UNIVERSITY OF THE WESTERN CAPE

THE DEVELOPMENT OF AN INSTRUMENT TO ASSESS RETURN-TO-WORK AMONG POST-STROKE SURVIVORS

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ABSTRACT

Return-to-work (RTW) after an injury or illness is influenced by physical, psychological and social factors. Therefore, a need exists to develop a contextualized multi-perspective and objective measure for the assessment of return-to-work among stroke survivors. This current study comprised three phases, with each phase intended to address various objectives in the process of developing and validating a psychometrically sound measure, to assess return-to-work in stroke survivors. In the first phase, qualitative data collection methods were employed with various stakeholders and key informants, to finalise the conceptualisation, scale construction, and domain identification of the intended instrument. In-depth interviews were conducted with stroke survivors, their caregivers, employers and rehabilitation professionals. The data generated were analysed using the Atlasti.version 7. The results were used to construct the instrument. The second phase involved validation, in which a panel of experts in stroke rehabilitation, as well as a few post-stroke survivors, were approached to provide feedback on the content and structure of the instrument for revision and validation, using the Delphi survey technique. The third stage was focused on determining the psychometric properties, using internal consistency and factor analysis. The final structure comprised three (3) domains and eleven (11) sub-domains. Ultimately, the Return-to-work Assessment Scale is a good, internally consistent, and reliable tool that has demonstrated good group and structural validity; therefore, it could be used as an outcome measure, to assess return-to-work among stroke survivors.

KEYWORDS

Assessment

Delphi study

Disability

Outcome measure

Reliability

Return-to-work

Scales

Stroke

Survivors

Validity

LIST OF ABBREVIATIONS

CFR – Critical fatality rate

C-OAR-SE – Construct definition, object representation, attribute classification, and rater entity, selection of item, enumeration and scoring rule

ICC – Intraclass coefficient

ICF – International classification of functioning Disability and Health

PCA – Principal component analysis

RAS – Return-to-work Assessment Scale -

RTW - Return to work

DECLARATION

I declare that the thesis entitled, *The Development of an Instrument to Assess Return to Work among Post Stroke Survivors,* is my own work, that it has not been submitted for any degree or examination in any other university, and that all the sources used or quoted, have been indicated and acknowledged by complete references.

Student name: Peter Olanrewaju Ibikunle

Date: May 2021

Signed:……

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CHAPTER ONE

INTRODUCTION

1.1. Introduction

Returning to employment, subsequent to an ailment, is an action controlled by physical, emotional, and societal factors (Waddell & Burton, 2006). An overview on stroke, disability, and returning to work is provided in this chapter. In addition, the factors that contribute to returning to employment are explained, also outlined are the aims and objectives of this research study. The implication of this current study, therefore, elucidates the need of developing an instrument to assess return-to-work.

1.2. Background of study

A stroke happens as a result of an interruption to the blood flow in the brain or part of the brain resulting in damage to the brain cells (Easton et al., 2009; Sacco et al., 2013). Stroke is classically characterized as a neurological deficit attributed to an acute focal injury of the central nervous system (CNS) by a vascular cause, including cerebral infarction, intracerebral hemorrhage (ICH), and subarachnoid hemorrhage (SAH), and is a major cause of disability and death worldwide (Sacco et al 2013). Despite its global impact, the term "stroke" is not consistently defined in clinical practice, in clinical research, or in assessments of the public health (Sacco et al 2013). Advances in basic science, neuropathology, and neuroimaging have improved the understanding of ischemia, infarction, and hemorrhage in the CNS. The Stroke Council of the American Heart Association (AHA)/American Stroke Association (ASA) published a scientific statement in 2009 to update and clarify the definition of transient ischemic attack (TIA), which in turn requires a re-evaluation of the broader definition of stroke (Easton et al., 2009). Classic definitions of stroke are decades old and have become outdated, but modern definitions have not been formalized and officially adopted by the AHA, ASA, or any other major organizations (Sacco et al 2013).

