings amongst South African stroke population despite

over 75% being independent in in-door walking. Irrespective of the functional status and abilities of the individuals that survived stroke incidence, compelling evidence suggests that the variation in statistics in community ambulation/re-integration among survivors is influenced by both personal factors of the participants and the context in which participation occurred (Ståhl & Månsson Lexell, 2018).

In a study by Wendel, Ståhl, Risberg, Pessah-Rasmussen, and Iwarsson (2010) conducted to investigate functional limitation and variations in means of transportation post-stroke, 44.3% of the study population decreased or ceased walking while more than half of the participants reduced the use of public transport such as bus or train after stroke (Griffen, Rapport, Coleman Bryer, & Scott, 2009). Resumption of driving on the other hand which could be categorized as a basic activity in modern daily living is documented to be 30% following stroke (Yu et al., 2016; Aufman, Bland, Barco, Carr, & Lang, 2013; Fisk, Owsley, & Pulley, 1997). Even though stroke survivors may use alternative mode of transport, this may not fully compensate for their mobility. The restriction with communal mobility affects the independence of the stroke survivor and thereby, leads to social isolation, reduced life satisfaction and increased the need for community support (Nanninga, Meijering, Postema, Schönherr, & Lettinga, 2018; Olaoye, Adejumobi, Olasusi, Aladesuyi, & Emechete, 2017; Robinson et al., 2011). For instance, Mayo et al. (2002) revealed that half of community dwelling Canadian stroke population relied on the help of able-bodied caregiver at home to enable them to participate in previous roles and routine such as leisure and work.

Family and spousal relationship

As stroke is a condition that mainly affects adults, spouses and other members of family are the primary informal care provider for the stroke survivors upon discharge to the home environment from hospitals (Mees, Klein, Yperzeele, Vanacker, & Cras, 2016; Tanwir, Montgomery, Chari, & Nesathurai, 2014). Substantial research (Anderson, Keating, & Wilson, 2017; Chung, Bakas, Plue, & Williams, 2016; Quinn, Murray, & Malone, 2014; Bäckström, Asplund, & Sundin, 2010) on stroke survivor and spouse dyad have established a decline in spousal relationship after stroke and a rise in the burden of care on family and relatives. A stroke often results in considerable activity and relational alterations for the

family as a whole and test the mutual family arrangement. The informal caregivers which often times are spouses and or family members of the stroke patients experience physical, psychological and/or social challenges during the care giving process which predispose them to fatigue and depression and put a strain on family and spousal relationship (Wu, 2009). The strain on spousal relationship is complex and multi-faceted and has further been linked to the emergence of roles akin to parent/child; disturbances of marital equity; decrease in couple communication; and diminished intimacy (Quinn et al., 2014; Bäckström et al., 2010; Buschenfeld, Morris, & Lockwood, 2009; Thompson & Ryan, 2009). According to the report of Thompson and Ryan (2009), stroke survivors often display an elevated level of frustration as well as anger about their dependence on their spouse and the burden that it causes. Also, stroke survivors experience loss of identity and sense of self, as they are obliged to relinquish their predefined roles within a marriage partnership. Even though stroke survivors may have recovered from other stroke sequelae, oftentimes spousal relationship significantly suffered or are rendered obscure. Contrarily, Greenwood, Mackenzie, Cloud, and Wilson, (2009) reported positive influence of stroke on spousal relationship which include: closeness to other members within the immediate family, appreciation and discovery of inner strength and taking better care of own health. In a similar study conducted by Haley and colleagues to quantify the influence of stroke on family and spousal relationship, over 90% of caregivers indicated that the experience increased their appreciation of life while more than 60 % revealed that the experience encouraged them to learn new skills that bond the family (Haley, Roth, Hovater, & Clay, 2015). According to Dreier (2008), family life is lived and understood in relation to its members' life, therefore changes to the family situation resulting from stroke could lead to conflicts, and imbalance in the conduct and routine of other member's ADL. For instance, the study conducted by Mapulanga, Nzala, Zyaambo, and Mweemba, (2015) to investigate socio-economic impact of stroke, reported that 88% and 68% of Zambian stroke population experienced family and marital role changes respectively. The observed changes in marital relationship in the above study include marital problems and neglect, apathy and role reversal. Similarly, Karraker and Latham, (2015) as well as Trygged, Hedlund, and Kåreholt, (2011) established that divorce rates are significantly higher for working aged stroke survivors compared to age-matched Swedish population. Significant greater sexual

dysfunction and reduced sexual functioning rate among stroke survivors when compared with apparently healthy population could have contributed to changes in marital relationship (Oyewole, Ogunlana, Gbiri, & Oritogun, 2017). As a result of the negative impact of stroke on family and spousal relationship, most clinical guidelines for stroke rehabilitation recommends the provision of support to families and spouse along the care-giving/intervention pathway (Intercollegiate Stroke Working Party, 2012; Smith, et al., 2010)

Leisure participation

According to the American Occupational Therapy Practice framework (American Occupational Therapy Association [AOTA], 2008), leisure is an intrinsically motivating and optional activity that an individual engaged in during a discretionary period when not involved in self-care or vocational activities. Leisure is established to be essential for optimal wellbeing and healthy living (Wang, Xu, & Pei, 2012). Compelling evidence have also identified leisure to be important for the prevention of disease conditions and relaxation from stress that is associated with everyday life (Pressman et al., 2009; Iwasaki, Mackay, Mactavish, Ristock, & Bartlett, 2006). Similarly, substantial literature subsists on the positive impact of leisure participation following stroke on life satisfaction and the quality of life of stroke survivors (Hartman-Maeir, Soroker, Ring, Avni, & Katz, 2007), and secondary stroke prevention (Billinger et al., 2014). In a study conducted by Sveen, Thommessen, Bautz-Holter, Wyller, and Laake, (2004) to explore the associated between competence in ADL and subjective well-being among Norwegian stroke survivors, engagement in leisure was a key independent predictor of wellbeing. Despite this, participation in leisure endeavours post-stroke is often restricted not only due to the sequela of stroke but also from environmental factors in which leisure involvement occur (Jellema et al., 2017; Amarshi, Artero, & Reid, 2006). Vincent-Onabajo and Blasu (2016) stated that approximately 60 % of Nigerian stroke survivors did not engage in recreational leisure activity. The authors further reported a decline in leisure participation post stroke that ranges from 5-35% across all domains of the leisure participation questionnaire among their study participants. A similar trend of significant decrease in leisure engagement was reported by Gillen (2016). In a longitudinal study conducted among Danish stroke population, over 60% were indicated to have experienced a severe restriction in leisure

participation five years after a stroke event (Teasdale & Engberg, 2005). Among Australian stroke cohort with good functional recovery, White, MacKenzie, Magin, and Pollack (2008) identified restrictions to participation in leisure engagement that include home maintenance, crafts and games, caring for grandchildren as well as volunteering while Arowoiya et al. (2017) found participation restriction ranging from severe to extreme in nearly 40% of South African stroke population. In a phenomenological qualitative enquiry conducted by O'Sullivan and Chard (2009) among Irish stroke survivors, the process of re-engagement in leisure participation after stroke was observed to involve the acceptance of physical limitations post-stroke, expression of gratitude for help and support as well as looking forward to the future. Further findings from the above discussed literature show that factors hindering social and leisure participation involve more than the functional impairment from stroke and include transportation accessibility, economic cost of leisure engagement, and the presence of social support. Therefore, in order to enable and improve occupational performance in social and leisure activities, environmental and personal factors that impacts leisure engagement should be addressed during rehabilitation.

Vocational participation

Ross, (2013) identified work as an indispensable form of human activity that provide meaning within the broader context of an individual's life. It is the most central performance area in a person's adult life. Work does not only serve as an important social outcome of rehabilitation for stroke survivors (Daniel, Wolfe, Busch, & McKeivitt, 2009) but it is also an age linked role expectation (Ross, 2013). Return to work (RTW) is the initial stage to re-employment. Treger, Shames, Giaquinto, and Ring (2007) established that RTW is prevalent in the initial six months and peaked at one years after stroke. There exists paucity in the literature on RTW after stroke in developing nations especially SSA. Available literature within SSA include studies by Arowoiya et al., (2017); Duff, Ntsiea, and Mudzi, (2014); as well as Peters, Buni, Oyeyemi, and Hamzat, (2013). In the cross-sectional study conducted by Peters et al. (2013) in Northern Nigeria, a RTW rate of 55% was identified among stroke survivors up to eight years post stroke while Duff et al. (2014) reported a 34% RTW rate two years post stroke in South African population. In a similar study by Arowoiya et al. (2017) in South Africa, half of the study participants revealed that

they experienced severe to extreme difficulty in each of performance of day to day work, doing important work and, completing assigned task.

Performance on the job is also a vital consideration after successful RTW (Young et al., 2016). Even though the stroke survivors in the above Nigerian and South African studies engaged in rehabilitation, they did not receive vocational rehabilitation intervention. Baldwin and Brusco (2011) reported in a review the RTW rate of stroke survivors after engaging in VR to be 49%. A Danish countrywide prospective cohort study observed a RTW rate of 62% in stroke survivors two years post stroke (Hannerz, Ferm, Poulsen, Pedersen, & Andersen, 2012) while in Singapore, a RTW rate of 7% was found among stroke referred for vocational assessment by Chan, (2008). The study population in Hannerz et al., (2012) included individuals of varying worker roles without an indication of their functional level as differences in the definition of work might influence RTW rates across studies (Saeki, 2000). Also, the low RTW rate reported by Chan (2008) may be attributed to the fact that the retrospective review was conducted in a vocational assessment unit. Various factors that have been identified by researchers to predict return to work rates among stroke survivors include: severity of stroke as indicated by the extent of cognitive and motor impairment; premorbid characteristics of survivor (such as level of education of survivor and job characteristics); availability of professional support and early involvement of an occupational physician in the rehabilitation of survivors (Doucet, Muller, Verdun-Esquer, Debelleix, & Brochard, 2012; Tanaka, Toyonaga, & Hashimoto, 2011; Treger et al., 2007; Vestling et al., 2003). An accurate comparison of the various studies on RTW rate after stroke may be difficult as most of the studies explored work resumption in different populations at varying follow up stages. Variation in findings could also be attributed to socio-economic factors across regions. These include employment and retirement rates, disability compensation structure available within the society and cultural factors like the availability of assistance from members of family (Saeki, 2000). Poor socio-economic status, availability of disability grants and social benefits as well as high unemployment rate may negatively influence return to work rate after stroke (Treger et al., 2007). For instance, the unemployment rates and presence of disability and social grant in South Africa, may have accounted for the low RTW rate found in study by Duff et al. (2014) as a quarter of South African general population were reportedly unemployed

during the period the study was conducted. Not getting back to work is not only seen as a defeat in the rehabilitation milestone for the stroke survivors of working age and their caregivers, it has also been attributed to reduce the survivor's life satisfaction and well-being (Vestling et al., 2003). Future studies need to have similar follow up duration, preferably six to twelve months post-stroke (to allow for rehabilitation effect) and identical RTW definition, to allow researchers to make global appraisal of RTW post-stroke (Daniel et al., 2009).

2.4.2.4 Work disability in the lens of the ICF

The acknowledgment of the significant role played by the various ICF domains on occupational performance has impacted greatly on the design and development of intervention strategies such as VR. With this, the focus of intervention to improve function or overcoming disability can be shifted from the person to the environment of the individual or vice versa (Rauch, Luckenkemper, & Cieza, 2012; Rusch et al., 2004). The ICF framework has been actively applied in VR with regards to work participation and resumption of worker role (Finger, Selb, De Bie, & Escorpizo, 2015; Glässer et al., 2012; Reuben Escorpizo et al., 2010).

In relation to work disability after stroke, survivors experience a significant departure from normal body function or structure which include among others, the loss of motor, sensory and speech functions. This anomaly or deviation in functioning (in terms of severity) is an important predictor of RTW documented in literature for stroke survivors (Saeki & Toyonaga, 2010; Treger et al., 2007). Impairments may result in difficulties in the execution of task or action when engaging in work. Such difficulties are experienced at the individual level by stroke survivors (for instance, inability to speak) (Vanleit, 2008; World Health Organization, 2001). Restriction are often experienced by stroke survivors when participating in previous or new work roles and function within the society (for instance paid employment). This may be due to external factors, such as the presence of barriers, and/or lack of facilitators within the environment.

Furthermore, the ICF identifies aspect of societal orientation that underpins the idea of social construction of work disablement. These comprise the environment and personal components of the individual (Rauch et al., 2012; Almansa et al., 2011; WHO, 2001).

Environmental factors refer to the aspect of the world which impact on an individual's functioning but are extrinsic to the individual (Rauch et al., 2012). These include among others the political, social, physical and institutional aspect of the environment. Environmental factors have been reported to serve as either barriers or facilitators to the resumption of worker role of stroke survivors (Duff et al., 2014; Soeker & Olaoye, 2017). For instance, engagement in meaningful and gainful work as an age related role expectation for an individual in the society could serve as motivation or hindrance to possible work reintegration for a stroke survivor. Personal factors on the other hand are contextual factors that are intrinsic and unique to an individual but are not part of the individual's health condition. These factors include but are not limited to socio-demographic and psychological characteristics of a person which can positively and negatively influence functioning and health (Vanleit, 2008; Reinhardt, Cieza, Stamm, & Stucki, 2006). Work disability is assessed through the comparison of participation profiles of individuals with and without disability in a particular society. The activity and participation components are further indicated to be subject to qualifiers; capacity and performance which can be influenced by the environment (Rauch et al., 2012; Almansa et al., 2011). The influence of the environment has been documented to be crucial on work participation/reintegration after a stroke event (Duff et al., 2014; Soeker & Olaoye, 2017). Figure 2.2 is used to depict the interactions that occur across the domains of ICF in the event of work disability after stroke.

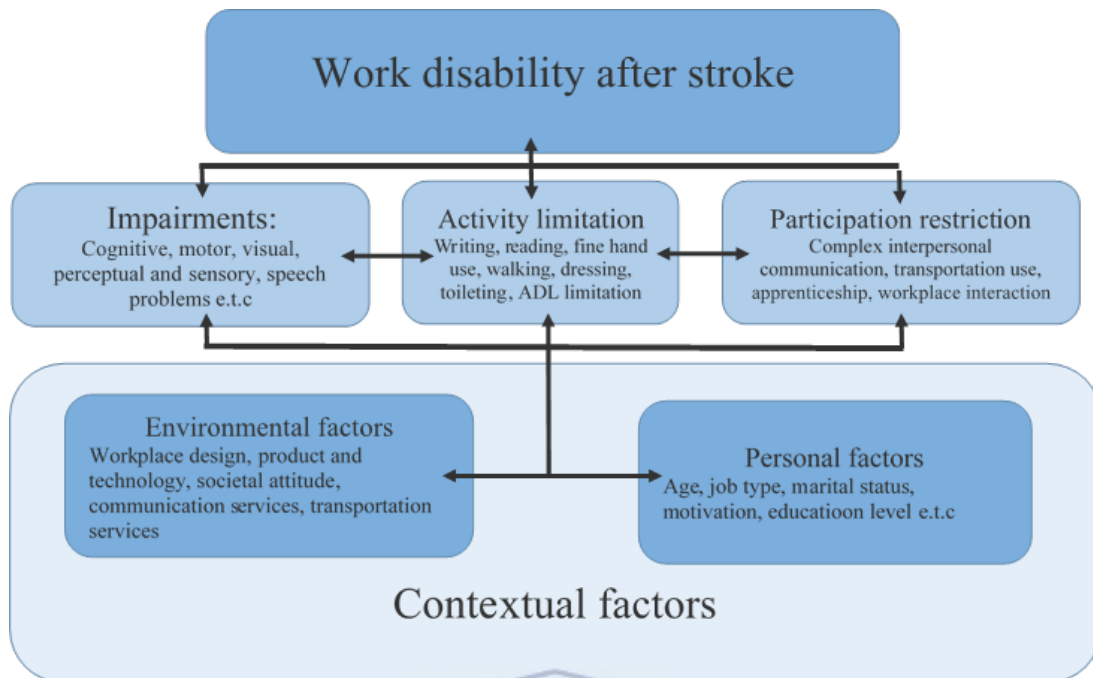


Figure 2. 2: Work disability after stroke

2.5 REHABILITATION POST-STROKE

Rehabilitation is defined by WHO (2001) as a restorative process that seeks to assist individuals with impairments and activity limitations to attain and maintain optimum functioning in physical, intellectual, psychological and social domains. The Western Cape Department of Health (2006) similarly described rehabilitation to involve enabling the patient to attain maximum potential in both work, sport and every sphere of life, with services offered at day hospitals, rehabilitation centers, schools, industries and other organizations. It has over the years been established that implementing rehabilitation research could be complex (Walker et al., 2017). For instance, even though rehabilitation goals following stroke are distinct and related, rehabilitation interventions, survivors' characteristics and context as well as service providers could differ. In order to reduce the complexity in post-stroke rehabilitation, the Donabedian's Structure, Process and Outcome (SPO) model (Donabedian, 2003) will be used to discuss this section. With the SPO model, the dimension of post-stroke rehabilitation can be delineated into three namely, the structure of care, the process of care and the outcome of care.

2.5.1 Post-stroke rehabilitation structure

Post stroke rehabilitation structure refers to the health professionals that provides rehabilitation services and the various settings in which rehabilitation occurs for stroke survivors. Rehabilitation services following stroke is most times provided by teams of health professionals that include the occupational therapists, physiatrists, physical therapists, nurses and speech therapist. With regards to settings, rehabilitation after stroke could be provided to individuals in an inpatient health facility, outpatient setting or the homes where survivors reside.

On inpatient basis, rehabilitation is offered to stroke survivors in acute care hospitals, rehabilitation centers and nursing homes. The acute care rehabilitation services could be provided in the generic wards or stroke units (Stroke Unit Trialists' Collaboration, 2007). The stroke units make use of a multidisciplinary rehabilitation team approach that involves the expertise of teams of health professional in the management of stroke. This approach focuses on the prevention and management of co-morbid ailment and medical complications; independence training and community integration; facilitation of psychosocial coping skills by the stroke survivor and caregivers; enhancement of the survivor's quality of life; and prevention of recurrent stroke and other vascular conditions that occur with increased frequency in stroke survivors (Intercollegiate Stroke Working Party, 2012).

In the outpatient settings, rehabilitation services are offered to stroke survivors after discharge from inpatients health facilities. Although there are still debates about where and when outpatient rehabilitation services are best provided, common approaches utilized within the outpatient rehabilitation setting include the early supported discharge (ESD), institutional based care, and home-based care. Substantial literature that exist on ESD showed that it reduces the risk of mortality and dependency as well as shortened the duration of care compared to institution based care (Mayo, 2016; Fearon & Langhorne, 2012; Langhorne et al., 2005). In the same vein, a systematic review of the comparative effect of home-based and institution based rehabilitation on recovery post-stroke conducted by Hillier and Inglis-Jassiem (2010) reported varied findings; with only seven out of eleven of their included studies revealing more benefit for home rehabilitation in terms of cost,

satisfaction, and caregiver strain compared to institution based outpatient care. A key critique of ESD and home based rehabilitation post-stroke however is the reduced access to multi-disciplinary rehabilitation team members by the stroke survivor that could potentially affect recovery as well as concerns regarding safety (van den Berg et al., 2016).

2.5.2 Post-stroke rehabilitation process

In evaluating stroke rehabilitation process, intensity and frequency of care as well as the content of treatment are vital constituents that have been expansively discussed in literature even though these listed constituents might differ across settings. With regards to the intensity and duration of care, compelling evidence suggests that more intensity of both in-patient and out-patient treatment such as PT and OT can facilitate better functional outcomes in stroke (Kwakkel, Kollen, & Lindeman, 2004). For instance, a meta-analysis of 30 studies conducted by Lohse, Lang, and Boyd (2014) showed that increased time scheduled of therapy was an important determinant of enhanced improvement after stroke in 1750 survivors. Although the above meta-analysis pulled data from studies that used different interventions to treat various impairments and functions following stroke, the findings could still be interpreted cautiously as time in therapy is a robust predictor of recovery following across different types of therapy.

With regards to the content of treatment during post stroke rehabilitation, physical therapy and occupational therapy are some of the vital components of the rehabilitation service rendered to stroke survivors in the different settings of care. The goal of the OT in stroke rehabilitation is the enablement of the survivors to regain their competence, re-engage in occupations and the redevelopment of their occupational identity through treatment of the functional and psychosocial difficulties that resulted from the stroke event (Ivey & Mew, 2010). Interventions employed to achieve this goal include re-education of physical functioning and ADL, patient and caregiver education and provision of assistive devices and equipment, home visits and home adaptation as well as social skills trainings (Arbesman, Lieberman, & Berlanstein, 2014; Langhorne, Bernhardt, & Kwakkel, 2011; Rowland, Cooke, & Gustafsson, 2008). A systematic review conducted by Legg, Lewis, Schofield-Robinson, Drummond, and Langhorne (2017) revealed that occupational therapy interventions improved ADL performance scores and decreased the risk of poor

outcome among stroke survivors. However, a major flaw of the above study by Legg et al. (2017) was the low methodological quality of the studies included in the review.

Physiotherapy treatment of stroke patients commonly include activities to re-educate upper and lower limb function, and neuromuscular stimulation, patient and carer education and provision of orthotics and assistive devices (Veerbeek et al., 2014; Wolf & Winstein, 2010; Pollock, Baer, Langhorne, & Pomeroy, 2008). Specific treatment approaches employed by the PT during stroke rehabilitation include Neurodevelopmental Treatment Approaches (Bobath), Proprioceptive Neuromuscular Facilitation, Task oriented approach and the Motor Learning Programme (Pollock et al., 2008). None of the physiotherapeutic approaches is superior to the other when it comes to patient outcomes (Pollock et al., 2008; Veerbeek et al., 2014). In a study conducted by Freburger, Li, and Fraher (2018) among 23,413 stroke survivors, both out-patient OT and PT was established to be effective in precluding hospital re-admission in the first month after discharge from in-patient care following a stroke. The authors however did not have direct measures of need for therapy based on individual assessment by either the therapist or physician, but rather depended on proxy measures. Similarly, a generic measure of therapy utilization was adopted which could have influenced the findings of the study.

Meanwhile across the different multidisciplinary rehabilitation team, two common overarching approaches have been identified to be used frequently as components of neuro-rehabilitation by team members in the management of stroke (Ivey & Mew, 2010). These two approaches are remediation and compensation. The remedial approach aims at reducing impairment resulting from stroke by improving the functional capacity of survivors through organized retraining. The remedial approach is also referred to as the restorative approach and it relies on the ability of the brain to regenerate itself otherwise known as neuroplasticity theory (Ivey & Mew, 2010). This approach has been posited by several authors (Ivey & Mew, 2010; Marshall et al., 2000; Neistadt, 1990) to use controlled stimulation (with graduation) provided through the use of normal movement, motor relearning processes and transfer of training to promote integration of sensory information and regeneration of the brain. In view of this, several successes have been reported in survivors with motor impairments while using this approach. However, the effectiveness

of restoration of cognitive impairments in stroke survivors has been contended by Ivey and Mew (2010) to be less successful.

The compensatory approach in contrast make use of the residual functional ability of the stroke survivor in achieving competence in occupational performance. This approach is likewise referred to as the adaptive or functional approach and it is based on the premise that man's functional ability has a positive effect on his well-being and existence (Turner, Foster & Johnson as cited in Ivey & Mew; 2010). Fatone and Malas, (2014) indicated that the compensation for occupational performance is needed in the rehabilitation of stroke survivors when restoration of function is unlikely or unachievable with specific emphasis on participation in ADL. For instance, Ivey and Mew (2010) asserted that the compensation for functional impairments among stroke survivor could be achieved through changes done in the survivor's behaviour, in the environment or in activity been carried out by the modification of tasks, assistive technology use, and/or continuous relearning of a task until occupational competence is achieved. Even though the compensatory approach has been reported by the above authors to be client-centred, easily administered and providing quick outcome, its popular critique however has been that the push for quick functional outcome usually undermine the recovery potential of stroke survivor thereby limiting attempts to remediate any functional essential skills.

In addition, vocational rehabilitation is a vital component of rehabilitation rendered to stroke survivors who are of working age. A detailed description of work or vocational rehabilitation offered to stroke survivors is provided in section 2.5.4.

2.5.3 Post-stroke rehabilitation outcome

According to Annerstedt and Währborg, (2011) rehabilitation outcomes refers to the characteristics of a patient that changed following exposure to treatment. It is the consequences of the rehabilitation services provided for the stroke survivor and is oftentimes classified based on the disablement process. The ICF framework described in section 2.4.2 of this chapter provides an ideal framework with which post-stroke rehabilitation outcome could be defined and appropriately labelled. With the ICF framework, rehabilitation outcomes can be categorized according to the changes

experience in body impairment, in activity limitation as well as participation restrictions by the stroke survivor after treatment.

There exist similarities in rehabilitation protocols and guidelines from different countries' health service systems involving post stroke rehabilitation. In the United Kingdom health system, stroke rehabilitation starts immediately when the survivor has been medically stabilised in a stroke unit (Intercollegiate Stroke Working Party, 2012). Compelling literature evidence suggests that stroke units utilising team-based approach are effective in improving social participation, reducing activity limitation and improving overall functional recovery of stroke survivors (Stroke Unit Trialists' Collaboration, 2013; Legg, 2004). In South Africa, guidelines for stroke management recommend the use of multidisciplinary stroke unit care for the management of complications after stroke. However, existing model of stroke care suggests that the stroke unit model of care is not widely implemented despite robust evidence of its efficacy (Bryer et al., 2011). As health facilities and patient access to health resources differ across provinces within the country, stroke is commonly managed as part of general medical service where there are no dedicated service allotted to stroke. According to Bryer and colleagues, there are no minimum requirements for treatment, while protocols for stroke care are also not readily available at most hospitals. Suggested rehabilitation protocol utilized however include education of patient, family and caregivers; discharge planning and the provision of rehabilitation services that may include occupational therapy, physiotherapy, speech therapy, psychosocial support, and counselling on sexuality (Bryer et al., 2011).

In the Nigerian health system which utilises similar health services delivery system like that of the United Kingdom and South Africa, a multidisciplinary team is used and rehabilitation services are offered in the general medical wards. However, stroke management has been reported to be suboptimal in the provision of diagnostic and treatment services; significant deficiencies have also been found in the rehabilitation and support services (Bell-Gam, Onwuchekwa, & Iyagba, 2012; Adika et al., 2011; Ogungbo et al., 2005). For instance, Ogungbo et al. (2005) indicated that stroke units in most acute hospital that rendered rehabilitation services in Nigeria are not yet developed while neuro-imaging centers are very few with access limited by cost and distance. Besides cost, poor

provision of equipment and infrastructure are factors identified by Bell-Gam et al. (2012) to be contributory to the sub-optimal stroke care. The deficiencies found within the rehabilitation and support services could be attributed to reduced or unavailability of human resources in most rehabilitation centres (with some of the rehabilitation specialists especially the occupational therapist, speech therapist, social worker and clinical psychologist not within the multidisciplinary team). This invariably results in most rehabilitation services using the conventional rehabilitation protocol that lacks holistic care. It could be argued that deferring early engagement of a multidisciplinary team during rehabilitation of the stroke survivor (like the therapists due to mild impairment in the stroke survivor), allow survivors to compensate for impairment with suboptimal behaviour that are difficult and time-consuming to unlearn (Ivey & Mew, 2010; Duncan et al., 2005; Stucki, Stier-Jarmer, Grill, & Melvin, 2005). Stroke survivors that have recovered from disabling stroke without serious functional limitation may be able to resume previous occupational (such as worker role) if the rehabilitation process supports them sufficiently. However, survivors with severe functional limitations may be able to function in supportive employment environment (van Velzen, van Bennekom, Edelaar, Sluiter, & Frings-Dresen, 2009; Malec, Buffington, Moessner, & Degiorgio, 2000).

2.5.4 Vocational Rehabilitation Post Stroke

Participation in meaningful occupation has provided the basis of vocational rehabilitation (VR) in occupational therapy history (King & Olson, 2009). According to (Escorpizo, et al. (2011, pp.) VR involves “a multi-professional approach that is provided to individuals of working age with health-related impairments, limitations, or restrictions with work functioning and whose primary aim is to optimize work participation”. This is aimed at addressing identified deficit areas in work performance. Simulations of the unpredictable nature of the survivor’s actual workplace demand are also carried out, followed by education and training in areas identified through assessment, work hardening and work conditioning (Chan, 2008).

As varying definitions of “work” and RTW exist in literature, it will be appropriate to provide these definitions prior to the description of available RTW programmes for stroke. The WHO Report on Disability described work as a broad concept that includes paid work

for an individual or organization in the public and private sectors of the economy; unpaid work in the home or in family enterprise; as well as self-employment (Bickenbach, 2011). The different definition of RTW in literature include that of Andersen, Christensen, Kirkevold, & Johnsen, (2012) who describe it as a minimum of 10 hours per week of work engagement. Saeki and Toyonaga, (2010) describe RTW as engagement in full time or part time competitive employment in a former or new job. On the other hand, Busch, Coshall, Heuschmann, McKeivitt, and Wolfe, (2009) simply define RTW as return to paid employment while Vestling et al. (2003) describe it as continuing occupation in the production of supplies and services for payment in formal paid work that could be on a part-time or a full-time basis. A three decade description of RTW provided by Saeki and colleagues define successful RTW after stroke as engagement in an active employment following stroke or the ability to continue housework or studies as before over a one month or more duration (Saeki, Ogata, Okubo, Takahashi, & Hoshuyama, 1993). For the purpose of this study, the definition of RTW by Saeki and Toyonaga (2010) was utilized.

VR is different from treatment interventions which are directed mainly at pathology and relieving the symptoms resulting in RTW as an indirect secondary outcome (Gordon Waddell & Burton, 2004). The primary focus of VR in stroke management is to assist stroke survivors to retain or regain the ability to participate in work. This conventionally starts with an assessment component and ends with the successful placement of the individual in competitive employment or supported work environment (Conroy, Levine, & Stein, 2009). VR can either take a traditional hospital route or community route. In traditional hospital VR pathway, the fundamental principle guiding it is the need to train stroke survivors before placing them in a work situation. Usually, clients partake in rehabilitation programme in the hospital, which is subsequently followed by work ability assessment prior to them receiving more customised employment support (Lloyd, 2010). Some of the VR programmes that have been discussed in literature are described in the subsections that follows.

2.5.4.1 Work hardening and work conditioning programmes

According to Chamberlain et al. (2009), work hardening programmes are highly organized, goal-oriented, individualised intervention programmes aimed at maximizing the ability to

RTW, addressing the issues of productivity, safety, physical tolerances, and work behaviours” of an individual. It also includes structured treatment regimens designed to improve the psychosocial aspects of human functioning required for optimal work performance. Work hardening is delivered by a coordinated multi-disciplinary team that includes physiatrist, occupational therapists, physiotherapist and other rehabilitation professionals (as required) with a duration lasting several hours daily for five days per week (Franchignoni, Oliveri, & Bazzini, 2006). A typical work hardening programme requires the stroke survivor to participate in a daily structured routine that simulate their job and minimises incentives for illness behaviour. The tasks within the programme are structured and graded to progressively improve physical and psychosocial work functions such as functional capacity, work habits and rules, work procedures and work-related skills, as well as interpersonal and communicative skills. On the other hand, work conditioning programmes are “work-related, goal-oriented intervention programme for individuals with less complex conditions”, provided by a single profession which could either be OT or PT lasting up to 4 hours per day (Schonstein, Kenny, Keating, & Koes, 2003). This was developed to meet the need for a less rigorous VR programme (Franchignoni et al., 2006). In work conditioning, intervention component excludes the behavioural and psychological treatment regimen. Both work hardening and work conditioning programmes often form part of multi-component VR programmes for stroke, TBI and other neurological conditions. Although documented in literature to improve work outcomes in individuals with LBP (Schaafsma et al., 2013); however, Costa, Gibson, and Collie (2017) in their meta-analysis of RTW programmes following ill-health found no evidence that a multicomponent VR programme that include work hardening and work conditioning was more effective in improving work outcomes among stroke survivors compared to usual care. The conclusion arrived at by Costa and colleagues was however based on insufficient quality evidence rather than evidence of no effect. Also, the active ingredient within the multi-component VR programme described by Costa that might have influenced work outcomes could not be ascertained.

2.5.4.2 Supportive employment programmes

Supportive employment programme (SEP) is a RTW strategy used to promote the inclusion of PWDs in competitive employment environments (Van Niekerk, Coetzee, Engelbrecht, Hajwani, & Terreblanche, 2015). The SEP allows individuals with disability to be placed in a job and then provided with intensive on-going support to help them remain there. This intensive on-going support includes assistance with transportation, assistive technology, specialized job training, tailored supervision and job coaches and workplace modification. The traditional vocational programmes differ from the SEP as it provides sheltered training prior to job placement. In a RCT study conducted by Ottomanelli et al. (2012) utilizing the SEP and traditional vocational care among individuals with SCI, the results indicated that the SEP group had over 10 times odds of obtaining competitive employment compared to the group with traditional vocational care. A main critique of this study was that the population was not a sample that is representative of the individuals with SCI as all the study participants were male. Another study conducted by Twamley et al. (2015) to explore the efficacy of SEP among individual with TBI reported a 60% work retention rate in competitive employment after 1 year of their initial job placement.

The SEP is documented to be a viable model in obtaining and maintaining a job (Van Niekerk et al., 2015; Ottomanelli et al., 2012; Meade, Armstrong, Barrett, Ellenbogen, & Jackson, 2006). However, for persons with severe disability especially severe TBI, Tate, Simpson, and McRae (2015) argued that the model is sometimes insufficient to maintain employment and that a pre-placement vocational rehabilitation might be required.

In Nigeria, attempts towards reintegration into the workplace for stroke survivors are hospital-based and starts when the stroke survivor is an outpatient. Often times intervention are directed towards decreasing neurological deficits and work conditioning. Although the extent of neurological deficit and disability experienced has always been a strong predictor for RTW among stroke survivors; with the exploration of available vocational rehabilitation options, gainful employment should be possible for all irrespective of the severity of condition (Taylor Committee, 2008; Treger et al., 2007). Holmqvist, Kamwendo, and Ivarsson (2009) opined that stroke survivors within the working age group need more multifaceted and cognitively demanding activities during rehabilitation to prepare them for possible cognitively demanding activities in the workplace. Therefore,

traditional hospital route intervention that may be inefficient for stroke survivors in Nigeria as evident in a study conducted by Peters et al. (2013) that reported a 50% RTW rate for stroke survivors in northeast, Nigeria.

An extensive study conducted by Thornton, Zietzer, Susanne, Golden, and Houtenville (2003) to review UK and USA's RTW policies and systems asserts the need for the early incorporation of VR interventions for RTW policies to be effective among individuals that are out of work due to health condition. Burton, Kendall, Pearce, Birrell, and Bainbridge (2008) as well as Hanson, Burton, Kendall, Lancaster, and Pilkington (2006) suggested the provision of modified work in situations where timely RTW is difficult in order to reduce work absence duration and facilitate RTW rates. Substantive evidence has revealed that the beneficial effects of work on well-being and health largely outweigh the detrimental effects of prolonged work absence or sick leave (Gordon Waddell & Burton, 2004). The UN Convention on the Rights of People with Disabilities recommended the provision of reasonable accommodation for workers who are unable to cope with their premorbid work role within the workplace (United Nations, 2006). Such suggested accommodation which could be voluntarily or mandatorily implemented by the employer includes the adaptation of the job, work routine and the workplace as well as the use of assistive technology to make it easier for the person with a disability to work (Bickenbach, 2011). There are very few studies that describe RTW intervention programmes, specifically for stroke survivors in Nigeria. Most of the studies present diverse interventions which are generally available to all sick listed employees (including stroke survivors) and to all people with disabilities who have either been on sick leave or were looking for a new job placement. A detail description of studies that describe RTW interventions for stroke survivors is presented in the scoping review section (Chapter 6) of this study.

Evidently, for intervention in returning stroke survivors to work to be successful, the context of the individual which include socio-economic, cultural and environmental factors must be taken into consideration. Return to work must be understood within the context and culture in which survivors live, reinforcing values which promote expected outcome of resuming their worker role while inhibiting negative ones. Consequently, researchers in some developed nations such as those in Europe and America have developed programmes which subsequently have been transformed into policies aimed at increasing RTW among

stroke survivors. Most of the programmes are influenced by racial, sociocultural, demographic and clinical variables. This presents an unrequited question: will RTW programmes for Americans or South Africans be applicable to Nigerian stroke survivors? Suffice to say that various therapeutic interventions (i.e work conditioning and work hardening) as well as VR programme (i.e the supported employment programme) designed for returning Americans/ South African individuals with chronic health conditions like stroke survivors to work might not be applicable to Nigerians. The unavailability of VR programmes as well as social factors such as disability benefits and stigma related with disability as observed in many SSA countries may serve as hindrance in generalizing the findings of studies from developed countries to stroke survivors in Nigeria. In addition, Amusat (2010) indicated a dearth of credible and robust statistics regarding disability in Nigeria. While this may or may not be true, statistic regarding RTW rate of stroke survivors in the state of Osun in Nigeria is currently unavailable. Availability of such data will assist in the development of effective policies and rehabilitation programmes that will enhance RTW after stroke in Osun state. For these reasons, it is important to develop unique and country-sensitive RTW approaches for stroke survivors, bearing in mind the nature of the Nigerian labour market, and effective means of ensuring stakeholder participation. Therefore, this study aimed to bridge this gap in Nigeria by determining the RTW rates and developing a programme for returning stroke survivors to work in Osun State, Nigeria.

2.6 SUMMARY OF CHAPTER

With the various sequelae associated with stroke, the career pathway of working age stroke survivors is interrupted briefly, recurrently or permanently. The weight of evidence in the last decades implicated prolonged work absence after stroke to result in a greater risk of negative health outcome (Waddell, Burton, & Aylward, 2007; Virtanen et al., 2005); and that vocational rehabilitation facilitates successful work re-entry after stroke. It is evident that VR is different from treatment interventions which are directed mainly at pathology and relieving the symptoms resulting in RTW as an indirect secondary outcome. A full vocational rehabilitation programme as defined in various studies caters for people who were previously employed and need to return to employment after being on sick leave or after temporary incapacity; it also caters for people who lost their jobs or who were never employed.

During groundwork for the study, the literature shows a paucity of studies on resumption of worker role after stroke from sub-Saharan Africa, specifically in Nigeria. Also, a wide range of RTW rates for stroke survivors exist across available global studies. Differences found could be a reflection of varying economic conditions across countries such as retirement age and employment rate, cultural factors like the availability of assistance from members of stroke survivor's family and the disability compensation structure; as well as socio-political factors. All of these make the generalization of findings to other context unsuitable. Even with the low rate of RTW after stroke that is prevalent in literature (49%), this review could not identify any standardized framework or guideline specifically for VR for stroke survivors, hence the need for this study. The subsequent chapter describes the methodology framework that was used to achieve the various objectives of the study.



CHAPTER THREE

RESEARCH METHODOLOGY

3.1 OVERVIEW

This chapter discusses the methodological process used to accomplish the objectives of this study. A detailed description of the research questions, aim, objectives and research setting of the study were provided. Similarly, the chapter describes the study design, population and sampling, methodological framework, data collection process as well as data analysis. Finally, the process used to achieve reliability, validity and rigor for the study are outlined bearing in mind ethical consideration pertaining to the study.

This chapter discussed the methodological process used to accomplish the study objectives. A comprehensive description of the research questions, aim, objectives and research setting of the study were provided. The chapter also describes the study design, population and sampling, methodological framework, data collection process and data analysis. Finally, the process used to achieve reliability, validity and rigor for the study are outlined bearing in mind ethical consideration pertaining to the study.

3.2 RESEARCH QUESTIONS

It is envisaged that through this study the following questions pertaining to the study would be answered:

1. What is the RTW rate of stroke survivors in Osun state of Nigeria?
2. What are the impairments, activity limitation and the participation restrictions that stroke survivors in Osun state experience when returning to work?
3. What influences the resumption of worker role of stroke survivors in Osun state, Nigeria? (what are the determinants of RTW for stroke survivors)?
4. What intervention strategies are used in returning stroke survivors to work?
5. What factors are required to design and develop a successful RTW programme for stroke survivors in Osun state, Nigeria?

3.3 AIM OF THE STUDY

The overarching aim of the study was to design a RTW intervention programme that could facilitate quick work re-entry for stroke survivors in the state of Osun, Nigeria.

3.4 OBJECTIVES OF THE STUDY

The objectives of this study were:

1. To determine the RTW rates of the stroke survivors;
2. To explore and identify the impairments, activity limitation, participation restrictions that the stroke survivors experienced;
3. To determine and explore the determinants/predictors of RTW of stroke survivors;
4. To determine the content of RTW interventions reported in literature for stroke survivors through a scoping review;
5. To develop a RTW intervention programme for stroke survivors.

3.5 RESEARCH SETTING

The research setting for the current study was the Osun state of Nigeria. Osun state, with a predominant Yoruba speaking tribe that is situated within the south west region has a population of 4,705,589 persons (National Bureau of Statistics, 2016) occupying a land mass of 9,026 kilometer square. Although not the most populated state in Nigeria, Osun state is however the cradle and source of the Yoruba race, one of the three largest tribes in Nigeria. Urbanism as a way of life in the state exist before the European colonization of Nigeria. Osun state is the only state with training facilities (both hospital and academia) for the two predominant rehabilitation professions in Nigeria (i.e occupational therapy and physiotherapy). Furthermore, the region within which the study setting is located have a high incidence (0.25 per 1000 of population) and prevalence rates (1.14 per 1000 of population) of stroke. These rates resonate with literature evidence from hospital reports on medical admission, mortality and morbidity rates of stroke in Osun state (Danesi et al., 2013; Danesi et al., 2007; Komolafe, Ogunlade, & Komolafe, 2007). A significant proportion of Osun state population that survives the stroke incidence are left with severe disability (Obembe et al., 2010). The state has 37 primary, 14 secondary and three tertiary public health facilities located across 30 local government areas. Curative services are offered across all the three tiers of health facilities while rehabilitative services which include physiotherapy and/or occupational therapy are only offered at the secondary and tertiary health facilities. This further makes it an appropriate study setting for the development of a RTW programme for stroke survivors.

3.6 RESEARCH DESIGN

The research design for this study was a multi-phase mixed method research design. According to Creswell, Klassen, Plano Clark, and Smith (2011), this design arises from multiple projects that are linked together and guided by a common objective. As the process through which the RTW programme for the stroke survivors could be developed entailed several inter-linked phases, the present research design was deemed appropriate for this study. The projects conducted in multi-phase mixed method design are often times managed over a period of time. The research design consists of three distinct phases (I, II, and III) that were guided by intervention mapping protocol. The first phase utilized a convergent mixed method parallel approach while the second phase entailed a scoping review of literature. The third phase used the information obtained from the preceding phases to develop a RTW intervention through a Delphi approach/study. The current research design was built on related studies used to design intervention programmes in adolescent health as well as mental health (Pharaoh, Frantz, & Smith, 2014; Koekkoek, van Meijel, Schene, & Hutschemaekers, 2010).

3.7 STUDY POPULATION AND SAMPLING

The target population for the first phase of this study were male and female stroke survivors that had received or are receiving rehabilitative services in secondary and/or tertiary health facilities in Osun state, within the age group of 18 years and 60 years. Health care practitioners that consist of occupational therapists, psychiatrists, physiotherapists, social worker, psychologist, and speech therapists; were also recruited as participants for the third phase of the study. Non-probability sampling was employed to recruit participants at each phase of the research process. A brief account of the overall non-probability sampling technique utilized in this study is provided here while the different non-probability sampling types utilized at each phase of the study are explained in detail in subsequent chapters.

3.7.1 Non-probability sampling

Non-probability sampling is a sampling technique that recruits participants into a study with an unequal likelihood of selection for eligible members within the population that is being recruited (Vehovar, Toepoel, & Steinmetz, 2016; Daniel, 2012). This implies that

each member from the population that is selected by the researcher has an unequal and unknown chance of participating in the study. With non-probability sampling, the objective is not to choose a representative sample in order to make statistical inference, but to provide an increased opportunity for participation with specific inclusion criteria among certain type of population. The first phase of this study employed purposive and quota sampling for its quantitative and qualitative stages respectively. The two sampling techniques allowed the researcher to recruit individuals who were stakeholders who had the experience of the phenomenon (stroke) under investigation into the study. While the third phase utilized purposive sampling in the selection of experts for Delphi survey.

3.7.1.1 Purposive sampling

With purposive sampling, participants are recruited based on their suitability with the specific inclusion and exclusion criteria of the study under consideration. The researcher selects samples from the target population in purposive sampling to fit the purpose of the study. This sampling technique has been avowed to be appropriate for and is often utilized in medical, behavioral, and community health researches (Daniel, 2012). Purposive sampling was employed to select participants in the first phase of this study, a cross-sectional survey was conducted to assess the RTW rates of stroke survivors and the determinants of RTW. Similarly, this sampling techniques was used during the selection of experts for the third phase that involved a Delphi survey to develop a RTW programme.

3.7.1.2 Quota sampling

A quota sample also commonly referred to as purposive heterogeneity sample with quota, is one which is selected from mutually exclusive sub-categories of targeted population based on availability and purpose of the study (Daniel, 2012). Participants in quota sample are recruited until the requisite number of individuals that are needed from the subcategories within the target population to be sampled are reached. In order to recruit respondents for the qualitative aspect of the first phase of the study, quota sample was utilized by the researcher to select from two mutually exclusive subcategories of stroke survivors who had returned to work and those that have not returned to work. This sampling technique allowed the inclusion of members of different sub categories while also

providing an opportunity for comparison of the subcategories, particularly subcategories of relatively small size in a qualitative study.

3.8 METHODOLOGICAL FRAMEWORK OF THE STUDY

In the development of interventions to change behavior, the need for a sound theoretical frameworks to steer such process is well explicated in the health promotion and intervention development literature (Kemmer, 2015; Grol, Wensing, Bosch, Hulscher, & Eccles, 2013; McEachan, Lawton, Jackson, Conner, & Lunt, 2008). To guide the data collection process of this study, the Intervention Mapping (IM) framework for health prevention and promotion by Eldredge, Markham, Ruiters, Kok, and Parcel, (2016) was adopted by the researcher. Intervention Mapping framework is a planning approach that uses an ecological based procedure to assess and intervene in health problems and community participation through the development of theories and evidence based programmes (Eldredge et al., 2016). IM was first described and documented by Bartholomew, Parcel, and Kok, (1998) to provide a blueprint/pathway from the identification of need in a project to the establishment of solution to the need. The framework provides a sound theoretical framework through which interventions to change behaviours and promote health could be developed using 2 core components: 1) the use of appropriate theories and evidence and, (2) a social ecological approach.

The use of appropriate theories and evidence as one of the core components by the IM framework is implicated on the fact that theory ensures detailed descriptions of aspects of programmes that are generalizable. Similarly, robust interventions that actually address all of the elements required to achieve change could be documented in detail through theories, thereby preventing type III error which may occur during intervention implementation. Equally important to the application of theories is the use of appropriate evidence. Evidence as described by Eldredge et al. (2016), refers to not only findings from scientific literature but also stakeholders' opinion and experiences.

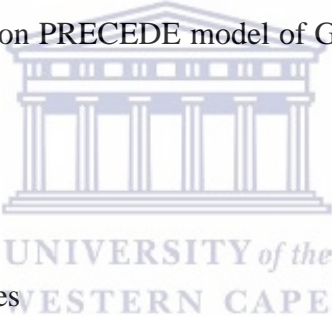
The ecological approach upon which the IM framework is based recognizes the existence of two levels of dimensions; the individual micro level and a structural macro level; that influences human health and quality of life. Rather, the IM embraced a social ecological based approach that viewed health to be a function of the interaction between an individual

and the environment where the individual exist (Eldredge et al., 2016). The individual consists of a biological, psychological and behavioural aspect while the environment is made up of social, physical, institutional, cultural aspects. The various aspects within the social ecological based approach to health were conjectured/assumed by the authors to allow multiple interactions that could occur across levels vertically or within levels horizontally. Through these interactions, interventions to promote health could be implemented.

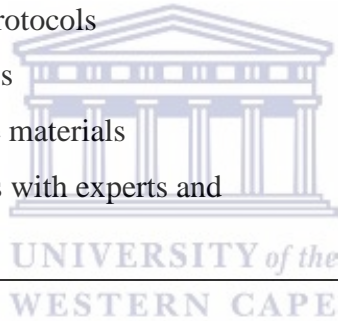
The IM framework comprises of six fundamental steps that appears linear. It is however conjectured by Eldredge et al. (2016) as an alternating process that allow user to move back and forth between tasks with information from a preceding step informing the next. The six fundamental steps include: 1) Analysis of health problems through needs assessment; 2) Identification of outcome and performance objectives. In this stage, change determinants and objectives are formulated; 3) Identifying and selecting theory-based methods as well as practical strategies through the appraisal of relevant existing literature; 4) Creation of an organized programme plan; 5) Creation of an adoption and implementation plan and; 6) Evaluation of programme plan. The IM framework was deemed appropriate for the present study as it provided a framework for designing a RTW programme that is both theoretically grounded and ecologically appropriate/applicable. This current study centred on the first four IM operational steps which were combined/used as phases for the development of a RTW programme for stroke survivors.

A summary of the methodological approach using IM framework is presented in table 3.1. The first and second step of the IM were combined as a phase in the study to provide baseline information regarding RTW status of participants and determinants of RTW. While the third and fourth steps stood individually as phases in the study. Therefore, this study was conceptualized as comprising of three phases that were designed independently with its own methodological features. The phases include phase 1: convergent mixed-method study (to identify needs and performance objectives), phase II: scoping review of literature (for strategies and method identification) and, phase III: Delphi survey of expert (programme development). The findings from each phase were used to inform the next phase, as shown in Figure 3.1.

Table 3. 1: Summary of methodological approach of study using Intervention Mapping Framework

IM operational Steps	Descriptions of steps	Relevance to study
<p>Step 1: Needs Assessment</p>	<p>Plan needs assessment based on PRECEDE model of Green and Kreuter (1999)</p> <p>Assess health, behaviour, and environment</p> <p>Assess capacity</p> <p>Establish programme outcomes</p> 	<p>The need assessment provides the baseline information regarding stroke survivors' return to work rate as well as work and health related status of survivor. This was achieved through a convergent mixed method study</p>
<p>Step 2: Matrices, determinants of health behaviour</p>	<p>State expected modifications in behaviour and the environment</p> <p>Specify the performance objectives</p> <p>Specify determinants</p> <p>Create matrices of change objectives</p>	<p>In this step the determinant of return to work were explored through cross-sectional survey and in-depth interviews of stroke survivors. Important objectives can be set to bring about change.</p>
<p>Step 3: Identification of theory based methods as well as practical strategies</p>	<p>Review programme ideas with interested participants</p> <p>Identify theoretical methods</p> <p>Choose programme methods</p> <p>Select or design strategies</p> <p>Ensure that strategies match change objectives</p>	<p>Theory based methods and practical strategies that have been used to return individuals that survived stroke events to work were identified from literature through a scoping review during this step.</p>

<p>Step 4: Programme development</p>	<p>Consult with intended participants and implementers</p> <p>Create programme scope, sequence, and theme.</p> <p>Develop concept maps and protocols</p> <p>Develop programme materials</p> <p>Review available programme materials</p> <p>Pre-test programme materials with experts and Implementers.</p>	<p>With this step, the researcher collated the information provided in the previous steps to design a programme. Through a Delphi survey, a culturally relevant RTW programme was developed</p>
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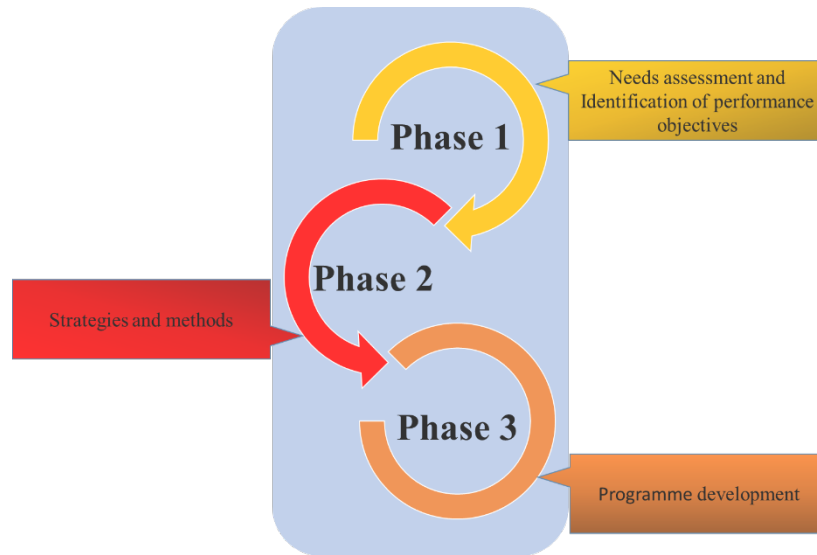


Figure 3. 1: Methodological framework of the study

3.9 PHASES OF DATA COLLECTION

3.9.1 Phase 1: Needs Assessment and identification of performance objectives:

3.9.1.1 Step 1: Needs assessment

The need assessment step of the IM evaluates the health problem in this case RTW after stroke, its associated behaviour and environmental conditions, as well as the related determinants of the health problem among the vulnerable populations. Through this, a detailed description of a problem at hand, its influence on functioning, behavioural and environmental causes, and determinants of work resumption could be outlined. Consequently, in order to obtain baseline information, the RTW status of stroke survivors in Osun state, Nigeria, as well as the impairments, activity limitations, and participation restrictions post-stroke was investigated by means of a convergent mixed method research approach. Mixed methodology is a systematic approach in which the researcher combines qualitative and quantitative research techniques, concepts or language into a single study. According to McKim (2015), mixed method is an extensive and innovative form of research, that is both inclusive and pluralistic. It allows researchers to use an heterogeneous approach in the conduct of research. In the convergent mixed method approach employed for the need assessment, the two different strands of quantitative and qualitative techniques were conducted concurrently with both techniques complementing one another

(Creswell et al., 2011). The quantitative strand used a cross-sectional survey while the qualitative strand employed in-depth interviews for the need assessment.

3.9.1.2 Step 2: Identification of performance objectives

The second step of IM provides the foundation for the intervention by identifying the elements that must change through intervention. Performance objectives that will bring about the needed change at different ecological levels, both individual and societal level were further identified during this step. In order to determine performance or matrices of change objectives; the cross-sectional survey that was utilized in step 1 explored the different health related and work characteristics of the population under review. The phase further used qualitative interviews to explore the phenomenon of RTW after stroke among participants. Concept mapping was employed as tool to depict the knowledge structure of participants about the phenomenon. For the purpose of this study, a modified version of concept mapping was used to identify qualitative concepts from sessions with identified stakeholders. Concept mapping (CM) is a “structured methodology for organizing the thoughts and ideas of a group or organization, to bring together diverse groups of stakeholders and help them rapidly form a common framework that can be used for planning, and/or evaluation” (Kane & Trochim, 2007). The structured methodology of CM is identified to comprise of five distinct stages. These stages include: an idea generation stage; statement reduction stage; a structuring phase where statements are sorted; a rating stage where statement are valued based on their importance and contribution to the study; and finally an analysis phase which results in a concept map (Hackett et al., 2016). With a concept map, perceived regularity, relationships or interconnections in events or objects, or records of events or objects, can be graphically organized or presented through the explicit illustration of a visual-spatial‘ network of propositions (Duit, Treagust, & Mansfield, 1996). Concept mapping has been used in a variety of health-care settings to plan, evaluate and make improvements to existing policy, interventions and services. The first stage of the CM, idea generation stage, incorporated qualitative in-depth interviews to generate participant responses to focus prompts. Prior to the idea generation stage, the researcher read comprehensively in the focus area of the study to formulate the prompts for interview with various participants. The analysis stage incorporated thematic analyses of transcripts and the distilling of concepts generated from the participants. The fourth and fifth chapters of the thesis provides detailed methodological process utilized to arrive at the performance objective.

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

This phase of the study coincides with the third step of IM. In this step, practical strategies and theory-based methods to transform health behaviour as well as societal factors are pursued/ sought. An example of a theory-informed method proposed by Eldredge et al. (2016) to facilitate behavior change was modelling. However, for the purpose of this study, scoping review methodology developed by Arksey and O'Malley (2005) and later revised by Levac, Colquhoun, and O'Brien (2010) was adopted as the researcher's theory-based method. Scoping review is a form of review method used to map concepts underpinning a research area and to extensively identify, explore and evaluate all the important literature pertaining to a research question. This form of review could be of particular advantage when the subject has not yet been comprehensively appraised or is of a multifaceted or diverse nature (Mays, Wyke, & Evans, 2001). A scoping review was deemed appropriate and preferred over other types of review such as traditional literature review or systematic review in this phase of the study as it allowed the researcher to map existing literature in the field of interest (which is return to work intervention for stroke survivors) in terms of the degree, nature, and features of the primary research. In addition, scoping review provided a organized evaluation of methodological rigour to identify all research on interventions for returning stroke survivors to work. In this way, an empirical base of all literature that reported on the components, theoretical directions and efficacy of intervention programmes aimed at facilitating return to work among stroke survivors could be established.

Table 3.2 presents a comparison among a scoping review, traditional reviews and systematic reviews under the headings: review; characteristics; uses; and limitations.

Table 3. 2: Comparison among traditional literature review, systematic review and scoping review

Review type	Description	Search	Appraisal	Synthesis	Analysis
Traditional literature review	Presents published materials on recent or current literature. Can cover wide range of subjects at various levels of completeness. May include research findings.	May or may not include comprehensive searching.	Often times may not include quality assessment.	Narrative synthesis	Analysis may be chronological, conceptual, thematic
Systematic review	Seeks to systematically search for, appraise and synthesize research evidence, often adhering to guidelines on the conduct of a review.	Aims for exhaustive, comprehensive searching.	Quality assessment may determine inclusion/exclusion.	Typically narrative with tabular accompaniment.	What is known; recommendations for practice. What remains unknown; uncertainty around findings, recommendations for future research.
Scoping review	Preliminary assessment of potential size and scope of available research literature. Aims to identify nature and extent of research evidence	Completeness of searching determined by time/scope constraints. May include research in progress.	No formal quality assessment.	Typically tabular with some narrative commentary	Characterizes quantity and quality of literature, perhaps by study design and other key features. Attempts to specify a viable review.

(Grant & Booth, 2009)

3.9.3 Phase III: Programme Development (IM step 4)

The fourth step of IM corresponds with the third phase of this study. During this phase, the scope and sequence of the components of intervention, completed programme resources, as well as programme modus operandi are established. The programme development phase requires the active participation of stakeholders, decision makers and implementers of intervention of change objectives regarding the scope, themes, and essential components of the programme. Consequently, a Delphi survey was implemented to develop a structure for the intervention/strategies extracted from the previous steps of IM. The Delphi technique is a useful and recognized research tool for gathering data from expert individuals regarding their opinion in a field of interest (von der Gracht, 2012). The Delphi was first documented by Dalkey and Helmer (1963) and has been used extensively in diverse fields that include but not limited to health care, education, behavioural sciences and social sciences (Chen, Yang, Hou, Hsieh, & Wang, 2017; Major-Helsloot et al., 2016; Vaughan-Graham & Cott, 2016; Faulkner et al., 2011; McIntyre, Novak, & Cusick, 2010). For instance, Major-Helsloot et al. (2016) used the Delphi technique to develop a global expert consensus report on physical rehabilitation for individuals that survives critical illness. Likewise, the Delphi has been used to develop a consensus framework for Bobath clinical procedure in adult neurological illnesses such as stroke (Vaughan-Graham & Cott, 2016). Through the Delphi, consensus of ideas and opinion about practical issues from the professionals are gotten over a round of questions. In the first round, experts respond to open ended questions pertaining to a topic of interest, in this instance work resumption after stroke. Information provided by experts in round one are then collated, synthesized and pulled as questions for the experts to rank, evaluate and comment on in round two. The mean rank for each response are calculated in order to observe consensus reached among the expert panel on questions. Similarly, comments and evaluation provided by experts are analysed. The summary of information relating to ranking, evaluation and comments provided by experts are subsequently sent back to the experts for further review in a third round. These expert panel rounds and reviews are repeated until consensus is achieved concerning all issues that are discussed within the group. One critically acclaimed benefit of the Delphi technique is that it allow expert to confidentially give and receive feedback on responses as the group interacts on questions. An overall consensus can be established based on the input of each expert on the panel, and through this process innovative ideas are explored. In this study, a three round e-Delphi survey was employed to generate agreement on the best possible

strategy to reintegrate stroke survivors into the workplace. This entailed an organized engagement of experts in the field of rehabilitation. Through the Delphi, the panel of experts were able to provide input regarding: the scope of the programme; the content of the programme; the approaches and strategies to be used in implementing the programme, and the overall structure of the programme.

A pictorial summary of the study overarching methodology is presented in Figure 3.2. Subsequent chapters of this study further describe in detail the data collection procedure, analysis and results of the four IM steps adopted to achieve the overall aim of the study.

3.10 DATA ANALYSIS

Quantitative data from the first phase of the study was analysed using descriptive and inferential statistics. Respondents' demographic, work and health related characteristics were summarised using frequencies, percentages and measure of central tendencies such as mean, mode, and standard deviation in tables and figures. Pearson Chi-square test was used to assess the association between return to work status and each of respondents' demographic and work characteristics. In addition, the data from work impact questionnaire and ICF brief core sets for vocational rehabilitation was subjected to t-test of analysis. Significant variables from the bivariate chi-square test and t –test were thereafter pulled into a multiple logistic regression analysis. The multiple logistic regression analysis was used to assess the demographic, work and health related characteristics that predict RTW among stroke survivors. The level of statistical significance was set at 0.05 (p-value =0.05).

Qualitative data from in-depth interviews was analysed by means of thematic content analysis. Similar description and direct quotes that emerge through line by line analysis of the data was grouped together, patterns that connects the emerging categories were subsequently analyzed to form themes. Themes were subsequently collated into subsidiary concept maps that were graphically represented in one meta-figure. The data was managed using Atlas.Ti version 7.5.2

Quantitative data from the Delphi survey was summarized using measures of central tendencies. Central tendency refers to the statistical measure that identifies a distinct value as representative of an entire distribution (Onwuegbuzie, Daniel, & Leech, 2011). It is often times located at the center or middle of a distribution. The three commonly used measures of central tendency are the median, mean, and mode. These measures are aimed to provide an accurate description of the data.

The qualitative data from the Delphi was grouped under the components of the programme. It was analysed manually via thematic content analysis. Recurrent themes were identified and colour-coded to illustrate themes that were grouped together. The data from the Delphi is illustrated in the form of tables.

3.11 RELIABILITY AND VALIDITY

Three validated questionnaires that had been used in similar studies globally, namely the Work Rehabilitation Questionnaire (WORQ) (Finger et al., 2015; Glässel et al., 2012); Work impact questionnaire (WIQ) (O'Connor, Cano, Ramió i Torrentà, Thompson, & Playford, 2005); and ICF brief core sets for VR (Aiachini, Cremascoli, Escorpizo, & Pistarini, 2016; Leonardi, Davide, Rui, Ambra, & Alberto, 2015) were used during the first phase of the study to obtain baseline information on RTW status, and the impairments, activity limitations and the participation restrictions that stroke survivors experienced in Osun state of Nigeria. A pilot study was conducted to test its use within the Nigerian context as well as the understanding of the stroke survivors regarding the questions.

3.12 TRUSTWORTHINESS/RIGOR

To achieve trustworthiness in the qualitative phase of this study, Krefting's criteria (1991) which are based on Guba's model was utilized. These criteria include credibility, transferability, consistency and neutrality. *Credibility*: This refers to the truth value of the research findings (Krefting, 1991). The credibility of this study was assessed by member checking, triangulation, interviewing techniques and reflexivity. According to Lincoln and Guba (1985), member checking involves obtaining informants feedback regarding the interpretation and conclusion drawn from a study group. The findings of the study were verified with the research participants for validation and amendments were made to the findings as appropriate. The researcher also ensured that the findings of the study were reflective of the study participants by bracketing personal biases that may influence the research process. *Transferability*: To achieve applicability of the study, sufficient description of the study population, the research method, context, the participants and the participants' lived experience were provided to allow for comparison and its applicability in similar context. *Consistency*: Consistency refers to the dependability of the findings of the study if it was conducted within a similar context (Krefting, 1991). This was achieved by a detailed description of the research method and peer debriefing. *Neutrality*: Neutrality refers to the extent

to which findings from a study are from informants and research conditions rather than from other biases and perspectives (Guba, 1981). The confirmability of this study was achieved through member checking and reflexivity on the part of the researcher. The detailed description of how rigor was achieved for the study is provided in each specific chapter.

3.13 ETHICS CONSIDERATIONS

The World Medical Association Helsinki Declaration of 2008 which guides the conduct of medical research involving human participants was adhered to while conducting this study. Ethical approval was obtained from the Research Ethics and Higher Degrees Committees of the University of the Western Cape (Appendix 3.1) and the Ethics and Research Committee of the Institute of Public Health, OAU, Nigeria (Appendix 3.2). Similarly, institutional approval was obtained from participating rehabilitation departments (Appendix 3.3). During the first and third phase of the study, the aims, rationale and content of the study were fully disclosed and explained to all participants verbally and in written using a subject information sheet (Appendix 3.4) after which their consent were obtained (Appendix 3.5 :consent forms). The study was conducted in the best interest of the participants throughout the phases of the study; the participants were not exposed to harm as the study did not include any invasive procedure. The participants' right to dignity, confidentiality and privacy were respected as their identities were not disclosed during the documentation and reporting of the findings of the study. Participants' anonymity was also ensured through the use of pseudonyms. Participation was voluntary and withdrawal from the study by participants could be done at any stage during the research process. The benefits to the individuals that participated in the study and the knowledge acquired from the study outweighed the risk of potential harm. In addition, the researcher had a referral source available during the in-depth interviews for the participants assuming they require/needed any emotional support due to feelings that could have been evoked during the interview sessions.

3.14 SUMMARY OF CHAPTER

This chapter describes the methodological framework of the study. The study was conducted with individuals who survived stroke event, and health practitioners involved in the management and rehabilitation of stroke survivors. Both quantitative and qualitative methods were employed through the use of cross-sectional surveys, in-depth interviews, and scoping reviews. Experts in the field/area of vocational rehabilitation, stroke management and rehabilitation were surveyed to

develop a RTW programme through the use of a Delphi method. The subsequent chapters discuss the various phases, methodologies and results in detail.



CHAPTER FOUR

BASELINE ASSESSMENT OF RETURN TO WORK RATE AND DETERMINANTS OF RETURN TO WORK FOLLOWING STROKE

4.1 OVERVIEW OF CHAPTER

This chapter presents the results from the quantitative data analysis which answer the first three objectives of the study. The objectives are 1) to determine the RTW rates of the stroke survivors; 2) to explore and identify the impairments, activity limitation, participation restrictions that the stroke survivors experienced; 3) to determine and explore the determinants/predictors of RTW of stroke survivors. Prior to presentation of results, the methodological rigor utilized to achieve the objectives were described. The present chapter further provides an overview of the demographic profile of study participants, their work and health related characteristics. The difficulties participants experienced due to symptoms of stroke, environmental factors, body function and structure impairments, limitation in activity performance and participation while re-integrating back to work as revealed by the work impact questionnaire and the International Classification of Functioning, Disability and Health (ICF) brief core sets in vocational rehabilitation (VR) were described in this chapter. The reported research findings are summarized using text, tables and charts. Furthermore, the chapter presents the respondents' factors that were associated with RTW after stroke, the difference in WIQ and ICF brief core sets score based on RTW status of respondents. Finally, the predictors of RTW are explained.

4.2 METHODOLOGY

4.2.1 Study population and sampling technique

Using a consecutive purposive sampling technique, individuals who had suffered a stroke and were undergoing or had undergone curative/rehabilitation services on an in/outpatient's basis in health facilities were recruited from the medical records of five hospitals (Ife Hospital Unit and Wesley Guild Hospital of the Obafemi Awolowo University Teaching Hospital Complex, Ladoke Akintola University of Technology Teaching Hospital, Osogbo; Seventh day Adventist Hospital, Ile-Ife; State Specialist Hospital, Osogbo) in Osun state, Nigeria during a six months recruitment period (August, 2016 – February, 2017). With an age adjusted stroke prevalence rate of 0.35 per 1000 persons, in South West, Nigeria (Danesi et al., 2007); it is estimated that 1162 individuals would

have experienced stroke in Osun state. Consequently, using Raosoft sample size calculator; a sample size of 270 stroke survivors was projected for this study. As documented by MacIntosh (2006), the Raosoft sample size calculator implements standard statistical formulae to determine sample sizes for a given confidence level for attribute sampling. It requires the input of a population size and several assumed values: means and standard deviations.

In the Raosoft calculator, the sample size “n” and margin of error “E” are represented by:

$$X = Z \left(\frac{C}{100} \right)^{2 \times r(100-r)}$$

$$n = Nx / ((N - 1)E^{2+x})$$

$$E = \sqrt{(N - n)^x / n(N-1)}$$

N refers to the population size, while r is the interested fraction of responses, and $z\left(\frac{c}{100}\right)$ is the critical value for the confidence level c. For this research, the confidence level, error level and distribution level in the Raosoft formula were set at at 95%, 5% and 50% respectively.

The participants satisfied a set of criteria before being eligible to partake in this study. The criteria include: being between the ages of 18 and 65 years of age, must have had a pre-morbid work status in the open labour market; must have experienced a single stroke episode with a minimum post stroke duration of six months. Conversely, stroke survivors with psychiatric or other health comorbidities, not resulting from stroke, such as fractures, diabetes mellitus which may influence work ability, were excluded from participating in this study.

4.2.2 Design

This phase of the study entailed a cross sectional survey. Surveys generate quantifiable data that can be analysed statistically, with the purpose of aggregating, assessing, modelling and predicting behaviour and relations (Garbarino & Holland, 2009).

4.2.3 Data collection instruments

A three sectioned validated questionnaire (*Appendix 4.1*) was used as the data collection instrument for this stage of the study. The questionnaire was developed from three different questionnaires namely, the work rehabilitation questionnaire, the brief core sets for VR and the work impact questionnaire. Peat, Mellis, Williams, and Xuan (2002) posited that questionnaires

serve as objective measurement tools in healthcare that facilitates the collection of information about past as well as present symptoms. The questionnaire facilitated the collection of complex information, minimised missing data and allowed for greater flexibility thus its suitability for use as the survey instrument in this study. The three questionnaire made up the three different sections of the survey instrument utilized for this stage of the study. Details of each questionnaire are outlined in subsequent subsections:

4.2.3.1 The Work Rehabilitation Questionnaire Self-Report

This section of the questionnaire contains screening questions created to elicit answers on RTW status and experiences and perceptions about work resumption. The questions were integrated and adopted from the Work Rehabilitation Questionnaire. The Work Rehabilitation Questionnaire Self-Report (WORQ-SR) is a 59 item self-rated standardised instrument that evaluates and document functioning amongst people with various health conditions in the context of vocational rehabilitation. The questionnaire identifies and monitors problematic areas of relevance in functioning in an individual undergoing rehabilitation along the whole continuum of the RTW process. WORQ-SR comprises of two parts; Part 1 and Part 2. The part 1 which consists of 17 items that measures demographic and work related information such as gender, age, marital status, employment status, educational level and return to work status that was used in this study. Psychometric properties of the WORQ-SR were discussed in Finger, Escorpizo, Bostan, and De Bie (2014) and in Bergamaschi, Escorpizo, Staubli, and Finger (2014). Finger et al. (2014) reported WORQ-SR to have a high degree of internal consistency (Cronbach's $\alpha=0.88$) and interlinker agreement ($\kappa=0.82$). The WORQ-SR also exhibit acceptable levels of test retest reliability ($r=0.79$) and good face, content and criterion validity. Only part 1 of the WORQ-SR were used in this study to obtain information on the sociodemographic and work related characteristics of participants. This section of the questionnaire assesses the RTW rate of the participants. The content and face validity of the included WORQ section for the current study was explored and found to be adequate by the researcher, supervisors and research advisor. As posited by Bhattacharjee (2012), the exploration of theoretical constructs of a questionnaire by experts is an appropriate and adequate method of establishing the content and face validity of a questionnaire.

4.2.3.2 The ICF core set for vocational rehabilitation

The ICF core set for vocational rehabilitation (VR) is a short list of ICF categories that are relevant and can be used by health professionals during the rehabilitation process with individuals with a given health conditions such as stroke (Finger et al., 2012). For the purpose of assessing the impairments, limitations in activity performance and the participation restrictions experienced by stroke survivors during work re-integration in this study, the brief ICF core set for VR was used. The brief ICF core set for VR consist of 13 items used to ascertain and monitor problematic areas of relevance in functioning across four domains of body functions, activity and participation, environmental factors along the whole continuum of RTW process. All items are rated on a five point ordinal scale of 0-4 which are the qualifiers scale of the ICF and these represent the extent of difficulty or limitation experienced by an individual except the four under the environmental factor domain. The four environmental factor items as originally constructed have a nine response options ranging from -4 (complete barrier) to +4 (complete facilitator), with a zero value indicating neither a facilitator nor a barrier. The environmental factors were therefore rated on these scales by the participants. The ICF core set in VR has been extensively used in conceptualising work functioning among individuals with musculoskeletal disorders (Saltychev, Kinnunen, & Laimi, 2013), spinal cord injury (Aiachini et al., 2016; Glässer et al., 2012), low back pain (Finger et al., 2015) and multiple sclerosis (Leonardi et al., 2015).

4.2.3.3 Work Impact questionnaire

The Work Impact Questionnaire (WIQ) is a 17 item self-reported questionnaire that assesses the impact of body impairment and environmental factors on an individual's ability to work (O'Connor et al., 2005). The items are rated on a five point-ordinal scale of 0-4 which depicts/represents the extent of impairments experienced by the individual and environmental factors impact on work functioning. The psychometric properties of the WIQ were discussed by O'Connor et al. (2005).

The three questionnaires used in this stage of the study were translated into its Yoruba version using the procedure outlined by Sousa and Rojjanasrirat (2011). The procedure involved the forward translation of the questionnaire from English language to Yoruba by two bi-lingual expert translators, the synthesis of the translation as well as the backward translation of the synthesized Yoruba version to English.

4.2.4 Data collection procedure

4.2.4.1 Timeframe

The study was conducted over a period of 6 months, with data collection taking place from Aug 2016 to February, 2017.

4.2.4.2 Pilot testing of questionnaire

As the above questionnaires were adopted, to ensure its validity and reliability for the Nigerian context, its psychometric properties were assessed. The questionnaires along with its Yoruba version's face and content validity as well as test retest reliability were assessed in a pilot study using the procedure described by Bowling, Bowling, and De Vaus (2004). A pilot study refers to a small scale study that is used to test a procedure prior to its use on a large scale. It allows a researcher to look at the practicability of an outcome measure, approach or tool that is projected to be used in a larger scale study. In the context of this study, piloting the questionnaire enabled the researcher to ascertain if the respondents understood the questions and could complete the questionnaire as appropriate. In addition, the requisite time needed to complete could be estimated through the pilot study. Before the administration of the pilot questionnaires, post-stroke duration and disability level (modified Ranking Scale) were included in the demographic section of the WORQ questionnaire. Following the pilot testing, two significant changes were made to the demographic section. These include: changing the question "what is your post-stroke duration" to "when did you first have the stroke experience" (how long have you had this stroke experience) and defining the modified ranking score for respondents to choose that which was applicable to them. No further modification was made to the questionnaires.

The pilot sample population was consecutively recruited from a tertiary health facility that was part of those selected for the main study within the same research setting. The reliability of the questionnaire was first determined after which the validity and reliability of its Yoruba version was assessed. All ethical procedures were followed as defined in the ethical consideration section in Chapter three.

Reliability of the Questionnaires

Thirty stroke survivors who consented to participate in the study at two different times were recruited for this pilot phase. In order to prevent problems relating to memory-effect and fatigue

which may influence the test-retest reliability results, the questionnaires were administered at two weeks interval. For instance, Hazzi and Maldaon (2015) put forward that test-retest intervals should be appropriately distant to prevent, learning, or recall effects, but near enough to forestall genuine variations in the variable that is been assessed. For this study, the sociodemographic details of the questionnaire were excluded while analysing the reliability data. The result of the analysis showed the Cronbach alpha to be 0.832 (21 items) which indicates a high degree of internal consistency. Subsequently, the questionnaires were translated into its Yoruba version through an iterating process described by Sousa and Rojjanasrirat (2011).

To evaluate the validity and reliability of the translated Yoruba version of the questionnaire; the two versions (English and Yoruba) of the questionnaire were administered to consented bilingual individuals that had experienced a stroke event. The Yoruba version was then re-administered after a two-week interval to the same individual taking into cognizance the stroke survivor details to enable matching of data. The result revealed a validation Cronbach alpha value of 0.841; $p < 0.001$ and a test-retest reliability interclass correlation Cronbach's alpha of 0.906; $p < 0.001$; which indicated a high level of both construct validity and internal consistency.

4.2.4.3 Administration of Questionnaire

The researcher contacted the administrative heads of the different departments and units of participating hospitals for approval. The unit head of departments of stroke rehabilitation units were also contacted to set up appropriate time for recruitment and administration of the questionnaires to stroke survivors. Information sheets describing the research and consent forms were provided to therapists to give to possible participants. This assisted the stroke survivors to feel comfortable in participating in the study. The researcher recruited therapists (occupational therapists, physiotherapists as well as occupational therapy assistants) who served as research assistance during the study at the five participating tertiary rehabilitation facilities. In order to become familiar with the questionnaires and to give the research assistants the chance to discuss any needed clarification concerning the questionnaire or its administration, the researcher conducted a training session with therapists who administered the questionnaire. Subsequently, informed consent of participants were obtained followed by the administration of questionnaires by the researcher or therapist.

4.2.5 Quantitative Data Analysis:

The statistical software package SPSS (version 24) was used to enter, clean and analyse the data (SPSS Incorporated, SPSS). Exploration and analysis of the data was carried out in three stages: (1) univariate descriptive analysis; (2) bivariate analyses to test which sociodemographic, work and health related characteristics were associated with return to work status (key dependent variable) of participants and; (4) Multivariate binary logistic regression to check for the independent variables that predicts return to work.

4.2.5.1 Description and operationalization of variables

The independent variables included in this study were selected by reviewing the available related literature (Duff, Ntsiea, & Mudzi, 2014; Doucet, Muller, Verdun-Esquer, Debelleix, & Brochard, 2012; Saeki & Toyonaga, 2010; Treger, Shames, Giaquinto, & Ring, 2007; Vestling, Tufvesson, & Iwarsson, 2003). They fall under demographic, work and health related characteristics/variables. The dependent variables is RTW status. Return to work status refers to the resumption of work in competitive employment, which may be in the formal or informal sector, self-employment inclusive. A detailed description of codes for both the independent and dependent variables as it was operationalized in SPSS is provided in Appendix 4.2.

4.2.5.2 Univariate/Descriptive statistics

Descriptive statistics of measures of central tendency, frequency and percentages were used to summarise demographic, work and health related characteristics as well as the return to work rate of participants. Summary statistics for key independent variables (impairment; activity and participation; environmental factors) were also calculated.

4.2.5.3 Bivariate analysis

Pearson's chi-square test:

Chi-square was conducted to assess the associations between the independent and dependent variables. Pearson chi-square test of association was used to investigate the association between each of the participants' demographics, work and health related characteristics (independent variables) and RTW status. Independent variables from the demographics, work and health related characteristics were run against the dependent variables (RTW). Significance level was set at $p \leq$

0.05. Variables that were statistically significant (with p value that is less than or equal to 0.05) were further explored with the key independent variables in a multivariate analysis.

T-test of Difference:

The independent t-test was conducted to assess the difference in symptom and environment subscale of the WIQ between stroke survivors that returned to work and those that did not. Similarly, the difference in impairments, activity and participation restriction, as well as environmental factor scores of the ICF brief core sets between survivors that returned to work and those that did not return to work was assessed using the independent t-test.

4.2.5.4 Multivariate Analysis

Multiple logistic regression analysis (MLR): To determine the variables that predicts return to work among stroke survivors, a multiple regression analysis was conducted. For the purpose of the study, the probability of returning to work after stroke event was predicted based on survivors' demographic, work and health related characteristics. Eight variables were tested in the MLR equation based on their bivariate analysis statistical significance of the characteristics of the stroke survivors. These variables which include 'marital status', 'disability level', 'side of stroke affectation', 'vocational programme engaged with', 'WIQ-symptom subscale', 'WIQ-environment subscale', 'activity and participation restriction' and, 'body function and structure impairments', were entered simultaneously to enable them to contend with one another within the regression analyses. Six models were subsequently identified and tested as a function of returning to work and not returning to work after stroke event. VanVoorhis and Morgan (2007) suggested the use of 10 to 15 participants per predictor variable when assessing the sample size that is appropriate to support a robust regression analysis. In this circumstance, a six predictor model would need a sample size of 60 to 90 participants. This study exceeded the minimum required number as the sample that participated in the survey was 210.

Prior to conducting the MLR, all predictor variables to be used in the analysis were correlated with one another to assess for multicollinearity among covariates. Subsequently, multiple logistic regression analysis was performed on the variables at 95 percent confidence interval to identify the contribution of each model towards work resumption after stroke by establishing their partial regression coefficients. The model was tested using the Hosmer and Lemeshow goodness of fit

test. Lastly, a summary of the significant predictors was presented. Statistical significance was set at $p \leq 0.05$.

4.3 RESULTS

4.3.1 Description of study sample

The population for this phase of the study sample were individuals who have survived stroke (stroke survivors) residing in Osun State, Nigeria, within the age range of 25 years and 60 years. A total of 271 stroke survivors were identified to meet the inclusion criteria from the medical records of five rehabilitation facilities in Osun state, Nigeria and were approached for possible participation. Two hundred and twenty-nine of the stroke survivors consented to participate. However, 210 copies of questionnaires distributed were available for analysis thereby yielding a response rate of 76.36% ($n=210/271$). Nineteen of the questionnaires returned were inaccurately filled or voided.

4.3.2 Demographic and clinical characteristics of the study sample

The study sample consisted of both females 51.4% ($n=108$) and males 48.6% ($n=102$) with the mean age of 52.90 ($SD=7.92$). The majority of the study sample/respondents were within the age range of 51-60 years (70.0%), followed by those within the age range of 41-50 years (21.0). Over sixty percent of the respondents were married. Similarly, the majority of the respondents had formal educational training, with 54.8% having a tertiary level of education while 4.8 % of the respondents had no formal education. Most of the respondents indicated that they received medical or therapeutic treatment (98.6%) and had some restrictions with performing tasks (77.6%). The most common place indicated for receiving therapeutic services was the Ife Hospital Unit of the Obafemi Awolowo University Teaching Hospital Complex (46.2%), followed by Ladoke Akintola University of Technology Teaching Hospital (19.5%), while the Seventh day Adventist Hospital provided the least recruitment rate for respondents (9.5%). More than two-thirds of the respondents had a level of disability ranging from slight to moderate (68.5%) and long term post stroke duration (68.6%). The summary of demographic and clinical characters of the study sample is presented in Table 4.1.

Table 4. 1: Demographic and clinical characteristics of respondents

Variable	n(210)	%
Gender		
Female	108	51.4
Male	102	48.6
Age (years)		
≤ 40	19	9.0
41-50	44	21.0
51-60	147	70.0
Marital Status		
Single*	83	39.5
Married	127	60.5
Education Level		
No formal Schooling	10	4.8
< Primary School	6	2.8
Primary School	26	12.4
Secondary School	54	25.7
Tertiary**	114	54.3
Received Medical/Therapeutic Rx		
Yes	207	98.6
No	3	1.4
Have Current Restrictions		
Yes	163	77.6
No	47	22.4
Hospital site		
OAUTHC, Ife	97	46.2
LAUTECHTH, Osogbo	41	19.5
SDA Hospital, Ife	20	9.5
Asubiaro State Hosp,	24	11.4
WGH, Ilesha	28	13.3
Side of Stroke Affection		
Left/ Non Dominant	123	58.6
Right/ Dominant	87	41.4
Disability Level (Modified Ranking Scale)		
No symptoms	4	1.9
No Significant Disability	44	21.0
Slight disability	62	29.5
Moderate disability	82	39.0
Moderate severe disability	15	7.1
Severe Disability	3	1.4
Time lapse since having a stroke (Post-stroke duration)		
Short term duration	66	31.4
Long term duration	144	68.6

Single*: Never married, divorced and widowed; **College, university and postgraduate degree

Mean Age: 52.90±7.92; Range 25-60; mode 58; Median 56; Mean PSD: 26.85±19.75; Range 7-120; mode 12; Median 20.7 (months)

4.3.3 Work characteristics of study sample

In addition to demographic and clinical characteristics, participants reported on their work characteristics. More than half (51.4%) of the study sample indicated that they were self-employed prior to having a stroke while 35.2% were engaged in public/civil service employment in the formal sector. The result further revealed that 44.8% of the respondents engaged in activities to secure and maintained job during their vocational rehabilitation while 7.6% were involved in apprenticeship or internship as a form of work preparation. The majority of respondents had returned to work (63.8%) with half of them in full time employment (32.9%), while 36.2% had not returned to work. A low proportion (9.5%) of the respondents indicated that their involvement in vocational rehabilitation was the reason for not returning to work. Table 4.2 presents the summary of work characteristics of respondents.

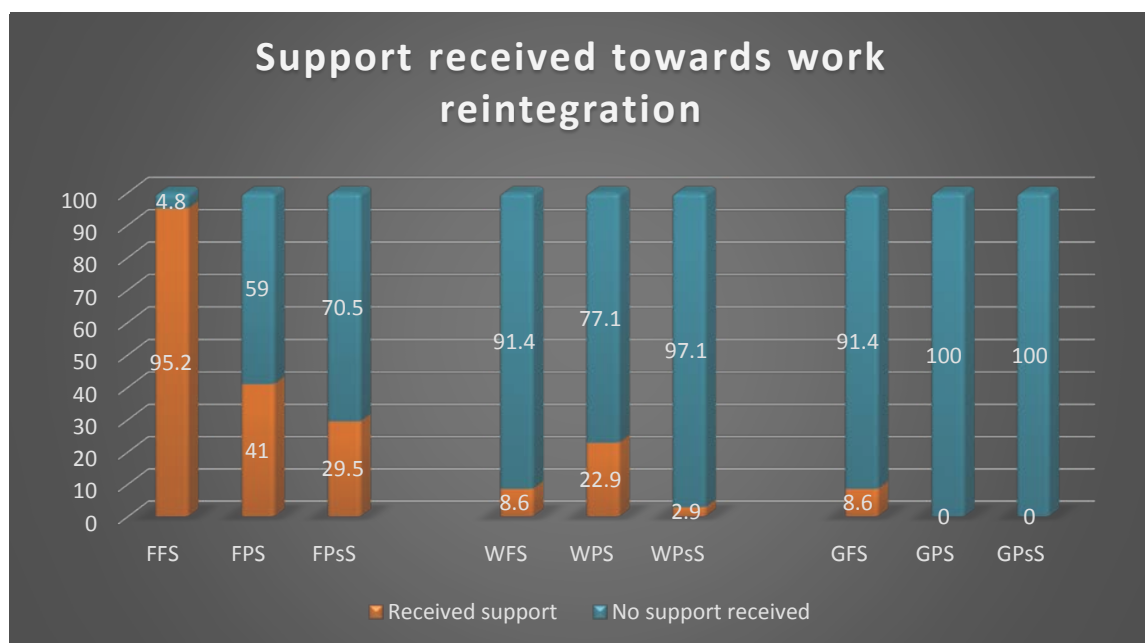
4.3.4 Assistance/Support towards work resumption

Consequent to reports on work characteristics, the respondents also described/identified the support they received when resuming their worker role after the stroke event. Most of the participants (98.1%) received support from their family members in returning to work. This was indicated to include financial support in order to access rehabilitation services (95.5%), followed by physical support (40.5%) while 28.4% of them received emotional/psychological support from family members. The least support towards work resumption was indicated to have come from government agencies with 8.5% of respondents receiving financial support in the form of salary payment while not working (sick-leave allowance). Table 4.2 and Figure 4.1 presents the summary of assistance received after stroke by respondents.

Table 4. 2: Work/Occupational characteristics of respondents

Variable	n(210)	%
Previous Work engagement (sector)		
Public/civil service employment	74	35.2
Private sector employment	28	13.3
Self-Employed	108	51.4
Work Category		
Sedentary	34	16.2
Light	59	28.1
Medium	92	43.8

Heavy	25	11.9
Vocational Rehabilitation Programme		
Engaging in VR training activities (Job skills)	49	23.3
Prep for Employment/internship (Apprenticeship)	16	7.6
Activities to maintain/secure job	94	44.8
Looking for a new job/work	51	24.3
Return to work Status		
Yes	134	63.8
No	76	36.2
Current work status (n=134)		
Full time	69	51.5
Part time	35	26.1
Modified/Light duty	30	22.4
Reason for not returning to work (n=76)		
Not working due to health	45	59.2
Not working due to ongoing VR	20	26.3
Not working due to other reason	11	14.5
Support/Assistance Received		
Family		
Yes	206	98.1
No	4	1.9
Boss/Workplace		
Yes	70	33.3
No	140	66.7
Government		
Yes	18	8.6
No	192	91.4



Key:

FFS: financial support from family; **FPS:** physical support from family; **FPsS:** psychological support from family. **WFS:** financial support from workplace; **WPS:** physical support from workplace; **WPsS:** psychological support from workplace; **GFS:** financial support from government; **GPS:** physical support from government; **GPsS:** psychological support from government.

Figure 4. 1: Support received by respondents towards work resumption

4.3.5 Participants response to WIQ

The summary of respondents' answers to the work impact questionnaire is presented in Table 4.3. More than 40% of the respondents identified two items from the Work Impact Questionnaire as having an impact ranging from 'quite a bit' to 'extreme' on their ability to work. These items include travel to and from work (43.8%) and access at work (43.3%). The least impact on work ability was observed to occur with swallowing (87.1%) and continence (77.1%). The respondents' symptom domain scores range from 9 to 37 with a modal value/score of 12 while the environment domain range from 8 to 36 with a modal value of 28.

4.3.6 Impairments, limitation in activities and participation restrictions experienced by respondents

Table 4.4 shows the extent of impairments, limitation in activities and participation restriction that was experienced by respondents. This provides answers to the second specific objectives of the study. The result showed that more than ten percent of the respondents experienced limitations (complete problem) in four of the six components of activity and participation domains of the ICF brief core sets for VR. These components were remunerative employment (21.4%), acquiring new skills (17.1%), non-remunerative employment (16.7%), as well as acquiring, keeping and terminating jobs (14.3%). Similarly, a larger proportion (44.7%) of the respondents indicated that they had moderate to severe problems with handling stress and psychosocial demands and two components of the body function domains; energy and drive functions (41.9%) and a higher level cognitive function (36.2%). Performing complex interpersonal relationships (68.6%) and exercise tolerance function (64.3%) were identified as resulting in no or little problem by more than sixty

percent of the respondents while returning to work. The respondents' activity and participation domain composite scores range from 0 to 22 with a modal value of 7 while the body function and structure composite scores range from 0 to 12 with a modal value of 0. The overall score of respondents on the ICF brief core set in VR range from -2 to 36 with a modal value of 2.0.



Table 4. 3: Frequency distribution of respondents answers to WIQ n=210(100%)

Variable	Not at all	A little	Moderate	Quite a bit	Extreme	Mode	Mean	Min	Max
Symptom Scale						12	16.7±4.9	9	37
Concentration	122(58.1)	47(22.4)	23(11.0)	17(8.1)	1(0.5)				
Memory	119(59.2)	51(25.4)	20(10.0)	10(5.0)	1(0.5)				
Speech	110(52.4)	36(17.1)	44(21.0)	13(6.2)	7(3.3)				
Swallowing	183(87.1)	11(5.2)	14(6.7)	1(0.5)	1(0.5)				
Visual problems	142(67.6)	30(14.3)	23(11.0)	12(5.7)	3(1.4)				
Coordination	63(30.0)	53(25.2)	66(31.4)	23(11.0)	5(2.4)				
Mood	128(61.0)	47(22.4)	25(11.9)	7(3.3)	3(1.4)				
Pain	54(25.7)	58(27.6)	57(27.1)	32(15.2)	9(4.3)				
Fatigue	50(23.8)	79(37.6)	53(25.2)	16(7.6)	12(5.7)				
Environment Scale						28	21.3±6.8	8	36
Walking difficulties	23(11.0)	46(21.9)	74(35.2)	42(20.0)	25(11.9)				
Balance	33(15.7)	56(26.7)	70(33.3)	37(17.6)	14(6.7)				
Access at work	55(26.2)	25(11.9)	39(18.6)	37(17.6)	54(25.7)				
Travel to work	52(24.8)	20(9.5)	46(21.9)	36(17.1)	56(26.7)				
Weakness	36(17.1)	50(23.8)	81(38.6)	32(15.2)	11(5.2)				
Public Attitudes	70(33.3)	19(9.0)	44(21.0)	32(15.2)	45(21.4)				
Handwriting	97(46.2)	16(7.6)	21(10.0)	30(14.3)	46(21.9)				
Continenence	162(77.1)	20(9.5)	26(12.4)	1(0.5)	1(0.5)				
WIQ Total						38	38.1±10.3	17	65

4.3.7 Influence of environmental factors on the work ability of respondents

In addition to impairments, activity limitation and participation restriction, the respondents reported on the influence of environmental factors on their return to work. Over 10 percent of respondents indicated that labour/employment services, system/policies was a substantial/complete barrier to their work resumption while health services, systems and policies (22.4%) was revealed by respondents to be a major facilitator of their return to work. The respondents' immediate family (86.2%) was indicated by the more than 85 percent of respondents as neither a barrier nor facilitator to their worker role. The environmental factor score of respondents ranges from -8 to +8 with a mean and modal value of -0.5 ± 2.20 and 0 respectively. Figure 4.2 presents the influence of environmental factors on the work ability of respondents.



Table 4. 4: Summary of impairment, activity limitation and participation restriction experienced by respondents during work resumption

ICF domains	Nil	Mild	Moderate	Severe	Complete	Mode	Mean	Min	Max
Activity and Participation						7.0	8.5±6.5	0	22
Acquiring skills	61(29.0)	44(21.0)	46(21.9)	23(11.0)	36(17.1)				
Handling stress and psycho demands	62(29.5)	49(23.3)	75(35.7)	19(9.0)	5(2.4)				
Complex interpersonal relationship	93(44.3)	51(24.3)	49(23.3)	13(6.2)	4(1.9)				
Acquiring, keeping and terminating job	76(36.2)	38(18.1)	29(13.8)	37(17.6)	30(14.3)				
Remunerative employment	84(40.0)	26(12.4)	38(18.1)	17(8.1)	45(21.4)				
Non-remunerative employment	84(41.4)	32(15.2)	38(18.1)	18(8.6)	35(16.7)				
Body Function and structure						0.0	3.6±2.7	0	12
Energy and drive function	68(32.4)	39(18.6)	68(32.4)	20(9.5)	15(7.1)				
Higher level cognitive function	77(36.7)	50(23.8)	63(30.0)	13(6.2)	7(3.3)				
Exercise tolerance function	85(40.5)	50(23.8)	60(28.6)	10(4.8)	5(2.4)				
Total Core set score						2.0	11.5±8.5	-2	36

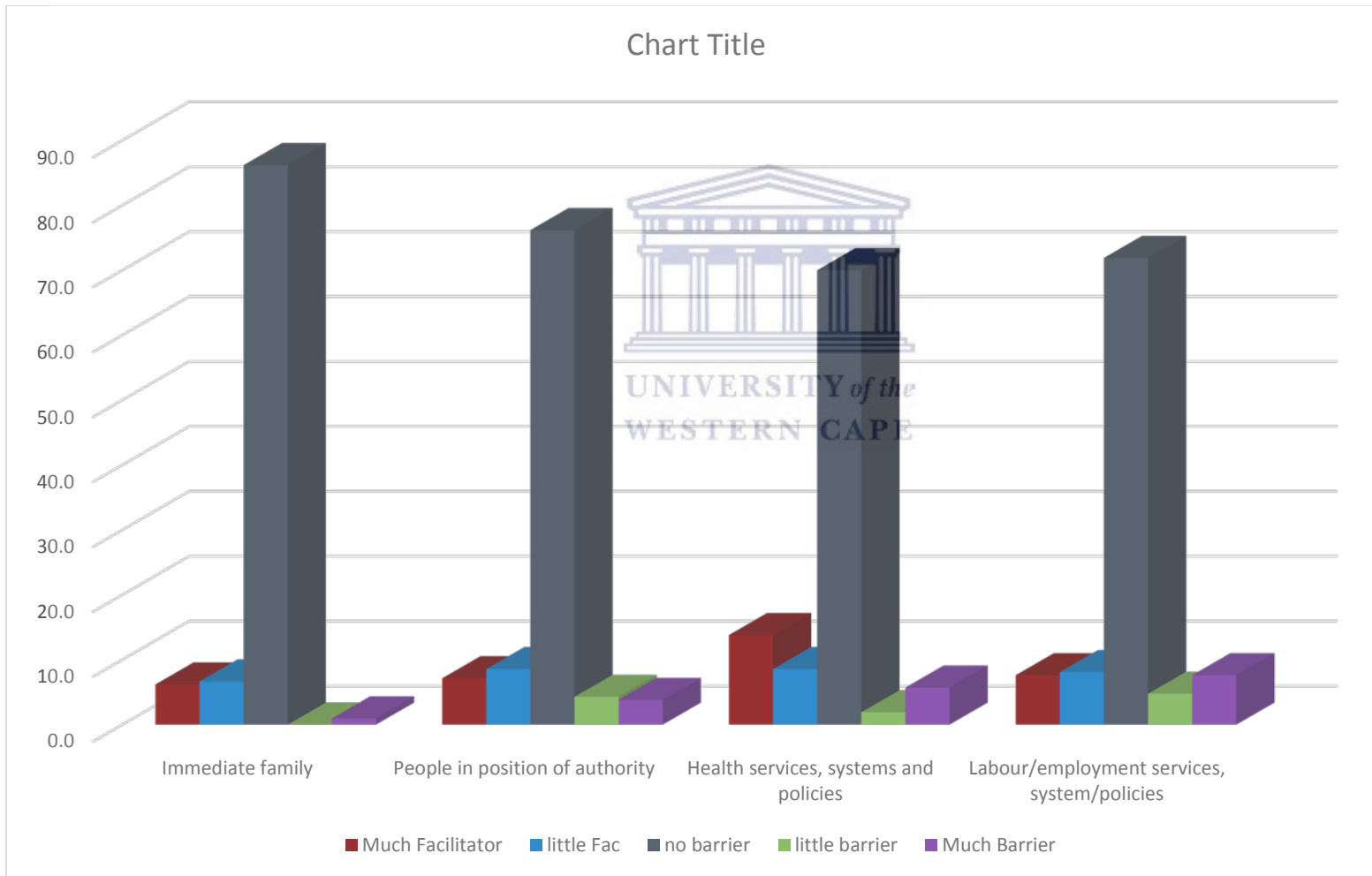


Figure 4. 2: Influence of environmental factors on the work ability of respondents

4.3.8 Bivariate comparisons of study sample characteristics

The results of bivariate and multivariate analysis conducted on the responses of participants in order to investigate the determinants of return to work (third specific objectives of this study) are discussed in this subsection using the following subheadings: factors association with return to work; summary of T-test of difference in WIQ and ICF brief core set in VR domains between respondents who have return to work and those who have not.

4.3.8.1 Factors association with return to work

The association between respondents' RTW status and each of their demographic, health related, and work characteristics were examined using Pearson Chi-square test. With a significance p-value that is equal to or lower than 0.05, seven of the demographic, clinical and work characteristics of the respondents had no significant association with RTW. However, the findings indicated that there was significant association between the RTW status of respondents and marital status ($p=0.040$); side affected by stroke ($p=0.001$), disability level ($p=0.001$); post stroke duration ($p=0.034$), vocational rehabilitation programme ($p=0.018$), work category/type ($p=0.050$) and support received from workplace ($p=0.050$) (table 4.4). Table 4.4 present the summary of the Pearson Chi-square test of association.

Table 4. 5: Summary of Pearson Chi-square test of association between respondent's characteristics and return to work status

Variable	χ^2	P-value
Age	28.73	0.741
Gender	1.99	0.159
Hospital site	3.05	0.776
Marital Status	7.06	0.040*
Education Level	8.64	0.071
Received Medical/Therapeutic Rx	1.73	0.190
Have Current Restrictions	11.0	0.258
Side of Stroke Affection	32.36	0.001*

Disability Level (Modified Ranking Scale)	16.86	0.001*
Post-stroke Duration	42.88	0.034*
Previous Work engagement/Sector of Employment	8.25	0.014*
Vocational Rehab Programme	61.91	0.018*
Work Category	8.37	0.050*
Support/Assistance Received		
Family	0.22	0.639
Boss/Workplace	3.72	0.050*
Government	0.60	0.438

*p-value is significant at $p \leq 0.05$

4.3.8.2 Difference in duration of stroke survival, WIQ and ICF brief core sets domain score based on return to work status of respondents

T-tests analysis was used to establish whether differences existed between various composite scores of the work impact questionnaire (symptom and environment subscale), ICF brief core sets for VR (activity and participation, body structure as well as environment) and post-stroke duration in relation to RTW status of respondents. With a p-value of 0.033, significant difference in post-stroke duration was identified between stroke survivors that returned to work and those that did not return to work. This implies that stroke survivors who returned to work had experienced the stroke for a longer duration compared to those that did not RTW. Similarly, the results show a p-value that is less than 0.001 for both symptom and environment subscale of the work impact questionnaire. This suggests that the symptom and environmental impact on work scores were significantly lower in stroke survivors that have returned to work compared to those that did not RTW.

For the ICF brief core sets for VR, the t-test analysis result revealed a significant difference in the impairments ($p < 0.001$), activity and participation restriction score ($p < 0.001$) between stroke survivors who returned to work and those that did not to work. Thus, stroke survivors who experienced significantly lesser impairments, activity limitation and participation restriction returned to work compared to survivors who had not return to work. However, the difference in mean score of environmental barriers and facilitators

experienced between stroke survivors who returned to work and those that did not RTW was observed to be insignificant ($p=0.093$). Even though there exist a difference of 0.47 in the composite score of environment domain of the ICF brief core set between survivors who had returned to work and those who had not, this difference cannot be interpreted as influencing the RTW status of the stroke survivors.

Table 4. 6: Summary of t-test in post-stroke duration, subscales of work impact questionnaire and ICF brief core set in VR between respondents who returned and did not return to work after stroke

Domain	Mean		F	t	P value
	Return to work status				
	No	Yes			
Post-stroke duration	23.01±17.8	29.03±20.5	1.70	-2.14	0.033*
WIQ-symptom subscale	19.55±4.8	15.21±4.3	1.09	6.68	0.001*
WIQ-environment subscale	25.41±6.4	19.04±5.9	0.37	7.25	0.001*
WIQ-Total	44.96±9.2	34.25±8.7	0.01	8.36	0.001*
Activity and participation	11.94±6.4	6.58±5.7	2.14	6.27	0.001*
Body function and structure	4.81±2.7	2.92±2.5	0.42	5.062	0.001*
Environment	-0.20±2.9	-0.73±1.8	3.32	1.66	0.098
ICF brief core set-Total	16.56±9.3	8.78±6.7	10.83	7.00	0.001*

*p-value is significant at $p \leq 0.05$

4.3.9 Determinants of return to work

A binary logistic regression model was utilized to assess how demographic, work and health related factors predicts return to work of the respondents. In order to achieve this, the dependent variable, return to work was categorized as have not returned to work (No) and returned to work (Yes). The independent variables set in the model were marital status,

side of stroke affectation, disability level, post-stroke duration, type of VR programme, work category, workplace support, symptom score, environment influence, activity limitation scores and participation restriction scores. The logistic regression model was statistically significant with Chi-square value (χ^2) of 167.70 (df =22, n=210), and p- value less than 0.0005. The regression model as a whole explained between 55.0% (Cox and Snell R square) and 75.4 % (Nagelkerke R Square) of the variance of the dependent variable and correctly classified 89% of all the cases with a sensitivity and specificity value of 91.8% and 84.2 % respectively. As revealed in table 4.7, affected side (left), type of vocational rehabilitation programme, symptom, environment, activity and participation problem as well as body function impairments were the health related factors for return to work. None of the work related variables predicted RTW status. The strongest determinant of return to work was side of stroke affectation (left) with odds ratio of 7.63. This shows that stroke survivors with left side affectation were 7.63 times more likely to return to work compared to others with right side stroke affectation. The type of VR programme engaged in by survivors had the least contribution to the logistic regression model with engagement in activities to secure or maintain job having no significant contribution. The odds ratio for all other significant health related factors were less than 1.

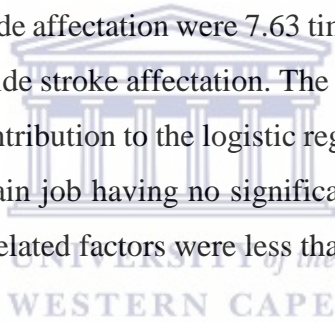


Table 4. 7: Determinants of Return to Work (n=210)

Variable	B	Ward	df	Unadjusted OR	p-value	95% CI for OR	
						Lower	Upper
Marital Status							
Never married (single)		3.10	3	1	0.377		
Married	0.08	0.01	1	1.08	0.948	0.92	12.86
Divorced	-0.34	0.07	1	0.71	0.786	0.05	9.55
Widowed	-1.64	1.46	1	0.19	0.228	0.01	2.79
Disability Level							
(No symptom)		3.06	5	1	0.690		
No Significant Disability	2.67	0.41	1	14.50	0.524	0.01	53666
Slight disability	2.88	0.47	1	17.81	0.490	0.01	63946
Moderate disability	1.99	0.23	1	7.30	0.634	0.01	26112
Moderate severe disability	3.28	0.57	1	26.52	0.452	0.01	134969
Severe Disability	6.12	0.45	1	454.25	0.500	0.00	0.01
Side of Stroke Affection							
(right)		8.99	1	1			
Left	2.03	8.99	1	7.64	0.003*	2.02	28.84
VR Programme							
(engaging in voc training)		21.34	3	1			
Preparatory activities for employment	-4.48	13.48	1	0.01	0.000*	0.01	0.12
Act to secure or maintain job	0.24	0.096	1	1.28	0.758	0.27	6.02
Looking for new job	-2.91	9.61	1	0.05	0.002*	0.09	0.34
WIQ							
WIQ-symptom subscale	-0.14	5.18	1	0.87	0.023*	0.77	0.98
WIQ-environment subscale	-0.19	7.26	1	0.83	0.007*	0.73	0.95
ICF Brief core sets							
Activity and participation	-0.15	7.11	1	0.86	0.008*	0.77	0.96
Body function and structure	-0.22	4.17	1	0.80	0.041*	0.65	0.99

*p-value is significant at $p \leq 0.05$

4.4 DISCUSSION

This stage of the study was conducted with stroke survivors with the aim of establishing baseline data regarding their RTW status, the impairments, activity limitations and the participation restriction that they experienced using Work Rehabilitation Questionnaire (Finger et al., 2014), Work Impact Questionnaire (O'Connor et al., 2005), and ICF brief core sets in VR (Finger et al., 2012). It further examined the influence of environmental factors on stroke survivors' work resumption and, the determinants of RTW. The results showed a RTW rate of 63.9% for the stroke survivors. This rate resonates with findings from the study conducted by Endo et al. (2016) among Japanese stroke survivors but with a slight increase in RTW status from the study conducted in the North Eastern Region of Nigeria where Peters, Buni, Oyeyemi, and Hamzat (2013) revealed a 55% return to work rate for stroke survivors. The difference in rates reported from this study as compared with that of Peters et al. (2013) could be as a result of insurgency and unrest experienced in the North-East Region where the previous study was conducted. Conflicts and unrest had been avowed to be a major contributory factor to high unemployment rate in war-torn societies as this leads to drainage of human capital and investment thus hampering economic development. Furthermore, health infrastructures needed to provide rehabilitation services to consumers are destroyed or depleted in conflict-torn areas. Whereas, the South West Region of Nigeria where the study setting is located has experienced relative peace and increased socio-economic index (such as literacy level, education level and household income) as compared to the North-East. This is further reflected in the general household survey that reported a 4.2% reduction in unemployment rate in Osun state as compared with 16.6% increase in unemployment rate in Borno state over a five year period (National Bureau of Statistics, 2018). Evidently, there would be a wide gap between the rehabilitation resources available in Osun state (the current stud setting) when compared to the North East region of Nigeria as rightly noted in a study conducted by Eleyinde, Amu, Emore, Lashman, and Arowolo (2018) which might have resulted in the higher rate of RTW following as observed in the present study.

Baldwin and Brusco (2011) reported a RTW rate ranging from 12% to 49% in their systematic review of effect of vocational interventions on RTW rates post stroke while van der Kemp et al. (2017) indicated a RTW rate of 71.9% in the Restore4Stroke cohort after one year. The gaps observed in rates may be linked with various definitions of work (status) reported by authors. The

present study considered all form of employment (either as full-time or part-time) in arriving at the return to work rates, with 32.9% returning to work full-time while 31.0% returning either parttime or modified work. It could be assumed that these RTW rates is comparable with the findings of Baldwin and Brusco (2011).

The results pertaining to symptoms that commonly affect survivor's work ability showed that problem arising from pain, cordination and fatigue mostly prevent surviors from resuming work. This finding is consistent with the study of Balasooriya-Smeekens, Bateman, Mant, and De Simoni (2016); Andrew et al. (2014); Hartke, Trierweiler, and Bode (2011) as well as Koch, Egbert, Coeling, and Ayers (2005). Although, most of these psychological symptoms such as pain and fatigue appears invisible to employer or co-workers, it however greatly impact on survivor's work ability and was classified as unmet needs by Andrew et al. (2014). The difficulty experienced by survivors in concentration, memory, visual problem and mood had no or little impact on work resumption. This is contrary to findings from previous literature that reported that cognitive sequelae of stroke severely limit task performance and work resumption following stroke (Balasooriya-Smeekens et al., 2016). It could be expected that rehabilitation interventions such as occupational therapy and physiotherapy received by the stroke survivors helped to reduced the sequelae of stroke that could have affected their work ability. Even though survivors might have experienced these symptoms during task performance, the different coping and adaptive strategies acquired during rehabilitation might have limited its impact as all survivors in this study received one or more forms of rehabilitation service. Conversely, travel to work, access at work, handwriting, public attitudes, and walking difficulty severely impacted on the work ability of the survivors. This is consistent with the findings of the qualittative study that explored the experiences of stroke survivors in South West, Nigeria by Soeker and Olaoye (2017). The above authors revealed that environmental factors which include society's attitude towards disability in the form of stigma, accessibility of the physical work environment as well as transportation systems to be a major barrier to work resumption among stroke survivors in South West, Nigeria. This result raises an important awareness that discriminatory practices that prevent inclusion and participation of people with disability in the society is still on the increase and that environmental specific impact that addresses stigma, workplace barriers should be noted as change initiatives that is needed in programme content and implementation.

At the same time, about a fifth of the stroke survivors had complete difficulty with remunerative employment. This finding may be attributed to the moderate to severe difficulty experienced by more than a third of the survivors in handling stress and psychosocial demands, exerting higher energy and drive function as well as higher level cognitive skills. Thus, it does not appear peculiar as the above listed skills are required for efficient performance in competitive remunerative employment. In addition, over 55% of the survivors were employed in medium to heavy energy exerting premorbid jobs. This would have presented as a barrier to RTW for survivors as the physically demanding nature of medium to heavy work may discourage RTW after stroke due to post-stroke motor impairment. The causal relationship established between RTW and category of work in the present study gives credence to this and further corroborates evidence from previous literature that report RTW of stroke survivors to be associated with the individual's premorbid job type (Wang, Kapellusch, & Garg, 2014; Saeki & Toyonaga, 2010; Chan, 2008; Leung & Man, 2005; Vestling et al., 2003). The results did not support gender patterns in RTW. However, across marital status, disability level, work category and workplace support, patterns in return to work of survivors were established as evidenced by significant findings on the Chi square tests. These results connotes that RTW intervention programmes should consider the influence of personal factors of the stroke survivor, the work characteristics and capacity of the survivors as well as environmental factors during content design and implementation of RTW strategies.

This study further showed that duration of post stroke survival (PSD) was longer among stroke survivors that returned to work as compared to those that did not. Peters et al. (2013) reported similar findings while previous prospective studies (Saeki & Toyonaga, 2010) revealed a higher chance of RTW in the first year after stroke. The longer period it took survivors from this current study to RTW could be ascribed to the paucity of specialized sub-acute and long-term rehabilitation centers in Africa (Agho & John, 2017; Wylie, McAllister, Davidson, & Marshall, 2016; Peters et al., 2013) as compared to other continents (Cameron et al., 2016; McCluskey et al., 2015) where stroke survivors can be provided intensive therapy services on inpatient basis upon discharge from the hospitals. In Nigeria, stroke survivors are referred for further rehabilitation usually only on an outpatient basis in tertiary health facilities based in urban centers. Often times, due to the inadequate number of rehabilitation practitioners, visits to rehabilitation centres are scheduled twice weekly. It could be assumed that a longer PSD provided more time for survivors to cope with sequelae of stroke with a likely positive influence on their work ability.

Stroke survivors who returned to work experienced a lower impact of symptoms on work ability, as well as lesser impairments, less activity limitation, and participation restriction as compared to those that did not return to work. This is consistent with previous literature evidence regarding factors that influences work resumption among stroke survivors (Wang et al., 2014). The more severe the difficulty experienced in activity performance and participation capacity as a result of stroke, the more difficult it becomes for a survivor to resume premorbid societal roles such as work. The implication for intervention is that return to work programmes that effectively teach coping skills, address impairments, activity limitation and participation restriction arising from stroke is imperative. The baseline data from the present study underscore the need for integrative programmes that address the multi-faceted nature of difficulties experienced by survivors when returning to work as suggested by Soeker and Olaoye (2017).

Logistic regression analyses indicated that clinical characteristics of survivors and environmental factors were important in facilitating RTW after stroke. In particular, side of body affected by stroke, type of rehabilitation programme, stroke symptoms and environmental factors, activity limitation and participation restriction experienced by survivors significantly explained the variance in return to work of survivors. These findings are consistent with the report of the systematic review conducted by Wang et al. (2014). In the present study, side of stroke affectation was the most important determinant of stroke RTW. Stroke survivors with left side affectation had a 7.6 times likelihood to RTW than their counterparts with right side affectation. This is consistent with the study of Ntsiea, Van Aswegen, Lord, and Olorunju (2015) who report a 7.7 odd ratio for stroke survivors with left side stroke affectation. Although, the current study did not check for hand dominance, literature evidence revealed the frequency of right side laterisation in any given population to range from 74% and 96% (Michel, Nelson, Babik, Campbell, & Marcinowski, 2013; Ferre, Babik, & Michel, 2010) and 94% among stroke survivors (Duff et al., 2014). It could therefore be expected that majority of the stroke survivors in the study are right hand dominant which made them better placed to RTW compared with their counterparts as posited by Hamzat, Olaleye, and Akinwumi (2014). The disability imposed by the stroke places a restriction on the functional use of the dominant hand for survivors with right side affectation. Thus, stroke survivors with left side affectation had a higher participation and a better reintegration into their worker role than their counterparts. Similarly, as individuals with right side stroke affectation has a greater tendency of having their broca area affected thereby leading to expressive aphasia, it may be

adduced that speech problem coupled with hemispheric laterization (right hand dominance) of stroke was responsible for the high likelihood to RTW by this group of stroke survivors. This is further corroborated as a third of the stroke survivors reported that speech problem had moderate to extreme impact on RTW. As most jobs require communication skills, speech problem might make work performance in some types of employment difficult if the stroke survivor is not accommodated in such employment. This line of thought is consistent with reports in the literature by Hommel et al. (2008); Alaszewski, Alaszewski, Potter, and Penhale (2007) as well as Bernspng and Fisher (1995).

4.5 CONCLUSION AND RECOMMENDATION

The results from this cross-sectional survey highlighted that RTW of stroke survivors is relatively higher as compared with previous studies from developing countries. Although, a high proportion of stroke survivors returned to self-employment. Despite the fact that survivors undertook one form of rehabilitation service after the stroke event, they experienced symptoms and environmental factors that significantly impacted on their return to work. The problems experienced in body structure and function, activity performance and participation capacity by survivors necessitates the development of an integrative programme to facilitate the return to work as well as the retention of stroke survivors at work. Also, this result provided empirical evidence that show patterns across marital status, disability level, work category and workplace support in how stroke survivors return to work. Furthermore, the result established that side of stroke affectation, type of rehabilitation programme, stroke symptoms, environmental factors as well as problems experienced by survivors in activity and participation can significantly predicts RTW of survivors. The implication for programme development is that these variables must be included as part of an integrative programme for RTW. Side of the body affected by stroke plays a prominent role in the resumption of worker role of stroke survivor in south-west Nigeria. The practice of compensatory strategies that involved the use of the unaffected limb after the plateau of functional recovery during work re-integration should be encouraged.

The results of this stage of the study presents the empirical findings from the survey of RTW status, impairments, activity limitation and participation restrictions experienced by stroke survivors. It further shows the factors that predicts RTW of stroke survivors. Though the results provide clear directives and implications for the programme that needs to be developed, the theoretical

framework of the broader study advocate the importance of exploring the subjective views of stroke survivors regarding the factors that influences their RTW. The subsequent stage of this study entails the findings of in-depth interviews that were conducted with stroke survivors to determine their experiences of living with a stroke and the factors that influences return to work of survivors.



CHAPTER FIVE

BASELINE EXPLORATION OF THE LIVED EXPERIENCES OF STROKE SURVIVORS AND PECEPTION OF WORK RESUMPTION

5.1 INTRODUCTION

This chapter presents the findings that relates to the second and third objectives of the study which are: to identify and explore the impairments, activity limitation, participation restrictions that the stroke survivors experienced and; to identify the determinants of RTW of stroke survivors. A detailed qualitative methodological process used to collect, analyse the data gathered, and a description of the study concept map is provided in this chapter. Subsequently, the chapter presents the findings related to three themes that comprises: “life is difficult with stroke”; “I can’t do one or two things” and; “factors that influences resumption of worker role”. Finally, the findings were put into perspective with current literature in a discussion section.

5.2 METHODOLOGY

5.2.1 Study population and sample

For this phase, stroke survivors that participated in the quantitative stage of the study were approached for possible recruitment via a purposive quota sampling technique. The participants had fulfilled similar criteria earlier discussed in the first stage of this phase of the study (Baseline assessment of RTW and determinants of RTW following stroke. They involved both stroke survivors that have and have not returned to work. The participants were purposively selected in order to get a sample that would provide in-depth information regarding the constructs under investigation (impairments, activity limitation, and participation restriction as and the factors that influences RTW after stroke). Purposive selection of these participants was based on the contribution they would make from their experience with regard to return to work after stroke. Mason (2010) reported in a systematic review conducted on PhD studies that the common sample size in qualitative studies ranges from eight to 30 study participants. For this study, the participants were interviewed until data saturation was achieved.

5.2.2 Design

The design for this stage of the study was based on the exploratory qualitative paradigm that permits a researcher to interpret phenomena in regards to the meaning people bring to them (Leedy

& Ormrod, 2010; Denzin & Lincoln, 1994). This in turn contributed to the conceptualization of an intervention programme towards returning stroke survivors to work. The qualitative paradigm acknowledges that people develop a distinctive understanding of their environment through which they construct realities (Carpenter, 2004). In essence, it enabled the researcher to study participants with a wide-angled lens thereby providing a profound insight to the connection between the complex social and physical environment, and the participants (Hammell & Carpenter, 2002). While using this paradigm, a concept map was employed to illustrate the knowledge structure of the stroke survivors regarding impairments, limitation in activity, and restriction in participation capacity as well as factors that influence their resumption of the worker role. With a concept map, perceived regularity, relationships or interconnections in events or objects, or records of events or objects, can be graphically organized or presented through the explicit illustration of a visual-spatial 'network of propositions' (Duit et al., 1996).

5.2.3 Data collection technique

The study utilized in-depth interviews as the technique of data collection. In-depth interview which is positioned in the qualitative paradigm was described by Ulin, Robinson, and Tolley (2005) as a data gathering technique that involves an exchange between one respondent and an interviewer which encourages the respondent to perform a more active role in the discussion. The in-depth interview which was semi-structured in nature was employed to gain insight about factors that influence the return to work of stroke survivors. In-depth interviews encourages a free expression of the respondent's feelings (Holstein & Gubrium, 1999) that will invariably lead to a 'shared goal of understanding' (Rubin & Rubin, 1995, pp. 11). The in-depth interviews were conducted with a total of eight stroke survivors; four among whom had returned to work while the other four had not. The in-depth interviews explored the survivors' experiences of impairments, limitation in activity performance and participation capacity restriction after stroke events. It further investigated the survivors' perceptions of factors that influence RTW after a stroke event. The in-depth interviews were guided by the following semi structured probes:

- What is it like to live with stroke?
- What changes did you have to make to your life to accommodate for the stroke that you experienced?

- Can you share your experience regarding attempts you made at returning to work after stroke?
- What are those things that you experienced that helped or hindered you when resuming previous or new roles after a stroke?
- In which/what way(s) has/have rehabilitation impacted on your attempts to return to work?

In addition, participants were observed during the interview process to capture non-verbal responses that the interview provoked.

5.2.4 Data collection procedure

The interview process began with the recruitment of participants from the pool of stroke survivors who were part of the baseline assessment study. They were identified from the medical records of the rehabilitation units of recruiting hospitals. An introductory meeting was held with the stroke survivors who volunteered to participate in the qualitative stage of the study. At this meeting, the aim of this phase of the study was explained both verbally and in writing with each participant. The participants' informed consent were sought and obtained, after which interview dates were arranged. Four of the interviews were held at the treating rehabilitation centres of the participants, three were held at the participants' workplace, while one was held at the participants' home. An information sheet (*see appendix 3.4*) that explains the objectives of the study and what was expected during the research process were given to the participants. The content of the information sheet was also explained to the participants verbally. A total of eight in-depth interviews were conducted. All the interviews were conducted by the researcher with the aid of an interview guide. The researcher was able to speak and read English and Yoruba. Even though the interview guide served as a basic check-list from which questions and prompts arose, participants were allowed to direct and focus on issues they found pertinent to the discussion. The questions and prompts were open ended such that it allowed for further probing if not answered satisfactorily. Example of the questions that were asked included: What is it like to RTW after stroke? Tell me about those things you felt stroke survivors experienced while returning to work. (*see appendix 5.1 for interview guide*). The ultimate focus of all the questions was on the impairments, activity limitation and participation restrictions participants experienced after the stroke incident as well as the factors that influences RTW of stroke. The data obtained from the interviews were recorded using an audio tape with each lasting an average of 45 minutes. The audio recording were later transcribed

verbatim. After each interview, a summary of the interview was provided to the participants to ascertain that this is in accordance to what the participant has responded to in the interview.

5.2.5 Data saturation and data analysis

Data saturation according to Fusch and Ness (2015) occur when there are fewer changes and no more emerging patterns in a data set. Francis et al. (2010), asserted that data saturation could be achieved through the use of multiple or different categories of informants that provides enough data to refine the theories that emerged during a qualitative interview process. In this study, data was obtained from eight stroke survivors with data saturation (no new pattern or themes) occurring at the seventh interview. The data analysis of this stage of the study was a continuous process that occurs in alternating sequence from the data collection phase to the end of the study (Corbin & Strauss, 2008). According to Bradley, Curry, and Devers (2007), analysis of qualitative data entails a process of reducing and organizing the data to generate findings for interpretation by the researcher. The data analysis process for this study involved the following: data management and thematic content analysis.

5.2.5.1 Data management

Data management is a systematic process that involves storage and retrieval of information in a research work from the raw data to final study report (Miles & Huberman, 1994). It is posited to consist of five key general principles that includes: formatting, cross referral, indexing, abstracting and pagination. To ensure the proper management of data in this study, the raw data which were the audio recordings from the interviews were transcribed and translated verbatim. The researcher conducted all of the in-depth interviews and collected the data. Also, the researcher transcribed and translated five of the audio recordings while the later three were translated by a professional transcriber. The active participation of the researcher in the transcription and translation of the raw data gave him the opportunity to immerse himself in the data through-out the research process.

5.2.5.2 Thematic content analysis

Thematic content analysis of the data from this stage of the study was guided by the work of Morse and Field (1996). The authors posit four cognitive processes through which thematic content analysis in qualitative research could be achieved, namely; comprehending, decontextualizing, theorising and contextualising. Content analysis is similar to Corbin and Strauss' description of

the analysis process for qualitative data (Corbin & Strauss, 2008). For this study, the data was analyzed using Atlas.ti 7.5.4 (Atlas.ti Scientific Software Development GmbH, 2017). To keenly comprehend information in the data, verbatim transcription of audio recordings from the interviews were done immediately after the interview; this gave the researcher a sense of understanding of emerging information before proceeding with further interviewing. The researcher read and re-read the transcripts for all interviews conducted to have a sense/picture of the whole that was being described by the participants. A transcript of each interview was then individually analysed via line by line coding on Atlas.ti software. This allowed the researcher to capture the underlying meaning of texts in the transcripts thereby enhancing the understanding of the RTW process of the stroke survivors.

Similar descriptions and direct quotes that emerged via line by line analysis of the data were grouped together using the family network tool on the Atlas.ti software to form categories. Thereafter, patterns and relationships that connect the categories were analysed to form themes. This provided a clear picture of the commonalities amongst transcripts. The researcher compared the various categories obtained from the analysed data with relevant literature thereby enabling the establishment of links between theories. The results would be discussed in the subsequent subsection in the context of established theoretical knowledge.

5.2.6 Bracketing

Starks and Trinidad (2007) put forward that all through the phases of qualitative research, the researcher take up the position as serve as mechanism for analysing data. It therefore becomes necessary for the researcher to be cognisant of his biases that could impact the research process. This preconception has been identified not only to influence the presentation of data but also to influence the gathering and interpretation of data (Tuffor & Newman, 2012). While conducting the study, the researcher presumed that stroke severity will negatively impact survivors' participation in the course of the interviews and eventually the findings of the study. In addition, as stroke affect survivors in diverse ways, the impairments and activity limitations among individuals that returned to work would be lesser compared to those that could not RTW.

According to Tuffor and Newman (2012), bracketing in qualitative research entails ignoring prejudices and biases about the phenomenon under enquiry and considering data in context with continuous in-depth reflection. In order to achieve the aforementioned, the researcher had to first

recognize any preconception about the impairments, the activity limitation and participation restrictions that stroke survivors experienced and its influence on RTW and then suspend the biases. This process ensured that the researcher's bias did not interfere with the emancipation of pure representation of the phenomenon from the stroke survivors' viewpoint. Similarly, the researcher regularly consult with his supervisors and colleagues at the division of postgraduate studies PET research class in order to guarantee that his bias has limited influence on the outcome of the analysis. The above efforts assisted the researcher to jettison his personal experiences, thereby guaranteeing the credibility of the research process.

5.2.7 Trustworthiness/Rigor of the data:

Krefting (1991) recommended four criteria for achieving trustworthiness in qualitative enquiry based on Guba's model. These criteria which include consistency, credibility, neutrality and applicability were used to realize rigor of this study.

5.2.7.1 Consistency

Consistency refers to the dependability of the findings of the study if it was conducted with the same participant or within a similar context (Krefting, 1991). The researcher achieved this by giving a detailed description of the research method and peer examination. He described the different phases of enquiry used by him with regard to exploratory and descriptive research and this further ensured the criterion of consistency. The study proposal was approved by the Higher Degree and Ethics Committee of the University of Western Cape. The researcher also presented the findings of the study to his supervisors.

5.2.7.2 Credibility

Credibility is measured by the truth value of the findings from a study. It addresses the truthfulness of the reports emanating from a research project (Krefting, 1991). To ensure the credibility of data that were obtained from this study, the researcher used an audiotape to record the interviews held with participants and transcribed the audio recordings verbatim. This permitted accurate representation of the views of the study participants. To further achieve credibility of the study, the following strategies that were posited by Krefting (1991) were used:

Member checking:

Member checking involves obtaining informants feedback regarding the interpretation and conclusion drawn from a study group (Lincoln & Guba, 1985). The transcripts from each interview were given to each participant before analysis and their views were taken into consideration. Six of the participants responded within the stipulated period. The stipulation arose because each transcript was to be analysed before proceeding to the next. Furthermore, the findings of the study were verified with the research participants for validation, with necessary amendment made to the findings where need arose. This ensured that the findings of the study were actual reflections of the participants' experiences and perceptions.

Triangulation:

This is a process used by researchers in establishing validity through convergence realised in multiple information sources (Creswell & Miller, 2000). Triangulation was achieved in this study by the use of multiple data sources that include stroke survivors who have and have not returned to work. Also, during data gathering, the interview process was combined with the participants' observation.

Interview technique:

The researcher employed in-depth interviews which enabled the researcher to explore the phenomenon under investigation both broadly and at the same time in depth thereby adding rigor to the research project. The researcher also ensured that the findings of the study are reflective of the study participants by bracketing personal biases that may influence the research process.

Researcher's reflexivity:

Self-disclosure of previous assumptions and biases by the researcher helped in achieving credibility in this study. Creswell and Miller (2000) posit that acknowledging one's belief in the early stage of a research process ensures that the readers of a research project understand the stance of the researcher. He further suggested the suspension of the researcher's biases as the researcher proceeds through the study. In this study, the researcher acknowledged that his previous experience as an occupational therapist in the rehabilitation of stroke could influence the results of the study. He therefore suspended all his preconceptions and captured his experiences and perceptions in a

reflexive journal. This enabled him to reflect on how his prejudices could have influenced the findings of the study.

Peer debriefing:

The researcher had constant discussions with supervisors and he also discussed the findings of the study with colleagues that are experts in the field of enquiry. Through these constructive criticisms of the findings, credibility was enhanced.

5.2.7.3 Neutrality

Neutrality refers to the extent in which findings from a study are from participants and research conditions rather than from other biases and perspectives (Guba, 1981). Confirmability was the criterion used to achieve neutrality of this study. Confirmability was accomplished through member checking, reflexivity on the part of the researcher and the use of an audit trail.

5.2.7.4 Applicability

Applicability refers to how transferable the finding of a study is to similar settings. Even though qualitative inquiry have been discussed in various literature, the findings of a qualitative study is not intended to be generalized to other populations (Soeker, 2011), it is however expected that the findings of a study have similar meaning to other studies conducted in similar context. This was termed as fittingness of a study by Guba (1981). To achieve applicability of this study, sufficient description of the study population, the research method, context, the participants and the participants' lived experience were provided and discussed to allow for comparison and its applicability in similar context.

5.3 RESULTS

5.3.1 Demographic data of the participants

The individual in-depth interviews were held with eight stroke survivors aged between 36 -60 years and post-stroke duration ranging from 1 -10 years. All except one of the participants were male. Seven of the participants had their highest education level at the tertiary level while one participant had a secondary level of education. With regards to job characteristics, two of the stroke survivors each were engaged in heavy and sedentary classified jobs while three were engaged in medium energy exerting jobs. Half of the participants were diagnosed of having right hemispheric cerebrovascular accident while the other half had left hemispheric cerebrovascular accident.

Similarly, four of the participants were unemployed at the time of interview while the other four participants were employed. The demographic description of the stroke survivors is as follows:

Participant one (P1): P1 is a forty-six year old male, who has a tertiary school level of education. He sustained a right hemispheric CVA on the 16th of December, 2015 that resulted in him experiencing left hemiplegic condition. He was self-employed as an insurance broker prior to the stroke incidence. He is currently unemployed and intends to change his vocation to trading in goods. He is married with one child.

Participant two (P2): P2 is a forty-two year old female, who has a tertiary school level of education. She sustained a left hemispheric CVA on the 11th April, 2014 that resulted in right hemiplegic condition. She worked as a class teacher in a state owned primary school before the stroke episode. She is currently unemployed. She is widowed with one child.

Participant three (P3): P3 is a fifty-nine year old male, who has a tertiary school level of education. He sustained a right hemispheric CVA on 15th February, 2016 that resulted in left hemiparesis. At the time of stroke, he worked as an administrative secretary in a state owned enterprise. Currently, he is employed with the same enterprise but works on a part-time basis. He is married with four children.

Participant four (P4): P4 is a thirty-six year old male, who has a tertiary level of education. He sustained a right hemispheric CVA on the 5th of August, 2015 that resulted in right hemiplegic condition. At the time of the stroke, he worked as a personal assistant to a political office holder. He is currently unemployed and single.

Participant five (P5): P5 is a fifty-eight year old male, who has a tertiary level of education. He sustained a right hemispheric CVA on the 21st of June, 2008 that resulted in left monoplegic condition. At the time of the stroke, he was working as a civil engineer in the maintenance and engineering unit of a tertiary institution. He indicated he returned back to his previous job. He is married with five dependents.

Participant six (P6): P6 is a fifty six year old male, who has a secondary school level of education. He sustained a left hemispheric CVA in October, 2006 that resulted in right hemiplegic condition and he returned to work in 2009. Prior to the stroke incidence, the participant worked as a typist

in a university. Currently, he is working as a clerical officer at a different unit in the university. He is married with three children.

Participant seven (P7): P7 is a fifty-four year old widowed male, who has a tertiary level of education. He sustained a left hemispheric CVA in July 2015 that resulted in a left hemiplegic condition. He was self-employed as a chartered land surveyor prior to the stroke incidence. Currently, he is on a self-imposed leave to attend to his health.

Participant eight (P8): P8 is a fifty-seven year old male, who has a tertiary school level of education. He sustained a left hemispheric CVA on the 24th of January, 2009 that resulted in right hemiplegic condition. He was a senior lecturer in a tertiary institution before the CVA and currently he is still employed as a senior lecturer in the same institution. He was married with three children before but now divorced. A summary of the demographics of the participants are provided in *Appendix 5.2*.

5.3.2 Emerging Themes

The participants described the impairment, activity limitation and participation restrictions that they experience as well as factors that influences the resumption of their worker role with three major themes which is represented in a concept map namely: 1) It is difficult to live with stroke; 2) environment factors influences involvement in life situation; and 3) factor that influences RTW after stroke/ (if not for this and that). The first theme; “it is difficult to live with stroke” explains the various impairments, activity limitation and participation restrictions that the participants experienced after the stroke event while the second theme; “the influence of environmental factors on occupational roles” describes the environmental factors that influences participation capacity after the stroke incidence. Subsequently, the third theme; “factors that influences RTW” explicate the various elements that impact the resumption of the worker role of the participants.

5.3.2.1 Theme One: It is difficult to live with stroke

<p>Theme:</p> <p>It is difficult to live with stroke</p>	<p>Categories</p> <ul style="list-style-type: none"> • The loss of body function • I can't do one or two things • Why me?
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This theme represents the participants' experience of difficulty encountered as a result of impaired body functions and structures which subsequently limit activity performance and restricts participation within the community. The participants indicated that life was challenging and difficult after the stroke event. This experience was described in terms of "loss of former self", that made them to be "unable to do one or two things". This subsequently made participants to question "why me?" One participant captured the description by saying:

"What you have been doing by yourself for it to become difficult, it is a great challenge. I am over it now, when it first happened, life was hell for me" P1

The above quote revealed that the stroke survivor had challenges in performing previous tasks and activities required for daily living. This challenge made life grueling and problematic to live after the stroke event. Another participant described that the difficulty he experienced after the stroke made him to lose hope in living/about the future.

"So it was very very devastating; its more or less left one with no hope, because you know one had to be doing so many things with difficulty you know eating , taking bath and all that, walking and all that, everything with difficulty, so it was not easy at all" P8

The participants pointed out that the stroke left them with residual disabilities that made their daily living experiences painful and unpleasant. The following categories are used to explain the foregoing theme: body function loss; I can't do one or two things and; why me?

5.3.2.1.1 The loss of body function (loss of former self)

This category describes the participants' experiences of impairments resulting from a neuronal lesion of the stroke event. The participants indicated that the stroke incidence affected their cognitive, speech, motor and sexual functioning. This was further described as resulting in a deficit of skills needed to perform daily living tasks. One of the participants conveyed this experience by saying:

“You know several months after it happened, I could not lift this my right hand, even most of the time I could not remember things. It affected my thinking so it was not easy at all and you see it indirectly affected my speech so I couldn't talk to people that brought work for me to do, to do normal things was impossible” ... P7

The above quote reveals that the stroke event affected the motor and cognitive abilities as well as speech function of the participant. He further indicated that all of the above made it difficult for him to perform basic tasks that is required of him. The sequelae of stroke was indicated to have led to memory loss for a prolong period of time by a participant. She revealed this experience of loss of body function by saying:

“I will see a person, eh you know I won't even know who the person is, imagine I could not even recognize my daughter. This happened for a while, everyone around me were just crying”. P2

The category points out that the stroke event caused survivors to loose functional skills needed for tasks performance. The category is further described with subcategories relating to the loss of cognitive function, loss of speech function, as well as loss of motor and sexual function.

- **Loss of cognitive function**

This subcategory describes the cognitive functions that participants indicated that they lost after the stroke event. One of the participants revealed that the stroke event compromised his ability to recall the skills necessary for functioning at the workplace. He described this experience by stating:

“...I could not even type because, I could not remember how to use the typewriter. I forgot almost everything I know about typing....” P6

Another participant indicated the loss of his cognitive ability becomes evident when he was under pressure to perform a task.

“But it takes time to now clear then and requires patience. Whenever I try to rush it, I sometimes forget or even get tired so I have learnt to do things simply...”P5

Several months after the stroke incidence, a participant revealed that he experienced retrograde amnesia that prevented him from remembering previous information.

“For instance, I couldn’t read, I would see something in the computer I didn’t know what they were, they were just meaningless to me, Even the people I knew, I would not be able to recognize their names again, I would still remember their faces, but I wouldn’t be able to know their names again, so many things like that even family member around.” P8

This subcategory indicates that stroke results in cognitive deficits that affected functioning among survivors. The loss of cognitive skills devastated participants and made them to lose hope about the future.

- **Loss of speech function**

In this subcategory, participants revealed the difficulty they experienced with communication as a result of loss of speech function after the stroke incidence. One participant described that it became practically impossible for him to express himself after the incidence. He described this by saying:

“I will want to talk to Mr. A, it’s not easy, I will want to talk with Mr. B., it’s not easy, I can’t talk well. I went to the Doctor, I wanted to talk to him but it wasn’t possible. It was not easy at all. I won’t be able to utter anything. That time it would have been impossible to have this interview with you”. P6

Another participant indicated that even though he was able to speak, people around him could not make sense out of his speech for almost six months after the stroke. He revealed that he was incoherent in speech with the statement below:

“Well, first, for almost six months I was totally confused because people did not understand what I was saying whenever I speak, more or less as if I was talking gibberish, you know word salad that kind of a thing” P7

The stroke incidence was also revealed by participants to have made articulating some words to be difficult. One of the participants described this by saying:

“When it happened initially my talking ehm (speech) was not okay at all but later it picked up ehm and I got over it ehm, but up till now articulating some words is still difficult even after over six year which was not so before.” P8

Loss of speech function was experienced by the stroke survivor; which affected their ability to communicate and interact with people effectively.

- **Loss of motor and sexual functions**

This subcategory conveys the loss of motor function that participants experienced. This motor function loss was presented to result in walking difficulties, handwriting impairments and sexual dysfunction for stroke survivors. A participant described this by saying:

“I woke up to read the bible then I realized I can’t move the right leg again, there was no power to move the leg at all...” P1

The above quote revealed that the participant lost muscle power of his left lower extremity immediately after the stroke. Similarly, another participant indicated that she experienced loss of motor function in her right upper and lower extremities which made it difficult for her to use the hand and to walk. She said:

“I can’t use this hand you see and ehm I find it difficult to walk the way I use to walk. I can’t even get out of our house, to move out of our compound is difficult...” P2

Furthermore the participants revealed that they had difficulty with motor coordination resulting in an inability to use their hands to carry out tasks. One participant described this by saying:

“...yes , yes, you know I said it did not affect me that much but some specific areas where it affects me, this my hand; I can’t co-ordinate it, but I can now talk.” P7

Another participant described that the loss of motor function he experienced made his handwriting illegible. He presented this by saying:

“Not much except that initially I couldn’t write very well, though I was writing but my handwriting wasn’t as legible as it used to be, apart from that nothing” P5

Also, the participants revealed that the stroke event resulted in loss of sexual function as it became difficult to have sexual interaction with their spouse. A participant captured this experience by saying:

“It has affected my family life in the sense that I cannot longer sleep with my wife, it’s difficult, I sleep alone but my relationship with other members are alright” P3

The above subcategory points out that the stroke sequelae affected the survivor’s motor and sexual abilities which subsequently resulted in difficulty in walking, handwriting and sexual relationship.

5.3.2.1.2 I can’t do one or two things

This category describes the participants’ experiences of activity limitation and participation restriction resulting from the stroke event. The participants indicated that the stroke incidence negatively affected their activity performance and participation capacity. One of the participants conveyed the limitation he experienced with task performance by saying:

“It is very painful because you will see a lot of things you want to do by yourself but you can’t do and at times you might not see people that will help you around, so it’s very painful and it’s not a good thing to experience at all” P1

The above quote revealed that the stroke survivor was unable to carry out activities that he would have wished to perform which subsequently made him frustrated when there was no assistance coming his way. Another participant explained that the stroke incidence made her emotionally disturbed as she could not carry out those activities that she routinely performed prior to the incidence. She explained this by saying:

“I that I was very agile before, I can run from here to there, I can talk and all of a sudden I couldn’t do that again, so there is no how I won’t think about the situation. There is nobody something of such happens to and she won’t think about it. Me that I have been going to work by myself, I mean go to toilet, do this, do that and all of a sudden, I couldn’t do those things again” P2

In the same vein, another participant revealed that he could no longer manage his schedules as he realized that most of the tasks he was doing previously, he was unable to perform it. He described this by saying:

“But after the incident, to even manage myself is difficult because I will want to do some things, I will just realize that I can’t do it” P4

Participants further indicated that they became easily fatigued whenever they engage in any activity. This they revealed made them to stop most activities in order to conserve their energy. One participant described this by saying:

“Even when my workers drive me to site, just sitting in the car for 1hr drive is a problem, I would be tired. It was why I initially stopped going out with the boys for survey (tasks related to his job)” P7

The category shows that the participants experienced limitation in task performance and restriction in participation capacity. The category is further described with subcategories relating to inability to walk/walking difficulty, participation restriction, and fear avoidance behavior.

- **It is difficult to walk**

This subcategory describes the participants’ experience of the difficulty they had while walking. The participants stated that the consequences of the stroke event caused them an inability to walk which they experienced immediately after the event, and some even lasting several months after the injury. One of the participants described the experience by saying:

“With this stroke there is no where I can go, it won’t be easy; moving around has been difficult so I have been all by myself “ P3

The above participant further explained that his inability to walk restricted him to his immediate environment. He conveyed this by saying:

“haa! I don’t go out of my house because I cannot be moving around in the community because there is no leg to do that so I remain at home, I only now walk around within my compound.” P3

Another participant revealed that she could only walk with the aid of an assistive device. The participant was initially dependent on people/caregivers to move immediately after the stroke event. She described this by saying:

“I can now move with a walking stick unlike when someone will have to hold me before I could go anywhere when it first happened” P2

Similarly, a participant indicated that he could not resume his work after the stroke due to the difficulty he experienced with walking. He described this by saying:

“... the first thing of course that hindered me from coming to work was turbidity, Although I had a car, for me to walk down from the car to the office was not, in fact I couldn't think of it” P8

- **Stroke restricts participation in communal activities**

This subcategory expresses the participants' description of how the stroke incidence prevented them from engaging in leisure endeavors/pursuit, perform societal roles, and interact with colleagues and families. One participant said:

It has affected my daily relationship with people, within my place ehm my community, I was a youth leader. I just had to tell my vice to take over because it became a problem when this stroke happened. The stroke restricted my mobility from one place to another. As for my leisure, I can't even do any leisure activity; the strength is no longer there, walking self is difficult. How do I play ball like this?,

P4

The quote above revealed that the survivor could no longer engage in leisure activity and communal responsibilities after the stroke incidence. Similarly, another participant indicated that the sequelae resulting from the stroke limited his interaction with colleagues and caused him to stay away from social gathering. He described this by saying:

“It now affected how I relate with people because meetings that I would have gone to, socializing with friend and fellow surveyor during meetings, I could not even attend outings at all. How do I talk to people, how do I relate with my friend in such situation. So, it affected in that way.” P7

Another participant explained that he lost hope of engaging in his favorite leisure activity due to the stroke incidence. He indicated this by saying:

“I love playing football, that has been my favorite sport, though I watch football here in Ife from television, I can’t go to the field to play and they call me to talk about it, with this I might not be able to go to the field again” P1

Interacting with colleagues at social gatherings was indicated by a participant to become emotional as a result of change in his perception of self. He further revealed that this made him to stay away from people. He described this by saying:

“...most of the time though, I don’t smoke I don’t drink alcohol, but going out to clubs and socializing with my colleagues it wasn’t easy for me so emotionally I didn’t feel comfortable with the way I was to go out with them, I was no longer the previous me.” P5

- **Fear avoidance behavior**

This subcategory describes the fear avoidance behavior exhibited by participants that made them not to engage and participate in activities after the stroke. This fear avoidance conduct which includes but not limited to fear of falling, fear of pain and fear of discrimination and stigma reinforced the participants’ belief that they could not perform some tasks. One participant indicated this by saying:

“where there are obstacles or undulating surfaces like within the community, it is difficult. So I restrict my walking around to within my compound so that I don’t now injure myself while walking” P3

The above quote reveals that the participant restricted his movement to his immediate environment due to fear of falling. Another participant indicated that she stopped performing daily task such as meal preparation so as not to aggravate the pain she experienced in her shoulder joint. She revealed this by saying:

*“using this hand is painful you see ehn when I lift it up to do things, to cook food, carry things is painful you now see, so my mum has been the one taking care of me and my daughter until the pain goes cause I will not want to aggravate the pain...
...so most things I should do, I can’t do you know it may be painful” P2*

In the same vein, a participant indicated that he decided not to engage in some tasks to prevent people around him from having a negative perception of his state of health immediately after the stroke event. He described this by saying:

“Initially cause of what people will say, sometimes I feel like not going out or doing things sometimes eh you see because of the way they look at me when I talk when it initially happened then, what I was uttering out was gibberish, I decided to keep to myself and not talk to people again...” P6

The above subcategory reveals that participants engaged in fear avoidance behavior which prevented them from participating in activities.

5.3.2.1.3 Why me?

In this category, participants described the emotional imbalance they experienced after the stroke event. Most of the participants indicated that they felt frustrated as effort placed on maintaining a good state health prior to the stroke incidence could not prevent the occurrence of stroke they had. One participant conveyed this by saying:

“Sometimes I just wonder why it was me because I don’t drink or smoke; I eat well and I go to church; why will this happen to me?” P7

Another participant revealed that he felt frustrated as the stroke transformed him from an individual that renders assistance to people to one that depends on others for survival. He indicated this by saying:

“Imagine, me that people rely on to now be the one that will now have to wait for people before doing things, haba! This shouldn’t have been me. It is devastating” P4

In the same vein, another participant indicated that the stroke was a sudden event that he never contemplated as he did not engage in activities that could have warranted the stroke he experienced. He expressed the frustration he felt by saying:

“this thing happened to me suddenly, it looks somehow to me because why me? Why me now? I don’t involve myself in bad activities for this to befall me. I actually felt tired of life” P1

The above category revealed that participants were emotionally troubled after self-reflection on fruitless efforts they had made to maintain a healthy lifestyle prior to the stroke incidence. This category is further discussed with the following subcategories: feeling of hopelessness, and loss of independence.

- **Feeling of hopelessness**

This subcategory describes the feeling of hopelessness which participants experienced after the stroke incidence. The inability to perform daily tasks caused most of the participants to lose hope of survival. One participant indicated that she felt dejected immediately she was informed she had experienced a stroke due to her knowledge of its consequences. She conveyed this by saying:

“Immediately I was told it was a stroke, all hope I had left was gone because you see eh one of the teachers in that my school, that school that did not pay me for two years died from stroke, I just felt the end has come because I know what she went through before she died”... P2

Another participant revealed that he lost hope of existence and felt that he would not survive the incidence. He described this by saying:

“Well, it is very very devastating, hum. For instance, when I had it, I almost lost hope of existence I didn't think I was going to survive it,”... P8

Similarly, a participant thought he had lost everything he had worked for after stroke. The participant's engagement with rehabilitation services later resurge his hope.

“I thought everything is gone, when it happened but later I would say is there was this hope rising in me that I could still make it, after I decided going for physio and O.T, I started feeling that it was possible for me to actually be doing most of the thing that I was doing before” P5

A participant revealed that he felt despaired after the stroke incident. He described this feeling of despair by saying:

“It has even gotten better now, you see when it happened I do ponder on it if this is how I will continue to live, staying in one place, everything was gloomy but I thank God sha” P1

- **Loss of independence/dependency**

Under this subcategory, the participants' experience of loss of independence is described. The participants pointed out that the stroke caused them to be dependent on other people to perform most activities of daily living. They further revealed that the loss of independence made them to live at the mercy/ (be reliant on) of family members, colleagues and friends. One of the participants describe this by saying:

“because I could not walk, bath, talk, I forget things.it was like my life was over. Everything had to be done for me. I was living at the mercy of people.” P6

Another participant indicated that she experienced a role reversal in her family life after the stroke event due to loss of independence.

“it affected every aspect of my life because it's only my mother and child that are with me. There is nobody taking care of me, we are just three in this house. To feed is difficult, to get things to even take care of one's health is a problem, imagine that, as old as I am, it is my mum and child that is taking care of me when I should be the one doing that.” P2

The above participants also explained that she depended on both her mother and daughter for virtually everything after the stroke. She conveyed this by saying:

“They are the one taking me to the hospital, they are the ones preparing food, they are the one putting me they are the one doing everything for me, they are the one bathing me, everything they do for me which should be the other way round...” P2

In order not to depend on his brother, a participant revealed that he had to spend extra time/hour on performing tasks that he would have completed routinely after the stroke event. He described this by saying:

“To even bath which takes no time for me to do, I may get to the bathroom under 3 minutes I am done with my bath before the stroke but now it takes me like 45minutes to bath. When it even occurred, it was my brother that was bathing me but now I can do that by myself with little help even though it takes more than 45 mins.” P4

In summary the theme, “it is difficult to live with stroke” was discussed. The participants revealed that they experienced the loss of body functions such as motor, cognitive and speech and sexual functions which limited the participants’ activity performance and restrict their participation capacity. Finally, an emotional imbalance arose as a result of the loss of independence experienced by the participants after the stroke event which cast a feeling of hopelessness on the survivors.

5.3.2.2 Theme 2: The influence of environmental factors on occupational roles

<p>Theme:</p> <p>The influence of environmental factors on occupational roles</p>	<p>Category:</p> <ul style="list-style-type: none"> • Accessibility of the environment influences participation in occupational role • Support network within the environment influences participation in occupational role • Challenges related to the health and labor systems and services in the environment
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The above theme represents the environmental factors that participants indicated influence their participation capacity after the stroke incidence. Participants described that for them to be able to participate in previous or new roles and tasks, they had to contend with accessibility of the physical environment and navigate health and labour systems. The participants further indicated that various support networks within their environment were influential in whether they were able to engage in premorbid or new tasks and roles. To illustrate the influence of environmental factors on participation capacity of stroke survivors, a participant is quoted as saying this:

“even when I felt I would be unable to do somethings, my wife and children will encourage me that daddy, you can do it; with that I summon courage and I have been able to achieve a lot from their encouragement. Without this kind of support, people like me will just be down with depression which will add to the problem on ground.” P5

The above quote revealed that the support received by the participants by his immediate family in the form of encouragement geared him to engage in tasks and activities that he thought he could

not do. He further indicated that such support from the immediate family could prevent emotional imbalance among stroke survivors.

The following categories are used to discuss the foregoing theme: accessibility of the environment, navigating health and labour systems, as well as supportive networks within the environment.

5.3.2.2.1 Accessibility of the environment influences participation in occupational role

This category represents the participants' description of participation restriction resulting from accessibility of the physical environment. The participants indicated that the presence of physical barriers within the environment acted as an additional burden to the sequelae of stroke which limited their ability to engage in activities as well as societal roles. One participant conveyed this by saying:

"...the only thing is that I can only move within my compound which is smooth but to go outside haa!, no I haven't been doing that because outside in the community there are curvet, gutters and open drainages that is difficult to cross without help."

P3

The above quote revealed that the participant and his movement was restricted to his immediate environment due to physical barriers within his community. He further indicated that he would be unable to overcome these physical barriers without assistance. Another participant stated that navigating his street to the bus stop was a huge challenge for him even though he had recovered his walking ability. He further explained that physical barriers such as uncovered man-hole and curvet within the community posed as threat when commuting within his environment. He explained this by saying:

"There was a time when I tried it that I fell down, that was after four months that I had the experience, since then I have overcome that. I will say walking within the street to take the bus was the issue. Those gutters that I would have crossed without a second thought became headache so I had to limit those things I would have engage in" P6

The above participant further indicated that in order to overcome the challenges posed by physical barriers he usually encounters whenever he needed to use public transportation, his wife had to learn how to drive. He described this by saying:

“my wife later learnt how to drive so she was the one bringing me to work because taking bus to work from my house was not possible, so before I walk to get to where I will get the bus I would have almost injured myself and fainted” P6

Most of the participants indicated that they avoided engaging in activities and taking up roles in which they might encounter physical barriers that may injure them. One participant explained this by saying:

“It was hell, I had to stop going to the bank, you see I wanted to access my money so I went to the bank, ehn ehn at the entrance, I was trying to climb the steps at this UBA entrance and I slipped off the floor it was in the hospital I woke up again. So, there are some places I have decided I won’t even go again. You see, what I do now is to give cheque to someone to collect money for me when I need money” P8

The above quote revealed that the participant injured himself during an attempt to navigate his way through the stairs of a public facility. The experience instilled in the participant fear avoidance behavior which made him to avoid going to the banking hall for financial transactions.

This category is discussed further with categories relating to transportation system, work environment physical accessibility, assistive device and technology enabled access to home and community

- **Transportation system negatively influences involvement in daily occupation**

This subcategory is representative of the participants’ description of restriction in participation capacity due to transportation facilities/systems. The participants revealed that their inability to use and access public transportation facilities limit their capacity to be involved in life situation such as attending religious gatherings and attending rehabilitation services needed to improve their functioning. One participant conveyed this by saying:

“To take a bike around is difficult, we don’t have a car in my house and public transport doesn’t get to our area. I am struggling to feed and to even pay for treatment, how will I get money to charter taxis to take me around?” P2

The above quote revealed that the unavailability of public transport facilities within the participant’s immediate environment compounded the difficulty she experienced in getting involved in community activities. Similarly, participants indicated that the cost of chartering a vehicle for

personal use was unaffordable for most stroke survivors in communities/areas where public transportation is not available. This, they said restrict their participation. A participant revealed this by saying:

“Although the distance from this your department for a person with no personal car and someone like me that can’t take bike here is much, having public shuttle like a taxi to move people round the hospital will make people want to come for treatment because when the cost of transportation when using chartered taxis is too much, someone like me will not come regularly due to money” P4

Attitudes of public transport drivers and sometimes commuters were also revealed to be contributory to the challenges participants experienced when accessing public transportation. One participant indicated this by saying:

“The attitude of those taxi drivers and conductors is also something else. It seems as if everybody in this country is in a hurry to get. Some will not even pick you cos you will be slowing them down.” P1

- **Physical environment of the workplace hinders participation at work**

This subcategory describes the barriers created by the physical environments when participants were re-engaging at work. Most of the participants indicated that navigating the physical environment was challenging due to physical barriers that restrict their movement. One participant captured this by saying:

“At the bursary [bursary department where the participant works], it was like going from frying pan to fire initially because the bursary was at the fourth floor of the building and the lift was not working, after the transfer I practically fainted when I tried to resume at the unit” P6

The above quote revealed that the participant struggled with his work role after he was transferred to a new work unit. The struggle arose as a result of the inoperative lift system installed at his new work environment which now required him to climb the stairs to the fourth floor to get to his office. In the same vein, another participant indicated that the unavailability of an elevator in his workplace caused him to stay away from attending meetings at work. He described this by saying:

“so there is a place where we have our meetings, that’s faculty meetings, since 2009, I have never attended faculty meeting because it is at the 3rd floor and it is so high that it is not just straining myself physically even the heart, if I climb that distance up, I had to rest, I have tried it anyway, I know that even the first floor of that building is not easy to climb talk less of the upper most floor. So, I didn’t attend faculty meetings at all” P8

The distance to the workplace was similarly indicated by other participants to restrict their re-engagement in previous or new work roles. One participant described that he resigned from his sabbatical position after the stroke event even though he had recovered basic skills required to do his job due to distance. He explained this by saying:

“by the time I finished I was on sabbatical leave in Ondo state, driving to and fro, I know it wouldn’t work for me so I decided to forgo the part of my sabbatical leave so I was told to stay at home to get fully recovered ...because the distance from home to work by the time I drive 12-15mins I get to work. Not like when I was in Ondo state that I had to travel almost 1hr plus. They didn’t know what could happen”

P5

The above subcategory pointed out that stroke survivors experienced physical barriers within the workplace which limited their involvement in work related activities.

- **Use of assistive devices and technologies facilitate access within the environment**

In this subcategory, participants described the influence of assistive technology and devices on participation. In order to overcome the barriers to participation and task performance posed by stroke symptoms and some environmental factors, the participants revealed that they made use of assistive devices and technologies such as computer apps and walking frames. Most of the participants further indicated that structural changes were made to their immediate home environment to enable easy access/participation. The quote below by one of the participants captured this:

“...that walking has improved a little bit now that I now use a walking stick instead of waiting for people to assist me through those step cases, you see, though it takes time to climb ehm but at least its better” P8

Another participant revealed that he secured a loan from a cooperative society to make structural changes to his house for easy access. He disclosed this by saying:

“When I eh, the topography of my compound wouldn’t allow me to move easily, it was undulating and I had fell twice while walking, you see my brother, I went to progressive, please give me part of my money as loan, since I still have a job with OAU. I called bricklayers and carpenters, do this do that and they leveled it for me. I can walk better without fear there later. P6

To address problems with the use of public transport access, one of the participants indicated that he uses travel apps to link up with drivers to convey him around town. He further indicated that even though it was more expensive than the normal public transport, it was affordable and more comfortable for him. He conveyed this by saying:

“Whenever I’m in Ibadan or Lagos, you see when there is no one to take me around it is uber and oga taxi that takes me around o. Assuming something like that is available in Osogbo, life would have been easier... the cost may be much but looking at it, the comfort and ease it is better; at least I will say I can afford it for now.”

P4

The above subcategory lays credence to the notion that the use of assistive devices coupled with structural changes to immediate environment facilitated improved access within the community and involvement of participants in life situations.

5.3.2.2.2 Support network within the environment influences participation in occupational role

This category conveys the participants’ description of the influence of a supportive environment on their activity performance and participation. Participants revealed that support was a prominent deciding factor towards reintegrating into the community after the stroke event. One participant indicated this by stating:

“well, I can say if not for the support I received at work, it might have been difficult to still be at work. I once contemplated retiring when I was sick and at home for almost six months but the first thing was that people at work encouraged me.”

P6

The above quote revealed that the workplace support provided for the participants discouraged him from resigning from his job. Similarly, another participant indicated that surviving the aftermath of stroke would be difficult without the support of family and friends. He conveyed this by saying:

“I can’t imagine how a person will survive what I have gone through without encouragement from family and friends”. P7

The subsequent subcategories are discussed based on the support network described by participants.

- **Support from families and friends enhances participation at work**

This subcategory describes the support participants received from their families and friends which enhanced their community reintegration. Most of the participants described that their health status would have been worse without the assistance provided by their immediate family during and after the stroke event. One participant explained this by saying:

“Well, my family too, my brothers, sisters all contributed because if not for them I would not have been in Ife, so they ran helter-skelter [hurriedly]. My church also because when this thing happened if not because they took steps to bring me here the situation could have been worse” P1

The participant further indicated that his family encouraged him to participate in activities. He revealed this by saying:

“It was even my family that encourage me, that geared me to do things. P1”

Another participant indicated that support from family members and friends in the form of motivation was germane for recovery after stroke. He explained this by saying:

“And also, well I believe one of the things people require is motivation, especially from people around one, you see family members, friends and even those at work. When such thing happens people should not leave them to their fate, instead encourage them, by visiting them not necessarily financial assistance. By the time they do that they will be better and willing to go back to work but if it is the reverse then it may create an additional burden. Which will add more to his personal problem. P6”

- **Workplace support enhances participation in work tasks**

Participants in this study described that the support they received from the work environment facilitated their participation at work. One of the participants indicated that the support he received from his colleagues and administrative head helped him with the classes he lectures. He revealed this by saying:

“my HOD then said it would be stressful for me to teach more than that and I know it was, so I was able to handle that course, thank God and then my colleagues also supported me in the practical area particularly to help me” P8

Another participant indicated that his workload was reduced which enabled him to gradually fit into his job after the stroke incidence. He described by saying:

“They have been very, even when I attempted to go back there, they did not give me much work to do. Most of them volunteered to do the work for me, this has helped me a lot to stabilise. P3”

Absence of workplace support was disclosed to worsen the state of health and recovery of stroke survivors. A participant narrated that she was transferred to a remote community by her employer after the stroke incidence and subsequently deprived of a year salary. She revealed that the action of her employer worsen her condition and hindered her recovery. She explained this with the quote below:

“where I worked I was cheated, and treated badly. They did not pay me for two years and I was transferred to a remote village to work. Although, it is not a permanent job... but they did not pay for over two years. It was federal government that employed us, federal teacher’s scheme it was why I became more sick that they paid a year salary. Up till now, I haven’t collected it because I don’t know where the money is hanging”P1

The above subcategory lays credence to the influence of supportive work environment to work participation after experiencing stroke.

- **The negative attitude of people to disability and stigma hindered participation.**

This subcategory represents the participants’ description of peoples’ negative attitude towards them after the stroke incidence. Participants revealed that negative attitude from people

discouraged them from getting involved in some activities and community integration. One participant described this by saying:

“You see just like I said before, some people thought I was even bedridden. I can remember a friend telling people that he is now handicap. All sort of stigma I didn’t like it, so I decided to stay within my confinement until I was okay.” P5

The above quote revealed that the negative comments from workplace colleagues discouraged the participant from social interaction.

Another participant indicated that people within the community often times abandon and run away from stroke survivors due to the assistance the survivor might require from them. She narrated this experience by saying:

“Without all of this, most people that are poor are suffering in silence with this kind of disease and people in the community often run from us because, they know you will want to request for their help one way or the other so they run” P2

In order to avoid negative comments from people, one participant indicated that some stroke survivors with walking difficulty might be discouraged from participating in communal activities. He described this by saying:

“There are some severe cases with improper movement. That may prevent return to work because of the way people will look at one, one may decide not to even go out, when I was still struggling with a stick, then I was walking with a stick, you see the way some people look at me and utter comments was discouraging but I did not care I knew what I want, everyone can’t be like that you know.” P6

The above category, supportive network within the environment shows that participants’ community reintegration could be significantly influenced by the support system available with the society.

5.3.2.2.3 Challenges related to the health and labor systems and services in the environment

This category presents the participants’ experiences with health and labor systems in their respective environment. Participants expressed that the cost of rehabilitation and inadequate rehabilitation facilities hinder their recovery of function and eventual community reintegration.

Also, participants described the role of the availability of disability benefits and health insurance scheme in navigating the health system for rehabilitation service. One participant captured this experience in his quote by saying:

“it’s like the hospital I was taken to in Ibadan (hospital) was supposed to give me first aid treatment but they said because I’m using NHIS it can’t cover the payment so they debated till the following day before the church rushed me to the church hospital in Iwo where I was given some treatment” P1

The above quote revealed that emergency treatment was not provided for the participant even though he was covered by a health insurance scheme. This, the participant later described to have hindered his quick recovery.

In a similar vein, one participant indicated that she was denied her salary arrears entitlement after the stroke event by her employer. She further described that this absence of financial benefits limited her capability to access a good health facility for her rehabilitation. She explained this by saying:

“where I worked I was cheated, and treated badly. They did not pay me for two years and I was transferred to a remote village to work... ...It was federal government that employed us, federal teacher’s scheme it was why I became more sick that they paid a year salary. Up till now, I haven’t collected it because I don’t know where the money is hanging, I wrote different letter to this effect but no response. P2

The above categories is further discussed with subcategories relating to cost of treatment; inadequate rehabilitation facilities and; disability benefits and health insurance.

- **An increase in cost of treatment obstructs access of rehabilitation service**

In this subcategory, participants described how the cost of treatment and financial constraint influence their access to rehabilitation services and eventual community reintegration. One participant revealed that the cost of treatment made him to skip OT appointments in order not to quickly exhaust the money he deposited for treatment. He explained this by saying:

“I have not faced any challenge so far. I am content with the treatment except for the money that is involved, which is a little bit on the high side; you see I just have

to tell you this, I had to be spacing my coming here to OT so as not to run out the money I paid quickly” P4

On the contrary, a participant indicated that cost of treatment was affordable for him. He however indicated that procuring assistive devices prescribed for stroke survivors might be difficult due to the high cost of such devices. He revealed this by saying:

“Haa! it’s not so expensive, no[t] much money, unless you just want to put something on your hand or on your leg, but you have to buy that is when the price is too much. The prices of those devices are too much, any poor person on the street will not be able to buy them” P3

Another participant indicated that although she could afford her treatment bills, she was however unable to buy the assistive device that was recommended for her. She described this by saying:

“the cost of some of the things that we are to buy are on the high side if they can reduce the money because people are suffering and there is no money out there. For instance, like that splint for my hand and leg, that I was told to use on the hand and leg, if the cost could be reduced, then I will be able to afford it” P2

Absence of rehabilitation services in hospitals within the communities where some of the participants resides made them to seek for out of pocket private care. They indicated that it placed a huge financial burden on them coupled with the fact that some of them were out of work. One participant indicated this by saying:

“Another alternative is to get someone to come around to treat me at home and that is a little bit on the high side. I don’t have a job now, I work privately, how do I take care of my home and still pay for such service, what a person will pay for a month is what a private person will collect for a week or even 2 days. I can’t afford it and most people may not” P1

The above subcategory points out that the participant’s navigation of rehabilitation services to improve health/enhance recovery was challenging due to the high cost of some of the services.

- **Inadequate availability of rehabilitation resources in negatively affects participation in occupational roles**

Participants described that their inability to access good and quality rehabilitation intervention delayed their recovery and their involvement in everyday activities. Most participants were of the opinion that the unavailability of rehabilitation professions such as OTs and PTs in hospitals within their communities hindered the holistic rehabilitation of stroke survivors that subsequently delayed recovery. One participant captured this description by stating:

“Not that there is no hospital where I stay but there are no personnel with requisite skills to deal with such in the clinic. Why have a hospital building where personnel to work are not available... ..You see, it is here that I got to know that there are occupational therapist that may come in to make me better like the physios. There is even no PT that have heard about before now, not to now talk of occupational therapy” P1

In order to obtain quality rehabilitation intervention, some participants indicated that they travelled to urban centers to live with family members which increased the cost of care and placed financial constraint on them. One participant described this by saying:

“when I was discharged the only thing left was for me to go for physiotherapy treatment and my family said no one will be taking me from Iwo to Ife that I should come to Ife, that is why I am here... ..I had to move here to where I can obtain treatment to get better even though it’s challenging. Where I’m staying you see where I live, I won’t be able to get this kind of treatment there so I had to move here” P4

Most of the participants were of the opinion that having an unmitigated treatment on daily basis would improve their recovery rate. One participant described that he spent less time focussing on rehabilitation during the week due to dearth of rehabilitation practitioners. This, he revealed made it difficult for him to quickly reintegrate back to the community. He said:

“...hmm the only barrier we have is that the physiotherapists are not enough, I think we can be doing it like two times a week but they give you once in a week or even 15 days which is too far, I should have been better than this.” P3

Some of the participants indicated that equipment that were needed to carry out rehabilitation intervention in most of the rehabilitation centres are either obsolete, non-functional or lacking. One participant captured this in the quote below by saying:

“because there was a machine they were supposed to use for me then but it is down, like in that aspect government should not have allowed such a thing to happen because people are facing this challenge day by day and all these tools and machines they need to help people should not be malfunctioning” P8

Access to good and quality rehabilitation intervention as revealed by participants in this subcategory influences the recovery and participation capacity of stroke survivors.

- **Access to medical insurance, sick leave and disability benefit at work hinders participation in rehabilitation**

Access to health insurance as well as the provision of sick leave for participants at the workplace was indicated to facilitate stroke survivors’ participation in rehabilitation service. One participants revealed that he was given sick leave covering up to a year to attend to his health. This, he explained helped him focus on his rehabilitation. He described this with the excerpt below:

...the University tried to give me leave to be away to take of my health, I think they called it sick leave or so, I was away for so many months... with it I could focus on my health, on getting better. P8

Most of the participants indicated that financial assistance provision in the form of salary or allowance to stroke survivors whenever incidence like this prevents people from working will go a long way to facilitate adherence/compliance with treatment and rehabilitation. One participant described this by stating:

“A person struggling to eat needs money assistance to even pay for treatment. for me now, if they can add that to the treatment, it will go a long way.” P4

Another participant revealed that financial assistance in the form of sick leave allowance allowed him to comply with rehabilitation appointment which eventually assisted his recovery. He disclosed this in the excerpt below:

“Like myself, I always like to be frequent at clinic, I don’t miss appointment, Okay, unlike someone, that someone, money is the cause, God shouldn’t slap my mouth o, hadn’t been I didn’t see money, I don’t think I could be like this” P6

Similarly, being on health insurance was indicated by participants to facilitate compliance with rehabilitation appointments as an individual who suffered a stroke only need to pay ten percent of the treatment bills. One participant described this by saying:

“but with the previous ones, previous insurance it really helped to foot the bill, I only had to pay 10% of the bills which is better for anyone that is out of job or working part time, with it I don’t miss appointment” P1

Having access to health insurance, sick leave and financial assistance in the form of disability benefits as revealed by participants enhances participation in rehabilitation and community reintegration.

5.3.2.3 Theme 3: Factors influencing return to work of stroke survivors

<p>Theme:</p> <p>Factors influencing return to work of stroke survivors</p>	<p>Categories:</p> <ul style="list-style-type: none"> • Recovery of functional abilities will make one return to work • Self-determination to take responsibility for ones’ self and return to work
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The theme is representative of participants’ description of factors that aided return to work after stroke. Participants indicated that improvement in their health condition as well as recovery of functional abilities was an enabler to the resumption of their worker role. One participant indicated that he was able to resume at work due to the fact that he fully recovered his functional abilities almost immediately after the stroke incidence. He described this by stating:

“I was able to resume at work because I recovered fully from the stroke early, yes almost immediately; for persons that can’t do those things they use to do before, it might be difficult to resume work” P5

The theme “factors influencing return to work” is discussed with the foregoing categories: recovery of functional abilities enhances an individual’s ability to return to work and self-determination to return to work.

5.3.2.3.1 Recovery of functional abilities will make one return to work

In this category, the participants described that the recovery of functional abilities will enable them to return to work. The participants pointed out that the recovery process was gradual and was facilitated by rehabilitation intervention. One participant described that he got back to work after he recovered a bit and realized that his health was no longer a problem. He indicated this in the quote below:

“When I recovered a bit and I realized it was not problem, I had to go because I also needed the money. It was not yet time for me to retire.” P6

Another participant revealed that he is waiting to see an improvement in his health before he resumes work. He described this by saying:

“...the weakness I experience in my body has not been helpful. So for now I want to see an improvement in my health before venturing into anything. It’s improving, when it gets better, I will resume.” P4

Similarly, some participants indicated that the severity of impairments they experienced deterred them from contemplating the resumption of their worker role. One participant described this by stating:

“There are some severe cases with improper movement. That may prevent return to work. And like I said if one is demoralized and it affects a part of one’s body permanently or severely it may also prevent going back to work” P5

The above quote revealed that the severity of stroke and its consequences on functional capacity could hinder return to work of stroke survivors.

This category is further explained with the following subcategories: getting better is a gradual recovery process; rehabilitation intervention helps with getting better delay experienced with accessing rehabilitation services worsen condition; and; workplace-directed intervention create an ease for them to return to the workplace.

- **Getting better is a gradual recovery process**

In this subcategory, participants indicated that their recovery was a gradual process that entailed diligence and commitment to treatment and adherence to instructions provided by the rehabilitation specialist. One of the participants revealed this by saying:

You know it happens gradually, it is a gradual process to get out of this and to get use to it but for now I thank God, the recovery has been gradual and it requires commitment and determination P1

Another participant indicated that he would have preferred to have an instant cure for the loss of motor function in his hand as compared to the gradual recovery process which appeared too slow for him. He explained this in the quote below:

“...but I don’t know what happened to this hand it appears as if the recovery time is very slow compare to the leg, it’s very very slow. that’s the thing I don’t understand definitely with time it will get better, this gradual process is not good, assuming it could be cured instantly it would have been better” P3

Similarly, another participant revealed that the sequelae of stroke takes time to clear and requires patience/perseverance on the part of its survivor for recovery of function to happen. He indicated this in the excerpt below:

“...but this stroke, it takes time, one needs to be patient and when I do what I’m told, I will get better” P5

The above subcategory points out that recovery of function after stroke is a gradual process that requires commitment from the stroke survivors in the form of adherence to therapy.

- **Rehabilitation intervention helps with getting better**

This subcategory represents participants’ description of therapeutic interventions that aided their recovery. Participants indicated that they were engaged in various treatments to reduce the sequelae of stroke and improve their functional capacity. One participant described this by saying:

“So, because I attended OT and [the] physio clinic, they really helped me to think otherwise and to do otherwise. Using my leg to walk, my hand to move things and all that wasn’t easy ehn with the drug they gave me. All the drugs they couldn’t help

me, but because I was motivated by O.T and Physio, to do things I think I could not do, it helps so with them it was possible” P8

In the above quote, the participant revealed the therapeutic interventions from the occupational and physical therapy motivated him to perform tasks which medications could not help with. Another participant indicated that she purposely started attending occupational therapy to enable her to teach again. She described this in the quote below:

“that is why I have been going to the hospital. To physio and I started OT purposely for this to help me to be able to teach again. So it is one of the steps I am taking now” P2

Another participant described that the severity of his speech impairment made him to seek the service of the speech therapist. He further revealed that the treatment he got under a few weeks transformed his speech and made it better. He described this by saying:

“You know I said then that if it were before you wouldn’t hear whatever I’m saying, hmmm, it was that serious then, you see the few weeks I spent with the speech people eh transformed and changed everything, my talking became better and better.”

P7

Some of the participants indicated that rehabilitation helped them in performing basic daily tasks and to return to work. One participant revealed this by saying:

“Without this rehabilitation I would have been unable to walk not to now even talk that I want to resume back at work”. P6

- **Delay experienced in accessing rehabilitation services worsens conditions thereby limiting RTW**

Under this subcategory, participants provided descriptions of how the delays they experienced with accessing rehabilitation services influence their recovery and eventual return to work. One participant revealed this by stating that:

“haa! the treatment is good o, assuming they attended to me like this immediately it happened, I will not be in this situation, my condition would have been better than this. I would have been working by now” P3

In the quote above, the participants attributed his inability to resume at work to lack of access to good treatment like he currently gets/enjoy. Similarly, some participants attributed the worsening of their health condition to a delay in experience in accessing emergency stroke treatment. One participant described this by saying:

“the hospital staff did not attend to me, they kept contemplating on the insurance cover till morning, before the church rushed me to the elsewhere [another hospital] where I was given some treatment, they did nothing during the period which worsen my condition” P1

Most participants indicated that not having competent people to attend to stroke survivors after the incidents impedes recovery and return to work. The quote below by a participant captures this narrative:

“well, it has not affected me that much because I am able to rescue it on time; I attended to it on time so what most people experienced because they did not go to the hospital for competent people to see to their health, did not actually happened to me” P7

- **Workplace-directed intervention create an ease for survivors to return to the workplace after a stroke**

Participants indicated that it became easier to integrate into the workplace when the interventions were directed at the work and work environment. One participant described that his work became easier after making changes to his work routine by conducting lectures in his office and a laboratory close to his office. He described this by saying:

“I couldn’t go to the general studio, so we had to devise another means, I had to take my lectures in my office, you see with that it now became easier for me to teach the students in my office and the scenography room close by” P8

Most of the participants revealed that in order to enable them to return to work, their workload was reduced. One participant described this in the excerpt below:

“Where I was before the stroke happened, they did not even give me any typing job to do, any work that I have, my friends in the same office will help me with it. I was

allowed to come to work two times a week to work, I will have to go to the clinic three days of the week during which I don't have to be at work". P6

The above quote revealed that the participant's workload was reduced and his work hours changed from full-time to part-time. Similarly, participants indicated that complex work tasks were simplified to enable them ease into the workplace. One participant captured this by stating:

"In OT, they tell me how to do things comfortably you know, they make it simple as if you are teaching a child and so most of those things now become easy to perform

P2

Participants further revealed that changes were made to their work physical environment to accommodate their functional capabilities. One participant described this by saying:

"...and I had to create another one for myself, so I created another toilet in the office which was better than what I was using then..." P8

The above subcategory lays credence to the need for workplace directed interventions which include but is not limited to work environment adaptation, workload reduction, work simplification and a change in work routine for stroke survivors when returning to work.

5.3.2.3.2 Self-determination to take responsibility for ones' self and return to work

In this category, the description of the stroke survivors' driving force to resume their worker role is presented. The participants indicated that they were determined not to allow the stroke event to control their lives but to accept and take responsibility for their recovery. One participant described this by saying:

"It would have affected and mess up my life totally but I didn't allow it." P6

The above participant further said that even though he had not recovered the functional use of his right hand, he went back to work so as to prevent the stroke from tying him down. He explained this in the excerpt below:

"What I did was that I don't allow it to tie me down, you see I was at home for 6months, cause they were magnanimous at my place of work to give me sick leave but when I was getting better and it remain only the hand, I went back to the office.

I was not doing anything in the office just to sit down just for an hour and go back home”. P6

One of the participants who is yet to resume work indicated he made the best use of himself to improve his functional skills. He described this by saying:

“But I have overcome that a little now. I am making the best use of myself. I make effort to get myself back to shape, to who I was prior to the stroke.” P3

The subsequent subcategories are used to describe other inherent/self-directed reasons which informed the participants’ decision to resume their worker role.

- **Boredom and loneliness geared survivors to resume work**

This subcategory is representative of the participants’ description of boredom and loneliness as a stimulus for resuming their worker role. One participant described that he would die of boredom if he decided to retire and not resume work after the stroke. He indicated this by saying:

“...I had to go because ... It was not yet time for me to retire. Even if I retire self, boredom will kill one at home.” P6

Another participant revealed that he was not used to being idle which made him to channel his effort to resume at work. This, the participant described in the quote below:

“I will say partially as I was brought up I didn’t like any situation I will be idle. Idleness means a lot to me. I hate it but when I was at home there’s little I can do.”
P5

Similarly, loneliness was identified by participants has a precipitating factor to their decision to resume work. One participant described this by saying:

“...so it is the thought of the condition, sometimes it is that thought that makes some people recover on time and resume what they were doing before. Because I did not like the way I was alone by myself that is why I still go out to see my boy to do some work.” P7

Even though the above participant was yet to fully recover from his functional abilities, the above quote revealed that the thought of his state of health disturbs him whenever he was alone by himself.

- **I need to work to meet financial obligations**

In this subcategory, participants indicated that in order to meet up with financial obligations, they had to resume their work or find an alternative means of income. One participant narrated this by saying:

“like I said then I needed the money and I was not willing to retire, not even with how pensioners are treated. Because of that I had to go back to work” P5

In the above quote, the participants indicated that he resumed back at work because he needed the money coupled with the fact that he wasn't ready to retire from his job. Similarly, another participant indicated that he was making effort to fully recover to enable him resume work as he had exhausted the compensation he got after the stroke incidence. He said:

“When I first had it, my boss was magnanimous to pay me off, which is hardly the case with private work. I have exhausted the money because when you keep spending and nothing is coming in, you will become broke. That is why I came here to get better, gain strength so I can do all those things I feel and want to do” P4

In order to take care of their health and meet family obligations, most participants indicated that they needed money which could only be available if they were working. Participants narrated this in the excerpts below:

“...there are instances that when I get to health center they will say buy this and that, I will get the money eh eh, but if there is no money, God knows, I thank God o so I needed the money to take care of myself and family, so I had to work” P6

“even if I don't want to work again, how will I survive without money? To meet family responsibilities and pay bills, I need money and you see without work, there is no money. There is little that my relative can do to assist me so going back to work is the only available option left for now.” P1

In summary, this theme reveals that the resumption of the worker role after a stroke is influenced by the recovery of functional abilities of the survivor which is a gradual process that may be hindered by hitches encountered when accessing rehabilitation services. Similarly, workplace directed

interventions was observed to create an ease for the survivor to resume work coupled with self-determination on the part of the participant to enhance his functional skills and return to work.

5.4 DISCUSSION

This chapter set out to answer the second and third objectives of the study which entailed obtaining baseline information on the impairments, activity limitation, participation restrictions that stroke survivors experienced and the formulation of performance objectives needed to develop a RTW programme for stroke survivor. Hence, the chapter explored the experiences of stroke survivors about the impairments, activity limitation, and participation restrictions after stroke and the factors that influences RTW of stroke survivors. In order to build a matrix of facts that apprise the design of the stroke RTW intervention programme, concept maps were used to organize data that was obtained from eight stroke survivors into a comprehensible visual format. Three themes that are deemed important when designing and developing a RTW intervention programme for stroke survivors emerged. The findings from the first theme revealed that “it was difficult to live with stroke” for the survivor. The difficulty arose as a result of the impairments experienced by the stroke survivors and the inability to perform familiar tasks which were revealed in the first “the loss of body function” and second “I can’t do one or two things” categories respectively. The experience of loss of body functions after stroke in the present study is consistent with findings from existing literature as survivors of stroke events are often left with impairments that significantly impact on their daily functioning (Salter, Hellings, Foley, & Teasell, 2008). The losses experienced by the participants were felt as skills deficits in the cognitive, speech, motor and sexual domains. The domains of functioning affected by stroke in the present cohort of respondents are similar to those identified in other national and international studies (Krishnan et al., 2017; Soeker & Olaoye, 2017; Hebert et al., 2016; Gillen, 2015; Akinyemi et al., 2014). For instance, majority of the participants in this study revealed that they had difficulty in the assimilation, memorization and recalling of information, as well as difficulty in focusing on tasks after the stroke. This is consistent with the report of Rand and colleagues who asserted that cognitive impairments occur in substantial portion of stroke survivors, affecting more than one third of stroke survivors at 3 and 12 months after stroke (Rand et al., 2009).

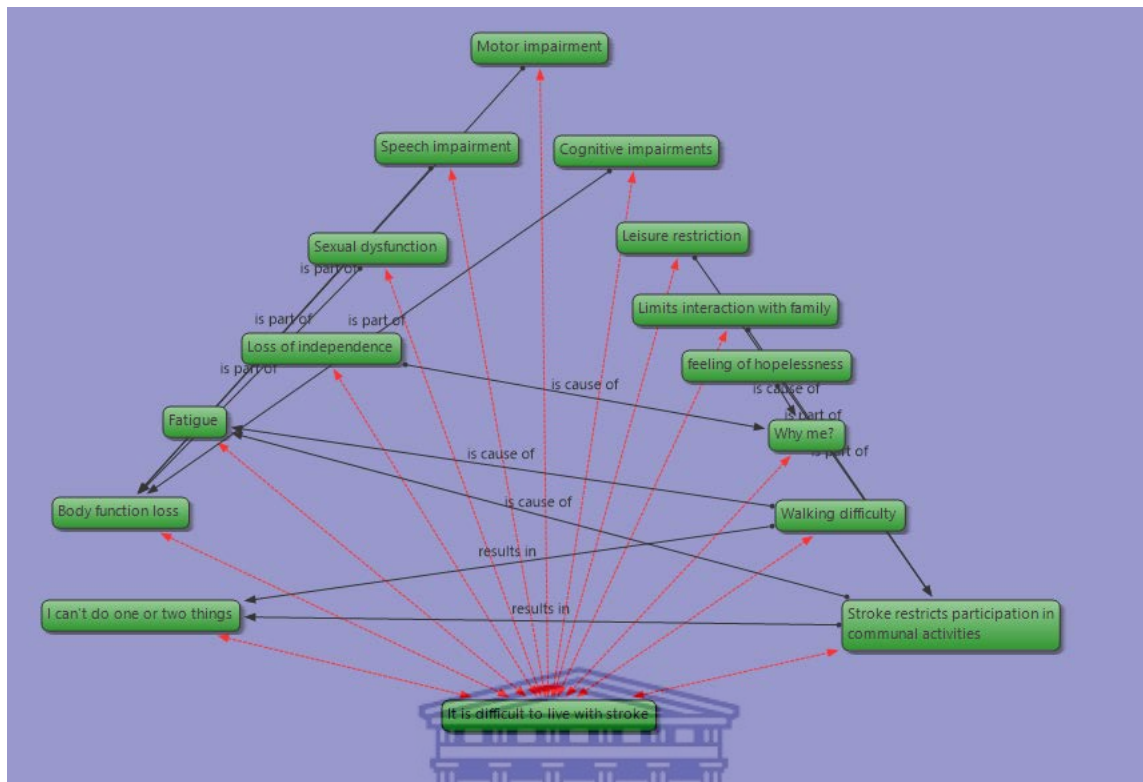


Figure 5. 1: Diagrammatic representation of theme one (It is difficult to live with stroke)

In the same vein, the participants indicated they had difficulty communicating with people as a result of loss of speech function after the stroke incidence. Gillen, Pendleton, and Schultz-Krohn (2006) posit that a stroke may result in a range of language or speech disorders. These disorders occur frequently in stroke survivors that had experienced a left hemispheric CVA. For instance, one participant with left hemispheric stroke indicated that he was incoherent in his speech and that the people he was addressing could not understand what he was saying. The foregoing situation or language disorder is congruent to what Gillen et al. (2006) describes as global aphasia which results from damage to the middle cerebral artery. The various functional skill deficits experienced by the participants after the stroke event resulted in an inability to carry out daily living activities as revealed in the category “I can’t do one or two things”. According to McKenna, Chen, Barrett, Chiaravalloti, and Goverover (2017), the majority of community-dwelling stroke survivors live with skill deficits that significantly compromise their functional mobility and independence in performing activities of daily living. From the findings of the present study and previous studies, stroke survivors experienced difficulty with walking and participating in communal activities such as leisure endeavors, societal roles and interaction with family and colleagues. These are important

domains of the activities and participation components of the WHO International Classification of Functioning, Disability and Health (Ganesh, Mohapatra, Mohanty, Pattnaik, & Mishra, 2017; Geyh et al., 2004; WHO, 2001). Likewise, one of the findings that emerged noticeably from the category “I can’t do one or two things” is the fear avoidance behavior exhibited by survivors that made them not to engage and participate in activities after the stroke. This fear avoidance conduct reinforced the survivors’ belief that they could not perform some tasks which significantly impact on their confidence (Walsh et al., 2017; Liu, Ng, Kwong, & Ng, 2015). Consequently, the stroke survivors responded emotionally to the vulnerability and changes they experienced after the stroke event with the query “why me?” As the stroke resulted in a loss of independence, stroke survivors felt hopeless and despaired about their situation. This finding was consistent with the report of Rimmer, Wang, and Smith (2008) which reported that more than a third of stroke survivors experienced a loss of independence (grooming, feeding, bathing communal activities) three months after a stroke event and felt hopeless 6 month post-stroke.

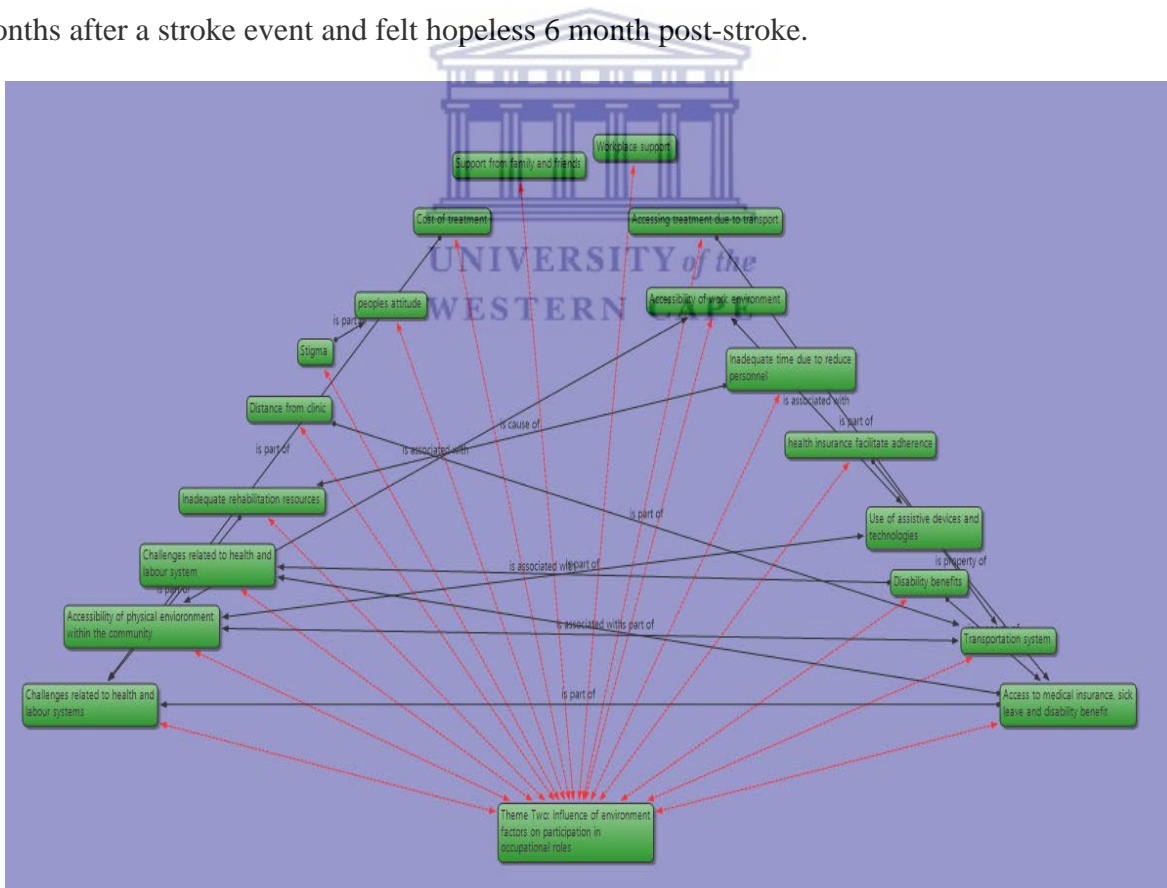


Figure 5. 2: Diagrammatic representation of theme two (the influence of environmental factors on occupational roles)

In a similar vein, Orchanian, Jamison, Atchison, and Dirette (2011) asserted that stroke survivor may experience a number of psychological changes, such as depression, irritability, low tolerance for stressful situations, fear and anxiety, and frustration after stroke. In the context of the present study, it could be argued that the inability of the participants to re-integrate into the community, live independently and fulfil expectations set by society may have reinforced the feeling of dependence, isolation and hopelessness that the stroke survivors experienced (Wood, Connelly, & Maly, 2010; Robison et al., 2009; Ch'Ng, French, & Mclean, 2008).

The second theme “the influence of environmental factors on occupational roles” revealed that the stroke survivors contended with various environmental factors in order to participate in previous or new role and tasks. Such environmental factors which include the physical environment, health and labour systems as well as support networks within the environment both positively and negatively influenced the participation capacity of stroke survivors. According to Hammel et al. (2015), environmental factors could hinder or facilitate full participation as much or more than individual impairment or function after stroke. Admittedly, the influence of environmental factors on survivors’ participation in the current study is consistent with the assertion of Hammel et al. (2015). For instance, support network of families and friends aided participation of stroke survivors within the current study while stigma and physical barriers (such as uncovered man-hole and curvetts within the community) posed as threat to their participation in communal activities even after survivors had significantly recovered from the stroke sequelae. Although the labour systems and service in the form of access to medical insurance, sick leave and disability benefits facilitated participation, health systems and services in the form of inadequate availability of rehabilitation resources was observed to hinder participation in occupational roles. The various environmental factors identified from the current study coincided with the five categories of environmental factors (products and technology; natural environment and human made changes to environment; support and relations; attitudes; and services, systems, and policies) defined in the ICF framework as being capable of influencing the participation capacity of any individual after a disease condition. In order to enhance participation opportunities and control over participation in the community for individuals with acquired neurological disorders, Wong, and colleagues recommended the elimination of physical and policy barriers, enhancement of social participation, and increase of access to technology and assistive supports (Wong et al., 2017). From the above assertion and findings from the current study, rehabilitation intervention for managing stroke should not only

address impairments arising from stroke but also address environmental factors that could impact participation after experiencing a stroke.

The third theme “factors influencing return to work of stroke survivors” highlighted the various issues that directly impacted on the resumption of the worker role of the participants. Prominent among these factors were the recovery of functional abilities. The findings showed that the recovery of functional abilities enabled the stroke survivors to return to work. This is consistent with the study of Baseman, Fisher, Ward, and Bhattacharya (2010) as well as Morris (2011) who reported social integration after experiencing stroke (which was inclusive of work resumption) to be significantly associated with functional status and overall stroke recovery. Similarly, Hofgren, Björkdahl, Esbjörnsson, and Stibrant-Sunnerhagen (2007) assert that improvement in cognitive and neurological function facilitates the resumption of worker role after stroke. The recovery of function in this study was however pointed out to be a gradual process that was facilitated by rehabilitation intervention. This is consistent with the findings of Hawkins et al. (2017) who identified the initial stage of post-stroke recovery trajectories to involve a gradual process of meaningful recovery through which survivors create a new and meaningful life.

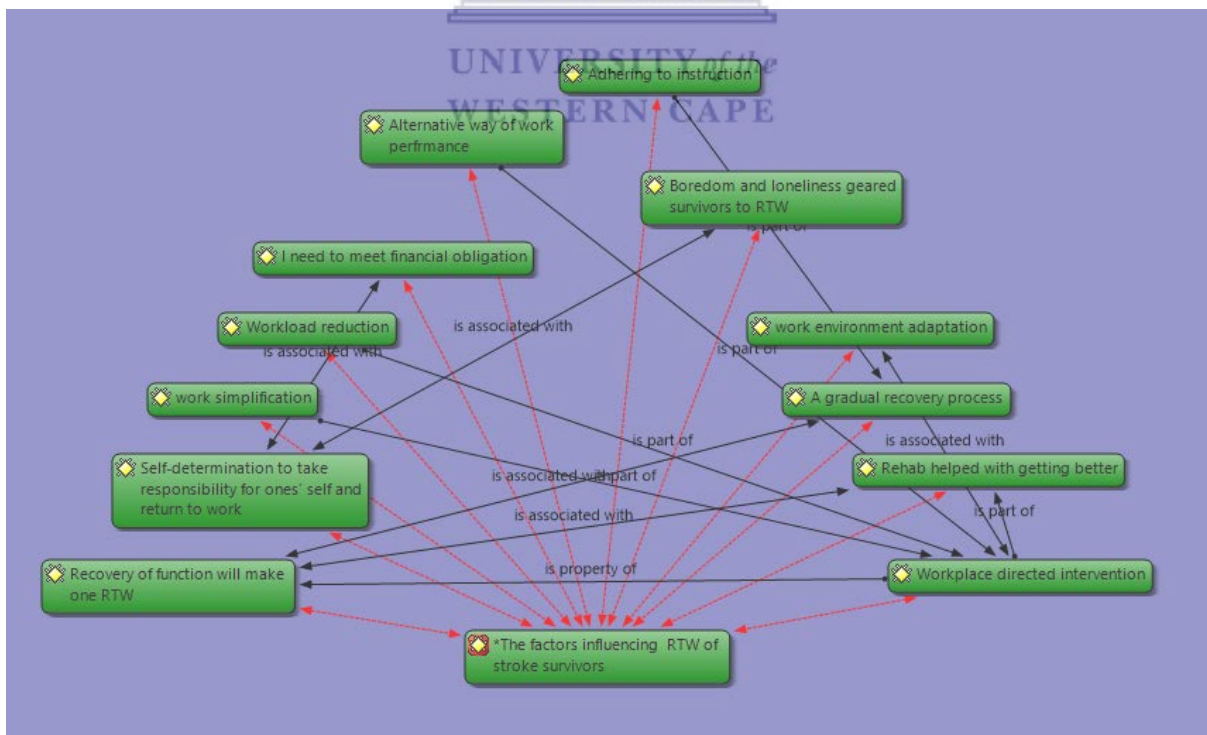


Figure 5. 3: Diagrammatic representation of theme three (the factors that influences return to work after stroke)

The gradual recovery was revealed to be marked by an initial disruption resulting from a delay experienced in accessing rehabilitation services. Rehabilitation interventions such as occupational therapy, physical therapy and vocational rehabilitation among others have been reported to improve recovery and return to work among stroke survivors (Langhorne, Bernhardt, & Kwakkel, 2011; Dohle et al., 2009). In the present study, rehabilitation services received by participants included interventions aimed at addressing the sequelae of stroke (such as PT, OT treatments) and workplace-directed interventions (such as work trials, alternative work placement and reasonable accommodation). The workplace directed interventions provided an ease for the stroke survivors to return to the workplace. This, corroborated the assertions of Medin, Barajas, and Ekberg (2006) as well as Friesen, Yassin, and Cooper (2001) who designated the workplace to be a critical factor for rehabilitation that is aimed at restoring the work ability of stroke survivors. The findings also support the position of the American Heart Association which stated that the holistic care for individuals with chronic conditions such as stroke survivors should address not only personal but also environmental factors that influence participation (Miller et al., 2010). It could be observed from this study that care directed towards a single domain (such as physical functioning or the work environment) may be too limited to deal effectively and comprehensively with the complex concept of work resumption after stroke.

Furthermore, the findings showed that the participants took responsibility for their recovery and determined to prevent the stroke event from controlling their lives. The need to meet financial obligations, fear of losing job as well boredom and loneliness were indicated to be motivating factors that geared the stroke survivors to take responsibility to return to work. Work motivation and a positive attitude to work was reported by Dekkers-Sánchez and colleagues as the most significant determining factor in returning people to work after long term sick leave (Dekkers-Sánchez, Wind, Sluiter, & Frings-Dresen, 2011). It could therefore be said that motivated stroke survivors had inherent positive attitudes to explore available options to achieve their goal of RTW return. The above findings further coincided with existing literature which revealed that rehabilitation interventions, when complemented by an employer's positive attitude, and the stroke survivor's self-determination to RTW leads to successful and sustained work resumption (Alaszewski et al., 2007; Koch, Egbert, Coeling, & Ayers, 2005; Lock, Jordan, Bryan, & Maxim, 2005).

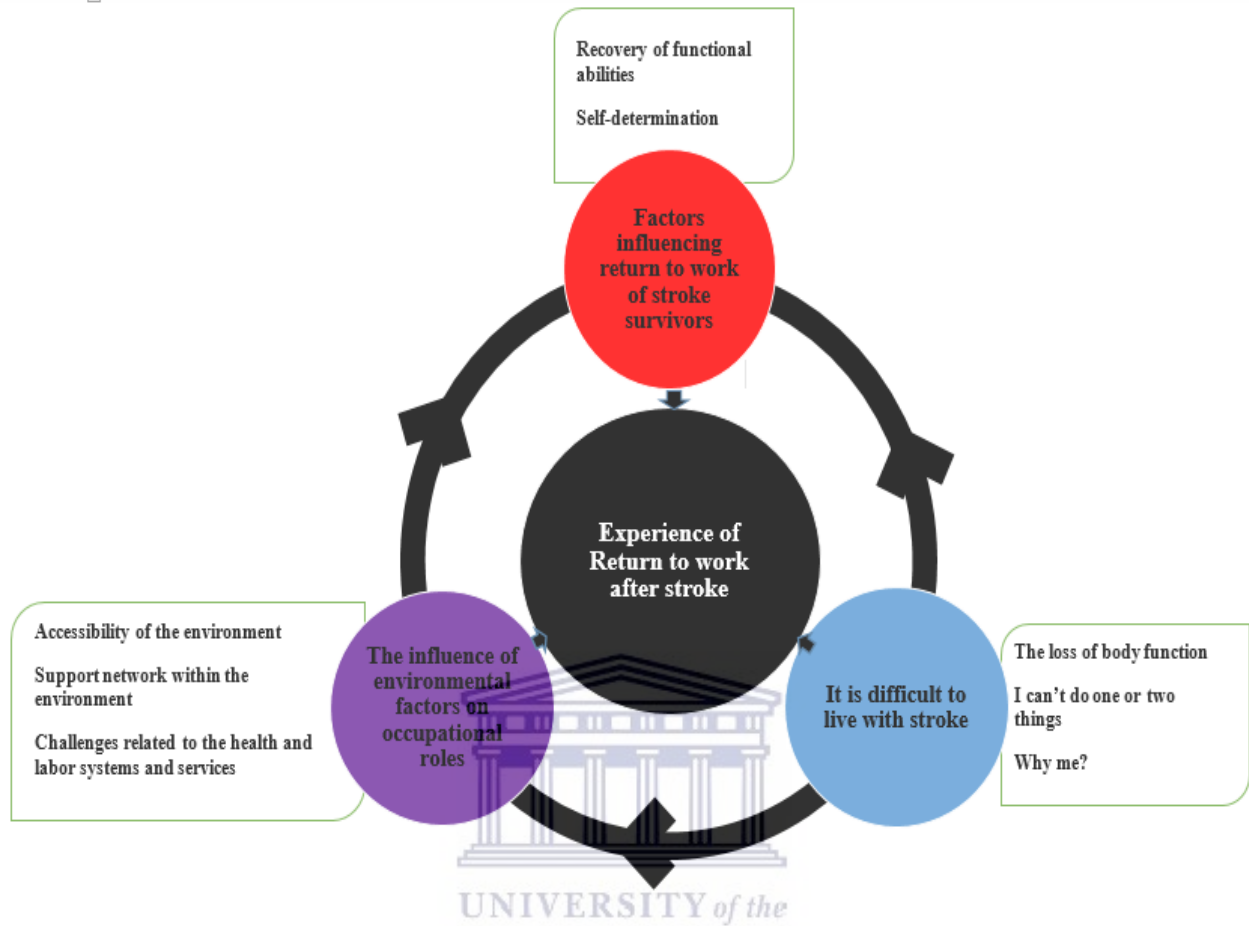


Figure 5. 4: Concept map of work disability experience after stroke

5.5 CONCEPT MAPS

Through the information that emerged from the current study, a matrix of three concepts maps was developed from the findings described above. The matrix consists of three circles that corresponded with the themes that emerged from the analysed results. The matrix is presented in figure 5.4. The circles are conceptualised as interacting with one another to produce the experience of living with a stroke and the perception of work resumption after the stroke by survivors. The derived concept map suggests that the experience of living with a stroke is a difficult phenomenon which is characterised by impairments (loss of body functions), limitation in activity performance (I can't do one or two things) and emotional concerns (why me?). The stroke survivors' environment was observed to either make or mar this experience as illustrated in the second circle. The third cycle represents the process and pathway through which work resumption after stroke was and could be achieved by the stroke survivors. The concepts map provides an overview of

what individuals go through after experiencing stroke and the various factors that influences their participation in occupational roles after stroke.

5.6 CONCLUSION

The current chapter emphasized the vital input obtained from the stroke survivors who will be the direct recipient of the proposed RTW intervention programme. It can be concluded that the lived experience of returning to work after stroke entailed three themes that was represented by a concept map. The first theme revealed that “it was difficult to live with stroke” for the survivor. The second theme revealed that the stroke survivors’ environment could either worsen or lessen the difficulty experience while the third theme highlighted the various issues that directly impacted on the resumption of worker role of the participants. The themes that emerged and presented with the concept maps served as a guide for the subsequent chapter where a scoping review was conducted to explore the content of return to work interventions for stroke survivors in existing literature.



CHAPTER SIX

METHODS AND STRATEGIES

6.1 INTRODUCTION

This chapter presents the results of the scoping review (phase II of the study) in an effort to answer the fourth objective of this research project. The fourth objective aimed to determine the content of return to work (RTW) interventions reported in literature for the stroke survivors. The review consisted of a search of nine databases and grey publications. In addition to a summary of the demographic characteristics of the studies reviewed, this chapter provides an in-depth description of synthesized findings on RTW interventions utilized or described by included studies. The chapter further discusses the synthesized findings with relevant theoretical assumptions.

6.2 METHODOLOGY

This phase of the study reviewed literature from studies that described strategies, models and programmes for returning stroke survivors to the workplace using Arksey and O'Malley's (2005) scoping review framework which was later reviewed by Joanna Briggs Institute (Peters et al., 2015). Scoping review provides an appropriate method for discovering and mapping information from fields with emerging evidence and paucity of randomized controlled trials in the area of vocational rehabilitation (Rumrill, Fitzgerald, & Merchant, 2010). For a scoping review to be used in summarizing evidence from different types of research studies, it must follow steps and procedures similar to those in systematic reviews. The five step process outlined by Arksey and O'Malley (2005); which include: i) identification of research question, ii) identification and selection of appropriate/relevant studies, iii) charting of the data iv) collation and reporting of results and v) consultation that could be optional was followed by the researcher during the review process to established rigor. Through these steps, empirical evidence was collated based on pre-determined criteria and data summarized using a systematic approach. Thus, the question, "what are the vocational rehabilitation (VR) programmes/strategies used in existing studies to facilitate RTW of stroke survivors?" guided this study.

In order to obtain theoretical clarity regarding the scoping review question, core terminology in the question were examined. This assisted the researcher in achieving the next step of the scoping review process that entailed creating key search terms and forming of inclusion and exclusion

criteria. The key terms that were extracted from the research question were: vocational rehabilitation, programmes, return to work and stroke survivors. The subsequent subsection describes the study population, inclusion and exclusion criteria, keywords as well as the data extraction strategy used for the scoping review.

6.2.1 Study Population and Sampling

The population of concern in a scoping review is an identified group of research studies rather than a group of people or individuals. The population for this review comprises of studies traversing an 11-year period from January 2007 to December 2017 with a primary focus on exploring RTW programmes for stroke survivors (vocational or work rehabilitation interventions, protocols and guidelines, etc.). The review duration was set at 11 years due to dearth of scholarship in the subject area. For the purpose of this review, studies were included using the following criteria.

6.2.1.1 Inclusion criteria

The inclusion criteria is discussed based on the foregoing: type of studies; types of participants and key concepts.

Types of studies: (a) all study designs including quantitative and qualitative articles as well as expert opinion papers and guidelines that described return to work strategies/ protocols (b) published in full and written in English Language; (c) published between January 2007 and December 2017.

Type of participants: (a) studies focusing on stroke survivors and studies that included stroke survivor within their sampled population. Priority was however given to intervention or experimental studies that were peer reviewed articles published in the last decade.

6.2.1.2 Exclusion Criteria

Studies were excluded from the review if they met the following criteria: Studies that that were published in a language other than English, or if they were articles that required payment for viewing. Studies that did not describe the vocational rehabilitation programme offered to participants were excluded from this review.

6.2.2 Data Collection process

The process through which data were collected for this phase of the study is conceptualized at three levels. These include: 1) key concepts and search terms, 2) database identification, and (3) search process.

6.2.2.1 Key concepts and search terms

The key concepts utilized in this study includes stroke, stroke survivor, vocational rehabilitation programme, and return to work. In order to ensure that studies were relevant in answering the scoping review questions, the meaning of the key concepts in the review questions were clarified while appropriate search terms and synonyms were generated for the concepts. The key concepts are explained below.

Stroke

Stroke as a concept domain is understood as an acquired brain injury resulting from a cerebrovascular accident or disease as defined by Sacco et al. (2013). To be included in the review, studies must have participants who have experienced a stroke event. The researcher included studies that conducted research on acquired brain injury as long as stroke survivors were present in the sample. The search terms used for stroke were: stroke, cerebrovascular accidents, cerebrovascular disease, CVD, CVA, acquired brain injury, ABI; brain injury, post stroke, hemiplegia and hemiparesis

Stroke survivor

Survivor as a concept refers to an individual who outlives or remain alive despite being exposed to a life-threatening phenomenon. The search term that was used to capture the concept of survivor include; survivor, patients, fighter and individual.

Vocational Rehabilitation

Vocational rehabilitation as a concept refers to interventions that assist an individual in accessing, maintaining or returning to employment or other useful occupation (Scottish Executive, 2007). This may be a specific programme of medical, psychological, social, physical, and/or occupational rehabilitation activities where the primary aim is to return the stroke survivor to work. The search term that was used to capture the concept of vocational rehabilitation were vocational rehabilitation, vocational rehab, vocational reintegration, vocational integration, vocational

recovery, vocational intervention, vocational training, vocational re-integration, work rehabilitation, work rehab, work reintegration, work re-integration, work integration, work recovery, work intervention, work training, occupational rehabilitation, occupational intervention, occupational medicine, supportive employment and VR.

Programme

This concept refers to a schedule or plan of action/procedures/interventions followed by an individual during VR. The search term used for programme are program*, strategies, procedure, intervention, treatment, protocol, therapy, process, method, and model

Return to work

Return to work as a concept is defined as returning to a vocation that is inclusive of employment, unpaid labor, leisure, unemployment, and retirement following a stroke. This is the primary outcome measure of VR programmes. Return to work was searched using the following search terms: return to work, RTW, return to job, back to work, return to employment, employment status, work status, work resumption, work absenteeism, sickness absence and sick leave.

6.2.2.2 General Search Strategies

The databases used to conduct the search were chosen based on the premise that they are central to social science research, health care interventions research and the topic of the research study. In consultation with a librarian, nine research databases which have links with the key concepts of the review were identified/ascertained. These databases include: Cochrane Library; Ebscohost (Academic Search Complete; CINAHL; Health Source {Nursing/Academic}; MEDLINE; and PsychArticle); and Ovid (AMED; EMBASE; PsychINFO). Databases were searched via the University of the Western Cape (UWC) and McMaster University library. Similarly, grey literature that provides documentation for vocational rehabilitation protocols and guidelines for stroke survivors such as Guideline central, Nexus, ProQuest, JobCentre Plus and National Institute for Health and Clinical Excellence (NICE) were searched using the methods posited by the Centre for Reviews and Dissemination (2009).

6.2.2.3 Search Process

The key terms and synonyms generated for the key terms were searched in each of the nine databases as either a keyword or a Medical subject heading. Boolean connectors “OR”, “AND”

and “NOT” were used to isolate potentially relevant articles. The Boolean operator “OR” was used to link up synonyms and related terms in each of the key concepts; “AND” was used to connect all of the key concepts together while “NOT” was used to exclude specific terms from being returned in the search. In this way, the search (the use of the Boolean operators) allowed the return of documents/literature with an overlap/interconnection of all of the key concepts in this review. The database searches were executed/carried out in June-August 2017. Due to the dearth of scholarship in the subject area, all research literature available in English language post- January 2007 was reviewed.

Using the inclusion and exclusion criteria, preliminary searches were conducted in each of the databases and website as an initial preview and screening of the literature. After the initial scan of the articles were retrieved from the searches, the search strategy was refined based on appropriate terms used in the databases. All of the databases (CINAHL, EMBASE, MEDLINE, and PsychINFO) allowed for keyword and subject heading searches for some terms except the AMED. When available, both keyword and subject heading searches were utilized. All studies or reports that described or tested RTW intervention (or one of its components) for stroke survivors were included. The detailed search results are provided and attached as Appendix 6.1. Following the completion of database searches; the titles, authors, years of publication, and abstracts were downloaded and extracted into excel spreadsheets to further sort through the articles that met the inclusion criteria for the review. All of the databases allowed for extraction of titles and abstracts into an excel spreadsheet (EMBASE, MEDLINE, and PsychINFO) except (CINAHL), which allowed for extraction of titles and abstracts in a Research Information System (RIS) format that is in the reference manager, Mendeley.

At the start of the review, the objective was to be as inclusive as possible. The researcher and research advisor independently assessed the titles and abstracts in relation to selection criteria determined by the relevance and worthiness of the study to the scoping review research question. The titles and abstracts were sorted into a “retain”, “unclear”, and “discard” folder through a collaborative effort of three reviewers; the researcher, supervisors and research advisor (first-level screening). This ensured credibility for the sorting of articles. For all of the articles that were retrieved and placed in the discard folder, the reasons for elimination ranges from “not describing the utilized intervention’ used to out rightly not having stroke survivors as the study population. For the articles whose title and abstract could not furnish sufficient evidence to apply the inclusion

and exclusion criteria (articles sorted into unclear an unclear folder), the full text were retrieved/downloaded and analyzed using inclusion and exclusion criteria screening procedure/techniques. Subsequently, the articles were re-categorized into the “retain” or “discard” folder. Similar procedures were conducted for the various databases and/or websites of grey literature. Once all included articles from the database and grey literature search were concluded, additional records were identified and supplemented through reference mining; the reference lists of included articles; until no new studies met the inclusion criteria. Consequently, all studies that passed the first-level screening were then appraised for relevancy in the field (second-level screening). The second level screening was conducted to ascertain if the study provided appropriate description of RTW intervention in the study and not assess the methodological quality of study.

6.2.3 Data Abstraction/Extraction and Charting

The information describing interventions for work integration in the various sets of research articles or grey literature were retrieved with a data extraction sheet. A preliminary data extraction sheet was drawn up based on the TIDieR checklist and guide (Hoffmann et al., 2014) and used to extract data from the first five studies by the researcher to examine if the extraction process was consistent with the research questions and the purpose of the review. The charting process was an iterative process in which the researcher continually updated the data-charting form. A final data extraction sheet was arrived at based on discussion and deliberation with supervisors and the research advisor. The detailed breakdown of the data abstraction sheet with the data of the final included articles is provided in Appendix 6.2. This form was built into excel spreadsheet to facilitate the coding of data. A log sheet was used and described the exact intervention components as presented by the included study authors. This aided the researchers in verifying if there was coherence in the definition of a core intervention components, and also in identifying the meaning of these components across different research approaches employed by included studies. It further allowed the researcher to conduct a logical analysis of the nature of interventions.

6.2.4 Data Synthesis/Analysis

The analysis of the reviewed data involved both descriptive numerical summary and thematic analysis as suggested by Peters et al. (2015). The descriptive summary included demographic characteristics of the study (such as year and country of publication, sample size, study design)

while the thematic analysis involved a meta-synthesis of identified/extracted RTW interventions provided to stroke survivors. As different bodies of research methodologies were pulled together in this review, the meta-synthesis approach proposed by Sandelowski and Barroso (2008) was chosen. The thematic analysis was an iterative process and was guided by the ICF framework. The number of included RTW interventions increased throughout the data analysis component.

6.3 RESULTS

6.3.1 Overview of Data Abstraction

After applying all inclusion and exclusion criteria, the nine database and grey literature searched yielded a total of 702 titles and abstracts with 268 abstracts selected for further review. Subsequently, 157 articles from the total abstract selected for further review were discarded while 110 articles and one clinical guideline were identified for full text review. Consequent to this, 32 articles and one clinical guideline were selected. The initial 157 articles were discarded due to the fact that stroke survivors were not included in the study population while the latter 68 articles were excluded because it did not describe the RTW intervention utilized within the study. Figure 6.1 provides a flowchart of included articles, removed duplicates, and outcomes of mined references leading to the total of thirty-three included articles for this review. An overview of the characteristics of included studies is presented in Table 6.1.

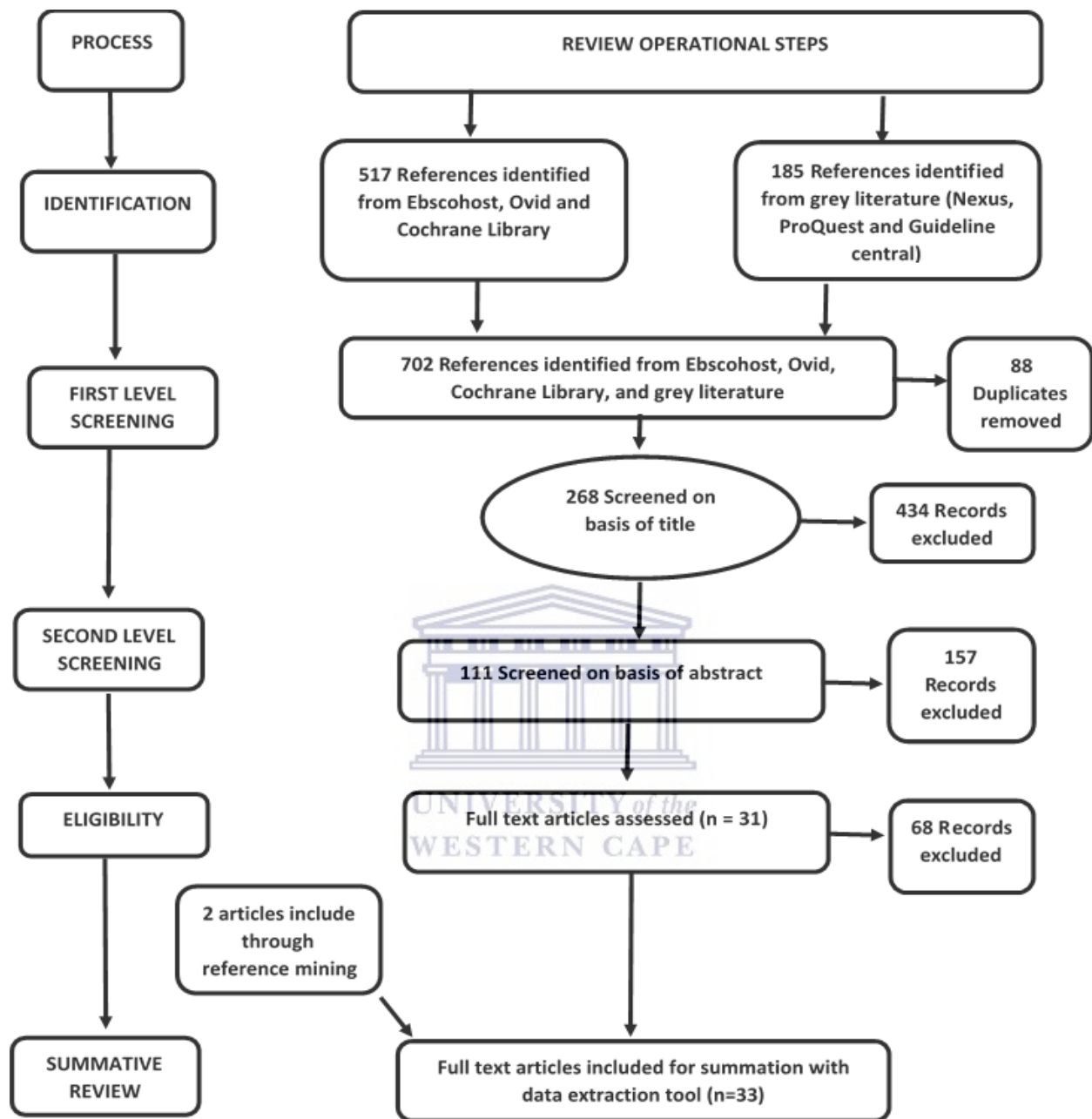


Figure 6. 1: Flowchart of Scoping Review Process

6.3.2 Characteristics of Included Study

The characteristics of included articles is described using the following sub-headings: authors; authors' location; authors and journals that articles are published as an indication of discipline; year of publication, year of data collection, and study site as well as methodological design.

6.3.2.1 Authors

The results of the review revealed that one hundred and nine diverse authors contributed to at least one of the 33 included studies. Among these, 9 authors in total were involved in more than one study. Eight of these authors; Lord, Ntseia, Olorunju, Ownsworth, Sluiter, van Aswegen, van Bennekom and van Velzen; contributed to two studies, while Frings-Dresen contributed to three studies. Of these, three authors, Ntseia, Ownsworth and van Velzen were the lead authors of the multiple studies they contributed to in this review. This analysis was conducted to identify foremost scholars working in the field of vocational rehabilitation of stroke survivors and draw links to understand the disciplinary and locale of where these studies are taking place.

6.3.2.2 Author's Location

The country of affiliation of the authors are presented in Figure 6.2. The authors had affiliation with institutions in eleven countries representing five of the continents of the world. Most of the authors had singular affiliation in a country with the exception of one author (Schonberger) who had affiliations with institutions in countries across two continents. However, many of the authors had more than one academic affiliation in their country.

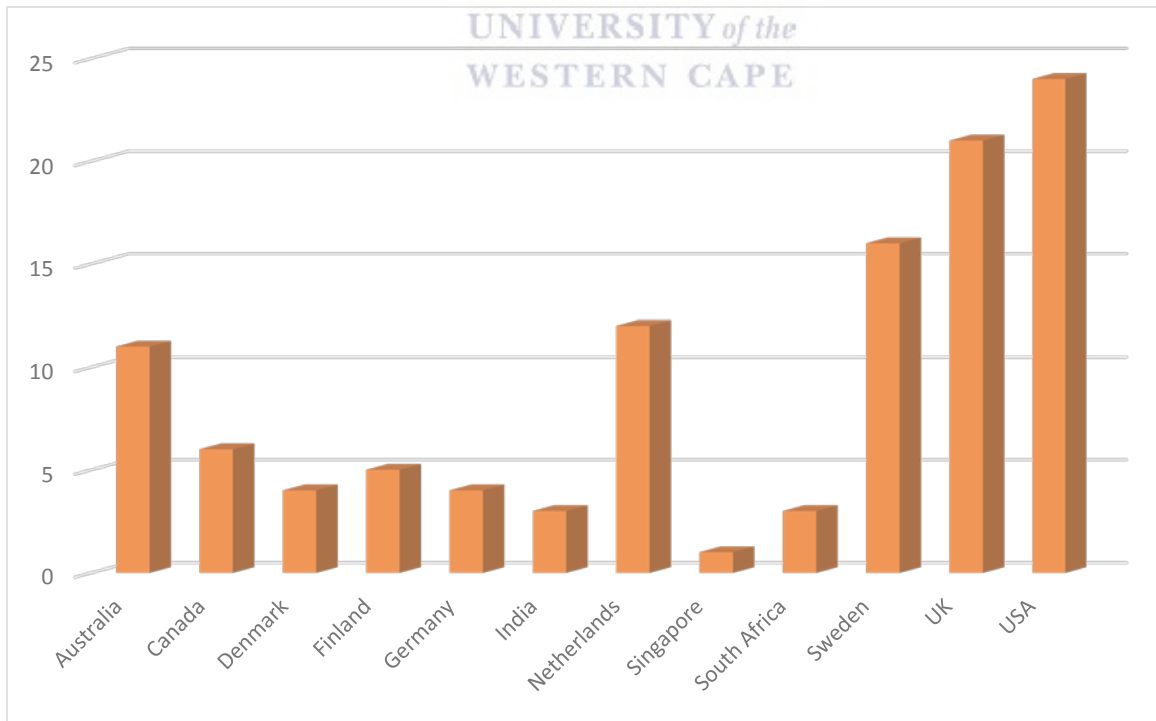


Figure 6. 2: Country of affiliation of authors

6.3.2.3 Authors and journals that articles are published as an indication of discipline

Through institutional and departmental affiliation of authors, fourteen academic disciplines to which authors were affiliated to was identified. This is summarized in figure 6.3. A large proportion of the authors have academic background in Occupational Therapy (20.2%), Neurorehabilitation (19.3) and Physical Medicine (18.3). Similarly, scrutiny of journals in which articles were published provided an understanding of the general field of study that are involved with vocational rehabilitation of stroke survivors. One of the study was a clinical guideline, thus journal related details was not available (NICE, 2015). Six of the studies were published in Brain Injury while Disability and Rehabilitation, Journal of Vocational Rehabilitation, and Work published three articles each. The journals in which article were published catered for audience interested in brain injury, occupational therapy, vocational rehabilitation, neurorehabilitation; even though most of the journals publish articles from wide range of health discipline. The summary of journals that published included articles is presented in table 6.2.

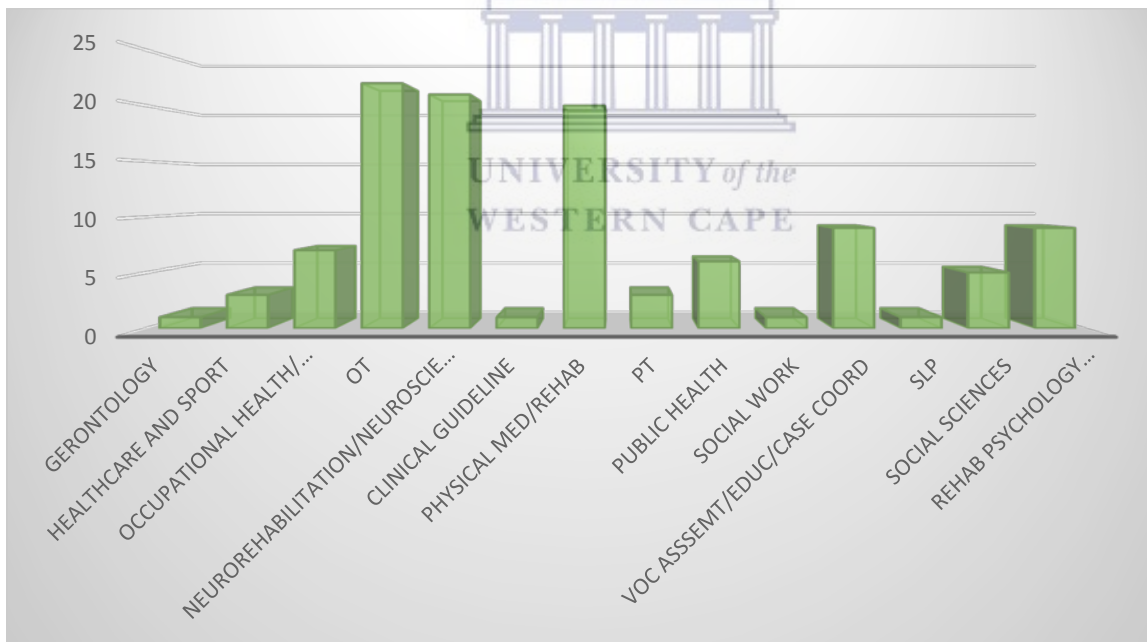


Figure 6. 3: Academic Disciplines of Authors

Table 6. 1: Characteristics of included studies

SN	Authors	Year	Title	Methodology design	Population	Outcome measures	Geographical location
1	Grigorovich; Stergiou-Kita; Damianakis; Le Dorze; Lemsy; and Hebert	2017	Persons with brain injury and employment supports: Long-term employment outcomes and use of community-based services	Descriptive mixed-method case study	ABI (stroke survivor; TBI); key Informants	In-depth interview; RTW status at 12 months Total hours worked	Canada
2	Materne; Lundqvist; and Strandberg	2017	Opportunities and barriers for successful return to work after acquired brain injury: A patient perspective	Qualitative descriptive case study	ABI (SS; TBI; Brain Tumor)	RTW status	Sweden
3	Nilsson; Eriksson; Johansson; and Hellman	2017	Experiences of the return to work process after stroke while participating in a person-centred rehabilitation programme	Qualitative Descriptive case study	Stroke: Stroke survivor	In-depth interview	Sweden

4	Schwarz; Claros-Salinas ; and Streibelt	2017	Meta-Synthesis of Qualitative Research on Facilitators and Barriers of Return to Work After Stroke	Qualitative (Review) meta synthesis	14 studies (3-very high, 7-high, 3-medium, 1-low quality)	Literature review (meta-synthesis)	Germany
5	Reunanen; Jarvikoski; Talvitie; Pyoria; Harkapaa	2016	Individualised home-based rehabilitation after stroke in eastern Finland – the client's perspective	Qualitative descriptive study	SS	In-depth interview	Finland
6	van Velzen; van Bennekom; van Dormolen; Sluiter; Frings-Dresen	2016	Evaluation of the implementation of the protocol of an early vocational rehabilitation intervention for people with acquired brain injury	Descriptive case report	Rehab professionals	Usability of protocol through questionnaire	Netherlands
7	Donker-Cools; Daams; Wind;	2015	Effective return-to-work interventions after acquired	Sytematic Review	studies (RCT; cohort)	Literature review	Netherlands

	and Frings-Dresen		brain injury: A systematic review				
8	Olivier, Duncan-Anderson, Mitchell, Etherington, and McGilloway	2015	Getting soldiers with brain injury back to work: the defence medical rehabilitation centre neurological vocational pathway	Descriptive Qualitative case report	Brain injury: Stroke, TBI	Functional capacity evaluation	UK
9	van Velzen, van Bennekom, Sluiter, and Frings-Dresen	2015	Early vocational rehabilitation after acquired brain injury: A structured and interdisciplinary approach	Descriptive case study/report	Not Applicable	Not indicated	Netherlands
10	Del Valle; Leahy; Sherman; Anderson; Tansey; and Schoen	2014	Promising best practices that lead to employment in vocational rehabilitation: Findings from a four-state multiple case study	Qualitative descriptive case study	(4 Dir, 25 VR leaders, 56 mid-level managers, 73 VR counselors)	In-depth interviews and focus group discussion	USA

11	Foy	2014	Long Term Efficacy of an Integrated Neurological and Vocational Rehabilitation Programme for Young Adults with Acquired Brain Injury	Cohort/ Longitudinal case study	ABI (TBI, stroke)	At baseline (admission) and 1 year post discharge Vocational outcome	UK
12	Grant; Radford; Sinclair and Walker	2014	Return to work after stroke: recording, measuring, and describing occupational therapy intervention	Descriptive study	SS	Occupational Therapy Content Analysis Proforma	UK
13	Killey; Gustafsson; and Hoyle	2014	Paths to Work after Stroke in Australia	Descriptive case report (Cross sectional survey)	Stroke survivor	RTW questionnaire Life satisfaction questionnaire (LiSat)	Australia
14	Ntsiea, Van Aswegen, Lord, and Olorunju	2014	The effect of a workplace intervention programme on RTW after stroke: A RCT	RCT	stroke survivors	A return to work questionnaire, Barthel index (BI); Modified Rivermead Mobility index (mRMI), Montreal cognitive assessment (MoCA), Stroke Specific Quality of Life Scale (SSQoL). Outcome measure	South Africa


						administered at baseline, 3months and six months follow up	
15	National Institute for Health and Care Excellence	2013	Stroke rehabilitation in adults	NA	Stroke	Not indicated	UK
16	Vestling; Ramel; and Iwarsson,	2013	Thoughts and experiences from returning to work after stroke	Qualitative Descriptive case study	Stroke survivors	In-depth interview	Sweden
17	Kolakowsky-Hayner; Wright; Shem; Medel; and Duong	2012	An effective community-based mentoring programme for return to work and school after brain and spinal cord injury	Single case design/pre-post test experimental	SS	Disability Rating Scale (DRS), Participation Index of the Mayo-Portland Adaptability Inventory (M2PI) Supervision Rating Scale (SRS) Craig Handicap Assessment and Reporting Technique – Short Form (CHART-SF) Diener Satisfaction with Life Scale (SWLS); RTWS Minimum of four assessment	USA

						(baseline, three months interval and exit from programme)	
18	Lundqvist; and Samuelsson	2012	Return to work after acquired brain injury: A patient perspective	Qualitative descriptive case study	ABI (SS) and Rehab specialist	Focus group discussion	Sweden
19	Ntsiea, Aswegen, Lord, and Olorunju	2012	Return to work services rendered for patients at stroke rehabilitation facilities in Gauteng Province, South Africa	Descriptive cross sectional survey	Stroke Rehab facilities	Questionnaire	South Africa
20	Baldwin and Brusco	2011	The Effect of Vocational Rehabilitation on Return-to-Work Rates Post Stroke: A Systematic Review	Systematic Review	Stroke	RTW rates	Australia
21	Macaden; Chandler; Chandler; and Berry	2010	Sustaining employment after vocational rehabilitation in acquired brain injury	Qualitative descriptive case study	ABI (SS); Caregivers; co-worker and job coach	In-depth interview	UK
22	Mohapatra and Mokashi	2010	Influence of modified therapeutic work programme	Descriptive Retrospecti	SS	Measured at base line and 3 months post intervention	India

			on RTW abilities in individuals with CVA	ve case study		Minnesota Manual Dexterity Test Hand dynamometer Punch gauge RTW status	
23	Niemeier; DeGrace; Farrar; Ketchum; Berman; and Young	2010	Effectiveness of a comprehensive, manualized intervention for improving productivity and employability following brain injury	RCT	ABI, SS	Employability Rating Scale (ERS) Rehabilitation Intensity of Therapy Scale (RITS) Clubhouse Member Satisfaction Questionnaire (CMSQ) VTP Learning Assessment RTW status Assessed at baseline 3rd, 6th and 9th week after intervention	USA
24	Owensworth	2010	A metacognitive contextual approach for facilitating return to work following acquired brain injury: Three descriptive case studies	Descriptive case study	Stroke survivor	RTW status at 6months	Australia

25	Schönberger; Hansen; Pedersen; Zeeman; and Jørgensen	2010	The Relationship between Physical Fitness and Work Integration Following Stroke	Cohort/ Longitudinal case study	SS	At 2 months and 3 years follow up: Åstrand Cycling Test Modified Harvard Step Test Walking/running speed in m/sec. RTW status Working Hours	Denmark
26	Chan	2008	Description of a return-to-work occupational therapy programme for stroke rehabilitation in Singapore	Retrospective descriptive case study	stroke survivors	RTW status and job profile	Singapore
27	Geurtsen; Martina; Van Heugten; and Geurts	2008	A prospective study to evaluate a new residential community reintegration programme for severe chronic brain injury: The Brain Integration Programme	Cohort/ Longitudinal case study	ABI (TBI;; SS;; Tumour;; Ence:)	At the start (T0), end of treatment (T1) and 1-year follow-up (T2) Living situation Work status Community Integration Questionnaire (CIQ CES-Depression EuroQOL Employability Rating Scale	Netherlands

28	Owensworth; Turpin; Brooke Andrew; Fleming	2008	Participant perspectives on an individualized self-awareness intervention following stroke: A qualitative case study	Qualitative descriptive case report	Stroke	In-depth interview and RTW status at 3, 6 and 9 months post intervention	Australia
29	Bisiker and Millinchip	2007	Developing a work Rehabilitation Project: 'Equal Pathways to Work'	Case control/Retrospective study	Individuals with neurological conditions; stroke inclusive	RTW status	UK
30	Desouza; Sycamore; Little; and Kirker	2007	The Papworth Early Rehabilitation Programme: Vocational outcomes	Retrospective/cohort pre-post intervention study	Brain injury (Stroke, TBI); MSD; others	Work status (immediate and 2 years follow-up)	UK
31	Klonoff; Tally; Dawson; Myles; Watt;	2007	The relationship of cognitive retraining to neurological patients' work and school status	Retrospective descriptive case study	BI (CVA, TBI)	At discharge: Timeliness Organization Scoring/Record Keeping Task Recall	USA

	Gehrels; and Henderson					Compensations Pragmatics Distractibility Big Picture RTW or school status	
32	O'Brien	2007	Achieving a successful and sustainable return to the workforce after ABI: A client-centred approach	Retrospective/Descriptive case study	Stroke survivor	 RBMT= Rivermead Behavioural Memory Test, NPA=Neuropsychological assessment, WPA=Workplace assessment, OSA=Observation of structured activity, VA=Vocational Assessment, FCE=Functional Capacity Evaluation, COTNAB= Chessington Occupational Therapy Neurological Assessment Battery, PRPP= Perceive, Recall, Plan Perform, FAES=Functional Assessment of	Australia

						Executive Skills, FMA=Functional Memory Assessment RTW status	
33	Rubenson; Svensson; Linddahl; and Bjorklund	2007	Experiences of returning to work after acquired brain injury	Qualitative descriptive case study	ABI (SS; TBI)	In-depth Interview	Sweden

6.3.2.4 Year of Publication, Year of Data Collection, and Study Site

The articles included in this study were published between 2007 and 2017. Five articles each were published in 2007, 2010, 2014, and 2015. None of the articles was published in 2009. The year in which data was collected was not indicated for more than half (56.3%) of the included journal articles. Amongst articles that specify their date of data collection, data collection occurred in 2004 for three articles while two articles each collected data in 2005 and 2011. Data collection took place in 12 countries, the United Kingdom serving as site for seven of the studies while Australia, Netherlands, and Sweden were study sites for five articles each. Only two of the articles were collected in Africa; South Africa to be precise.

Table 6. 2: Journals of Publication of Reviewed Articles

Journal Name	Articles	%
Brain Impairment	2	6.1
Brain Injury	6	18.2
British Journal of Occupational therapy	2	6.1
Clinical Rehabilitation	1	3.0
Disability and Rehabilitation	3	9.1
Health and Social Care in the community	1	3.0
Indian journal of Occupational therapy	1	3.0
International Journal of Therapy and Rehabilitation	1	3.0
Journal of Occupational Rehabilitation	2	6.1
Journal of the Royal Army Medical Corps	1	3.0
Journal of Vocational Rehabilitation	3	9.1
Topics in Stroke Rehabilitation	1	3.0
Neuropsychological Rehabilitation	1	3.0
NICE guideline	1	3.0
Neuro Rehabilitation	1	3.0

Occupational Therapy international	1	3.0
Scandinavian Journal of Occupational Therapy	2	6.1
Work: A Journal of Prevention, Assessment & Rehabilitation	3	9.1

6.3.2.5 Methodological Design

Of the total included studies, 18 (54.5%) studies used quantitative approaches, while ten utilized qualitative approaches (30.3%) to describe and explore work resumption among stroke survivors. Two of the included studies were expert report/guideline (3.0%) and descriptive mixed method case study (3.0%). The rest of the included studies were review articles, with two being a systematic review (6.1%) while the other was a qualitative meta-synthesis (3.0%). For the studies that utilized a quantitative approach, the majority were retrospective studies (18.1%), descriptive pre-post test study (12.1%), cohort/longitudinal study (9.1%), and cross sectional survey (9.1%) while only two (6.1%) were randomised controlled trial. The two randomised controlled trial were conducted in South Africa and USA.

6.3.2.6 Exclusively stroke survivor or stroke survivor with other health conditions/Brain injury as study participants

Of the included studies, 13 articles described vocational interventions/treatment that are exclusive to stroke survivors while 13 articles had a study population comprising of stroke survivors and brain injured individuals. The study population for the rest of the included articles comprises of rehabilitation practitioners (three), stroke survivors and individuals with other neurological conditions (three) as well as stroke survivors, brain injury, caregiver, employer and job coach (one). Macaden, Chandler, Chandler, and Berry (2010) authored the only article with study population comprising of stroke and brain injury as patient as well as rehabilitation practitioner, colleague and job coach.

6.3.2.7 Return to Work Intervention/Vocational Intervention Concept Addressed

The included studies provided explanation of vocational interventions used in reintegrating their study population back to work. Depending on the methodological approaches utilized by individual studies, different methods were used to give detailed description, comparisons and

analysis on the various components of the RTW interventions. More than half of the studies (19) provided quantitative evidence using standardized tools such as RTW questionnaire, employability rating scale, disability rating assessment tool, and hand dynamometry to investigate RTW after vocational rehabilitation in their study population while 7 studies utilized qualitative methods such as in-depth interviews and focus group discussions to understand the underlying mechanisms of work resumption. Of the included studies that used quantitative assessment (19), 18 assessed RTW status of their study population.

6.3.3 Intervention Content

The intervention content is first described based on the components inspired by the TIDieR checklist and guide. This includes: what (intervention activities that address RTW); why (goals and theoretical foundations relating to RTW); who provided (the professionals involved), when (point in the stroke management trajectory that intervention was provided), and where (intervention setting). The description of the intervention contents from each included study is summarized in Table 6.3. Subsequently, a thematic description of the synthesized interventions is provided.

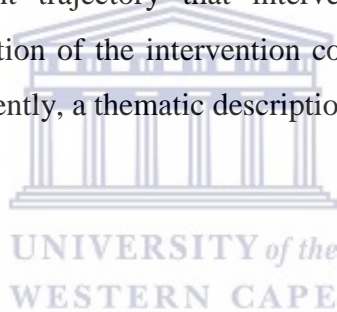



Table 6. 3: Description of intervention contents and theoretical underpinning of study

SN	Authors	Purpose of study WHY/ THEORY	WHO provided	HOW	How much	Where	When	Tailorin g
1	Grigorovich; Stergiou-Kita; Damianakis; Le Dorze; Lemsky; and Hebert	To understand how employment services (ES) are provided to persons with brain injuries (PWBI) in Ontario Canada	NA 	NA	NA	NA	NA	NA
2	Materne; Lundqvist; and Strandberg	Knowledge of opportunities and barriers for a successful RTW. Biopsychosocial theory	NI	Face to face	NI	NI	NI	Individu al tailored
3	Nilsson; Eriksson; Johansson;	Exploration and description of a person centred RTW process by stroke survivors. NA. Person-centred rehabilitation theory	NI	NI	NI	Rehabilitatio n clinics	4.5-14 months after stroke	Person centred

	and Hellman							
4	Schwarz; Claros-Salinas; and Streibelt	Meta-synthesis of literature evidence on facilitators and barriers to work after stroke	NA	NA	NA	NA	NA	NA
5	Reunanen; Jarvikoski; Talvitie; Pyoria; Harkapaa	Investigate experiences of clients with home-based intervention from the viewpoint of their own reintegration. Activating physiotherapy approach	PT, OT and speech therapist	face to face	3 months (twice weekly)	Home and Community	After discharge from standard hospital rehabilitation	Individualized
6	van Velzen; van Bennekom; van Dormolen; Sluiter;		Rehabilitation physicians, OT, PT, cognitive trainers, (neuro)psychologists, social workers, VR specialists and speech therapists	Face to face	NI	In/Out-patient Hospital/Work Rehabilitation centre	During rehabilitation	Individual tailored


	Frings-Dresen							
7	Donker-Cools; Daams; Wind; and Frings-Dresen	To gather knowledge about effective return-to-work (RTW) interventions for patients with ABI	NA	NA	NA	NA	NA	NA
8	Olivier, Duncan-Anderson, Mitchell, Etherington, and McGilloy	Comparison of military vocational rehabilitation and civilian rehabilitation in the US/ DMRC vocational strategy/Graded Activity	OT	face to face	4 sessions weekly (2 hrs each)	Inpatient hospital, outpatient, community, medical center	NI	Individual
9	van Velzen, van Bennekom, Sluiter, and	To give a description of the Early Vocational Rehabilitation (EVR) protocol and its development for ABI	Rehabilitation physicians, OT, PT, cognitive trainers, (neuro)psychologists, social workers, VR	Face to face	NI	In/Out-patient Hospital/Work	During rehabilitation	Individual tailored

	Frings-Dresen		specialists and speech therapists			Rehabilitation centre		
10	Del Valle;. Leahy; Sherman; Anderson; Tansey; and Schoen	To analyse the organization structural elements and service delivery practices related to the provision of effective best practices that enhance employment outcomes for individuals with disabilities. EBP	NA	NA	NA	NA	NA	NA
11	Foy	Assess factors associated with vocational outcome 1–9 years post-discharge from VR	OT, PT, SLT, psychology, VR Counsellor	Face to face	5 hrs daily	Inpatient rehabilitation centre	After hospital discharge from neurorehabilitation	Individual tailored
12	Grant; Radford; Sinclair and Walker	Test feasibility of stroke specific VR intervention	OT	Face to face	Ten sessions (1hr each)	Rehabilitation centre and hospital	In hospital and after discharge	Individual

13	Killey; Gustafsson; and Hoyle	to identify the paths used by Australian people to return to work following stroke, including changes to work-related habits and routines, and job satisfaction	NI	NI	NI	NI	NI	Individual
14	Ntsiea, Van Aswegen, Lord, and Olorunju	To determine the effect of a workplace intervention programme on the rate of return to work of previously employed stroke survivors	OT and PT	Face to face	Six weeks; 1 session per wk of 1 hr duration	Workplace	During Out-patient Rehabilitation	Individual tailoring
15	National Institute for Health and Care Excellence	NA	NI	NI	NI	NI	During rehabilitation	Individual
16	Vestling; Ramel; and Iwarsson,	To increase the knowledge about RTW, and to nurture the development of programmes to support the process	NI	NI	NI	NI	in-patient, after discharge	NI

17	Kolakowsky-Hayner; Wright; Shem; Medel; and Duong	To describe effect of community based mentoring on RTW and RTS	Community based mentor, Rehab psychologist and vocational counselor	Telephone, face to face	NI	NI	NI	NI
18	Lundqvist; and Samuelsson	To study significant factors supporting vocational rehabilitation after acquired brain injury	NI	NI	NI	NI	21 months after injury	Group
19	Ntsiea, Aswegen, Lord, and Olorunju	To establish current practice in RTW intervention programmes for patients with stroke. Theory of occupational science	NI	NI	NI	Hospital and Community work rehabilitation center	NI	NI
20	Baldwin and Brusco	To determine the effect of vocational rehabilitation programmes on return-to-work rates post stroke. NA	Counsellors, OT, PT, Social worker, speech therapist, VR specialist, Work placement officer	face to face	10 -23 weeks (varied)	Inpatient hospital, outpatient, community,	In-patient, after discharge	Not indicated

						medical center		
21	Macaden; Chandler; Chandler; and Berry	Exploration of factors affecting sustaining employment in people with acquired brain injury	Multidisciplinary team of therapists, psychologists and work training specialists	NI	NI	NI	NI	NI
22	Mohapatra and Mokashi	Investigate effectiveness of modified Therapeutic Work programme. NI	OT	face to face	NI	OT department	NI	Individual and group tailored
23	Niemeier; DeGrace; Farrar; Ketchum; Berman; and Young	To reports effect of manualized, employability-enhancing intervention for community-dwelling persons with acquired brain injury	NI	Face to face	20-session	Clubhouses	After standard rehabilitation	Group sessions
24	Owensworth	Description of the implementation of a metacognitive contextual approach for facilitating return to	Neuropsychologist and OT	Group and later face to face	16 sessions	Home and Community	3.5 -7 years after stroke. After out-	Individual tailoring

		work for individuals with acquired brain injury. Metacognitive Contextual approach			of 3 hrs each		patient rehab	
25	Schönberger; Hansen; Pedersen; Zeeman; and Jørgensen	To assess the relationship between physical fitness and work integration following stroke	PT 	Face to face	14 weeks (4 days per week)	Rehabilitation centre	NI	Individual tailored
26	Chan	To illustrate the multifactorial aspects influencing positive work outcomes. Biopsychosocial model of functioning	OT, Psychologist, social worker	Face to face	NI	Hospital and Community work rehabilitation center	During and after Out-patient Rehabilitation	Individual tailoring
27	Geurtsen; Martina; Van Heugten; and Geurts	To assess the effectiveness of a residential community reintegration programme for participants with chronic sequelae	a neuropsychologist, a physiatrist, a neuropsychiatrist, occupational therapists, cognitive	face to face	254 hours	residential rehabilitation centre	After standard inpatient acquired brain injury	Individual and group

		of severe acquired brain injury that hamper community functioning	therapists, social workers, speech-language therapists, physical therapists and rehabilitation nurses/coaches				rehabilitation	
28	Owensworth ; Turpin; Brooke Andrew; Fleming	To explore how an individual (CP) perceived and reacted to different components of an awareness intervention in the context of a return to work programme. The theoretical framework of Toglia and Kirk	NI	face to face	12 sessions	Outpatient	After standard stroke rehabilitation	Individual
29	Bisiker and Millinchip	To evaluate work rehabilitation project and document the process of setting it up. NI	NI	Face to face	not definitive (few weeks to 1 year)	Work Rehabilitation centre	After outpatient rehabilitation (2 months to 20 years post injuries)	Individual tailoring

30	Desouza; Sycamore; Little; and Kirker	To describe vocational rehabilitation services in the UK (Papworth Trust vocational rehabilitation programme)	literacy tutor, occupational therapist & assistant, consultant in rehabilitation medicine, speech & language therapist and physiotherapist	face to face	3-9 months	Rehabilitation centre	After standard stroke rehabilitation	Individual
31	Klonoff; Tally; Dawson; Myles; Watt; Gehrels; and Henderson	Cognitive learning theory	NI	face to face	(40-minute sessions, 4-5 times/wk); Rx duration: 8.6 (2.8-23 months)	Hospital.	Inpatient	Group sessions
32	O'Brien	To describe services used to facilitate participation in the	OT, Speech pathologist, neuropsychologist, PT	face to face	9 months intervention (average)	Work Rehabilitation centre	7 months or more after stroke	Individual and

		workforce. Client centre practice theory						group tailored
33	Rubenson; Svensson; Linddahl; and Bjorklund	To explore experiences of returning to work after rehabilitation, from the viewpoint of people with acquired brain injury. MOHO	NI	NI	NA	NA	NA	NA

Keys:

NA: Not Applicable; NI: Not Indicated



6.3.3.1 Why (goals, rationales)

Twelve studies (47%) described the theoretical underpinning for the vocational interventions exploited in their studies, which were diverse (table 6.3). Four of these studies; Ntsiea, et al. (2012); Ownsworth, et al. (2008); O'Brien, (2007) as well as Rubenson, et al. (2007) utilized occupational therapy based theory comprising theory of occupational science, Dynamic comprehensive model of awareness, client centre practice theory and the model of human occupation respectively. Olivier, et al. (2016) was the only intervention based on a theory linked to vocational rehabilitation (graded activity theory). The other studies (n=7) were grounded on frameworks or models relating to person centre practice theory (Nilsson, Eriksson, Johansson, & Hellman, 2017), biopsychosocial theory (Matérne, Lundqvist, & Strandberg, 2017; Chan, 2008); metacognitive contextual/Cognitive learning theory (Ownsworth, 2010; Klonoff et al., 2007), evidence based practice theory (Del Valle et al., 2014) and activating physiotherapy theory (Reunanen, Järvikoski, Talvitie, Pyöriä, & Härkäpää, 2016).

6.3.3.2 What (Intervention activities that address RTW)

All of the articles identified in this study described one or more interventions for returning stroke survivors to the workplace. A total of 48.5% and 33.3% of the articles indicated a form of work skills/functional capacity evaluation and job analysis/workplace assessment respectively as components of their intervention activities. Prevocational skills training such as CV writing, interview skills training were described by 63.6% of the articles (Grigorovich et al., 2017; Schwarz, Claros-Salinas, & Streibelt, 2017; Donker-Cools, Daams, Wind, & Frings-Dresen, 2016; van Velzen, van Bennekom, van Dormolen, Sluiter, & Frings-Dresen, 2016; Olivier et al., 2016; van Velzen, Van Bennekom, Sluiter, & Frings-Dresen, 2015; Del Valle et al., 2014; Grant, Radford, Sinclair, & Walker, 2014; Killey, Gustafsson, & Hoyle, 2014; Kolakowsky-Hayner, Wright, Shem, Medel, & Duong, 2012; Lundqvist & Samuelsson, 2012; Baldwin & Brusco, 2011; Macaden et al., 2010; Mahapatra & Mukashi, 2010; Niemeier et al., 2010; Ownsworth, 2010; Schönberger, Hansen, Pedersen, Zeeman, & Jørgensen, 2010; Ownsworth et al., 2008; Bisiker & Millinchip, 2007; O'Brien, 2007) while 39.4% of the articles included job coaching as one of the intervention activities to address RTW after stroke (Grigorovich et al., 2017; Donker-Cools et al., 2016; van Velzen et al., 2016; van Velzen et al., 2015; Killey et al., 2014; Ntsiea, Van Aswegen, Lord, & Olorunju, 2014; Baldwin & Brusco, 2011; Macaden et al., 2010; Mohapatra & Mokashi,

2010; Niemeier et al., 2010; Geurtsen, Martina, Van Heugten, & Geurts, 2008; O'Brien, 2007; DeSouza, Sycamore, Little, & Kirker, 2007). Constraint induced movement therapy and psychoeducation were only described by articles authored by Baldwin and Brusco (2011) and Ownsworth (2010) respectively. The details of RTW interventions for stroke survivors and the corresponding articles that offered the intervention is summarized in Table 6.4. Twenty-one of the studies provided details of the delivery mode of their interventions with the majority (90.5%) being delivered face to face while the studies by Kolakowsky-Hayner et al. (2012) and Ownsworth (2010) indicated face to face coupled with group and telephone delivery mode respectively. Similarly, 13 studies indicated the duration of the interventions provided to stroke survivors. The time devoted to RTW as part of these interventions ranged from 40 minutes (Klonoff et al., 2007a) to five hours (Foy, 2014) per session. The interventions were provided over a period of six weeks (Ntsiea et al., 2014) to nine months (O'Brien, 2007) in six (Ntsiea et al., 2014) to 56 successive sessions (Schönberger et al., 2010).

6.3.3.3 Who provided the intervention

Seventeen of the included studies described the health professionals that offered the interventions indicated in their studies. Among these, the majority (64.7%) were provided by a range of health-care professionals that included OT, PT, neuropsychologist, social worker, speech therapist, rehabilitation physician, vocational rehabilitation counsellor. One of the studies, (Ntsiea et al., 2014) revealed two professionals that included OT and PT delivered their VR intervention. In the same vein, three of the studies (Olivier et al., 2016; Grant et al., 2014; Mohapatra & Mokashi, 2010) indicated that their intervention was delivered only by the OT while the interventions described in the study by Schönberger et al. (2010) was provided only by the PT.

Table 6. 4: Summary of intervention content with corresponding articles

SN	Intervention contents	Serial number of article	%
1	Work skills assessment e.g Clients functional abilities (cognitive, physical assessment); Identification of work-related goals and work situation; Social skills assessment	1,2,5,7,8,12,13 14,17,18, 26,21,27,29,30,33	48.5

2	vocational counselling and career planning (Skills and vocational goal exploration)	2,8,10,11,14,16,17,25,27,28,29,33	36.4
3	Job coaching	2,7,10,11,12,16,23,25,27,28,29,30,33	39.4
4	Emotional support/ Behavioral/Anger management; Personal Counselling or psychotherapy, mentorship	1,2,4,8,9,10,13,15,23,25,32,33	36.4
5	Advice on coping /adjustment strategies to compensate for mobility and upper limb functional limitations; Development/teaching of active techniques for adaptation and problem-solving	1,2,3,10,15,21,23,25,33	27.3
6	fatigue management, relaxation	1,2,9,32,33	15.2
7	Acquiring basic skills/ Rehabilitation to improve work-related skills (Practical skills development/training)	2,3,10,11,12,13,14,17,18,20,23,32,	36.4
8	Social skills training (communication skills)	2,6,10,12,13,23,25,29,32,	27.3
9	Job skills training (CV writing, interview skills training, job search); Simulated job interview with a self-reflection homework task	3,4,5,7,8,9,10,11,12,13,14,17,20,23,25,28,27,29,30,32	63.6
10	Formal (further) Training: Includes short skills-based courses and further education; Identification of suitable courses, including arranging or providing appropriate learning support	1,10,12,13,14,16,25,27	24.2
11	Advice on accessing benefit (disability service training), Educating about the Equality Act 2010; Disability disclosure and discrimination training ; Work incentive planning and benefit counselling	1,8,9,13,17,25,26,31,32,	27.3
12	Self-awareness and self-regulation training in home, community and work settings (Confidence building Developing insight/self-awareness)	1,2,3,4,13,14,22,23,24,32,	30.3
13	Work hardening, exercise coaching, physical conditioning	3,5,8,17,19,20,31,	21.2

14	Work/family balance strategies	9,31,32	9.1
15	Cognitive Retraining—remediation ;Cognitive strategy development and practice	1,6,10,12,23,25,26,29,32	27.3
16	ABI psychoeducation	32	3.0
17	Compensatory strategies for work performance	3,7,10,29,30,31	18.2
18	Time management	1,9	6.0
19	CIMT	27	3.0
20	Job analysis/ workplace or ergonomic assessment	1,2,5,7,13,18,19,21,26,27,30,	33.3
21	Adaptation of the working environment	1,7,18,19,21,25,26,30,33,	27.3
22	Education of employer to clients' work-related issues and support	5,10,12,13,14,16,17,19,25,29,	30.3
23	Accessing transport (advice on travel needs.)	1,2,7,8,10,11,14,17,21,22,25,26,27,30,31,32,	48.5
24	Use of assistive technology	1,5,7,11,17,19,22,25,27,28,30,32,	36.4
25	Family involvement and support (education)	1,7,8,18,19,26,27,30,	24.2
25	Peer support and feedback (Development of natural supports at the workplace)	4,5,7,8,10,17,19,21,29,30,32,	36.4

6.3.3.4 When and where

More than half of the study (63.6%) indicated where the interventions described in their study took place. The results revealed that most of the RTW interventions were offered during and after discharge from in-patient hospitalization in a variety of setting that includes in-patient/out-patient hospitals, workplace, home, clubhouses and/or external rehabilitation centres. Four studies (Olivier et al., 2016; van Velzen et al., 2016; van Velzen et al., 2015; Baldwin & Brusco, 2011) mentioned that their RTW intervention commenced within the in-patient hospitals and delivered

across two or more settings for the stroke survivors. Similarly, two of the studies provided their interventions at the work environment of the stroke survivors (Ntsiea et al., 2014; Niemeier et al., 2010), while the studies by Foy (2014) and Geurtsen et al. (2008) offered their intervention in a residential neuro-rehabilitation centre.

6.3.4 Meta-synthesis of RTW intervention (Key Findings)

Given that the aim of this phase of the study is not to demonstrate effectiveness of RTW intervention but to summarize available interventions for returning stroke survivors to work, the synthesis of findings from each included study is reported thematically. Similarly, as varying methodological approaches were used within the included study, it becomes appropriate that a description of synthesis of the findings accommodate findings from all these types of studies. However, it is equally important to be aware that the included studies were not assessed for quality, as the focus of the review was not to demonstrate effectiveness or causality through attribution analysis. Thus, the following synthesis is predominantly descriptive. The synthesis of key findings (components of intervention) will be presented in three broad concepts based on the corresponding interface of interaction: i) Intervention components at the individual level that interface with the worker and family; ii). Intervention components at the organization level that interface with the workplace or work environment; and iii) Components describing strategies of implementation.

6.3.4.1 Theme 1: Components at the individual level that interface with the worker and family

This theme identified 12 key components of RTW interventions that interfaced with the stroke survivor as a worker as well as the family/caregiver of the stroke survivor. These components starts with an assessment element that involve comprehensive work ability assessment such as functional capacity evaluation of the stroke survivor. This is subsequently followed by vocational counselling and career planning that is provided for the stroke survivor. Subsequent elements in this component includes: behavioral management and psychotherapy to address emotional disorders arising from stroke; exercise coaching and physical conditioning; as well as cognitive retraining and remediation. Another recurring intervention identified from this meta-synthesis was skills training. These skills training programmes includes coping and adjustment skills to compensate for functional limitations; self-awareness and self-regulatory skills, basic ADL skills as well as

prevocational skills which includes but not limited to basic work skills, workplace norm, cv writing and job interview.

Similar intervention elements revealed from this meta-synthesis that interfaced with the stroke survivors are work hardening and work simulation task training; work trial (performance on actual job) and enrollment of the stroke survivor in formal education and training to improve job competitiveness. Interventions addressing transportation access such as driving rehabilitation and advice on travel needs was also a key component of RTW intervention identified from this study. Furthermore, education and psychosocial support for family/caregivers was indicated as a key element of interventions that could facilitate RTW of stroke survivors in the included studies.

6.3.4.2 Theme 2: Components that interface with the workplace or work environment

This theme presents the activities and actions required at the workplace that were found from the scoping review to be essential for achieving successful RTW outcomes. The theme commenced with the assessment elements that involve a comprehensive job analysis and workplace ergonomic assessment. Further to this are work physical environmental adaptation, job coaching; work peer support and feedback as well as assistive technology usage. Similarly, reasonable accommodation at the workplace in the form of change in job profile, modification of work and graded RTW programmes were identified from the included studies as vital components of an intervention needed to facilitate RTW of the stroke survivor. The education of the employer about the clients' work-related issues were deemed as a necessary component of RTW intervention for stroke survivors.

6.3.4.3 Theme 3: Components at the disability practice or stroke management level

Under this theme, essential elements that guides how the previous two themes (key components that interfaced with the stroke survivor and the workplace) should be implemented are presented. To achieve an effective RTW and retention at work for the stroke survivors, the findings showed that core intervention components must be individually tailored and implemented using a team based approach. Most of the synthesized studies revealed either a multi-disciplinary or interdisciplinary team offering the RTW interventions. In addition, a key element found from this study is the use of case managers to manage the return to work process of the stroke survivor. Similarly, the establishment of VR goals by the rehabilitation team in cooperation with the employer and stroke survivor coupled with the regular assessment of the stroke survivor's

performance during the VR process were identified as vital elements of the implementation process in this scoping review. Ultimately, the rehabilitation team should provide tailored support to stroke survivors to find work and to ensure work retention.



Table 6. 5: Description of core components of return-to-work (RTW) interventions for stroke survivors

Theme	Intervention components	Basic description
Interface with worker/individual level	Comprehensive work ability assessment	Evaluation of functional capacity of stroke survivors to determine disability factors or RTW obstacles at the personal level of the survivor using different tools
	Vocational counselling and career planning	Advice and guidance of stroke survivors on issues such as career exploration, career change, personal career development and other career related issues.
	Behavioral management and psychotherapy	Management of challenging emotional and behavioral changes that influences work resumption after stroke
	Exercise coaching and physical conditioning	Exercise regimen aimed at improving cardiovascular capacity, expand mobility and optimize neuromuscular control through intensive functional endurance, strength, and balance training
	Cognitive retraining and remediation	Engagement of the stroke survivor in learning activities to enhance the neurocognitive skills relevant to overall recovery goals
	Skills training	Training of coping and adjustment skills to compensate for functional limitations; self-awareness and self-regulation training; social skills training; prevocational skills (Basic job skills training, workplace norm, cv writing, job interview); basic ADL skills, and compensatory strategies for work performance
	Formal education and training to improve job competitiveness	Participation of stroke survivor in education or training provided by an educational institution or off-the-job in a workplace, usually involving direction from a teacher or instructor to improve skills and job competitiveness

	Work hardening/Work simulation task training	The use of simulated work tasks and progressively graded conditioning exercises that are based on the individual's measured tolerances. This is designed to improve the biomechanical, neuromuscular, cardiovascular and psychosocial functioning of the worker
	Advice on travel needs, accessing transport and driving rehabilitation	Advice on how to access transport and driving rehabilitation
	Family involvement and support (Education and psychosocial support for family)	Education of family and caregivers on stroke and provision of psychosocial support
	Work trial (performance on actual job)	Provision of work-based opportunities for the stroke survivors in a real work environment to upgrade their capacity, develop skills and/or gain on the job experience
Interface with workplace or work environment	Comprehensive job analysis/ workplace or ergonomic assessment	A complete and detailed analysis of all aspects and demands of stroke survivor's job through conducting a work site visit to ascertain work routine, job characteristics, equipment and technology utilized in the workplace, work ergonomic requirements as well as environmental characteristics of the workplace.
	Work environment adaptation	Modification of the workplace to accommodate the stroke survivor's health situation and functioning
	Education of the employer to the client's work-related issues and support	Liaison with the employer and the workplace by providing information on the work ability of, and needed support of the stroke survivor for effective job performance to the employer.
	Job coaching	Use of intensive on-the-job training to help the stroke survivor to learn to perform job tasks and job-related responsibilities to the employer's specifications and to learn the interpersonal skills necessary to be accepted as a worker at the job site and in related community

	Reasonable accommodation at work	Change in job profile, modification of work, graded return to work and use of assistive technology for job performance
	Work peer support and feedback	Workplace support from peers/co-workers coupled with feedback regarding work performance
	Work placement (tailored support to find work)/Post work placement support	Follow-up of stroke survivors until retention at work is assured
	Team-based approach	The components of interventions is organized and delivered by using a team-based approach that could be multidisciplinary, interdisciplinary, or integrated rehabilitation teams.
	Individual tailored Intervention	The interventions is tailored to meet the individual return to work needs of the stroke survivor.
Implementation strategies/ components at disability/stroke management practice level	Workplace at the core of vocational rehabilitation plan. (Set/establish VR goals by the rehabilitation team in cooperation with the employer and SS)	Rehabilitation activities and VR goals are implemented and progressively centralized within the stroke survivors' workplace with a focus on the job to be returned to by the survivor. The use of a therapeutic return to work plan that links graded work exposure with functional restoration.
	Regular review of goals and plan to ensure sustained employment	Review and continuous re-assessment of the stroke survivor when implementing interventions.
	Use of a Case Manager (Continuous collaboration with stakeholders/actors through meetings and phone calls)	Liaison and communication among stakeholders involved in the RTW pathway of stroke survivors.
	Supportive rehabilitation team	Provision of support from RTW team members towards work resumption for stroke survivor.

6.4 DISCUSSION

This study reviewed 32 articles and one clinical guideline that describe RTW interventions for stroke survivors. The studies were mostly from Europe with only two studies and 2.7% of the authors emerging from Africa. This is somehow not surprising as health research output from Africa is documented to make up of 1.3% of global health research output (Uthman et al., 2015). Although, Africa shares a quarter of the global burden of disease, the highest age-standardized stroke incidence and stroke mortality (Sarfo & Ovbiagele, 2017; Akpalu et al., 2015) as well as 17% of the world population (United Nations, 2017), this is however not reflective of health research activities from the continent. It could be put forward that Africa is yet to recognise research as a tool for solutions to the health needs of the region, which has led to the triviality and lack of developing an enabling environment for research in the region. From the review of articles identified in this study, the majority were observational experimental studies that assess efficacies of the RTW interventions for stroke survivors with two articles being randomized control trials (RCT). This aligned with the position of Gerber et al. (2016), Johnston and Dijkers (2012) as well as Tucker and Reed (2008) that indicate a paucity of RCT studies in health research such as medical rehabilitation and thus, recommended additional strategies for reviewing literature for evidence to improve translation of findings into practice and to influence health policy.

The findings from this review suggests the relevance of comprehensive work ability assessments and the job analysis of the stroke survivor during the RTW process as most of the reviewed studies identified these assessments as one of the core components of the VR process. A comprehensive work assessment helps to determine the stroke survivors' eligibility for services as well as the nature and scope of interventions to be included in the stroke survivors' return to work plan. For instance, the RCT study by Ntsiea et al. (2014) conducted work skill assessment sessions of a minimum of four hour duration, undertaken by either a physiotherapist or an occupational therapist with their study participants to define the scope of workplace intervention rendered for the intervention group. Similarly, the first two stages of early vocational rehabilitation (EVR) protocol for individuals with ABI described by van Velzen et al. (2015) included assessments comprising job requirement, workplace evaluation and work ability evaluation in the EVR protocol. Without appropriate comprehensive assessment, the rehabilitation team involved in the RTW process of the stroke survivor cannot provide evidence for intervention and justify the need for such VR

services. A holistic understanding of the stroke survivor's work capacities and barriers is important for delivering of effective VR services.

In addition, this study identified three core components of RTW interventions described in the literature as vital for attaining successful work resumption after stroke. These include an intervention component that involves the stroke survivor as a worker and their caregivers to address impairments and activity limitation that influences RTW. Interventions within this component is comprised but not limited to tested interventions such as vocational counselling and career planning, skills trainings exercise coaching and physical conditioning, work hardening and work simulation task training as well as adequate training in the use of public transportation system which may be delivered as a single or multicomponent form. For example, such single or multi-components intervention was reported by Chan (2008) to result in a 55% RTW rate for stroke survivors while Mohapatra and Mokashi (2010) indicated a 77.8% RTW rate for stroke survivors involved in a modified therapeutic work programme. Similarly, Niemeier et al. (2010) reported an 80.8% increase in employability score for brain injured patients (stroke inclusive) as compared to a 46.4% observed in the control group. The above authors further found a 24% increase in a work retention rate in the intervention group as opposed to 8.3% decreased in the control group. As work disability of stroke survivors could be influenced from a combination of difficulties experienced at the body, personal and societal levels based on the biopsychosocial framework of the ICF, improving or restoring physical, cognitive and psychosocial abilities through intervention components that interfaced with the stroke survivors described above is deemed as essential for successful work re-integration after stroke. The interventions addresses most of the comprehensive ICF core sets in VR on functioning, activity performance and participation capacity described by Finger et al. (2012).

Furthermore, another of the three core components of RTW for stroke survivors identified from this scoping review is the intervention components that interfaced with the workplace or work environment. According to Finger et al., the multifaceted nature of work makes resumption of the worker role after stroke extend beyond the survivors that performs it to the societal level which involves family, community and governance. The interventions within this theme included work physical environment adaptation, job coaching, workplace accommodation, and assistive technological use for work performance. Such workplace directed intervention was described by Ntsiea et al. (2014) as resulting in a 60% RTW rates for strokes in intervention group as compared

to 20% in control (OR: 5.2). Similarly, Foy (2014) found a 52.6% positive vocational outcome rate for young adults with ABI (stroke inclusive) after an integrated neurological and VR programme that included supported work placement, employer education and support and graded RTW. However, changes to work habits and routines, work environment modification, and the use of assistive equipment and devices in a cohort of Australia stroke survivors resulted in a 38% RTW rate (Killey et al., 2014). Half of the above study cohort did not access formal VR services during the RTW process. This might account for the lower RTW rates reported by Killey et al. (2014) as compared to Foy, (2014) and Ntsiea et al. (2014).

Finally, the scoping review identified strategies for implementation as the third core components of RTW intervention for stroke survivors from the meta-synthesis of the findings. A prominent approach among these RTW intervention implementation strategies is individually tailored intervention using a team-based approach. The individual tailored intervention entails designing the intervention to address the individual characteristics and specific needs of the stroke survivor. Interventions that are tailored to the attributes of an individual have been avowed to have greater efficacy than standardized interventions, resulting in better adherence, improved health outcomes, and cost effectiveness (Beck et al., 2010). For example, the individualized meta-cognitive contextual intervention conducted by Ownsworth (2010) resulted in sustained employment for stroke survivors. Similarly, the clinical guideline for stroke rehabilitation by the National Institute for Health and Care Excellence (2013) advocated for a RTW process that is individually tailored to the survivors' characteristics. Further to this, the component "team-based approach" revealed the use of an interdisciplinary or multidisciplinary team approach in the delivery of RTW intervention in the reviewed studies. Within a multidisciplinary team, different professionals within the stroke care and VR continuum offer the needed RTW services to stroke survivor on separate discipline specific goals with little or no overlap of roles while in working as an interdisciplinary team, rehabilitation professionals share goals, overlap roles and jointly work together to solve the work disability problem of the stroke survivor. The composition of the rehabilitation professionals involved in implementing the RTW intervention in the studies reviewed however varies. For instance, DeSouza et al. (2007) described a RTW intervention delivered by a multidisciplinary team consisting of a rehabilitation coordinator, job coach and assistant, vocational advisor, information technology assessor, and vocational psychologist; occupational therapists (OTs) or occupational therapy assistants (OTAs); speech and language

therapists (SLTs) and physiotherapist (PTs) whereas Foy (2014) and van Velzen et al. (2015) described an interdisciplinary team comprising an OT, PT, SLP and psychologist. Conversely, the workplace directed intervention conducted by Ntsiea et al. (2014) was delivered by only the PT and OT. The composition of team members could be an adaptable feature to be considered when implementing components of an intervention as described in this scoping review.

At the same time, a recurring element in the implementation strategies of the RTW intervention from the reviewed studies was the use of case managers or VR coordinators to manage the RTW process of stroke survivors. According to Marnetoft (2015), VR coordinators and case managers are vital players in the success of RTW process. The case manager most times serve as liaison between the stroke survivor, workplace, healthcare team, insurance and benefits agency, and other stakeholders involved in the VR process. For instance, the Papworth early rehabilitation programme described by DeSouza et al. (2007) was coordinated by case managers and resulted in sustained RTW for more than half of the study after 2 years. Similarly, the meta-synthesis of facilitators and barriers of RTW after a stroke reported by Schwarz et al. (2017) implicated the vital role of VR coordinators in the success of any RTW programme for stroke survivors. Utilization of case managers when implementing the VR programme further ensure that the workplace is set as the core of RTW plan. With this, rehabilitation activities are implemented and progressively centralized within the stroke survivors' workplace with a focus on the job to be returned to by the survivor. van Velzen et al. 2016) illustrated this within the early vocational rehabilitation programme that was described for acquired brain injury survivors where the work and work environment of the study participants played a central role in the RTW process. Consequently, a regular review of RTW goals and plans with the stroke survivors to ensure sustained employment within a supportive rehabilitation and workplace environment was identified as components within the implementation strategies theme of this study. It has been posited that when providing VR services, the rehabilitation team must establish natural support systems within the workplace while gradually tapering external support as the natural support systems are more permanent and entrenched within the workplace (Leonardi, Davide, Rui, Ambra, & Alberto, 2015; Alaszewski, Alaszewski, Potter, & Penhale, 2007; Medin, Barajas, & Ekberg, 2006). These natural support system strategies were provided in the studies under review and resulted in job stability for the stroke survivors (Matérne, et al., 2017; van Velzen, et., 2016; Van Velzen, et al., 2015; Grant, et al., 2014; Vestling, Ramel, & Iwarsson, 2013; Rubenson et al., 2007)

6.5 CONCLUSION

The results of this review show that there is a paucity of RCT studies on return to work interventions for stroke survivors with the majority of the available descriptive and experimental studies that described RTW intervention being conducted in Europe. A methodological search of nine databases and grey literature revealed only 33 studies that met the inclusion criteria after screening. From the studies identified, it was affirmed that RTW interventions for stroke survivors falls into three core components which includes 1) intervention components that interface with the stroke survivor; 2) intervention components that interfaced with the workplace and; 3) components that describe strategies of implementation. These core components are interventions that could guarantee an effective RTW for strokes survivors when included in a RTW programme.

6.6 LIMITATIONS

As this scoping review included an extensive consideration of available interventions in RTW after stroke, one of the review's limitations was the inclusion of studies whose sampling population included stroke survivors and individuals with other types of brain injury. Identifying and isolating interventions that was strictly for stroke survivors within such groups was impracticable. Even though within this category of studies, stroke survivors appeared to be predominant in the sampling, but it is possible that promising interventions intended for stroke survivors may have been ignored. Also, given the objective of this scoping review and the diversity of research designs utilised within the included studies (e.g., quantitative, qualitative and health guideline), methodological rigour and level of evidence for each included studies were not conducted. Therefore, the findings should be interpreted with caution. Another limitation associated with this review is that only sources found in specific databases were included, consequently, the results cannot be generalized to other databases. In addition, the review was restricted to a 10 year time frame.

CHAPTER SEVEN

DELPHI STUDY: THE DEVELOPMENT OF A RETURN TO WORK INTERVENTION PROGRAMME FOR STROKE SURVIVOR

7.1 INTRODUCTION

This chapter presents the results from the third phase of the study. The phase utilized a Delphi survey to develop an appropriate RTW intervention programme for stroke survivors. The chapter first provides a brief background on which the study was designed. This was subsequently followed by the methodology utilized to accomplish the fifth objective (i.e. to develop a RTW programme for stroke survivors) of the study. Consequently, the results detailing the responses of participants to the different rounds of the Delphi survey and the conceptualization and drafting of the proposed RTW intervention programme will be discussed. Finally, adjustments made to the initial draft of the developed RTW intervention programme will be described.

7.2 BACKGROUND

Over the past decades, there has been a growing concern on the increasing incidence and prevalence of stroke which have led to high morbidity rate among stroke survivors in developing countries. After stroke, a significant number of survivors experienced prolong work absence that have rendered them unproductive within the community. Meanwhile, it has been long documented that resuming at work after prolong work absence due to ill health/sickness requires a well-defined vocational rehabilitation pathway. This has led to emergent interest on the application of evidence-based return-to-work (RTW) interventions for work disability management for various health conditions. Even though clearly defined pathways for vocational re-entry are well recognized for conditions such as mental health, musculoskeletal dysfunction and traumatic brain injury, none has been identified for stroke as there has been a lack of consensus regarding such clear pathways to vocational re-entry and the essential contents of RTW interventions needed to effectively facilitate work reintegration for the individuals that have experienced stroke. More specifically, in Nigeria which serve as the study context, there is a gap with regards to strategies to facilitate work re-entry for stroke survivors. The overall aim of this research project tends to bridge this gap. This chapter deals with this later challenge, i.e., it aims to arrive at a consensus regarding the RTW intervention components that are essential to consider and define a clear vocational pathway for

implementing such RTW components when replicating effective interventions in different contexts.

In order to arrive at or make decisions when there is inconsistency or dearth of information on a phenomenon under investigation, consensus approaches/technique such as the nominal group method, brainstorming and Delphi survey method have been suggested by Hasson, Keeney, and McKenna (2000). The Delphi technique as a research method was developed in the middle of the 20th century by the RAND Corporation and utilized to acquire the most consistent and consensual information from a group of experts (Donohoe, Stollefson, & Tennant, 2012). The Delphi method utilizes multiple iterations to refine expert opinions on a specific topic in an anonymized way coupled with controlled feedbacks to achieve consensual position (Helmer & Rescher, 1959). Although it has been argued not to be a substitute for other scientific testing, the Delphi as a research technique provides an alternative for examining complex and intertwined topics that traverse disciplinary boundaries (Grisham, 2009). This survey method has been applied in diverse fields that includes rehabilitation science, education and economics because of its various advantages to inform policies and establish guidelines (Miller, 1993).

7.3 METHODOLOGY

For the current study, a modified e-Delphi was implemented to develop a RTW intervention programme for stroke survivors. According to Donohoe et al. (2012), the e-Delphi survey represents latest efforts to digitalize the Delphi process in order to enhance the method's ability to survey a group of experts that are in geographically dispersed location that might be inaccessible face to face. It is similar to other Delphi survey approaches but conducted via the internet. Experts in the field of neuro-rehabilitation and vocational rehabilitation who are involved in the RTW process of stroke survivors were selected from healthcare circle/specialty and academia. As an e-Delphi survey permits each selected expert to provide equal input thereby reducing the influence of a single viewpoint, it was deemed as the appropriate Delphi technique for this study. The modification to the e-Delphi was done by the researcher and it entailed merging of the opinion of the experts from the first round of the Delphi with evidences from the previous phase of the Intervention Mapping (IM) protocol for further controlled feedbacks in the subsequent rounds of the Delphi process. The modification ensured that the designed and conceptualization of the RTW intervention programme that emerged in the second round were from all the preceding phases of

the study. An overview of the methodological process for the modified e-Delphi is presented in figure 7.1.

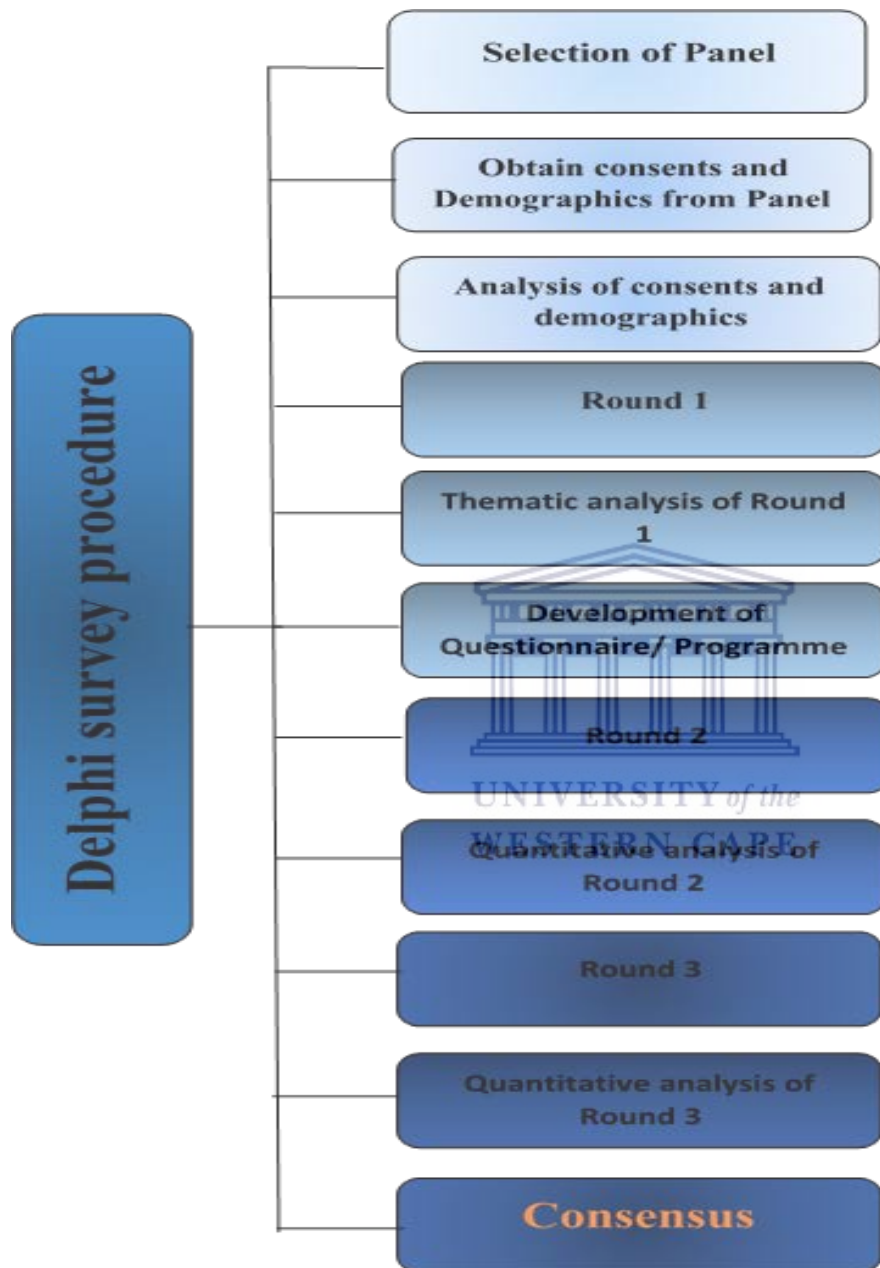


Figure 7. 1: The Delphi survey procedure

7.3.1 Delphi rounds

A peculiar feature of the Delphi survey is the multiple iterations that entail a series of feedback processes which allow experts to review their opinions on a topic. To this end, different rounds of iteration process is encouraged (Salkind, 2010). In the present study, the e-Delphi survey

consisted of three rounds and was conducted over a six month period. Consensus was reached at the end of the third round of the e-Delphi.

7.3.2 Selection of experts

According to Okoli and Pawlowski (2004), the selection process of the panel of experts for a Delphi study involves four iterative steps namely: 1) preparation of a knowledge resource nomination work sheet (KRNW) in which relevant disciplines, organization or academic and practitioners literature are identified; 2) populating KNRW with names of experts; 3) ranking of experts based on their area of specialisation and; 4) invitation of experts. The selection procedure outlined by the above authors was used to purposively select 29 experts for this Delphi study. The panel of experts included, occupational therapists, physiotherapists, and, clinical psychologists. The composition of the stroke/vocational rehabilitation professionals within the panel of experts allowed the researcher to capture diverse knowledge and opinion pertaining to RTW interventions for stroke survivors. Majority of the experts were familiar with the Nigerian health context while experts without prior knowledge of the study context were provided with adequate information to help with decision making as it concerns the Delphi study.

7.3.3 Procedure/Process

An invitation to participate was sent to the 29 selected experts via e-mail. A consent form (Appendix 7.1) and information sheet (Appendix 7.2) were included with the invitation. Eighteen of the experts initially consented to participate with three later recusing themselves from the study based on their competency on the topic of investigation. No reason was given by the other experts who declined to participate in the study. Subsequently, a questionnaire (Appendix 7.3) that sought information on the demographic details of experts such as age, highest education level, duration of practice in the field of stroke management and vocational rehabilitation was sent via e-mail to consenting participants. The consents forms, demographic questionnaire and questionnaires for the different rounds of the Delphi were designed using Google Forms and administered online through links provided in the sent out e-mails. The Google forms allowed the participants to complete and submit the questionnaires online.

In the **first round**, the experts were requested to provide their opinion on four open ended question regarding interventions needed to facilitate RTW of stroke survivors to the workplace (Appendix

7.4). At the end of four weeks, fifteen experts completed and responded to the open ended questions.

The results were subsequently triangulated with findings from the previous phases of the study into an initial concept map that was later transformed into a draft RTW intervention programme presented to experts in the second round of the study.

In the **second round**, the experts were asked to rate the degree of agreement on the draft RTW intervention on a three point scale of 0-disagree; 1-indifferent; and 2- agree. Consensus on the level of agreement was set at 70% with a higher number indicating the level of importance and appropriateness of the intervention component in the RTW programme (Powell, 2003; Alexandrov, Pullicino, Meslin, & Norris, 1996). During this round, the experts were asked to comment on the intervention contents and provide any additional information that they felt were of importance to the RTW intervention programme that was being designed.

Subsequently, in the **third round**, questions without 70% and above consensus in round two were reviewed based on input from experts and pulled into a questionnaire which was sent back to the experts. They were requested to indicate if the revision made to the questions/intervention contents were appropriate with a “Yes” or “No” response. Consensus was similarly set at 70% and above.

7.3.4 Data Analysis

As both quantitative and qualitative data are collected in Delphi surveys, the data analysis procedure for this study involves both measures of central tendencies and thematic content analysis. The data obtained from the first round of the Delphi survey was analyzed thematically. The responses of experts were analyzed line by line using codes and linked together to form categories. Themes were subsequently generated from the categories based on patterns that connects categories emanating from the codes. The quantitative responses from the experts in the second and third round were analyzed descriptively and presented using means of central tendency (mean, and mode). Von der Gracht (2012) indicated that central tendency analysis serves as a means of measuring consensus in Delphi studies. This enabled the researcher to provide statistics regarding the collective judgement of the experts on the draft intervention. The results from each round of the study as well as the procedure utilized to design the draft intervention for the second round of Delphi are described in the subsequent sub-sections.

7.4 RESULTS

7.4.1 Demographic characteristics of Panel of Experts (n-15)

The demographic characteristics of panel of experts is summarized in Table 7.1. The mean age of experts was 44.73 ± 9.48 years while the mean duration of practice and the years of experience in vocational rehabilitation of stroke was 18.26 ± 8.71 and 10.73 ± 4.90 respectively. Eight (53.3%) of the experts were from Nigeria, 2 experts were from the United Kingdom while one expert each came from Australia, South Africa, Sweden, Uganda and Canada. Majority of the experts were male (66.7%); occupational therapists (46.7%) and are clinical practitioners (60.0%). All of the experts had been involved in the vocational rehabilitation assessment and intervention implementation for stroke survivors.



Table 7. 1: Demographic characteristics of panel of experts

ID	Age	Sex	Highest Qualification	Country of Practice	Current Occupation/ position	Years of Experience	Years of experience in SR/VR	Roles in stroke management and VR of stroke survivors
1	52	Male	M.Sc.	Nigeria	Clinical psychologist at tertiary health facility	27	17	Assessment, Intervention, Monitoring/Follow-up,
2	55	Male	D.ClinPsy	United Kingdom	Neuropsychologist with UK National health service	31	20+	Assessment, Intervention, and Monitoring/Follow-up
3	39	Female	M.Sc.	Nigeria	Occupational therapy consultant in private practice	14	6	Assessment, Intervention, researcher
4	33	Male	M.Sc.	Nigeria	Occupational therapist with tertiary health facility	7	7	Assessment, Intervention, Monitoring/Follow-up and Case management
5	31	Male	M.Sc.	United Kingdom	Occupational therapist with UK National health Service	10	8	Assessment, Intervention and Case management
6	37	Male	M.Sc.	Nigeria	Occupational therapist in tertiary health facility	13	10	Assessment, Intervention Monitoring/Follow-up
7	41	Male	M.Sc.	Canada	Occupational therapy in private practice	16	10	Assessment and Intervention

8	45	Female	Ph.D.	South Africa	Lecturer at academic institution (PT)	23	8	Assessment, Intervention, and Monitoring/Follow-up
9	40	Male	M.Sc.	Australia	Occupational therapist with Medicare	9	6	Assessment
10	44	Male	Ph.D.	Nigeria	Lecturer at Academic institution (PT)	21	9	Assessment
11	52	Male	M.Sc.	Nigeria	Lecturer at academic institution (OT)	13	10	Assessment, Intervention Monitoring/Follow-up
12	43	Female	Ph.D.	Nigeria	Lecturer at academic institution (PT)	20	13	Assessment and intervention
13	45	Female	Ph.D.	Sweden	Lecturer and Private OT practitioner	20	10+	Assessment, Intervention, and Monitoring/Follow-up
14	45	Female	Ph.D.	Uganda	Lecturer at academic institution (PT)	12	6	Assessment, Intervention, and Monitoring/Follow-up
15	69	Male	M.Sc	Nigeria	Consultant PT in tertiary health facility	38	21	Assessment, intervention and follow-up

7.4.2 Results of first round of Delphi survey

In the first round, 15(n=18) experts among those that consented responded to the four open ended questions (Appendix 7.4), thereby yielding a response rate of 85.7%. Three major themes emerged from the responses of the experts namely; 1) RTW interventions components addressing functional and work abilities of the stroke survivor, 2) strategies of implementation, and 3) essential components in the RTW intervention. The recurring themes are summarized in table 7.2.

Table 7. 2: First Round of Delphi Survey Theme

Theme	Categories
Theme 1: RTW intervention components addressing functional and work skills of stroke survivors	Assessment of functional capacity, work abilities and job analysis
	Basic functional skills training
	Work skills training
	Adaptation of the work and work environment
	Psycho-education of family, caregivers and employers
Theme 2: Strategies for implementation	Use of rehabilitation consultant or case manager
	Use of team-based approach
	Client centredness and individualized tailoring of intervention
	Early implementation of RTW
Theme 3: Essential elements of RTW intervention	Objective assessment of work abilities and job analysis.
	Team work and communication among stakeholders
	Work skills intervention

7.4.2.1 RTW interventions components addressing functional and work skills of stroke survivors

The panel of experts mentioned different interventions that could address work limitation arising from functional impairments caused by stroke. This interventions components are presented under four categories, namely: assessment of functional capacity, work abilities and task analysis; basic skills trainings; work skills training, work and work environment adaptation as well as liaison with stakeholders.

- **Assessment of functional capacity, work abilities and job analysis**

Most of the panelist mentioned assessment components as part of the RTW intervention needed to address functional and work disabilities of the stroke survivor. The panelist indicated that an initial assessment of the functional abilities of stroke survivor, the survivors' needs and employer needs, job duties and expectations are required to address work disability due to stroke. This description is captured in the following excerpts:

“Initial rehabilitation assessment, including assessment of the workers and employer’s needs- job and duties, expectations is the first thing needed” (Expert 9)

“Neuropsychological assessment to determine cognitive strengths and vulnerabilities” (Expert 2)

“Activities similar to that of the client workplaces are given to the client and they are observed by the occupational therapist to determine if they have the required component to perform these activities” (Expert 7)

Liaison with treating professionals to ascertain the capabilities and prognosis of the stroke survivor as well as a visit to the workplace to determine the work requirement of the stroke survivor was also described by experts. The panelists described this in the excerpts below:

“Liaison with treating professionals to ascertain current medical situation, individual prognosis, and capacities” (Expert 1)

“Visit to workplace to design return to work plans- such as identifying suitable duties; Occupational therapy assessment and visit to the workplace – this is the most important intervention” (Expert 13)

The experts further listed the different assessment components that they opined to be needed during the return to work process of the stroke survivor. This included task analysis and functional capacity evaluation.

- **Basic functional skills training**

The retraining of lost skills as well as new skills needed for optimal functioning was suggested by experts as components of RTW intervention needed to address impairments, limitations and restrictions arising from stroke. The suggested skills training included activity of daily skills, social skills training, and cognitive rehabilitation therapy. One of the experts captured this by indicating:

“It depends on what the patient presents with. impairments and activity limitations will be managed like any other stroke survivor focusing on cognitive function, activities of daily living (including instrumental) and mobility functional ability” (Expert 8)

Another expert suggested that interventions that improves ADL skills and encourages social participation are needed to address work disability arising from stroke. She captioned this in the excerpt below:

“Intervention to improve ADL, encourage social participation in the work environment and community” (Expert 12)

Similarly, some of the experts were of the opinion that behavioral intervention programmes which incorporates emotive therapy, coping skills training and problem solving skills training should be included as part of RTW interventions needed to address work disability after stroke. Other interventions suggested by expert were endurance training through physical conditioning and fatigue management.

- **Work skills training**

The panel of experts suggested various work skills training as instrumental in addressing work disabilities among stroke survivors. This suggestion by experts is captured in the excerpt below:

“This might need facilitating enrolment of the worker into a suitable programme to address gaps in skill requirements for the roles (Expert 9)”

Some of the work skills training intervention recommended by panelists include: vocational counselling and work pacing, basic work skills training (such as CV writing, interviewing skills), and job coaching.

Most of the experts indicated the need to engage stroke survivors in work simulation task training and work hardening programmes. One of the experts described this using this quote:

“...include simulations of work environment within therapy sessions; Mobility - including endurance and speed; work tolerance and stamina, work conditioning” (Expert 7)

Similarly, panelists recommended the inclusion of participatory ergonomic training programme in RTW interventions. This suggestion is captured in the following quotes:

“...education on the safe utilization of equipment, especially using participatory ergonomics” (Expert 6)

“Educating the stroke survivors on ergonomic principles that can be utilized in effective performance/execution of task” (Expert 3)

Further to this, some of the panelists indicated the need for the education and advice of stroke survivors on the use of transportation services to and from work.

“RTW should include advice on transport to and from work” (Expert 2)

- **Adaptation of the work and work environment.**

In order to improve work participation, panelists suggested modification of the job and work environment of the stroke survivors to fit their work abilities. One of the panelists described this in the quote below:

“ ...intervention should include adaptation of work setting- such as wheelchair ramps, support rails, elevators, wider corridors for wheelchair access” (Expert 5)

Another expert indicated that job should be modified bearing in mind the duration and complexity of performance.

“Phased return to work: gradually increase 1. Time at work, 2. Level of complexity of job functions.” (Expert 2)

Experts further recommended the prescription or use of assistive technology for effective task performance

“The use and recommendation of assistive technologies such as software to help with routine tasks; memory aids;” (Expert 14)

- **Psycho-education of family, caregivers and employers**

The panelist indicated that RTW interventions should include advice and psycho-education of the caregivers, family as well as employer of the stroke survivor. This was captured in the excerpts below:

Also, family/patient/caregiver education on elements of programme; counselling/education of the employee about RTW should be taken into account.” (Expert 15)

“Psycho-education for patient and employer will help” (Expert 2)

Liaison with relevant stakeholder such as the employer and family to create a stable environmental support system during the RTW process was also recommended.

“Liaison and advocacy with employer; family, caregiver and co-workers for ensure stability for survivor over the period of work re-entry” (Expert 12)

The above theme, RTW intervention components addressing functional and work abilities of the stroke survivor, describes the recommended intervention components suggested by experts to facilitate work integration for the stroke survivor.

7.4.2.2 Theme 2: Strategies for implementation

This theme describes the various strategies for implementing RTW interventions as indicated by the panel of experts. Most of the experts recommended that the intervention should be client-centred and occupation focus during implementation. This is captured in the excerpt below:

“The interventions should be client-centred, it should revolve around and be directly by the stroke survivor’s wish and be occupation focused.” (Expert 4)

Similarly, the experts suggested the implementation of work skills interventions after objective assessment and basic functional skills training has been completed. This is reflected in the extract below:

“Assessment, followed by clinic based intervention and workplace liaison, workplace intervention with a gradual RTW that is phased, then tapered follow-up” (Expert 2)

Some of the experts recommended the use of case management approach during RTW intervention implementation. The recommendation is captured in the excerpts below:

Use of rehabilitation consultant or case manager who might be an occupational therapist to facilitate the RTW plan. He will need to coordinate the RTW plan, complete assessments with key parties to identify their needs. (Expert 9)

“Use of Case management through Human Resources and occupational health departments” (Expert 5)

In addition, panelists suggested the use of a team approach during the implementation of RTW interventions for stroke survivors. One of the experts described this in the following excerpt:

“Communication and collaboration among all stakeholders through team process, especially the rehabilitation practitioners working as a team during the return to work plan implementation. This might involve the employer if need be” (Expert 3)

The experts expressed different opinions regarding the exact period to commence RTW interventions for stroke survivors. Most of the panelists suggested the incorporation of a RTW plan during in-patient rehabilitation. The different views of the panelists are captured in the following excerpts below:

“RTW should commence not too early, and not too late” (Expert 2)

“Early implementation of the RTW plan immediately survivor is medically stable” (Expert 11)

“Therapists should set long term goals that include possible work resumption for patients at onset of treatment. These goals can be in achievable phases” (Expert 12)

The above theme, “strategies of implementation” describes the panelists' opinion regarding the strategies required to implement RTW intervention components with stroke survivors.

7.4.2.3 Theme 3: Essential elements of RTW intervention

This theme represents opinions of panelists on components of RTW interventions which they deemed as crucial in RTW programmes for stroke survivors. The theme is represented and discussed with the following categories: objective assessment of work abilities and job analysis; team work and communication among stakeholders as well as timing of RTW intervention.

- **Objective assessment of work abilities and job analysis.**

The experts opined that the objective assessment of work abilities should precede any RTW intervention to be provided for the stroke survivors. The panelists felt that this will enable the RTW plan to meet the stroke survivors’ actual need. One of the experts indicated this in the excerpt below:

Objective assessment of abilities is crucial. It is through objective assessment that RTW plan can meet the actual need of the client. (Expert 11)

Experts further revealed that objective assessment of work abilities and work ergonomic assessment will enable rehabilitation teams to monitor effectiveness of interventions as well as reviews needed in the RTW plan.

For appreciable progress to be made, constant review of the stroke survivor’s progress is needed which could be impossible without assessment. (Expert 9)

Juxtaposition of pre-morbid personality of clients and the present personality after stroke will help team to monitor RTW progress. (Expert 1)

- **Team work and communication among stakeholders**

This category describes expert’s view on the importance of team work as well as communication among stakeholders in RTW programmes. The panelists indicated that rehabilitation professionals involved in the RTW process should utilize team-based approaches in the delivering of interventions. The experts captioned in the following excerpt:

Team work is very important. (Expert 5)

Team based approach should be used in implementing interventions. (Expert 7)

Needed and requisite professionals should be drafted in on team bases. (Expert 2)

In addition, the expert indicated as essential communication among stakeholders involved in the return to work process. One of the experts revealed this in the excerpt below:

Clear communication in terms of treatment goals between therapist and workplace (Expert 11)

Experts described as vital the involvement of stroke survivor, survivors' family and employer in the planning of RTW programmes. One of the experts indicated this in the following excerpt

Involving the employer of the survivor in the planning of RTW as well as the family, patient and caregiver on the various elements of program is necessary. (Expert 6)

- **Work skills intervention**

This category represents the various work skill intervention components that experts mentioned to be essential in the RTW programme. Most of the experts indicated the need for the inclusion of prevocational skills and work skills training in the RTW programme.

Skills training especially work hardening, vocational counselling and career planning are important elements that should be in the program. (Expert 5)

Similarly, experts indicated the importance of work and workplace modification in the RTW programme.

“adaptation of work setting such as wheelchair ramps, support rails, elevators, wider corridors for wheelchair access are important things to consider during return to work intervention” (Expert 10)

The use of a job coach after work placement was also revealed to be an essential element of RTW intervention programme for stroke survivor. One of the experts captioned this in the excerpt:

Direct support in workplace, in particular using a ‘buddy system’, and environmental adaptations to reduce disability. (Expert 13)

In the above theme, experts described the essential element of a RTW programme to include not only assessments and work skills intervention components but to also include the utilization of team-based approach in implementing RTW programme.

7.4.3 Concept mapping and drafting of the Return to Work programme

This section reports on the RTW intervention programme that was designed for use in the second round of the Delphi process. The intervention was designed based on the IM framework. The IM framework recommended that the design of a programme be informed by the following phases:

- The needs assessment and identification of performance objective phase (Chapter 4 and 5) that established baseline data about the impairments, activity limitation and participation restrictions that stroke survivors experience, as well as the RTW rates of stroke survivor. Similarly, in this phase, factors that influences the resumption of worker role of stroke survivors were investigated and the experiences of returning to work after stroke was explored.
- The methods and strategies phase (Chapter 6) in which effective RTW interventions and strategies for returning stroke that were published in literature were collated through a scoping review study.

The results from the first round of the Delphi survey was triangulated with findings from previous phases (Chapters 4-6) of the study and culminated in a preliminary concept map (figure 7.2). The concept map was developed to outline the link among various concepts that was established during the triangulation of findings to inform the proposed return to work intervention programme. With the concept map, the researcher was able to identify key areas to be considered in designing RTW intervention programme for stroke survivors. This, in turn allowed a more informed basis for the development of the RTW intervention programme. For instance, during the needs assessment stage of Phase one (Chapter 4), it was discovered that more than a third of the stroke survivors did not returned to work as a result of the sequelae of stroke while only half of the survivors that RTW did so at a reduced capacity (part-time and light duty). Similarly, the needs assessment discovered patterns across marital status, disability level, work category and workplace support in how stroke survivors return to work. Meanwhile, during the identification of performance objectives that were needed to change in order to facilitate RTW of stroke survivors, it was established that the side of stroke affectation, type of rehabilitation programme, stroke symptoms, environmental factor as well as problem experienced by survivors in activity and participation can significantly predict RTW capacity of stroke survivors (Chapter 4). It was similarly discovered that work resumption after stroke was influenced by the recovery of functional abilities of the survivor; access to rehabilitation services; workplace directed interventions; as well as self-determination of the stroke

survivor to RTW (Chapter 5). In the same vein, a range of evidence identified from clinical guideline, cross-sectional, longitudinal, and experimental studies in the method and strategy phase (Chapter 6) established three core components of RTW interventions for strokes survivors in literature. These components include: 1) intervention components that interface with the stroke survivor; 2) intervention components that interfaced with the workplace and; 3) implementation strategies.

Having an understanding of the RTW rates, the determinants of work RTW and the intervention strategies that could facilitate RTW of stroke survivors forms the basis through which the RTW intervention programme was developed.

7.4.3.1 Components of the intervention programme to be considered

Through the concept map, five key areas that includes: programme structure, participants, theories, context, and focus, which could contribute to the successful design of the RTW intervention programme were identified. These key areas enabled the researcher to design the interventions into deliverable and coherent RTW programme. The subsequent sub-sections explain the four key areas.

Programme Structure

The structure of the intervention programme plays a central function in achieving the purpose of returning stroke survivors to work and in the overall effectiveness of the programme. Given that traditional approaches for returning stroke survivors to work in Osun state seems to be inadequate as only a third of survivors return to full time duty (Chapter 4), an alternative approach was arguably necessary. Information gathered from the in-depth interviews conducted with stroke survivors (Chapter 5), the scoping review of literature (Chapter 6) as well as the first round of Delphi revealed the components that are needed in the structure of the intervention to ensure effective resumption of worker role after stroke. It is clear from the literature that work disability after stroke is influenced by both human and environmental factors that could only be addressed through a multi-component intervention programme (chapter 5 and 6). Therefore, emphasis must be placed on appropriate interventions that cater to build the general functional and work skills of the stroke survivor as well as those needed to address environmental factors that limit activity performance while at work.

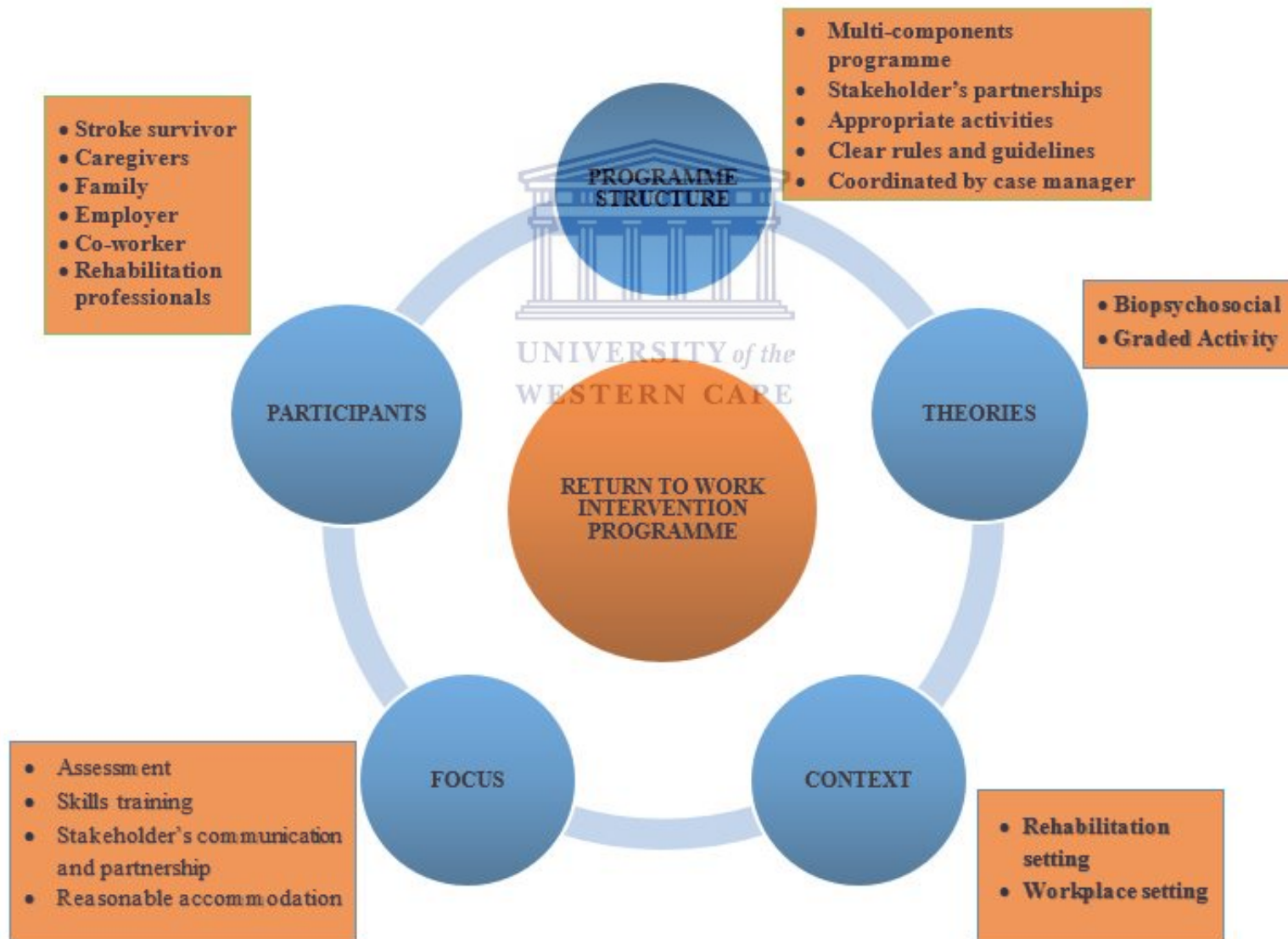


Figure 7. 2: Concept map and design of Return to Work Intervention Programme

According to the findings from the scoping review (chapter 6), intervention programmes may include work preparation skills training such as work habit training, job search and interviewing skills, that are aimed at grooming the stroke survivor for appropriate work behaviour and basic work skills. The intervention could similarly include work hardening which is focused on work endurance/tolerance ability of the stroke survivor, as well as ergonomic and environmental modifications that are designed to address restriction in work participation arising from the job and workplace (e.g., graded return to work, use of assistive technology and workplace modification). Other features that are to be considered in structuring the RTW programmes include context-specific focus, programme guidelines, and stakeholder involvement.

To ensure that the RTW intervention that was designed is context-specific and appropriate for the population, stroke survivors' experiences of work disability and opinions of rehabilitation experts involved in vocational rehabilitation of survivors were explored (chapter 5 and 7), thus providing insight about the work integration context. To prevent the inapplicability of intervention or outright misuse of valuable resources during RTW implementation, the nature of relationship between work disability and the context was first understood (MacEachen, 2013). In the same way, four guiding strategies/principles were recognized as providing a broad philosophy for the RTW intervention programme and guaranteed that there is a link between theory supporting the programme, evidence from the literature and stakeholders' perspective during programme content development as well as intervention delivery. The guiding principles include: the use of team-based approach (which could either be an interdisciplinary or multidisciplinary approach); individualized treatment strategy, use of client centred approach as well as the case management principle. It was also envisaged/anticipated that the principles would enable an eclectic implementation of the RTW programme, as the rehabilitation professionals providing the intervention programme are acquainted with these guiding principles. Thereby, ensuring that the basic presumption and goals of the programme are preserved.

Finally, in addition to guiding principles, stakeholder's partnership during VR intervention programmes is asserted to be expedient in achieving the goal of successful and sustained work resumption (Burdorf, 2011). As rightly pointed out during the first round of Delphi, improved communication among stakeholders involved in the RTW continuum (such as stroke survivors, survivor's family and caregiver, employer, and rehabilitation team) is an important criterion for success of the programme. Bearing this in mind, the programme allowed the active involvement

of all stakeholders during intervention development and delivery. The programme comprises of four phases that are directly linked with one another. Each of the phases are made up of activities that will facilitate the resumption of worker role of the stroke survivor. The intervention sessions were planned to allow for tapering of rehabilitation support within a structured environment. This tapering of support was aimed at enhancing independence and self-efficacy at work, so that the stroke survivor can cope efficiently with little or no assistance from the rehabilitation team while at work.

Participants

The participants in RTW intervention programmes include all stakeholders involved in the RTW continuum and not only the stroke survivors that need to return to the workplace. The stroke survivor, caregivers, family, employer, co-worker and rehabilitation professionals are all key participants in a RTW intervention programme. For instance, the use of a natural support system (such as work buddy) which was identified to lead to sustained employment for stroke survivors to serve as job coach (chapter 6) will require the participation of the co-worker in the programme implementation. Some of the participants such as the stroke survivor's family, caregivers, co-workers and employers may however require additional skills for their involvement in the RTW process to be of value. The programme is designed such that all members involved understands their role and have the requisite skill sets needed to contribute to the successful work re-entry of stroke survivors.

Theories

To serve the multi-players, priorities and stakeholders involved in VR, Pransky, Gatchel, Linton, and Loisel (2005) stressed the need for a multi-faceted approach that incorporate both practice and research models. Similarly, Penuel, Fishman, Haugan Cheng, and Sabelli (2011) emphasized the importance of using appropriate theories to ground intervention programmes. Multiple theories were identified from the method and strategy phase of this study as guiding the RTW interventions rendered to stroke survivors (Chapter 6). Such theories included the client centre practice theory, the model of human occupation, graded activity theory, biopsychosocial theory and activating physiotherapy theory. Considering the multiplicity of RTW process and vocational rehabilitation, Escorpizo et al. (2010) recommended the use of an overarching framework that is not only integrative but also dynamic and interactive to guide the theories, as a single theory might be

inadequate for the programme. Therefore, the ICF framework was used as an overarching framework in the development of the RTW programme. The biopsychosocial theory of rehabilitation and graded activity theory were embedded within this overarching ICF framework.

Context

The context in which the RTW intervention programme to facilitate work resumption of stroke survivors will occur will be the rehabilitation and work settings. The rehabilitation setting as well as the workplace will serve as the setting where assessment and goal settings will be conducted by the rehabilitation specialists (occupational therapist, physiotherapist or vocational rehabilitation specialist, psychologist). Subsequent intervention phases proposed within the RTW programme will similarly be carried within the rehabilitation and work environment.

Area of focus/Essential elements

The first round of Delphi survey with experts identified three areas of focus for RTW intervention programme for stroke survivors. This area of foci includes, assessment; skills training, stakeholder's communication and partnership; as well as reasonable accommodation through ergonomic and environmental modification. The participants indicated that an initial assessment of the work ability of survivors, the job and workplace ergonomics are important precursor in any RTW intervention programme. The holistic understanding of work abilities and barriers to work engagement provides the basis on which VR intervention should be built. For instance, Power (2013) emphasized that most of the mistakes in job placement, which is at the end of the VR continuum could be circumvented with an appropriate and accurate work assessment. The furnishing of the VR stakeholders with information about the survivor's capacities, the environment, and the correspondence between the two and work, Breeding (2005) concluded that such comprehensive assessment promotes empowerment which is an essential component in a successful RTW process. Efforts therefore, should be placed in conducting vocational assessment that is comprehensive and holistic in the developed RTW intervention programme.

Also, it was revealed that stroke events most times negatively affect the functional and work skills of survivors, therefore making it a point of /an area to focus in RTW intervention programme. The inclusion of-work skills training in RTW intervention programmes helps to build self-confidence and competence of the stroke survivor before re-entering into the workplace. Cancelliere, Cassidy, and Colantonio (2013) asserted that work skills training during vocational rehabilitation provides

the client a chance to achieve independence in the workplace while provisional support is still offered. Moreover, work skills intervention was suggested as an essential component of the RTW intervention programme for stroke survivor by rehabilitation experts in the first round of the Delph survey. As one of the areas of focus in the present RTW protocol, work skills training will help to address skills deficit that often times arise from the stroke event. While much attention is often drawn to combat skills deficits during stroke rehabilitation, Solovieva, Dowler, and Walls (2011) asserted the need for a fit between the work abilities/skills of the worker and the job through ergonomic and environmental modification in order to encourage work participation. Reasonable accommodation in the form of ergonomic and environmental modification provides opportunity for RTW efforts, especially in situations where restoration of deficits in work skills may otherwise not be possible. Such ergonomic and environmental modification has been adduced to facilitate not only work resumption but also job retention among stroke survivors (Culler, Wang, Byers, & Trierweiler, 2011).

In the same vein, partnership and communication among RTW stakeholders are central to achieving success in vocational rehabilitation programme (Marnetoft, 2015). Given the intricacy of response to and recovery from neurological injury following stroke, it becomes apparent that rehabilitation professionals need to work in partnership to bring to bear their collective knowledge and skills for the benefit of stroke survivors during vocational rehabilitation. Even though a cooperative multi-stakeholder approach to RTW is accentuated/stressed in vocational rehabilitation for stroke survivors (Chapter 6), considerable communication problems between return-to-work stakeholders are reported in the literature (Brunarski, Shaw, & Doupe, 2008), thus, making stakeholders' partnership and communication an area of focus in the development of RTW intervention programme for stroke survivors. Consequently, an improved communication between stroke survivor, employers, rehabilitation team and other relevant stakeholders (e.g. insurers) would then be an essential prerequisite for the developed intervention programme.


In designing this programme, the information from stroke survivors was included because it was the intention of the researcher to create an opportunity for the stroke survivors to take ownership of the programme design and set the goals to be achieved. In addition, involvement of key rehabilitation experts to provide input into programmes is essential to ensure the success of the programme as they will be the one to implement the programme.

7.4.3.2 Programme Goals

The programme aims to address the barriers that hinder the resumption of worker role of stroke survivors. It provides a structured pathway that will facilitate the return to work of stroke survivors through series of interventional activities. The developed programme will be known as *Stroke Return to Work Intervention Programme* and it is presented in detail in table 7.3. Table 7.3 presents the developed programme to be known as *The Stroke Return to Work Intervention Programme (SReTWIP)*.

The SReTWIP comprises of four interconnected phases of interventions that commences with an **Assessment Phase** where comprehensive work ability assessment and workplace ergonomic assessment is conducted for the stroke survivor. The phase is proposed to last between 1 to 10 sessions of 60 minutes per session. The assessment phase is succeeded by a **Work Intervention Training (WIT) Phase** where clinic based work and non-work specific intervention are provided for the client. These include: general functional skills training, vocational counselling and career planning as well as prevocational skills training. The WIT phase is proposed to be conducted over 5 to 20 treatment sessions of 60 minutes per session. When competency is achieved in the second phase by the stroke survivor, the client proceeds to a third phase which is a **Work Test Placement (WTP) Phase**. In this phase, other stakeholders in the RTW process of the stroke survivor are involved in the process. The interventions provided are both clinic and work based and this is envisaged to be achieved over a minimum treatment session of five to 15 of 60 sessions per minute. The final phase of the SReTWIP, **Clients Full Participation in the Worker Role**, envisioned that the stroke survivor would have achieved competencies in varying work aspects and capabilities of the previous three phases. During this stage clients would be encouraged to undergo self-reflection about the previous stages and about their ability to participate in the occupational role as a worker. The client in due course would synthesize and internalize the skills they acquire as well as the actions that they undertook in the preceding two stages. Similarly, clients is able (are trained) to make decisions about strengths and weaknesses, and can (are trained to) identify whether they require ongoing rehabilitation services for specific skills when it is needed. Furthermore, the involvement of core rehabilitation is gradually decreased (tapered) during this phase.

Table 7. 3: Proposed Stroke Return to Work Intervention Programme (SReTWIP)

Phase	Description	Components	Duration
Phase 1: Assessment Phase	This is the first phase of the programme where preliminary interview is conducted with the clients and at the workplace to obtain information about the stroke survivor's work ability and the job respectively	<ul style="list-style-type: none"> • Functional capacity evaluation • Job analysis; • Workplace ergonomic assessment 	<ul style="list-style-type: none"> • 3 -5 sessions of 60 minutes per session. OR • 6-10 sessions of 60 minutes per session
Phase 2: Work Intervention Training phase	This phase comprises of 2 focus areas where clinic based work interventions are provided to clients	<p>Focus area 1: Non-work specific intervention/training section</p> <ul style="list-style-type: none"> • General functional skills training <p>Focus area 2: Work specific intervention/training section</p> <ul style="list-style-type: none"> • Vocational counselling and career planning • Prevocational skills training (such as work competence, communication skills, work behavior, interviewing skills, education of legal aspects of work) • Formal education and training to improve job competitiveness • Work hardening that is inclusive of simulated task training 	<ul style="list-style-type: none"> • 5-9 sessions of 60 minutes per session OR • 10-15 sessions 60 minutes per session OR • 16-20 sessions of 60 minutes per session
Phase 3: Work Test Placement	This is a continuation of the previous phase. In this phase, other stakeholders in the RTW process of the stroke survivor are engaged. The interventions	<p>Intervention in the phase include:</p> <ul style="list-style-type: none"> • Education and preparation of clients, family, employer and co-worker about client's abilities • Identification of suitable work opportunities/jobs 	<ul style="list-style-type: none"> • Minimum of 5 sessions over a month period (60 minutes each); OR • Minimum of 8 sessions over a month duration (60 minutes each) OR

	provided are both clinic and work based	<ul style="list-style-type: none"> • Work trials (practice of work skills in real work environment) • Job coaching and on-going support at the workplace • Ongoing environmental and ergonomic modification (structure, equipment, and organizational ergonomics). 	<ul style="list-style-type: none"> • Minimum of 15 sessions over a month duration (60 minutes each)
Phase 4: Clients Full Participation in the Worker Role	This is the final phase of the RTW programme where the stroke survivor is fully reintegrated back to work	<p>In this phase,</p> <ul style="list-style-type: none"> • Clients is able (are trained) to make decisions about strengths and weaknesses • Clients can (are trained to) identify whether they require ongoing rehabilitation services for specific skills (if needed) • OT involvement is gradually decreased (tapered) 	<ul style="list-style-type: none"> • A month duration of 3 contact sessions of 60 minutes each OR • 3 contact sessions over a period of 3 months (60 minutes each) OR • No time-line linked to employment of period (this is based on job availability) but OT contact is limited to 1- 2 sessions per month over a period of three months
Implementation Strategies and Period for the RTW intervention	This section describes the strategies by which the different phases of the interventions are to be operationalized	Implementation Strategies:	
		Commencement of Rehabilitation Programme	
		<ul style="list-style-type: none"> • Use of Multidisciplinary team-based approach • Use of Interdisciplinary team-based approach • Client-centered (client is involved in decision making process throughout the intervention). • Interventions are individually tailored to meet clients need • Use of case manager to coordinate return to work process 	
		<ul style="list-style-type: none"> • During out-patient rehabilitation • During in-patient rehabilitation • After out-patient rehabilitation • After the completion of medical intervention by physician 	

		<ul style="list-style-type: none">• When client is independent in performing ADL tasks (self-care and mobility)• When client is independent in performing leisure activities• When client is fully reintegrated in the community (such as participation in social groups)	
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7.4.4 Results of the second round of Delphi survey

This subsection of the chapter report on the finding of the second round of Delphi survey. The results are summarized using charts and percentages. The experts rated the feasibility of the developed Stroke Return to Work Intervention Programme and provided further input on the content and structure, components, approaches, implementation strategies and duration of implementation of the programme. The developed programme was transformed into a questionnaire (Appendix 7.5) on google forms and sent via e-mail to experts for their input. The questionnaire had 38 items that were rated on a three point Likert scale of Agree, Indifferent and Disagree. In addition, comment sections were provided in the questionnaires for the experts to give suggestions regarding the content of the programme. The response rate to the second round Delphi was 86.7% as 2 panelists who participated in the first round did not respond to the second round survey. To be eligible for inclusion in the designed Stroke Return to Work Intervention programme, an item must have achieved a consensus from nine experts ($\approx 70\%$) (Powell, 2003; McKenna & Hasson, 2002; Alexandrov et al., 1996). Items with agreement score of less than nine and disagreement score that is less than five were expanded on based on the suggestions/opinion provided by the experts and considered for re-evaluation in a third round. The results were analysed quantitative and collectively presented in tables (table 7.4).

Table 7. 4: The Structure and Content of Stroke Return to Work Intervention programme

Item	Agree n (%)	Indifferen t n (%)	Indiffere nt n (%)	Comments/Opinion
Phase 1 • Assessment	10(76.92)	3(23.01)	0(0.00)	Inclusion of goal setting as a component of assessment
Phase 2 • Non-work specific intervention/training	11(84.62)	2(15.38)	0(0.00)	
• Work specific intervention/training	13(100)	0(0.00)	0(0.00)	
Phase 3 • Work test placement	13(100)	0(0.00)	0(0.00)	
Phase 4 • Clients full work participation	12(92.31)	0(0.00)	1(7.69)	Consideration of self-awareness capacity of clients

Regarding the structure and content of the **Stroke Return to Work Intervention programme**, all the experts (n=13, 100%) agreed that the programme should include work specific intervention/training and work test placement while the majority of the panelists consented that assessment (n=10, 76.92%); non-work specific intervention/training (n=11, 84.62%) and clients full work participation (n=12, 92.31%) should be included. The panelist advised that the assessment phase should include more of full functional capacity evaluation that is conducted at the workplace compared to the use of work samples as well as goal settings. Similarly, the panelists suggested that the stroke survivors' self-awareness with regards to their ability to make accurate decisions about work performance, strengths and weaknesses as well as a comprehensive review of the clients' work integration at the final phase of the RTW programme should be considered.

Regarding the components of the each of the contents of the programme for stroke RTW Intervention, majority of the experts (n=10, 76.92%) consented that the assessment phase should include functional capacity evaluation, neuro-psychological evaluation, job analysis and workplace ergonomic assessment. However, there was no consensus reached on the duration of the assessment by the experts (figure 7.3).

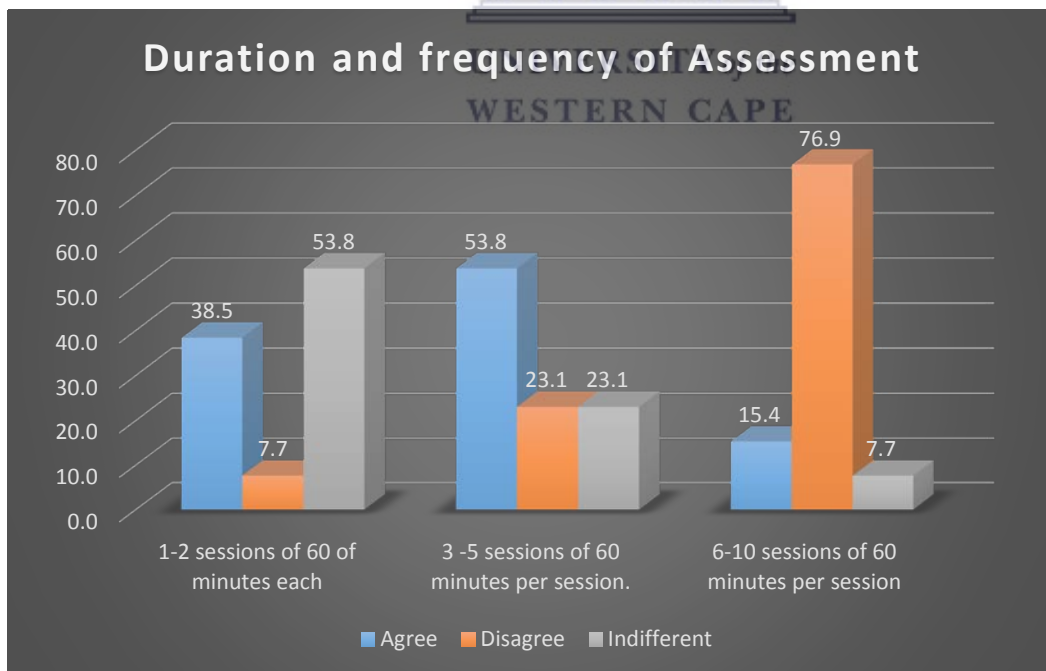


Figure 7. 3: Duration/frequency of Assessment

With regards to the non-work specific and work specific intervention components, majority of the experts agreed on the inclusion of general functional skills training (n=11, 84.62%); prevocational

skills training (n=9, 69.23%); and work hardening (n=9, 69.23%) in the second phase of the SRTW intervention programme. On the contrary, consensus was not reached on the inclusion of vocational counselling and career planning (61.54%) as well as formal education and training in the second phase of the programme (Table 7.5). The majority of experts disagreed that the non-work and work specific phase of the intervention programme should be conducted over a duration of 16-20 sessions (60mins/session) (figure 7.4). No consensus was reached on the duration of the work intervention training (WIT) phase.

Table 7. 5: The components of Work Intervention Training Phase (Phase 2)

Phase 2 Components: Work Intervention Training Phase	Agree n (%)	Disagree n (%)	Indifferent n (%)
Focus area 1: Non-work specific intervention/ training section			
• In this focus area, general functional skills training are provided for the stroke survivor	11(84.62)	2(15.38)	0(0.00)
Focus area 2: Work specific intervention/ training session			
• Prevocational skills training (such as work competence, communication skills, work behavior, interviewing skills, education of legal aspects of work, commuting to and from work)	9(69.23)	2(15.38)	2(15.38)
• Vocational counselling and career planning	8(61.54)	1(7.69)	4(30.77)
• Formal education and training to improve job competitiveness	6(46.15)	3(23.08)	4(30.77)
• Work hardening that is inclusive of simulated task training	9(69.23)	2(15.23)	2(15.23)

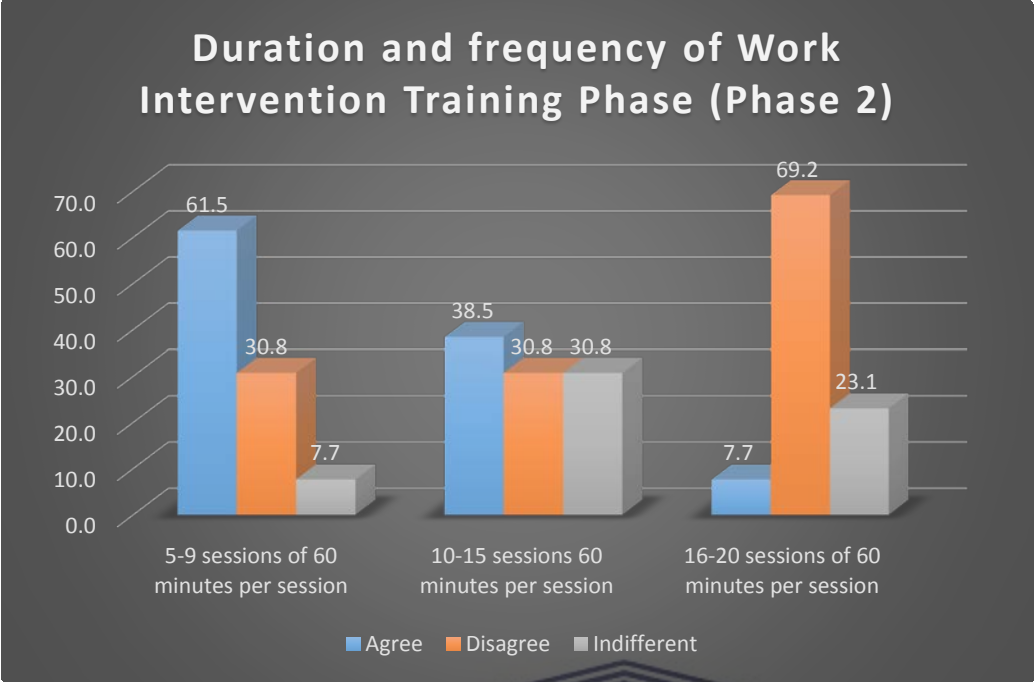


Figure 7. 4: Experts' Level of Agreement on the frequency of Work Intervention Training Phase (Phase 2)

Table 7.6 summarises the level of agreement of experts on the components of intervention in the work test placement phase. The majority of the experts consented on all of the items included within this phase with percentages ranging from 69.23 to 84.62% (Table 7.6). Also, consensus on the duration and frequency of the phase was reached by the experts (figure 7.5).

Table 7. 6: The components of Work Test Placement Phase (Phase 3)

Phase 3 Intervention Components	Agree n (%)	Disagree n (%)	Indifferent n (%)
Work Test Placement			
• Education and preparation of clients, family, employer and co-worker about client's abilities	9(69.23)	0(0.00)	4(30.77)
• Identification of suitable work opportunities/jobs	9(69.23)	2(15.38)	2(15.38)
• Work trials (practice of work skills in real work environment)	11(84.62)	2(15.38)	0(0.00)
• Job coaching and on-going support at the workplace	10(76.92)	1(7.96)	2(15.38)
• Ongoing environmental and ergonomic modification (structure, equipment, and organizational ergonomics)	10(76.92)	2(15.38)	1(7.96)

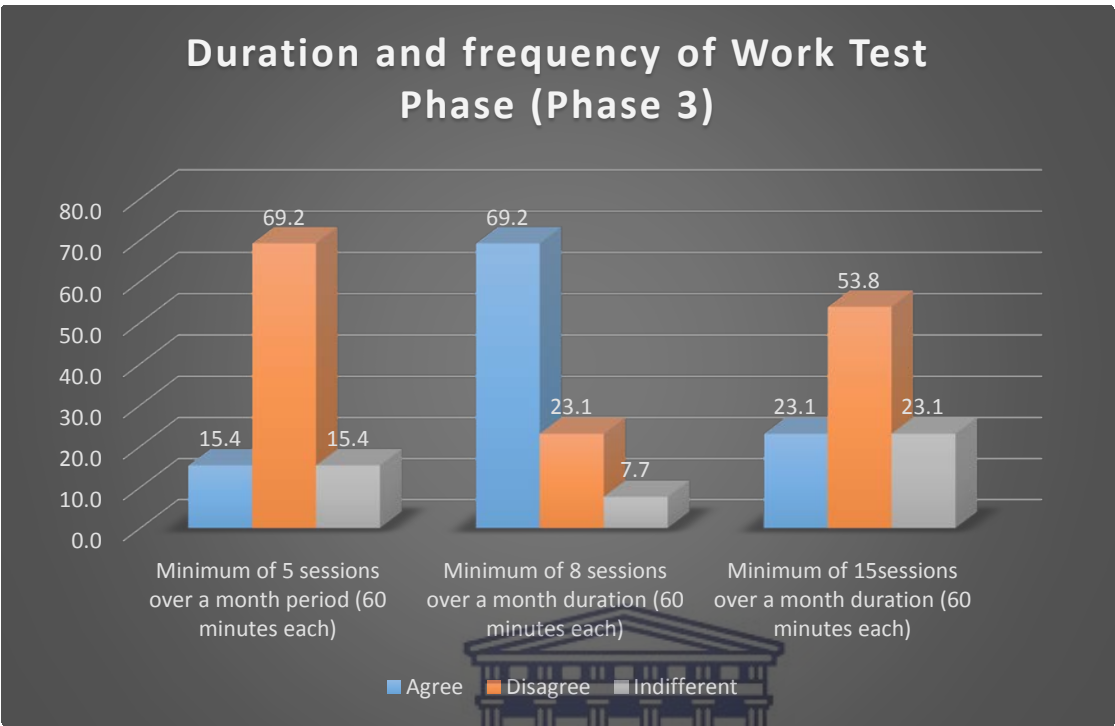


Figure 7. 5: Experts' Level of Agreement on the frequency of Work Test Placement (Phase 3)

Table 7. 7: The components of Clients Full Participation in Worker Role Phase (Phase 4)

Phase 4 Intervention Components	Agree n (%)	Disagree n (%)	Indifferent n (%)
Clients Full Participation in Worker Role			
• Clients is able (are trained) to make decisions about strengths and weaknesses	12(92.31)	1(7.96)	0(0.00)
• Clients can (are trained to) identify whether they require ongoing rehabilitation services for specific skills (if needed)	12(92.31)	1(7.96)	0(0.00)
• Rehabilitation professional involvement is gradually decreased (tapered)	12(92.31)	1(7.96)	0(0.00)
• Clients is able (are trained) to make decisions about strengths and weaknesses	12(92.31)	1(7.96)	0(0.00)

The panel of experts had a high level of agreement on all the components (92.31%) of the fourth phase of the SRTW Intervention programme (table 7.7). Similarly, consensus was reached on the frequency and duration of the fourth phase. This is presented in figure 7.6.

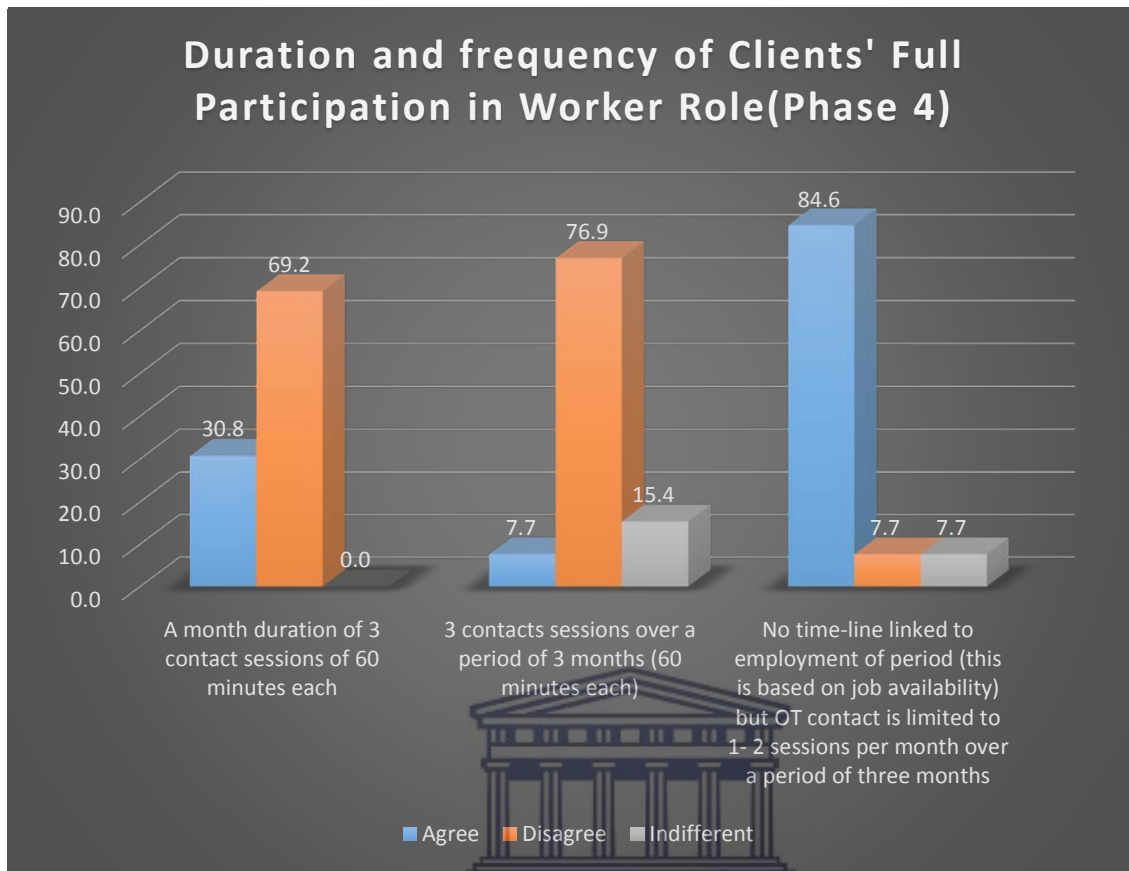


Figure 7. 6: Experts' Level of Agreement on the frequency and duration of Phase 4

The strategies for implementing the RTW programme that was recommended by the experts were similarly rated and consensus on inclusion was reached on four out of five suggested strategies. These included the use of interdisciplinary team-based approach (n=11, 84.62%); the use of client-centered approach (n=11, 84.62%); the tailoring of interventions to meet individual clients' need (n=11, 84.62%) and the use of case manager to coordinate the return to work process (n=9, 69.23%). With regards to the period during stroke rehabilitation continuum when RTW should be commenced, no consensus was reached by the experts. However, there was an agreement among the panel of experts regarding the period when RTW programme should be commenced during stroke recovery continuum (table 7.8).

Table 7. 8: Implementation strategies and period for implementing Stroke Return to Work Intervention Programme

Item	Agree n (%)	Disagree n (%)	Indifferent n (%)
Implementation Strategies of RTW intervention			
• Use of Multidisciplinary team-based approach	4(30.77)	8(61.54)	1(7.96)
• Use of interdisciplinary team-based approach	11(84.62)	1(7.96)	1(7.96)
• Client-centered (client is involved in decision making process throughout the intervention)	11(84.62)	2(15.38)	0(0.00)
• Interventions are individually tailored to meet clients need	11(84.62)	2(15.38)	0(0.00)
• Use of case manager to coordinate return to work process	9(69.23)	3(23.08)	1(7.96)
When to commence the programme during stroke rehabilitation			
• During out-patient rehabilitation	7(53.85)	4(30.77)	2(15.38)
• During in-patient rehabilitation	7(53.85)	5(38.46)	1(7.96)
• After out-patient rehabilitation	8(61.54)	3(23.08)	2(15.38)
• After the completion of medical intervention by physician	8(61.54)	2(15.38)	3(23.08)
When to commence the programme during recovery continuum			
• When client is independent in performing ADL tasks (self-care and mobility)	12(92.31)	1(7.96)	0(0.00)
• When client is independent in performing leisure activities	3(23.08)	9(69.23)	1(7.96)
• When client is fully reintegrated in the community (such as participation in social groups)	2(15.38)	8(61.54)	3(23.08)

7.4.5 Results of third round of the Delphi survey

The third round of the Delphi survey comprises of a few items in the developed programme that consensus were not reached by the panel of experts. These included items that had a level of agreement that is less than nine and a level of disagreement that is less than five. Consensus was not reached on two items in the work intervention training phase (Phase 2) and the duration/frequency of the phase 1 and 2. Based on the suggestions provided by the experts, the duration of the phases of intervention was reviewed and divided into ‘how long’ (timing) and “how often” (the numbers of sessions required). Similarly, 3 items regarding the period to commence RTW during stroke rehabilitation were pulled back into the third round. Response options to the third round questions were limited/restricted to a Yes or No (Appendix 7.6).

At the end of the third round, consensus was reached on all of the items of the **SReTWIP**. Regarding the duration and frequency of the assessment phase of the programme, the majority of the experts agreed that the assessment component should be conducted over 3-5 treatment sessions (76.9%) of 45-60 minutes per session (92.3%). With the duration and frequency of the Work Intervention Training Phase, the panel of experts reached consensus that it should be conducted between 5-9 sessions (84.6%) that spans 45-60 minutes per session (92.3%). Similarly, concerning contents of the work specific intervention training section of the WTP, consensus was reached on the inclusion of vocational counselling and career planning (100%) as well as a recommendation for formal training to improve job competitiveness (69.2%). Furthermore, the panel of experts agreed that the SReTWIP should be implemented during outpatient rehabilitation (92.3%). Table 7.9 summarises the results of the third round of the Delphi survey.

The participants were thereafter notified of the completion of the final round of the Delphi and provided with a copy of the developed RTW intervention Programme

Table 7. 9: Results of third round of Delphi survey

Items	n	%	Comments	
Duration of RTW Assessment Phase				
<i>How many sessions?</i>				
• Minimum of 1-2 Sessions	3	23.1		
• Minimum of 3-5 Sessions	10	76.9		
<i>How long should each Assessment Session take?</i>				
• 30 minutes	1	7.7		
• 45-60	12	92.3		
Duration of Work Intervention Training Phase				
<i>How many sessions?</i>				
• Minimum of 5-9 Sessions	11	84.6	As RTW intervention is client-centred, the frequency and duration of intervention will depend on personal and clinical factors of the client.	
• Minimum of 10-15 Sessions	2	15.4		
<i>How long should each Assessment Session take?</i>				
• 30 minutes	1	7.7		
• 45-60 minutes	12	92.3		
Relevance of intervention components within WTP				
<i>Vocational counselling and career planning</i>				
• Relevant	13	100		
• Not relevant	0	0.0		
<i>Formal education and training to improve job competitiveness</i>				
• Relevant	9	69.2		
• Not Relevant	4	30.8		
Implementation Period of the RTW intervention				
<i>During out-patient rehabilitation</i>				
• Yes	12	92.3	Essential to go side by side with other treatment schedules at the onset	
• No	1	7.7		
<i>After out-patient rehabilitation</i>				
• Yes	3	23.1		
• No	10	76.9		
<i>After the completion of medical intervention by physician</i>				
• Yes	4	30.8		
• No	9	69.2		



7.5 ADJUSTMENT TO THE DESIGNED STROKE RETURN TO WORK INTERVENTION PROGRAMME

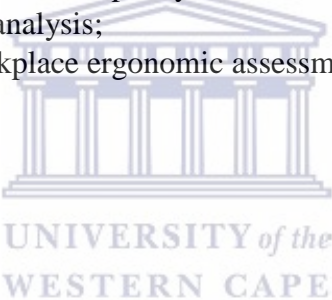
On completion of the Delphi study, minor changes were made to the initially designed Stroke Return to Work Intervention Programme. These changes were effected in the first three phases of the programme and in the programme implementation strategies. Firstly, the “duration” of the various phases were renamed to “frequency and duration” in order to accommodate for the timing (how long) and the numbers of sessions (how often) required for each phase of the programme, as this provided clear information regarding the frequency of the interventions. This further serves as a step for the proper quantification of the various intervention phases to ensure future fidelity assessment (DeJong, Horn, Gassaway, Slavin, & Dijkers 2004). Also, based on the recommendation of the panel of experts, goal setting was included as one of the components of the assessment phase. Even though goal setting during stroke rehabilitation has been generally referred to as a single activity that is isolated from other rehabilitation processes in most literature (Lloyd, Bannigan, Sugavanam, & Freeman, 2018; Levack et al., 2015; Hartigan, 2012), the experts felt it should be an integral part of the stroke survivors’ assessment and treatment management plans. This position is similar to the report of Plant and Tyson (2018) who indicated that the goal setting process as well as the patient’s assessment during stroke rehabilitation are clearly interlinked. The above authors further posited the integration of the two processes in long term post stroke rehabilitation. Since goal setting during this phase will enhance communication and collaboration within rehabilitation teams (Levack et al., 2015; Rosewilliam, Roskell, & Pandyan, 2011; Sugavanam, Mead, Bulley, Donaghy, & van Wijck, 2013) as well as improve patient motivation and engagement in the other phases of the SReTWIP programme (Alanko, Karhula, Kröger, Piirainen, & Nikander, 2018), its inclusion was deemed important.

On the other hand, formal education and training to improve job competitiveness was excluded as a component of the Work Intervention Training phase based on the opinion of the panel of experts. They felt that recommending the upgrading of skill sets required for work may be needed but that this should not be an integral component of vocational rehabilitation. As formal education and upgrading of skill sets would not be conducted by rehabilitation teams involved in the RTW process of the stroke survivor, this was then excluded from the programme after consensus was reached by the panel of experts.

With regards to the implementation strategies, the multi-disciplinary team-based approach (MDT) was excluded, as experts felt that the interdisciplinary approach (IDT) was more suited for delivering the RTW intervention. Although MDT has been associated with improvements in the quality of stroke care by policy makers and clinical guideline developers in the literature (Clarke, 2013; Harris et al., 2013; Intercollegiate Stroke Working Party, 2012; Reeves, Lewin, Espin, & Zwarenstein, 2010), considering the context in which the RTW would take place and the stage during the care continuum when RTW intervention is to be implemented, the experts felt that the conceivable value of integrated team action may not be achieved using MDT. On the hand, the experts felt that interdisciplinary team-based approach which allow team members to perform activities toward a common goal (i.e. RTW), and accept the additional obligation of group effort for patients, was a more practical approach. Disciplinary articulation that is provided within the IDT could have further informed the position taking by the experts as this may enable team members to have an understanding of each other's roles and identify where overlap occurs (Clarke, 2010; McCallin, 2009). Since IDT allows RTW team members to work as equals, with reverence for the expertise and knowledge provided by each team member, it will therefore facilitate a more cohesive and efficient approach to collaborative working among the RTW team. Furthermore, IDT in stroke management has been attributed to ease prompt information exchange and facilitates early interventions, as well as an effective approach in longer term rehabilitation in community settings (Clarke & Forster, 2015).

The final draft of the developed Stroke Return to Work Intervention Programme is presented in Table 7.10

Table 7. 10: The Developed Stroke Return to Work Intervention Programme (SReTWIP)

Phase	Description	Components	Numbers of sessions	Duration of sessions
Phase 1: Assessment Phase	This is the first phase of the programme where the preliminary interview is conducted with the clients in the treatment setting and/or at the workplace to obtain information about the stroke survivor’s work ability and the job respectively	<ul style="list-style-type: none"> • Functional capacity evaluation • Job analysis; • Workplace ergonomic assessment 	<ul style="list-style-type: none"> • Minimum of 3 - 5 sessions 	<ul style="list-style-type: none"> • 45 to 60 minutes per session
Phase 2: Work Intervention/ Training Phase	This phase comprises of 2 focus areas where clinic based work interventions are provided to clients	<p>Focus area 1: Non-work specific intervention/training section</p> <ul style="list-style-type: none"> • General functional skills training <p>Focus area 2: Work specific intervention/training section</p> <ul style="list-style-type: none"> • Vocational counselling and career planning • Prevocational skills training (such as work competence, communication skills, work behavior, interviewing skills, education of legal aspects of work) • Formal education and training to improve job competitiveness • Work hardening that is inclusive of simulated task training 	<ul style="list-style-type: none"> • Minimum of 5-9 sessions 	<ul style="list-style-type: none"> • 45 to 60 minutes per session

<p>Phase 3: Work Placement</p>	<p>This is a continuation of the previous phase. In this phase, other stakeholders in the RTW process of the stroke survivor are involved in the process. The interventions provided are both clinic and work based.</p>	<p>Intervention in the phase include:</p> <ul style="list-style-type: none"> • Education and preparation of clients, family, employer and co-worker about client's abilities • Identification of suitable work opportunities/jobs • Work trials (practice of work skills in real work environment) • Job coaching and on-going support at the workplace • Ongoing environmental and ergonomic modification (structure, equipment, and organizational ergonomics). 	<ul style="list-style-type: none"> • Minimum of 8 sessions over a month duration 	<ul style="list-style-type: none"> • 60 minutes per session
<p>Phase 4: Clients Full Participation in Worker Role</p>	<p>This is the final phase of the RTW programme where the stroke survivor is fully reintegrated back to work</p>	<p>In this phase,</p> <ul style="list-style-type: none"> • Clients is able (are trained) to make decisions about strengths and weaknesses • Clients can (are trained to) identify whether they require ongoing rehabilitation services for specific skills (if needed) • OT involvement is gradually decreased (tapered) 	<ul style="list-style-type: none"> • No time-line linked to employment of period (this is based on job availability) but OT contact is limited to 1- 2 sessions per month over a period of three months 	
<p>Implementation Strategies and Period for the RTW intervention</p>	<p>This section describes the strategies by which the different phases of the interventions are to be operationalized</p>	<p>Implementation Strategies:</p> <ul style="list-style-type: none"> • Use of interdisciplinary team-based approach • Client-centered (client is involved in decision making process throughout the intervention). • Interventions are individually tailored to meet clients need • Use of case manager to coordinate return to work process <p>Commencement of the Rehabilitation Programme</p>	<p>Overall Duration of Programme: Minimum of 12 weeks</p>	

		<ul style="list-style-type: none">• During out-patient rehabilitation• When client is independent in performing ADL tasks (self-care and mobility)		
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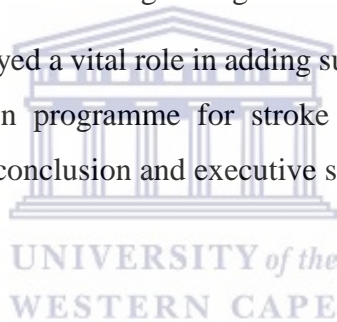


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7.6 CONCLUSION

Through the Delphi method, it was possible to obtain expert input to design and develop a vocational rehabilitation programme that could ultimately enhance the return to work rates and quick resumption of the worker role of stroke survivors. This phase of the study showed that the Delphi method is an appropriate forecasting tool that could be used when expert opinion and advice of high priority is required for the development of a programme. Although two of the experts who consented to partake in the study were lost to follow-up after the first round of the Delphi, the researcher was still able to get consensus from 13 experts on all the contents that formed part of the Stroke Return to Work Programme that is being designed. These contents are to be implemented in four different phases. The phases are directly linked with one another and are guided by implementation strategies. The stroke survivor can move/fluctuate between the different phases based on their level of work functioning during the course of vocational rehabilitation.

As this chapter of the study has played a vital role in adding substance and value to the design and development of RTW intervention programme for stroke survivors, the succeeding chapter (**Chapter 8**) is used to present the conclusion and executive summary of the study.



CHAPTER EIGHT

SUMMARY AND CONCLUSION

SUMMARY

8.1 INTRODUCTION

The overall aim of the study was to design a return to work programme that could facilitate quick work re-entry for stroke survivors in Osun state, Nigeria. The study was conceptualised using the WHO International Classification of Functioning, Health and Disability framework. Similarly, the methodological framework of Intervention Mapping that was proposed by Eldridge (2016) was utilized to guide the execution of the study in a three phase process that is graphically represented in Figure 8.1.

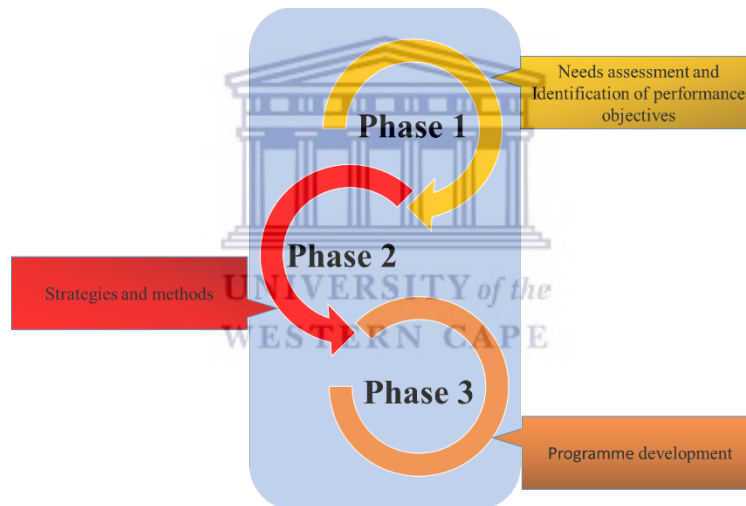


Figure 8. 1: Phases of the study

The first phase of the study provided an understanding of the problem through a baseline assessment of RTW rates and exploration of the impairments, activity limitation as well as participation restriction after stroke. The phase further identified performance objectives by exploring the determinants of RTWs through qualitative in-depth interviews with stroke survivors. The second phase identified methods and strategies from a scoping review of the current body of literature while the third phase developed a RTW programme through a Delphi study with a panel of experts in stroke and vocational rehabilitation.

This chapter purposes to provide an integrated summary of the three phases of the study and the contribution of the study to the field of stroke and vocational rehabilitation. The chapter concludes by providing recommendation for futures studies and the limitations to the present study.

8.2 SUMMARY OF PHASES

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

The first phase of the study sought to understand the problem by (a) investigating the RTW rates of stroke survivors (b) exploring the impairments, activity limitation and participation restrictions that stroke survivors experienced after the stroke event and, (c) identifying the determinants of RTW after stroke. All of the above three objective were achieved in two convergent stages, namely; the quantitative assessment of RTW rates, impairments, activity limitation, participation restriction and determinants of RTW after stroke

8.2.1.1 Baseline quantitative assessment of RTW rates, impairments, activity limitation, participation restriction and determinants of RTW after stroke

The RTW rates of the stroke survivors who partook in this survey was 63.8%. Even though this showed an 8.3% increase in rates compared to a previous hospital based study conducted in Nigeria (Peter., 2013), almost half of the study population who RTW, returned to either modified work or worked on part-time basis while the majority of those that were unable to RTW could not return due to their health condition and lack of engagement in rehabilitation. Problems pertaining to a lack of energy and drive function and higher level cognitive function were indicated by the majority of the study population as common body impairments that they experienced after the stroke. Difficulties with the acquisition of new skills and handling of stress and psychosocial demands influenced their participation in activities. Similarly, over 40% of the study population experienced difficulty ranging from “quite a bit” to “extreme” with travel to and from work and access at work.

These results highlighted the need for a RTW intervention programme that incorporate models and /or theories such as the ICF framework to facilitate the re-integration of stroke survivors to work in competitive employment. The ICF framework suggests that work ability or disability after stroke arises from a combination of the sequelae arising from the stroke event and factors within the environmental where work participation occur. With this, the focus of intervention to facilitate

RTW can be shifted from the person to the environment in which work participation occur or vice versa (Rauch et al., 2012; Rusch et al., 2004). It was envisaged by the researchers that the use of the ICF framework as underlying theory for the designed programme would lead to a better understanding of the various human and environmental factors that influences RTW after stroke. The health status measurement approach of the ICF framework focus on the level of impact of a health condition such as stroke on body functions and structure, as well as activity and participation while taking into account personal and contextual factors of the individual.

Preliminary bivariate analysis showed that marital status, side affected by stroke, disability level (stroke severity), duration of stroke survival, sector of employment, type of vocational rehabilitation and workplace support significantly explained the variance in return to work status after experiencing a stroke. Further regression analysis revealed that health related and environmental factors were important in facilitating RTW among stroke survivors. In particular, the combination of the side of the body affected by stroke, type of vocational rehabilitation programme, stroke symptoms, activity and participation problems as well as body function impairments significantly predicts RTW status among stroke survivors. The side of the body affected by the stroke was identified as the most important predictor of RTW status with an odd ration of 7.6. This findings is consistent with previous work of Wang et al. (2014) and Ntsiea, Van Aswegen, Lord, and Olorunju (2015). For instance, Ntsiea et al. (2015) reported that individuals who had their left side of the body affected by stroke had a 7.7 times likelihood of returning to work compared to their counterparts with right side hemiparesis or hemiplegia. Ninety-four percent of stroke survivors are documented as having right side laterization in previous literature (Duff et al., 2014; Hamzat, Olaleye, and Akinwumi 2014). It could therefore be assumed that majority of the stroke survivors in the study are right hand dominant which made them better placed to RTW compared to their counterparts that are left handed. The disability imposed by the stroke places a restriction on the functional use of the dominant hand for survivors with right side affectation. Thus, stroke survivors with left side affectation had a higher participation and a better reintegration into their worker role than their counterparts. Similarly, as individuals with right side stroke affectation have a greater tendency of having their broca area affected thereby leading to expressive aphasia, it may be adduced that speech problem coupled with hemispheric laterization (right hand domince) of stroke was responsible for the high likelihood that this group would struggle to RTW. This is further corroborated as a third of the stroke survivors reported that speech problem

had moderate to extreme impact on their ability to RTW. As most jobs require communication skills, speech problem might make work performance in some types of employment difficult if the stroke survivor is not accommodated in such employment as observed from this baseline study which revealed that two-third of the stroke survivors did not receive any form of support from the workplace. According to Gensby, Labriola, Irvin, Amick, and Lund (2014), it is important to understand that work disability after a health condition such as stroke is influenced by both human and environmental factors that could only be addressed through a multi-component intervention programme. Thus the consideration of appropriate interventions that address these multi-factorial factors that restricts work performance is essential to improve RTW rates among stroke survivors.

8.2.1.2 Baseline exploration of the lived experience of returning to work after stroke

To obtain further understanding and insight regarding the impairments, activity limitations and participation restrictions that stroke survivors experienced, it was important to explore the lived experiences of individuals living with a stroke and navigating through employment after a stroke event. Specifically, the experiences of both stroke survivors who had and had not RTW were explored regarding the impairments, activity limitation, participation restrictions and possible factors that influences work resumption through qualitative in-depth interviews. An exploratory methodological approach was used and this provided opportunities for the clarification of the processes and pathways by which the stroke survivors perceive factors that affect work resumption. The results of this stage produced a composite concept map that was derived from three themes. The concept map suggests that the experience of living with stroke is a difficult phenomenon which is characterised by impairments (loss of body functions), limitation in activity performance (I can't do one or two things) and emotional concerns (why me?). The stroke survivors' environment was observed to either make or mar this experience as illustrated in the second theme. The third theme represents the process and pathway through which work resumption after stroke was and could be achieved by stroke survivors. The concepts map provides an overview of what individuals go through after experiencing stroke and the things that influences their participation in occupational roles after stroke.

It is difficult to live with stroke:

Over the years, phenomenological research into the lived experiences of stroke survivors have established that a substantial percentage of survivors experienced one or more forms of difficulty

in areas of functioning that makes the aftermath of stroke gruelling (Arntzen, Borg, & Hamran, 2015). The findings from this theme highlighted the negative impact of stroke sequelae on activity performance and psychological well-being of the stroke survivor that is consisted with previous literature (Krishnan et al., 2017; Soeker & Olaoye, 2017; Hebert et al., 2016; Gillen, 2015; Akinyemi et al., 2014). The difficulty arose as a result of the impairments experienced by the stroke survivors and the inability to perform familiar tasks which were revealed in the first “the loss of body function” and second “I can’t do one or two things” categories respectively. The losses experienced by the participants were felt as skills deficits in the cognitive, speech, motor and sexual domains which subsequently influenced the ability of the stroke survivor to perform daily task. According to Arntzen et al. (2015), as stroke survivors struggle to overcome the sudden change in their functional abilities and negotiate to participate in everyday activities, they experience tension in their recovery trajectory. Consequently, the stroke survivors responded emotionally to the vulnerability and changes they experienced after the stroke event with the query “why me?”

The influence of environmental factors on occupational roles:

The findings revealed that stroke survivors contended with various environmental factors in order to participate in previous or new roles and tasks. Such environmental factors which include the physical environment, health and labour systems as well as support networks within the environment both positively and negatively influenced the participation capacity of stroke survivors. This finding is consistent with existing literature where the physical, social and political environment have been implicated as influencing community integration and participation (Wong et al., 2017; Hammel et al., 2015). Thus, rehabilitation intervention for managing stroke should not only address impairments arising from stroke but also address environmental factors that could impact participation after experiencing a stroke.

Factors influencing the return to work of stroke survivors:

This finding highlighted the various issues that directly impacted on the resumption of the worker role of the participants. Prominent among these factors were recovery of functional abilities and self-determination of stroke survivors to take responsibility for self. The recovery trajectories of the stroke survivor involved a gradual process that was facilitated by rehabilitation. Rehabilitation interventions such as occupational therapy, physical therapy and vocational rehabilitation among

others have been reported to improve recovery and return to work among stroke survivors (Langhorne, Bernhardt, & Kwakkel, 2011; Dohle et al., 2009). By engaging in rehabilitation, the stroke survivors were able to envision a new and meaningful life. Furthermore, the stroke survivors took responsibility for their recovery and determined to prevent the stroke event from controlling their lives. The need to meet financial obligations, fear of losing their jobs as well as boredom and loneliness were motivating factors that geared the stroke survivors to take responsibility to return to work. Rehabilitation interventions, when complemented with the employer's positive attitude, and stroke survivor's self-determination to return to work has been posited to lead to successful and sustained work resumption (Alaszewski et al., 2007; Koch et al., 2005; Lock et al., 2005).

Thus, this stage of the first phase was vital in informing the design and content of the RTW programme as it draw attention to aspects that needed to be considered when developing the programme.

8.2.2 Phase 2: Strategies and methods.

This phase of the study utilized a scoping review methodology to develop an understanding of the strategies and methods that are characteristic of RTW programmes for stroke survivors. This entailed a detailed review of current literature on vocational rehabilitation interventions that were used to facilitate return to work of stroke survivors. From the scoping review, it was found that there is a paucity of RCT studies on return to work interventions for stroke survivors with the majority of available descriptive and experimental studies that described RTW intervention being conducted in Europe. Based on the meta-analysis of the findings of the scoping review, it was affirmed that RTW interventions for stroke survivors falls into three core components which includes 1) intervention components that interface with the stroke survivor; 2) intervention components that interfaced with the workplace and; 3) components that describe strategies of implementation. Intervention components that interface with the stroke survivor include an assessment element, vocational counselling and career planning, behavioural management and psychotherapy, exercise coaching and physical conditioning, cognitive retraining and remediation, skills training, work hardening and work simulation task training. While intervention components that interface with the workplace also include an assessment element involving comprehensive job analysis and ergonomics, work physical environment adaptation, job coaching employee education. The essential elements that guide the strategies for implementations include the use of

a team-based approach, case management approach, client centred approach and the tailoring of the interventions for individual needs.

These core components are interventions that could guarantee an effective RTW for stroke survivors when included in a RTW programme.

8.2.3 Phase 3: Programme development

The programme development phase is an important aspect of Intervention Mapping and this was achieved through a modified e-Delphi study. The modified e-Delphi method was utilized in three iterations to refine expert opinions on the drafted RTW programme in an anonymized way coupled with controlled feedbacks to achieve a consensual position. This process is consistent with recommendations regarding health promotion and programme development in literature that suggest the need to enhance efficacy and evidence through experts' opinion (Santos et al., 2018).

By using open ended enquiry in the first iteration, a panel of experts on stroke and vocational rehabilitation provided their opinion and knowledge on interventions that could facilitate return to work of stroke survivors. Information provided by the experts in the first iteration were then synthesized with findings from the first and second phase of the study to draft the Stroke RTW Intervention Programme (**SReTWIP**) through concept mapping as described in detail in chapter seven. The second iteration entailed a feasibility assessment of the developed RTW. When developing health programme through IM, Eldredge et al. (2016) emphasized the need for feasibility assessment to determine appropriateness and relevance of the developed intervention. The second and third iterations of the modified e-Delphi enlisted feedback from the panel of experts to explore if the drafted programme was acceptable, practicable and adaptable. Although an e-Delphi is not a substitute for other scientific testing, the Delphi as a research technique provides an alternative for examining complex and intertwined topics that traverse disciplinary boundaries (Grisham, 2009). The response rate to the second and last iterations of the modified Delphi survey was high ($\approx 70\%$). Studies using the Delphi as a methodology have argued that rigour can be attained with a response rate of 70%, which was reached in this study (Alexandrov et al., 1996; H. McKenna & Hasson, 2002; Powell, 2003). The findings from this phase showed that the drafted content of the **SReTWIP** was adequate with recommendations to the sequence of the intervention phases.

8.3 THE DEVELOPED STROKE RETURN TO WORK INTERVENTION PROGRAMME

The different phases of the study informed and guided the design and development of the SReTWIP. A description of the SReTWIP is as follows:

The SReTWIP comprises of four interconnected phases of interventions that will span for 12 weeks. The programme commences with an assessment phase (Phase 1) where comprehensive work ability assessment, workplace ergonomic assessment and goal settings are conducted for the stroke survivor. The phase will be initiated during out-patient rehabilitation, after the client is independent in performing ADL and is to be conducted over a minimum of three to five sessions. The assessment phase is succeeded by a Work Intervention Training (WIT) Phase where clinic based work and non-work specific intervention are provided for the stroke survivors. These include: general functional skills training, vocational counselling and career planning as well as prevocational skills training. The WIT phase is to be conducted over a minimum of 5 to 9 treatment sessions. When competency is achieved in the second phase by the stroke survivor, the client proceeds to a third phase which is the Work Test Placement (WTP) Phase. In this phase, other stakeholders in the RTW process of the stroke survivor are engaged. The interventions provided are both clinic and work based and this is to be conducted over a minimum of 8 treatment sessions of 60 minutes per session. In the final phase of the SReTWIP, Clients Full Participation in Worker Role, envisioned that the stroke survivor would have achieved competencies in varying work aspects and capabilities of the previous three phases. During this stage clients would be encouraged to undergo self-reflection about the previous stages and about their ability to participate in the occupational role as a worker. The client ultimately would synthesize and internalize the actions that they undertook and skills that they learnt during the previous stages. Similarly, stroke survivors are encouraged to make decisions about strengths and weaknesses and can (are trained to) identify whether they require ongoing rehabilitation services for specific skills when it is needed. In addition, the involvement of core rehabilitation specialist is gradually decreased (tapered) during this phase.

The entire phase of the SReTWIP will be individually tailored to meet the needs of the stroke survivor and implemented by an interdisciplinary team that will include the OT and PT as key members. Equally, the stroke survivor is expected to be involved in the decision making process

throughout the duration of the SReTWIP. And finally, the programme is to be coordinated by a case manager who will be a member of the interdisciplinary team. A graphical illustration of the SReTWIP is shown in figure 8.2.



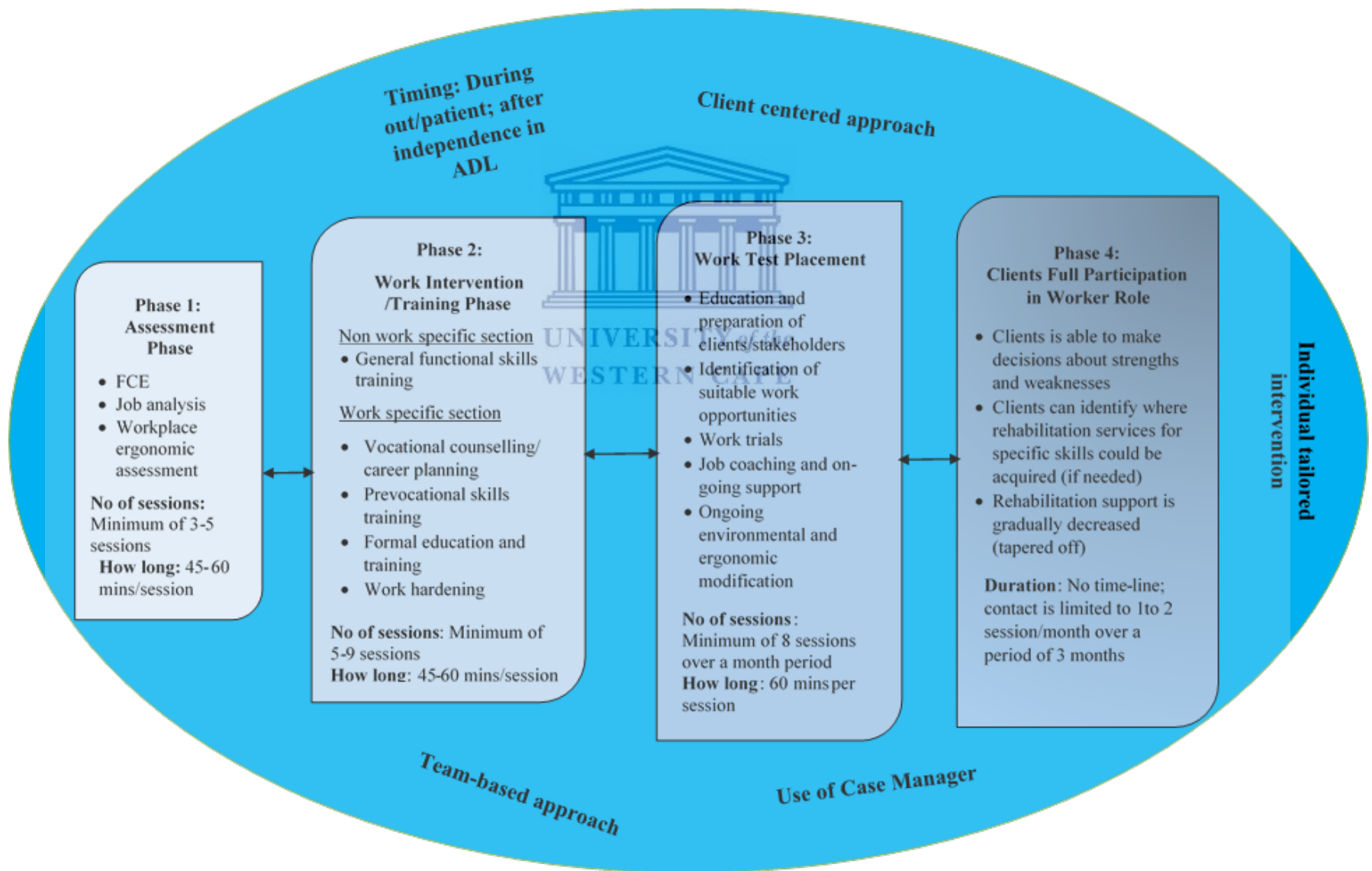


Figure 8. 2: Stroke Return to Work Intervention Programme (SRerTWIP)

8.4 CONCLUSION

From this study, it was concluded that:

- The RTW rate for stroke survivors in the state of Osun, Nigeria is 63.9% with 32.9% returning to full-time work while 31.0% returned either to parttime or modified work.
- Problems pertaining to the lack of energy and drive functioning and higher level cognitive functioning were the common body impairments that the stroke survivors experienced after the stroke event.
- Acquiring new skills, handling stress and psychosocial demands, travel to and from work and access at work were problems with activities and participation restrictions that the stroke survivors encountered.
- The side of body affected by stroke, type of rehabilitation programme, stroke symptoms, environmental factors as well as problems experienced by survivors in activity and participation significantly predicted the RTW of stroke survivors.
- The experience of living with a stroke is a difficult phenomenon that could be alleviated or worsened by the stroke survivor's environment.
- The stroke survivor's self-determination and the recovery of functional abilities influenced the resumption of their worker role.
- The RTW interventions for stroke survivors fall into three core components which include 1) intervention components that interfaced with the stroke survivor; 2) intervention components that interfaced with the workplace and; 3) components that described strategies of implementation.
- Based on the **SReTWIP**, the VR pathway that could successfully facilitate the RTW of stroke survivors entailed four interconnected intervention phases that should be conducted over a 12 weeks period.
- The phases include **an Assessment Phase (Phase 1), a Work Intervention Training (WIT) Phase (Phase 2), a Work Test Placement (WTP) Phase (Phase 3) and the Clients Full Participation in Worker Role Phase (Phase 4)**
- The stroke survivor could move along the various phases of intervention after attaining/achieving competency in a preceding phase.

Finally, this chapter describes the limitations of the study followed by recommendations relating to the findings from the study.

8.5 STUDY LIMITATION

The limitations of the different phases that makes up the study is first discussed with a subsequent description of the limitations regarding the study as a whole.

8.5.1 Baseline quantitative exploration of RTW rates, impairment, activity limitation and participation restriction of stroke survivors

The use of cross-sectional survey may have influenced the predictor power of other variables on RTW of stroke survivor which could have been addressed by a longitudinal study, the present study however presents a baseline data, being the first in Osun state and South West, Nigeria, on which subsequent studies could be built.

8.5.2 Qualitative exploration of impairments, activity limitation and participation restriction following stroke

A pilot interview was envisaged prior to the start of the in-depth interview. As the first two participants that were interviewed had no problem with the semi-structured interview questions, the data from the pilot was therefore pulled into the main study.

In the current study, most of the stroke survivors that participated in the study were male, therefore calling for caution in the generalization of the findings as this may not be representative of the stroke population in Osun state. Although subsisting statistics from the quantitative phase of the study showed the prevalence of stroke as almost equal between the genders, the female participants were not forth-coming and willing to participate in the in-depth interviews. The researcher's effort towards having a gender representative sample was further compounded by industrial action embarked on by health practitioners in four out of the five health facilities within the study setting during the data collection period.

8.5.3 Scoping Review

As the scoping review phase included an extensive consideration of available interventions in RTW after stroke, one of the review's limitations was the inclusion of studies whose sampling population included stroke survivors and individuals with other type of brain injury. Identifying and isolating interventions that was strictly for stroke survivors within such groups was

impracticable. Even though within this category of studies, stroke survivors appeared to be predominant in the samplings, but it is possible that interventions intended for individuals with other types of brain injury may have been included within the review.

Also, given the objective of the scoping review and the diversity of research design utilized within the included studies (e.g., quantitative, qualitative and health guideline), methodological rigour and level of evidence for each included studies were not conducted. Therefore, the findings should be interpreted with caution.

Another limitation associated with this review is that only sources found in specific databases were included, even though these databases index journals where majority of the concepts under investigation are published. Consequently, the results cannot be generalized to other databases. In addition, the review was restricted to a 10-year time frame.

8.5.4 Delphi Study

Thirteen experts out of fifteen completed the second and final rounds of the Delphi survey. Concerted efforts that was made by the researcher to get feedback from the two experts lost to follow-up after the first round was unsuccessful. However, the 13 experts were a representative sample of the different rehabilitation professionals that commenced the Delphi process. In the same vein consensus was achieved on all items on the rounds of the Delphi study.

8.5.5 Overall limitation

Due to the multifaceted nature of evidence-based rehabilitation programme design, this thesis presents the first of the numerous iterations for designing and developing health programmes as suggested by Eldridge (2014). The implication of this is that the designed SReTWIP needs to be tested for practicability within the context where it was designed.

8.6 RECOMMENDATIONS

The findings from this thesis highlight certain implications for practice that are described under the following subsection: recommendations for future research, clinical practise, and education.

8.6.1 Recommendation for future research

The acceptance of a programme by key stakeholders is an important aspect of the feasibility of the programme, although the present study explored the feasibility of the SReTWIP among

rehabilitation professionals through the Delphi, a feasibility study with other key stakeholders involved in RTW such as employers, informal caregivers and the stroke survivors before its implementation is required.

Similarly there is need for a process evaluation and cost analysis of the SReTWIP prior to its implementation.

8.6.2 Education

From the findings of the studies, it was revealed that the resumption of worker role after stroke required and entailed a team-based process. The development of a vocational rehabilitation curriculum that is interdisciplinary based and that could enhance the team process during rehabilitation is recommended.

8.6.3 Policy development

As health and environmental factors made a significant contribution to the stroke survivors' work re-entry based on the findings from the study, the design and implementation of health policy with a focus on the rehabilitation for people with disabilities (PWDs) is recommended. Similarly, the enactment/implementation of existing legislations of a separate bill/ legislation that addresses socio-political and economic factors that hinder community integration of people with disabilities within the study setting is also recommended. This could facilitate the participation of stroke survivors in competitive employment.

8.6.4 Clinical practise

The inclusion of other health professionals (such as the OTs, PTs, SLTS and social workers) involved in stroke management as team members during rehabilitation and when implementing return to work programmes for stroke survivors is needed to ensure that services rendered to the stroke survivors are both holistic and adequate.

Vocational rehabilitation of the stroke survivor needs to be considered as a priority with a separate pathway of care as compared to what is presently obtainable in the study setting. With a specific referral system for work rehabilitation that is not just one of the components of general rehabilitation in hospital in the study settings, the expected outcome of return to competitive employment would be achievable.

Similarly, the development of a National Practice Guideline for post-acute stroke rehabilitation within the study setting is suggested

The early inclusion of the employer of the stroke survivor in the RTW process is suggested as this may improve the reasonable accommodation and workplace support provided for the stroke survivor.

8.7 DISSEMINATION OF FINDINGS

The findings of the study have been submitted for conference presentation at the second annual sub-Saharan Africa Regional Conference of the World Federation for NeuroRehabilitation. Similarly, the thesis will be drafted into manuscripts for submission to accredited peer-reviewed journals.



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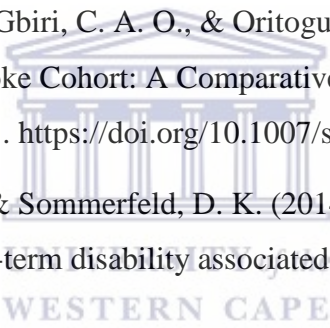
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APPENDIXES

APPENDIX 3.1: STUDY'S ETHICS CERTIFICATE FROM HIGHER DEGREES COMMITTEE OF THE UNIVERSITY OF THE WESTERN CAPE, SOUTH AFRICA



**OFFICE OF THE DIRECTOR: RESEARCH
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01 June 2016

Mr O Olaoye
Occupational Therapy
CHS Faculty

Ethics Reference Number: HS/16/3/25

Project Title: Determinants to return to work and the development of a return to work programme for stroke survivors in Osun State, Nigeria.

Approval Period: 10 MAY 2016 – 10 MAY 2017

I hereby certify that the Humanities and Social Science Research Ethics Committee of the University of the Western Cape approved the 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.

A handwritten signature in black ink, appearing to read 'Patricia Josias'.

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

APPENDIX 3.2: ETHICS CERTIFICATE FROM THE INSTITUTE OF PUBLIC HEALTH, OBAFEMI AWOLOWO UNIVERSITY, ILE-IFE.

 **HEALTH RESEARCH ETHIC COMMITTEE (HREC)**
INSTITUTE OF PUBLIC HEALTH
OBAFEMI AWOLOWO UNIVERSITY, ILE-IFE, NIGERIA. 

Our Ref: HREC NO: IPHOAU/12/671 Date Sept. 30th, 2016

Your Ref: _____

Notice of Full Approval after Full Committee Review


DETERMINANTS OF RETURN TO WORK AND THE DEVELOPMENT OF A RETURN TO WORK PROGRAMME FOR STROKE SURVIVORS IN OSUN STATE, NIGERIA.

Health Research Ethics Committee assigned number: IPHOAU/12/671
Applicant's Name: OLAOYE Olumide Ayoola.
Applicant's Address: Dept. of Medical Rehabilitation, OAU, Ile-Ife.
Date of receipt of valid application: June 7th, 2016
Date of meeting when final determination of research was made: Aug. 29, 2016


This is to inform you that the research described in the submitted protocol (HREC No: IPHOAU/12/671), the consent forms and other participant information materials have been reviewed and *given full approval by the Health Research Ethics Committee.*

This approval dates from Aug. 29th, 2016 to Aug. 27th, 2017, If there is delay in starting the research, please inform the HREC so that the dates of approval can be adjusted accordingly. Note that no participant accrual or activity related to this research may be conducted outside of these dates. *All informed consent forms used in this study must carry the HREC assigned number and duration of HREC approval of the study.* In multiyear research, endeavor to submit your annual report to the HREC early in order to obtain renewal of your approval to avoid disruption of your research.

The National Code for Health Research Ethics requires you to comply with all institutional guidelines, rules and regulations and with the tenets of the Code including ensuring that all adverse events are reported promptly to the HREC. No changes are permitted in the research without prior approval by the HREC except in circumstances outlined in the Code. The HREC reserves the right to conduct compliance visit to your research site without previous notification.



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**APPENDIX 3.3: INSTIUTIONAL APPROVAL OR THE STUDY BY PARTICIPATING
REHABILITATION HOSPITAL**



APPENDIX 3.4: SUBJECT INFORMATION SHEET



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APPENDIX 3.4

INFORMATION SHEET

Title of Research:

Determinants of return to work and the development of a return to work programme for stroke survivors in Osun State, Nigeria

What is this study about?

Stroke survivors have difficulties in resuming premorbid occupational/worker roles. This cast a huge burden on the society and affects the survivor's life satisfaction, self-esteem, quality of life and functional ability. Vocational rehabilitation provides a systematic pathway through which job placement and retention for stroke survivors can be facilitated. However, no standardized vocational rehabilitation protocol has been established for stroke survivors in Nigeria. This study therefore aim to assess the determinants of return to work and develop a return to work programme for stroke survivors in Osun State, Nigeria

What will be asked if I agree to participate in this study?

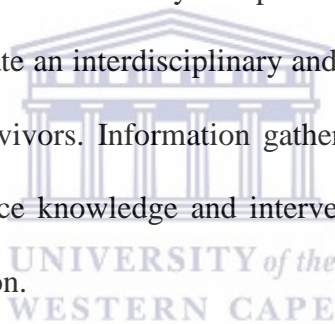
The proposed time frame for this study is 6 months. The researcher will invite 287 stroke survivors from secondary and tertiary health facilities in Osun State in Nigeria. Two methods of data collection will be used to achieve the objectives of this study; questionnaire survey and in-depth interviews with the stroke survivors. 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 fill a questionnaire and describe your experiences of returning to work. You will also be asked to describe some of the challenges you experienced when working.

What are the risks of this research?

There are no known physical or psychological risks involved in this study but due to the nature of interviews and the topic in question, a professional referral source will be made known to the participants if they at any time require counselling or guidance regarding personal matters that may be evoked during the research process.

What are the benefits of this research?

The research study is intended to inform stroke rehabilitation practice. There's a paucity of data on return to work rates and standardized vocational rehabilitation protocol for stroke survivors in Nigeria. Having a standard vocational rehabilitation protocol in Osun state will provide a structured pathway that focuses on work re-entry and placement during stroke rehabilitation. In addition, such protocol will facilitate an interdisciplinary and systematic focus on return to work during rehabilitation of stroke survivors. Information gathered in this study will not help you personally but may help to advance knowledge and intervention strategies in returning stroke survivors to work after rehabilitation.



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

Participation in this research is voluntary. Once you've consented to partake you may withdraw your participation at any time during the process without penalty.

What if I have questions?

The research is being conducted by Olaoye Olumide Ayoola under the guidance of the Department of Occupational Therapy at the University of the Western Cape. If at any time you have queries regarding the nature of the study you could contact the researcher at the details given below:

Researcher: Mr. Olumide Ayoola Olaoye

Email: oaolaoye@oauife.edu.ng

Cell: 08030763794/ +27650329251

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, you may also contact:

Supervisor: Prof. Shaheed Soeker (Head of Department)

Occupational Therapy Department

Tel: +2721 959 9339

Fax: 021 959 1259

Email: msoeker@uwc.ac.za

Co-supervisor : Prof. Anthea Rhoda

Dean, Faculty of Community and Health Sciences.

Email : arhoda@uwc.ac.za



APPENDIX 3.4B: SUBJECT INFORMATION SHEET (YORUBA VERSION)

EDA KETA

AWE IROYIN

Koko ise iwadii:

Wiwadii imolara ati awon pipada senu ise laarin awon eni ori koyo nnu arun roparose.

Kinni iwadii yii da le lori?

Ipada senu ojuuse osise leyin arun roparose nipa nla lori sise ifidimule awon ojuuse atijo ati ibasepo. ki se pe eleyii maa din eru wuwo ti arun roparose gbe le awujo najjiria lori kii nikan sugbon o mu iyipada ba itelorun iponle-eni le, igbe-aye ati ipa ati eni ti ori koyo ninu arun roparose pelu ailera ayeraye ti o waye nipase arun roparose ati ibasepo laarin ipo ailera ati awon sababi o pon dandan beere nipa awon ipeniya ti en oni koyo la koja nigba ti o pada seni ise re leyin ipari eto ilera ni gusu iwo oorun Najjiria.

Eko yii fe se awari imulara ati iriri ogbon ifara da ti eni ori koyo ninu arun roparose se amulo lati pa ise won mo.

Iriri imo lara ati ero won yoo safihan oye ti yoo mu ise ti o kun ti o si loorin wa.

Ohun ti a maa beere ti mo ba gba lati kopa ninu iwadii yii?

Gbendeke akoko fun iwadii yii ni osu mejila. Oluwadii yoo pe eni ori koyo ninu arun roparose mejila lati ile iwosan OAUTHC, ipinle osun orile-edo Najjiria, awon afunni nitoju mejila eni ori koyo ninu arun roparose ati akosemose lori aye ayipada meji lati ile iwosan OAUTHC lati kopa ninu iwadii naa. Ogbon isewadii meji ni a maa lo lati se akojo imolara ati iriri awon eni ori koyoninu arun roparose bii awon afunni nitojuu.

Owo awon afunni nitoju, iwadii ti o jinle pelu awon eni ori koya ninu aarun roparose ati osise akose mose eto igbe aye ayipada fun awon alarun roparose oro enu ati nipa kiko iwe si won ni ipa ti won yo ko lakoko ise.

Iwadii yii a tun maa so fun won pe ki won bu owo lu iwe adehun, won si tun maa ni anfaani lati beere ibeere saaju ifowosi.

Kin ni ewu ti a foju ri tabi ti ero ti o wa ninu iwadii yii sugbon nitori eda egbe afunninitoju, iforowanilenuwo ati ise iwadii gan-an, a maa mu awon onimo, akose rise han awon olukopa tori o seese ki won nilo itoni ati igbani niyanju nipa oro ara en ti o le yoju lakokoo iwadii.

Kinni awon anifaani iwadii yii?

Ise iwadii yii da lori imu ayipada ba arun roparose ni tooto, iroyin ti o joju wa nipa ipada senu ojuuse osise laarin awon omo Naijiria ti ori koyo ninu arun roparose. O le soro lati ni oye bi awon ori koyo ninu arun roparose se n gbe ni awujo. Iroyin ti a se akojo yoo ran an lowo bi enikan sugbon yoo seranwo lati mu imu gbooro fun imo ati ogbon isamulo ninu ayipada fun arun roparose.

Se mo ni lati wa ninu iwadii yii lati pe se kiri maa kopa mo nigbakugba?

Iwofun ni ikopa ninu ise iwadii yii. Bi o tile je pe o gba lati kopa, o le jade nigbakugba laisi ijiya.

Ti mo ba wa ni ibeere nko?

Olaoye Olumide ni eni ti o n se iwadii yi labe idari eka-eko occupational therapy ni fasiti ti western cape. Igbakugba ti o ba ni ibeere lori ise iwadii yii o le ri oluwadii nipa akosile isale yii.

Oluwadii: Ogbeni Olaoye Olumide Ayoola

Email: oaolaoye@oauife.edu.ng

Cell: 08030763794/+2783471208

Ti o ba ni awon ibeere nipa iwadii yii tabi o fe fi isoro ti o n dojuko gege bi olukopa lori iwadii to ni leti o le pe:

Alabojuto: Omowe Saheed Soeker (Adaari eka)

Occupational Therapy Department

[Tel:+27219599339](tel:+27219599339)

Fax: 0219591259

Email: msoeker@uwc.ac.za

APPENDIX 3.5A: CONSENT LETTER



UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa
Tel: +27 21-959, Fax: 27 21-959
E-mail:

Consent Form

Title of Research: Determinants of return to work and the development of a return to work programme
for stroke survivors in Osun State, Nigeria

The study has been described to me by means of the Information Sheet, in a language that I understand and I freely and voluntarily agree to participate. My questions about the study have been answered. I understand that my identity will not be disclosed and that I may withdraw from the study without giving a reason at any time and this will not negatively affect me in any way.

Participant's Name: Participant's Signature:

Witness:

Date:



Should you have any questions regarding this study or wish to report any problems you have experienced related to the study, please contact the researcher.

Researcher: Mr. Olumide Ayoola Olaoye
Email: oaolaoye@oauife.edu.ng; 3218557@myuwc.ac.za
Cell: 08030763794/ +27834714208

APPENDIX 3.5B: CONSENT FORM (YORIBA VERSION)



UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa
Tel: +27 21-959, Fax: 27 21-959
E-mail

EDA KETA OJU KARUN

IWE ADEHUN

A ti se apejuwe iwadii yii fun mi ni pase awe iroyin, ni ede ti mo gbo ati wipe emi si yo n da lati kop alai fi ipa mu mi. Ibeere mi lori iwadii yii ni a ti daa hun. O ye mi wipe a ko ni fi ami idani mo mi han ati wipe mo le kuro ninu iwadii yii ni igba kuu gba lai fi idi Kankan sile ati wipe eyi ko ni se ipalara kankan fun mi ni ona kona.

Oruko olukopa: Awe olukopa:

Elerii:

Ojo:

Ti o ba ni awon ibeere nipa iwadii yii tabi o fe fi isoro ti o n dojuko gege bi olukopa lori iwadii to ni leti, o le pe:

Oluwadii: Ogbeni Olaoye Olumide Ayoola

Email: oaolaoye@oauife.edu.ng; 3218557@myuwc.ac.za

Cell: 08030763794/+2783471208

APPENDIX 4.1: RETURN TO WORK QUESTIONNAIRE

No:

APPENDIX 4.1: RETURN TO WORK QUESTIONNAIRE

The Work Rehabilitation and Work Impact Questionnaire 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 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.

Section 1: Work Rehabilitation Questionnaire

1. Age (in years) : _____
2. Sex : Male Female
3. Civil status : never married married divorced widowed
4. Which best describes your current work status, or if currently not working your last work status?
 Employed Self-employed Non-paid work (volunteer) Student/in training
 Homemaker Retired
5. Which of the following describes your current work status best?
If currently working, are you ? Full time Part time On modified/light duty
Or if currently not working, are you ? Not working due to health reason
 Not working due to participation in voc rehabilitation Not working due to other health reasons : Please specify?
6. When thinking about your work or vocational rehabilitation program: Are you currently: (Check all that apply) Engaging in vocational training activities (e.g knowledge and skills for a job/ school)
 Engaging in programs related to preparation for employment (apprenticeship/ 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)?
9. What kind of business, industry or service is (or was) your job in? _____
10. What kind of work are (or were) you doing? _____
11. If a change of job is planned, what future job are you aiming for? _____
12. Are you in medical or therapeutic treatment? Yes No Not Applicable (NA)
13. Do you have current restrictions? Yes No NA
14. What kind of work or vocational intervention are you receiving now? (list all you know)
Interventions :
15. In your current situation, do you get the support you need from your family Yes No NA
If yes, please specify what kind of support you get
16. If still employed, do you get the support you need from your supervisor/boss? Yes No NA
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 NA
If yes, please specify what kind of support you get:

18. Side of stroke affectation: Left Right
- 19 Post stroke duration:
20. Modified Ranking scale score (mRS):

Section 2: Work Impact Questionnaire

The following questions seek to know the impact of the underlisted variables on your resumption of worker role. Tick the appropriate box as it applies to you

	How much does . . .	Impact on your work (please circle)				
		Not at all	A little	Moderately	Quite a bit	Extremely
21	Fatigue					
22	Balance					
23	Walking difficulties					
24	Visual problems					
25	Weakness					
26	Handwriting					
27	Pain					
28	Coordination					
29	Speech					
30	Swallowing					
31	Continence					
32	Concentration					
33	Memory					
34	Mood					
35	Travel to work					
36	Access at work					
37	Public attitudes					

Section 3: Brief ICF core set in vocational rehabilitation

Domains	ICF core sets	Score
Activities and Participation	Acquiring skills	
	Handling stress and other psychological demands	
	Complex interpersonal interactions	
	Acquiring, keeping and terminating a job	
	Remunerative employment	
	Non-remunerative employment	
Body Functions	Energy and drive functions	
	Higher-level cognitive functions	
	Exercise tolerance functions	
Environmental Factors	Immediate family	
	People in positions of authority	
	Health services, systems and policies	
	Labour and employment services, systems and policies	

Notes on scoring of activity and participation; and body function

0: no problem; 1: mild problem; 2: moderate problem 3: severe problem; 4: complete problem

Notes on scoring of environmental factor domains

0: Not a barrier/facilitator; +1 Mild facilitator; +2 Moderate facilitator; +3 Substantial facilitator; +4 Complete facilitator; -1 Mild barrier; -2 Moderate barrier; -3 Severe barrier; -4 Complete barrier

mRS scoring: 0: No symptoms; 1: No significant disability, able to carry out all usual activities despite symptoms
2: Slight disability, able to look after own affairs without assistance, but carry out all previous activities
3: Moderate disability, requires some help but able to walk unassisted
4: Moderately severe disability, unable to attend to own bodily needs without assistance, and unable to walk unassisted
5: Severe disability, requires constant nursing care and attention, bedridden, incontinent.
6: Dead



APPENDIX 4.1B : RETURN TO WORK QUESTIONNAIRE (YORUBA VERSION)

EDA KERIN OJU KINI: IWADII NIPA IPADA SENU ISE LEYIN AISAN ROPAROSE

Iwe ibeere yii ni a gbekale lati je ki a ni oye lori isoro ti a n dojuko lori awon ise ti eeyan n se lojojumo to romo ilera ara. Abala keji yoo beere nipa bi e se n se awon ise oojo yii. Nigba ti e ba n dahun apa keji, e ronun nipa oose ti e lo koja, ki e si ronun si awon idojuko ti e ni ni ojo ti o daara julo ati eyi ti ko daara, ati awon wahala ti e dojuko ni ose to koja.

Abala Kini

1. Ojo ori: _____
2. Imo ako tai tabo: ako abo
3. ipo igbeyawo: mi o ti gbeyawo mo ti gbeyawo ikorasile opo
4. ewo ni o juwe ise ti o n se lowo bayii tabi ti o ko ba se ise bayii, kini ise ti o se keyin?
 Mo n sise ise adani ise ofe akeekoo/mo n kose
 ise-ile mo ti fehinti
5. ewo ni o sapejuwe ise ti o n se lowo?
kini ise ti o se keyin? ise kikun ise igba kankan iparo ise
tabi ti o ko ba se ise bayii? ise ise tori ailera
 aise ise nitori ikopa ninu liana ipada senu ise
 aise ise nitori awon ailera miiran (jowo soju abe niko) ?
6. Nigba ti o ba n ronun nipa ise re tabi eto ipada senu ise, nje o n ro bayii? (toka si gbogbo eyi ti o ba kan si o) kikopa ninu eto ikose (fun apere, ninu imo nipa ise abi ile-iwe)
 Engaging in programs related to preparation for employment (apprenticeship/ internship)
 kikopa ninu eto ti yoo je ki o le pe lenu ise
 wiwa ise
7. kini ipo ile-iwe ti o ga julo ti o pari? O ko lo si ile-iwe o ko pari ile-iwe alakobere ile-iwe alakobere ile-eko girama ile-eko giga ile-eko giga julo
8. kini ise ti o n se lowo bayi tabi ise amodaju, tabi ti o ko ba sise lowolowo bayi, kini ise amodaju tabi ti o se keyin (oruko ise naa)
9. Iru idokowo tabi ile-ise wo ni ise re? _____
10. Iru ise wo ni o n se? _____
11. Ti iyipada si ise miiran ba sele, iru ise wo lo lero lati ni lojo iwaju? _____
12. Nje o n gba itoju lowo? Bee ni bee ko ko ba mi wi
13. Nje o ni ailera kan ti o je idiwo? Bee ni bee ko ko ba mi wi
14. Iru eto ise wo ni o n kopa ninu re fun ipada senu ise? (ko oruko gbogbo eto yii)
Eto naa :
15. Ninu ipo ti o wa bayi, nje awon ebi re n ran o lowo? Bee ni bee ko ko ba mi wi
Ti o ba ri bee, jowo so iru iranlowo ti o n ri lati odo won?
16. ti o bas i sise, nje o n ri iranlowo ti o ni lo lati odo alabojuto tabi oga re?
bee ni bee ko ko ba mi wi
ti o ba ri bee, jowo so iru iranlowo ti o n ri gba:

17. Leyin ise ojo re tabi ilana igbada senu ise, se o ri iranlowo lati owo ijoba tabi aladaani ti o n gba eni sise lati ri ise tabi lati wa ise miiran? Beeni Beeko ko bami wi
To ba je beeni, iru iranlowo wo ni o ri gba
18. Eya ara ti roparose n d la mu: Osin Otun
19. Iye akoko roparose:
20. Igbelewon ti a yipada ti a ilera (Modified Ranking scale, [mRS]) :.....
Awon ibeere ti o tele yii fem o bi awon nkan wonyii se nipa lori pipada si enu ise re. Toka si eyekeyi ti o ba kan si o

Abala Keji

	Ni ona wo . . .	Ipa lori ise (ka ile mo)				
		Kosi rara	Die ni kekere	Niwon tunwonsi	Ni ran pe	Ni gongo ara
21	Rire					
22	Ni diduro daadaa					
23	Idojuko nipa irin ririn					
24	Idojuko nipa riri iran					
25	Aare					
26	Iwe kiko					
27	irora					
28	Coordination					
29	Oro siso					
30	Gbigbe ounje mi					
31	Tito lona toyen					
32	Ifo kan si					
33	Ri ran ti					
34	Mood					
35	Lilo si ise					
36	Iroru iwolewode nibi ise					
37	Iwuwa si awon eniyan					

Abala Keta: Pataki ninu eeya pipada si enu ise niti ICF

Eeya	Pataki ninu eeya pipada si enu ise niti ICF	Iwon
Kikopa ninu orisiriyi ise oojo	Nini imokun imo	
	Ibojuto aare ara ati awon ero inu ookan miiran	
	Ijiroro eeyan si eeyan ti ota koko	
	Gbigba ise, didi ise mu ati fifi ise sile	
	Ise ti o lowo lori	
	Ise ti ko pa owo wole	
Ise eeya ara	Ise ara ti o gba ookun ati agbara	
	Ise ara ti o gba ironu ti o wan i ipele ti o gaa	
	Kikopa ninu eto ifarada idaraya amara ji pepe	
Ohun itokasi ayika	Ebi ti o sun mo eni	
	Awon eniyan ti o wa nipo giga	
	Ilana, eto ati amulo ilera	
	Ilana, eto ati amulo ise sise ati gbigba ise	

Akosile nipa igbelewon ti eeya ara ati kikopa ninu ise oojo

0: kosi wahala; 1: iwonba wahala; 2: isoro niwontunwonsin 3: isoro nla; 4: isoro ni kiikun

Notes on scoring of environmental factor domains

0: ki n se idena tabi irorun; +1: o je ko rorun niwonba; +2: irorun niwontunwonsin; +3: irorun nla; +4: irorun ni kikun; -1 idena ni iwonba; -2: idena niwon tun wonsin; -3: idena nla; -4: idena ni kikun

Igbelewo mRS:

0: Ko si amin aisan rara;

1: ko si ailera pataki, alaisan le da se ise oojo re pelu amin aisan ti mo n ri

2: Ailera die, alaisan le da bojuto ara re lai si iranlowo lati odo enekeni

3: Ailera niwon tun wonsin, alaisan nilo iranlowo die sugbon o le fun ra re rin lai si iranlowo

4: Ailera niwon tun wonsin nla, alaisan ko le da bojuto ara re, ko si le ri lai si iranlowo

5: Ailera nla, alaisan nilo abojuto nigba gbogbo, alaisan ko le ta to, o da wa ni oju kan lori ibusun ni

6: O ti di oku



UNIVERSITY *of the*
WESTERN CAPE

APPENDIX 4.2: DESCRIPTION AND OPERATIONALIZATION OF VARIABLES IN SPSS

DEPENDENT VARIABLE

The dependent variable in this study explains the resumption of worker role of the stroke survivor in Osun state, Nigeria. This is derived with the question “have you return to work?” with a dichotomous answer of “Yes” or “No”.

INDEPENDENT VARIABLE

The independent variables were grouped into four categories. These include demographic variables, clinical variables, and work as well as health related variables from the WIQ and brief ICF VR core set.

Demographic variables

Age: Participants’ age was represented in three categories which are 0- Less than or equal to 40 years; 1- 41- 50 years; and 2 - 51-60 years.

Gender: The gender of participants was represented in binary form as 0 –female and 1 – male.

Marital status: Respondents’ marital status were categorized as 0 –single (this connotes never married, divorced and widowed) and 1 – married.

Highest education level: This was represented in 5 categories based on Nigeria educational system of 6-3-3-4, and was coded as 0 – no formal education; 1- did not complete primary education; 2 - completed primary education; 3- Completed Secondary Education; 4- Completed either a college, polytechnic or university education.

Hospital site: This refers to the secondary and tertiary health facilities where participants received rehabilitative care. Hospital site was coded as 0- Obafemi Awolowo University Teaching Hospital Complex, Ile-Ife; 1- Ladoke Akintola Teaching Hospital, Osogbo; 2- Seventh Day Adventist Hospital, Ile-Ife; 3- Osun State Specialist Hospital; Asubiaro; and 4- Wesley Guide Hospital of OAUTHC, Ilesha.

Clinical Variables

Received Medical or Therapeutic treatment: This is a binary variable with a dichotomous response coded as 0 – No and 1 -Yes

Currently have restrictions: this was represented with a dichotomous response of 0 as no and 1 as yes

Side of stroke affection: This refers to the side of the body which was affected by stroke. Responses were coded as 0 – non-dominant and 1 – dominant.

Disability Level (modified Rankin Scale): No changes was made as the pre-codes of this variable were taken for the analysis. 0 was used to represent no symptoms; 1 for no Significant Disability;

2 - Slight Disability; 3- Moderate Disability; 4- Moderate Severe Disability and 5 -Severe Disability.

Post stroke duration: this refers to the time lapse after experiencing stroke event. It was categorized and coded as 0 – short term (between 6-24 months) and 1-long term (above 24 months).

Work characteristics variable

Sector of previous work engagement: Previous work engagement was categorized as 0 –public sector 1 - private sector and 2 – self-employment.

Work type: the type of work that the respondents were involved with (job title) prior to stroke by respondents was categorized based on the U.S. Department of Labour, Employment and Training Administration (1991). The amount of strength required for the job was used to classify and code the respondents' work type as 1- Sedentary; 2 – Light; 3- Medium; and 4 – Heavy.

Vocational rehabilitation programme. This refers to the vocational rehabilitation programme participated in by the respondents. This was coded as 0- Engaging in vocational rehabilitation training activities; 1- engaging in programmes related to preparation for employment; 2- Engaging in activities to secure or maintain a job; 3- Looking for a new job.

Current work situation: This gives the description of the respondents' current work condition. It was represented as 0 - Not working due to other reason; 1- Not working due to ongoing VR; 2- Not working due to health; 3 - Modified/Light duty; 4 - Part time ; and 5 - Full time.

Family support/ assistance towards work re-engagement: this is a binary variable that seeks to identify if the respondents received assistance from family members when re-engaging at work. The assistance indicated by participants were categorized as financial, physical and emotional support. Response is represented as 0 – No and 1 – Yes.

Workplace support. This is a binary variable with subcategories listed as financial, physical and emotional support participants. Its responses are represented with 0 as No and 1 as Yes.

Government support: This variable seeks to know if respondents received support from Government towards work re-engagement and/or when unable to work. It is coded as 0- No and 1- Yes.

Health related variables (Key independent variables):

WIQ variables: No changes were made as the pre-codes of these variables were used for the analysis. The codes were represented as 0 – Not at all; 1 – A little; 2 – Moderately; 3- Quite a bit and 4- Extremely. The variables were categorized as symbol subscale and environment subscale as initially proposed by O'Connor et al. (2005)

ICF brief core sets in VR variables (impairments, activity limitation and participation restriction): No changes were made as the pre-codes of these variables were taken for the analysis except for the environmental factor subsection. To allow for uniformity, the response to the environmental factor were recoded as +2- Substantial/complete facilitator; +1- mild/moderate facilitator; 0- No

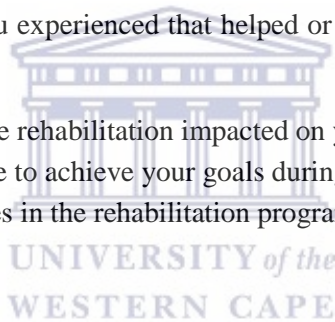
barrier/facilitator; -1 – mild/moderate barrier; -2– severe or complete barrier. The variables of the ICF brief core sets in VR were subcategorised as impairments, activity limitation and participation restriction (environmental factors):



APPENDIX 5.1: INTERVIEW GUIDE

Interview questions and probes:

1. Could you tell me about yourself?
 - What you do before having a stroke and what do you do now?
2. Tell me what it is like to live with stroke
 - How has it affected your life with regards to family, work and leisure?
3. What changes did you have to make to your life to accommodate for the stroke that you experienced?
4. Could you tell me about your experience of returning to work after having a stroke
 - What are those things that served as hindrance/facilitators to work resumption?
 - Can you share your experience regarding attempts you made at returning to work after stroke
5. What are those things that you experienced that helped or hindered you when resuming previous or new roles after stroke
6. In which/what way(s) has/have rehabilitation impacted on your attempts to return to work?
 - Were you able to achieve your goals during rehabilitation
 - What activities in the rehabilitation programme assisted you in developing your work skills?



APPENDIX 5.2: PARTICIPANTS' DESCRIPTION FOR BASELINE EXPLORATION OF LIVED EXPERIENCE OF STROKE SURVIVORS AND PERCEPTION OF RETURN TO WORK

Name	Age as at 2016	Sex	Marital Status	Type of injury	Education	Employment status	Job description	Type of rehabilitation services received after CVA
Participant 1	46	M	Married	Right CVA on 16/12/2015	Tertiary (Masters)	Not Employed	Current job: Nil Previous job: Insurance Broker	In/out patient: physiotherapy Service provider: private and state Out-patient: occupational therapy Service provider:state
Participant 2	42	F	Widowed	Left CVA on 11/4/2014	Tertiary (Bachelors)	Not Employed	Current job: Nil Previous job: Primary School teacher	Out-patient: physiotherapy and occupational therapy Service provider: state
Participant 3	59	M	Married	Right CVA on 15/02/2016	Tertiary (Bachelor)	Employed	Current job: Administrative secretary (part-time) Previous job: Administrative secretary	Out-patient physiotherapy Service provider: state
Participant 4	36	M	Single	Right CVA on 05/07/2015	Tertiary (Bachelor)	Not employed	Current job: Nil Previous job: Personal Assistant	In/out patient: physiotherapy Service provider: private and public Out-patient: occupational therapy Service provider: state
Participant 5	58	M	Married	Right CVA on 21/06/2008	Tertiary (masters)	Employed	Current job: Civil engineer Previous job: Civil engineer	In/out patient: physiotherapy Service provider: private and state
Participant 6	56	M	Married	Left CVA in 10/2006	Secondary/high school	Employed	Current job: Clerk Previous job: Typist	In/out patient: physiotherapy Service provider: private and state Out-patient: occupational therapy Service provider:state
Participant 7	54	M	Widowed	Left CVA in July 2015	Tertiary (Masters)	Self-Employed	Current job: Land surveyor (not back at work) Previous job: Land surveyor	In/out patient: physiotherapy Service provider: private and public Out-patient speech therapy
Participant 8	60	M	Divorced	Left CVA on 24/01/2009	Tertiary (Masters)	Employed	Current job: Lecturing Previous job: Lecturing	In/Out-patient: physiotherapy and occupational therapy, vocational rehabilitation Service provider: private and state

APPENDIX 6.1: SOPING REVIEW SEARCH RESULT

SN	Database	Search Results
1	Academic Search Complete	55
2	Health Source	92
3	Medline	45
4	PsychARTICLES	7
5	CINAHL	87
7	PsychInfo	49
8	AMED	20
9	Embase	129
10	Conchrane Library	33
11	Nexus	35
12	Proquest	138
13	Guideline Key	12

DETAILED SEARCH RESULT FOR ACADEMIC SEARCH COMPLETE

ACADEMIC SEARCH COMPLETE			
SN	Search Terms	Search Options Limiters - Full Text; Scholarly (Peer Reviewed) Journals; Published Date: 20070101- 20171231	Actions
S80	S75 AND S76 AND S77 AND S78 AND S79	Limiters - Published Date: 20070101-20171231	View Results (55)
S80	S75 AND S76 AND S77 AND S78 AND S79	Limiters - Published Date: 20070101-20171231	View Results (109)
S79	S46 OR S47 OR S48 OR S49 OR S50 OR S51 OR S52 OR S53 OR S54 OR S55 OR S56 OR S59	Search modes - Boolean/Phrase	View Results (28,538)
S78	S37 OR S38 OR S39 OR S40 OR S41 OR S42 OR S43 OR S44 OR S45 OR S73 OR S74	Search modes - Boolean/Phrase	View Results (12,793,375)
S77	S17 OR S18 OR S19 OR S20 OR S21 OR S22 OR S23 OR S24 OR S25 OR S26 OR S27 OR S28 OR S29 OR S30 OR S31 OR S32 OR S33 OR S34 OR S35 OR S36 OR S58 OR S61 OR S62 OR S63 OR S64 OR S65 OR S66 OR S67 OR S68 OR S69 OR S70 OR S71 OR S72	Search modes - Boolean/Phrase	View Results (119,707)
S76	S13 OR S14 OR S15 OR S16 OR S60 S1 OR S2 OR S3 OR S4 OR S5 OR S6 OR S7 OR S8 OR S9 OR S10 OR S11 OR S12	Search modes - Boolean/Phrase	View Results (3,444,079)
S75	OR S57	Search modes - Boolean/Phrase	View Results (201,713)
S61	(MH "Job Re-Entry")	Limiters - Published Date: 20070101-20171231	View Results (250)
S60	"program"	Limiters - Published Date: 20070101-20171231	View Results (574,594)
S59	(MH "Rehabilitation, Vocational")	Limiters - Published Date: 20070101-20171231	View Results (1)
S58	(MH "Survivors")	Limiters - Published Date: 20070101-20171231	View Results (2,719)
S57	(MH "Stroke")	Limiters - Published Date: 20070101-20171231	View Results (33,993)
S56	sick leave	Limiters - Published Date: 20070101-20171231	View Results (3,121)
S55	sickness absence	Limiters - Published Date: 20070101-20171231	View Results (1,226)
S54	work absenteeism	Limiters - Published Date: 20070101-20171231	View Results (388)
S53	work resumption	Limiters - Published Date: 20070101-20171231	View Results (81)
S52	work status	Limiters - Published Date: 20070101-20171231	View Results (2,553)

S51	employment status	Limiters - Published Date: 20070101-20171231	View Results (3,764)
S50	return to employment	Limiters - Published Date: 20070101-20171231	View Results (371)
S49	back to work	Limiters - Published Date: 20070101-20171231	View Results (4,273)
S48	RTW	Limiters - Published Date: 20070101-20171231	View Results (374)
S47	return to job	Limiters - Published Date: 20070101-20171231	View Results (662)
S46	return to work	Limiters - Published Date: 20070101-20171231	View Results (4,070)
S74	model*	Search modes - Boolean/Phrase	View Results (2,934,946)
S73	service*	Search modes - Boolean/Phrase	View Results (3,159,683)
S45	method	Limiters - Published Date: 20070101-20171231	View Results (3,089,260)
S44	process	Limiters - Published Date: 20070101-20171231	View Results (1,619,062)
S43	therap*	Limiters - Published Date: 20070101-20171231	View Results (1,089,644)
S42	protocol	Limiters - Published Date: 20070101-20171231	View Results (175,589)
S41	treatment	Limiters - Published Date: 20070101-20171231	View Results (1,714,402)
S40	intervention	Limiters - Published Date: 20070101-20171231	View Results (349,264)
S39	procedure	Limiters - Published Date: 20070101-20171231	View Results (449,396)
S38	strateg*	Limiters - Published Date: 20070101-20171231	View Results (681,360)
S37	program*	Limiters - Published Date: 20070101-20171231	View Results (1,392,515)
S36	vr	Limiters - Published Date: 20070101-20171231	View Results (5,461)
S72	sheltered employment	Search modes - Boolean/Phrase	View Results (182)
S71	affirmative industry	Search modes - Boolean/Phrase	View Results (30)
S70	job development	Search modes - Boolean/Phrase	View Results (2,468)
S69	vocational counsel*	Search modes - Boolean/Phrase	View Results (720)
S68	job coach*	Search modes - Boolean/Phrase	View Results (1,720)



S67	supported employment	Search modes - Boolean/Phrase	View Results (1,065)
S66	work ready	Search modes - Boolean/Phrase	View Results (688)
S65	work preparation	Search modes - Boolean/Phrase	View Results (3,160)
S62	employment support	Search modes - Boolean/Phrase	View Results (1,707)
S61	vocational support	Search modes - Boolean/Phrase	View Results (403)
S35	occupational medicine	Limiters - Published Date: 20070101-20171231	View Results (18,608)
S34	occupational intervention	Limiters - Published Date: 20070101-20171231	View Results (729)
S33	occupational rehabilitation	Limiters - Published Date: 20070101-20171231	View Results (1,349)
S32	work training	Limiters - Published Date: 20070101-20171231	View Results (3,754)
S31	work intervention	Limiters - Published Date: 20070101-20171231	View Results (3,133)
S30	work recovery	Limiters - Published Date: 20070101-20171231	View Results (1,636)
S29	work integration	Limiters - Published Date: 20070101-20171231	View Results (1,624)
S28	work re-integration	Limiters - Published Date: 20070101-20171231	View Results (6)
S27	work reintegration	Limiters - Published Date: 20070101-20171231	View Results (65)
S26	work rehab	Limiters - Published Date: 20070101-20171231	View Results (22)
S25	work rehabilitation	Limiters - Published Date: 20070101-20171231	View Results (1,147)
S24	vocational training	Limiters - Published Date: 20070101-20171231	View Results (3,273)
S23	vocational intervention	Limiters - Published Date: 20070101-20171231	View Results (180)
S22	vocational recovery	Limiters - Published Date: 20070101-20171231	View Results (36)
S21	vocational integration	Limiters - Published Date: 20070101-20171231	View Results (66)
S20	vocational re-integration	Limiters - Published Date: 20070101-20171231	View Results (1)
S19	vocational reintegration	Limiters - Published Date: 20070101-20171231	View Results (20)
S18	vocational rehab	Limiters - Published Date: 20070101-20171231	View Results (1)



S17	vocational rehabilitation	Limiters - Published Date: 20070101-20171231	View Results (31,239)
S16	fighter	Limiters - Published Date: 20070101-20171231	View Results (17,913)
S15	individual	Limiters - Published Date: 20070101-20171231	View Results (754,670)
S14	patient*	Limiters - Published Date: 20070101-20171231	View Results (1,801,906)
S13	survivor	Limiters - Published Date: 20070101-20171231	View Results (70,372)
S12	hemiparesis	Limiters - Published Date: 20070101-20171231	View Results (2,261)
S11	hemiplegia	Limiters - Published Date: 20070101-20171231	View Results (2,279)
S10	post stroke	Limiters - Published Date: 20070101-20171231	View Results (3,654)
S9	post-stroke	Limiters - Published Date: 20070101-20171231	View Results (3,172)
S8	brain injury	Limiters - Published Date: 20070101-20171231	View Results (29,271)
S7	acquired brain injury	Limiters - Published Date: 20070101-20171231	View Results (1,279)
S6	cvd	Limiters - Published Date: 20070101-20171231	View Results (30,685)
S5	cva	Limiters - Published Date: 20070101-20171231	View Results (10,001)
S4	cerebrovascular disorder*	Limiters - Published Date: 20070101-20171231	View Results (10,603)
S3	cerebrovascular disease	Limiters - Published Date: 20070101-20171231	View Results (22,338)
S2	cerebrovascular accident	Limiters - Published Date: 20070101-20171231	View Results (9,936)
S1	stroke	Limiters - Published Date: 20070101-20171231	View Results (81,868)



APPENDIX 7.1: DELPHI SURVEY CONSENT FORM



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Private Bag X 17, Bellville 7535, South Africa
Tel: +27 21-959, Fax: 27 21-959
E-mail:

Delphi Consent Form

Title of Research: Determinants of return to work and the development of a return to work programme
for stroke survivors in Osun State, Nigeria

The study has been described to me by means of the Information Sheet, in a language that I understand and I freely and voluntarily agree to participate. My questions about the study have been answered. I understand that my identity will not be disclosed and that I may withdraw from the study without giving a reason at any time and this will not negatively affect me in any way.

Participant's Name: Participant's Signature:

Witness:

Date:



Should you have any questions regarding this study or wish to report any problems you have experienced related to the study, please contact the researcher.

Researcher: Mr. Olumide Ayoola Olaoye
Email: oaolaoye@oauife.edu.ng; 3218557@myuwc.ac.za
Cell: 08030763794/ +27834714208

APPENDIX 7.2: DELPHI STUDY INFORMATION SHEET

Title of Research:

Determinants of return to work and the development of a return to work programme for stroke survivors in Osun State, Nigeria

What is this study about?

Stroke survivors have difficulties in resuming premorbid occupational/worker roles. This cast a huge burden on the society and affects the survivor's life satisfaction, self-esteem, quality of life and functional ability. Vocational rehabilitation provides a systematic pathway through which job placement and retention for stroke survivors can be facilitated. However, no standardized vocational rehabilitation protocol has been established for stroke survivors in Nigeria. This study therefore aim to assess the determinants of return to work and develop a return to work programme for stroke survivors in Osun State, Nigeria

What will be asked if I agree to participate in this study?

The proposed time frame for this study is 3 months. The researcher will invite experts in the field of stroke 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) programme for stroke survivors.. 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 fill a demographic questionnaire and provide your opinion regarding interventions that could facilitate return to work of stroke survivors. You will also be asked to rate the content of the RTW intervention programme.

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 stroke rehabilitation practice. There's a paucity of data on return to work rates and standardized vocational rehabilitation protocol for stroke survivors in Nigeria. Having a

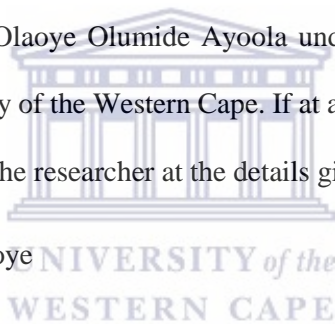
standard vocational rehabilitation protocol in Osun state will provide a structured pathway that focuses on work re-entry and placement during stroke rehabilitation. In addition, such protocol will facilitate an interdisciplinary and systematic focus on return to work during rehabilitation of stroke survivors. Information gathered in this study will not help you personally but may help to advance knowledge and intervention strategies in returning stroke survivors to work after rehabilitation.

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

Participation in this research is voluntary. Once you've consented to partake you may withdraw your participation at any time during the process without penalty.

What if I have questions?

The research is being conducted by Olaoye Olumide Ayoola under the guidance of the Department of Occupational Therapy at the University of the Western Cape. If at any time you have queries regarding the nature of the study you could contact the researcher at the details given below:



Researcher: Mr. Olumide Ayoola Olaoye

Email: oaolaoye@oauife.edu.ng

Cell: 08030763794/ +27650329251

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, you may also contact:

Supervisor: Prof. Shaheed Soeker (Head of Department)

Occupational Therapy Department

Tel: +2721 959 9339

Fax: 021 959 1259

Email: msoeker@uwc.ac.za

Co-supervisor : Prof. Anthea Rhoda

Dean, Faculty of Community and Health Sciences.

Email : arhoda@uwc.ac.za



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APPENDIX 7.3: DELPHI STUDY DEMOGRAPHIC QUESTIONNAIRE

9/10/2018

Return to work intervention for stroke survivors: A Delphi Survey (Expert's demographic information)

Return to work intervention for stroke survivors: A Delphi Survey (Expert's demographic information)

* Required



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Survey content

This survey has 16 questions and takes less than 10 minutes to complete. It seeks to collect your consent, demographic information and opinion on the contents of return to work (RTW) intervention for stroke survivors.

1. Question 1: Are you willing to participate in this survey? *

This serves as consent that you are willing to participate in the study. Please note that your participation in this study is voluntary. In addition, all information provided is protected and anonymous.

Mark only one oval.

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

2. Question 2: What is your age?

3. Question 3: What is your sex?

Mark only one oval.

- Female
- Male

<https://docs.google.com/forms/d/14tU42T1TakgXv26sTDMgetgq0RyKkQ8aQMqKvhw6DWVY/edit>

1/4

4. Question 4: Which of the following describes your profession?

Mark only one oval.

- Occupational Therapy
- Physical Therapy
- Social Work
- Psychology
- Kinesiology
- Vocational Counselling
- Nursing
- Physiatry
- Other: _____

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

6. Question 6: What is your highest level of education?

Mark only one oval.

- College
- Bachelor
- Masters
- P.h.D.
- M.D
- Other: _____

**7. Question 7: Have you obtained any post-graduate training specifically in Vocational Rehabilitation (VR/RTW)? For example, certificates, workshops, courses**

Mark only one oval.

- Yes
- No

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

9. Question 9: Which of these describe(s) your work setting?

Multiple options allowed

Check all that apply.

- Out-patient
- Community practice (e.g. community care access center)
- Private practice
- Academia/Research
- Other: _____

10. Question 10: What is the main funding source for your clients with stroke?

11. Question 11(a): How many years of experience do you have in stroke rehabilitation?

12. Question 11(b): How many years of experience do you have in vocational rehabilitation?

13. Question 11(c): How many years of experience do you have in VR of stroke survivors?

14. Question 12: In which aspect(s) of VR/RTW do you have experience?

Multiple options allowed

Check all that apply.

- Assessment
- Intervention
- Monitoring/Follow-up
- Case management
- Other: _____

15. Question 13: What are the return to work (RTW) interventions needed to address impairments, activity limitation and participation restrictions arising after sustaining a stroke?

16. **Question 14: What are the RTW interventions required to address activity limitation and participation restrictions resulting from stroke that is related to the work environment?**

17. **Question 15: How should the RTW interventions you have listed/described in questions (13) and (14) above be implemented during treatment?**

18. **Question 16: In your opinion, what will you describe as the essential elements of the RTW program that will facilitate the RTW of stroke survivors?**



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 7.4: FIRST ROUND DELPHI QUESTIONNAIRE

9/10/2018

DEVELOPMENT OF A RTW INTERVENTION PROGRAMME FOR STROKE SURVIVORS (First Round Delphi Questions)

DEVELOPMENT OF A RTW INTERVENTION PROGRAMME FOR STROKE SURVIVORS (First Round Delphi Questions)

Kindly provide your responses to the questions below

* Required

1. Email address *

2. Question 1: What are the return to work (RTW) interventions needed to address impairments, activity limitation and participation restrictions arising after sustaining a stroke? *

3. Question 2: What are the RTW interventions required to address activity limitation and participation restrictions resulting from stroke that is related to the work environment? *

4. Question 3: How should the RTW interventions you have listed/described be implemented during treatment? *



9/10/2018

DEVELOPMENT OF A RTW INTERVENTION PROGRAMME FOR STROKE SURVIVORS (First Round Delphi Questions)

5. **Question 4: In your opinion, what will you describe as the essential elements of the RTW program that will facilitate the RTW of stroke survivors? ***

Send me a copy of my responses.

Powered by
 Google Forms



APPENDIX 7.5: SECOND ROUND DELPHI QUESTIONNAIRE

9/10/2018

DEVELOPMENT OF A RTW INTERVENTION PROGRAMME FOR STROKE SURVIVORS (Second Round Delphi Questions)

DEVELOPMENT OF A RTW INTERVENTION PROGRAMME FOR STROKE SURVIVORS (Second Round Delphi Questions)

This survey has 23 questions and takes less than 15 minutes to complete. It seeks to collect your opinion on the contents of RTW intervention programme for stroke survivors (arrived at from participants' responses to the first round of the Delphi survey).

* Required

1. **Email address ***

2. **Phase 1: Assessment phase ***

This is the first section of the programme where preliminary interview is conducted with the clients and at the workplace to obtain information about the stroke survivor's work ability and the job respectively
Mark only one oval per row.



This is the first section of the programme where preliminary interview is conducted with the clients and at the workplace to obtain information about the stroke survivor's work ability and the job respectively

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

Comments/suggestions

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

Duration of assessment phase
Mark only one oval per row.

	Disagree	Indifferent	Agree
1-2 sessions of 60 minutes each	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3 -5 sessions of 60 minutes per session	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6-10 sessions of 60 minutes per session	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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

Comments/suggestions on duration

Skip to question 5.

Phase 2: Work intervention/training phase

This phase comprises of 2 focus areas where clinic based work interventions are provided to clients

6. Focus area 1: Non-work specific intervention/training section *

Mark only one oval per row.

	Disagree	Indifferent	Agree
In this focus area, general functional skills training are provided for the stroke survivor	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

7. Focus area 2: Work specific intervention/training session *

In this focus area, the under-listed work specific training sessions are provided to stroke survivors

Mark only one oval per row.

	Disagree	Indifferent	Agree
Vocational counselling and career planning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Prevocational skills training (such as work competence, communication skills, work behavior, interviewing skills, education of legal aspects of work, commuting to and from work)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Formal education and training to improve job competitiveness	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Work hardening that is inclusive of simulated task training	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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

Comments

9. **The estimated duration required to implement the work intervention/training phase should be?**

*

Duration of work intervention/training phase (focus area 1 & 2)

Mark only one oval per row.

	Disagree	Indifferent	Agree
5-9 sessions of 60 minutes per session	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10-15 sessions of 60 minutes per session	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16-20 sessions of 60 minutes per session	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

10. **Kindly indicate any comments/suggestions you have regarding the duration of the work training/intervention phase?**

Comments

Phase 3: Work Test Placement (WTP)

This is a continuation of the previous phase. In this phase, other stakeholders in the RTW process of the stroke survivor are engaged. The interventions provided are both clinic and workplace based

11. **The following interventions should be included in this phase of the study? ***

Interventions in the WTP phase

Mark only one oval per row.

	Disagree	Indifferent	Agree
Preparation of clients and education of clients' family, employer and co-worker about client's abilities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Identification of suitable work opportunities/jobs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Work trials (practice of work skills in real work environment)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Job coaching and on-going support at the workplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ongoing environmental and ergonomic modification (structure, equipment, and organizational ergonomics)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

12. **Kindly indicate any comments/suggestions you have regarding this WTP phase**

Suggestions/Comments on WTP phase

13. **The estimated duration needed to implement the Work Test Placement phase should be? ***

Duration of WTP phase

Mark only one oval per row.

	Disagree	Indifferent	Agree
Minimum of 5 sessions over a month period (60 minutes each)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Minimum of 8 sessions over a month duration (60 minutes each)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Minimum of 15 sessions over a month duration (60 minutes each)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

14. **Kindly indicate any comments/suggestions you have regarding the duration of the WTP phase**

Suggestions/Comments on WTP's duration

Skip to question 14.

Phase 4: Clients Full Participation in Worker Role15. **This is the final phase of the RTW programme where the stroke survivor is fully reintegrated back to work. The client is independent and requires minimum support at this phase ***

Mark only one oval per row.

	Disagree	Indifferent	Agree
Client is able (are trained) to make decisions about strengths and weaknesses	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Client can (are trained to) identify whether they require ongoing rehabilitation services for specific skills (if needed)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Rehabilitation professionals (such as OT) involvement is gradually decreased (tapered)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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

Comments regarding the final phase of programme

17. The estimated duration needed to implemented this phase of the study should be? *

Duration for implementing final phase of RTW intervention programme
 Mark only one oval per row.

	Disagree	Indifferent	Agree
A month duration of 3 contact sessions (60 minutes each)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3 contacts sessions over a period of 3 months (60 minutes each)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
No time-line linked to phase (this is based on job availability) but OT contact is limited to 1- 2 sessions per month over a period of three months	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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

Comments/suggestions

Implementation Strategies for the RTW Intervention

This section describes the strategies by which the different phases of the interventions are to be operationalized

19. The following strategies should be utilized when implementing the four phases of the RTW programme? *

Mark only one oval per row.

	Disagree	Indifferent	Agree
Use of multidisciplinary team-based approach	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use of interdisciplinary team-based approach	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Client-centered approach (client is involved in decision making process throughout the intervention)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Interventions are individually tailored to meet clients' need	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use of case manager to coordinate return to work process	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

20. Kindly indicate any comments/suggestions you have regarding the implementation strategies for the RTW intervention programme

Comments on Implementation strategies

21. When in the rehabilitation process should the RTW intervention programme be commenced for the stroke survivor? *

Mark only one oval per row.

	Disagree	Indifferent	Agree
During out-patient rehabilitation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
During in-patient rehabilitation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
After out-patient rehabilitation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
After the completion of medical intervention by physician	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

22. When during the recovery process should the RTW intervention programme be commenced for the stroke survivor? *

Mark only one oval per row.

	Disagree	Indifferent	Agree
When client is independent in performing ADL tasks (self-care and mobility)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When client is independent in performing leisure activities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When client is fully reintegrated in the community (such as participation in social groups)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

23. Kindly indicate any comments/suggestions you have regarding the period for commencing the RTW intervention programme

Comments on when to commence programme



24. Kindly indicate any comments/suggestions you have concerning the OVERALL STRUCTURE of the RTW Intervention Programme for stroke survivors

Comments on the overall structure of programme

Send me a copy of my responses.



APPENDIX 7.6: THIRD ROUND DELPHI QUESTIONNAIRE

9/10/2018

DEVELOPMENT OF A RTW INTERVENTION PROGRAMME FOR STROKE SURVIVORS (Third and Final Round Delphi Questions)

DEVELOPMENT OF A RTW INTERVENTION PROGRAMME FOR STROKE SURVIVORS (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 on the contents that were modified from the second round of the Delphi survey.

* Required

1. Email address *

2. Duration of RTW Assessment phase *

In terms of the frequency of the assessment phase of the RTW programme, in HOW MANY SESSION(S) should the assessment phase be conducted?

Mark only one oval.

- 1-2 session(s)
 3-5 sessions

3. In terms of the duration of the assessment session(s) of the RTW programme, HOW LONG should each assessment session take? *

Mark only one oval.

- 30 minutes per session
 45 minutes - 60 minutes per session

4. Kindly indicate any comments/suggestions you have regarding the duration and frequency of the assessment

5. In terms of the Work Intervention Training phase (Phase 2), kindly consider the RELEVANCE of the following intervention components in the resumption of a NEW or PREVIOUS work role after stroke. *

Mark only one oval per row.

	Relevant	Not relevant
Vocational counselling and career planning?	<input type="radio"/>	<input type="radio"/>
Formal education and training to improve job competitiveness?	<input type="radio"/>	<input type="radio"/>

6. **Regarding the frequency of the work intervention training sessions, in HOW MANY SESSIONS should the work intervention training be conducted? ***

Mark only one oval.

- 5-9 sessions
- 10-15 sessions

7. **In terms of the duration of the work intervention training sessions, HOW LONG should each intervention session take? ***

Mark only one oval.

- 30 minutes
- 45 minutes - 60 minutes

8. **Kindly indicate any comments/suggestions you have regarding the frequency and duration of treatment intervention?**

9. **RTW Implementation Period: During the stroke rehabilitation process, when should the RTW intervention programme be commenced for stroke survivors? ***

Mark only one oval per row.

	Yes	No
During out-patient rehabilitation	<input type="radio"/>	<input type="radio"/>
After out-patient rehabilitation	<input type="radio"/>	<input type="radio"/>
After the completion of medical intervention by physician	<input type="radio"/>	<input type="radio"/>

10. **Kindly indicate any comments/suggestions you have regarding the period for commencing the RTW intervention programme**

Comments on when to commence programme

Send me a copy of my responses.