It is the second most common reason for patient mortality, universally, as well as a primary source of disability in adults. Stroke, as the main reason for protracted disability, affects patients, as well as their formal and informal caregivers, emotionally and socio-economically, in a drastic manner (Bell-Gam, Onwuchekwa, & Iyagba, 2012). Mortality in Nigeria is high, with stroke reviews reporting a prevalence of 1.14 per 1000 population (Ogun, Ojini, Ogungbo, Kolapo, & Danesi, 2005). A 30-day case fatality rate was reported and ranged

from 28 to 40%; Bell-Gam et al., 2012). At most of the tertiary healthcare institutions in Nigeria, the principal reason of neurological admissions is stroke (Wahab, 2008). Stroke accounts for a fatality rate between 1.8% and 15.6% of all deaths in tertiary hospitals and is recognized as an important health concern for persons, as well as a burden to the general public (Bell-Gam et al., 2012).

There is a differential pattern for the prevalence of stroke in urbanized and evolving countries (Danesi, Okubadejo, & Ojini, 2007). According to Danesi, Okubadejo, Ojini, and Ojo (2013), in a research conducted in Lagos, South West Nigeria, the gender specific rate was 28.3/100,000 population for males, and 21.3/100,000 population for females. The age-adjusted rate was 54.08% per 100,000 populations; the hospitalisation rate was 84.6%, while the critical fatality rate (CFR) was 16.2% in Surulere, Lagos (Danesi et al., 2013). Okon et al., (2015) conducted research in Ondo, Southwest Nigeria, and placed pathologic diagnosis as confined, in 75% of the cases. However, this could result in inaccurate statistics, which in turn, could negatively impact the allocation of resources, as well as the planning, or prioritizing of services (World Health Organization [WHO], 2013; Owolabi et al., 2015).A study conducted in rural South West Nigeria placed the prevalence of stroke at 0.58 per 1,000 population, while the incidence was observed to be 26 per 1,000 population, using the urban register (Enwereji et al., 2014).Another study placed the prevalence at 1.14 per 1,000 population in a metropolitan population in South West Nigeria (Danesi et al., 2007). In Ukpo, Onitsha, Anambra state, rural South East Nigeria, stroke prevalence was 1.63 per 1,000 populations. When adjusted for gender, the study reported that the prevalence rate was1.99 (95% CI 0.73–4.33) per 1,000 in males, while among females, it was 1.28 (95% CI 0.35–3.28) per 1,000 population (Enwereji et al., 2014).When adjusted for age, the peak prevalence of stroke was 12.08 (95% CI 3.92–28.19) per 1,000 population; however, when considered and adjusted to the world population, the peak was 1.0 (95% CI 0.33–2.33) per 1,000 population (Enwereji et al., 2014).In the Niger-Delta region during a door to door prevalence survey, adjusted for age prevalence, it was 14.6 per1,000 person(Ezejimofor,et al .,2017).

The WHO projected that, in the course of the next two decades, the incidence of stroke is expected to deteriorate in evolving countries, due to the increase in civilization, and the adaptation of lifestyles, which are integral to healthy living (WHO, 2013).

The projected increased occurrence of stroke, as well as other cardiovascular diseases, poses the risk of further straining the resources in developing countries. Stroke is a health condition that comes with disability, which in turn, affects the worth of life of survivors

(Easton et al., 2009; Sacco et al., 2013). In addition, age is another significant risk factor, specifically, from 30 years to 65 years, globally. The majority of stroke cases occur among people aged 65, and the risk of dying increases with age (Roger et al., 2011). The ability to recover from paralysis and disabilities, as a result of stroke, reduces with age (Roger et al., 2011; Mandal, 2019). Varrella, (2021) describe the Labor force in Nigeria based on age as follows; (a)15-24years-16,710 million, (b)25-34years-23,328 million, (c)35-44years-20,125 million, (d) 45-54years-13,089 million, (e) 55-64years-7,040 million. Nigeria has a labor force of over 80 million people (Varrella, 2021). As of 2020, Nigerians aged 25 to 34 years old represented the largest labor force population in the country, with around 23 million people. Individuals from 35 to 44 years old made up the second most numerous groups, with over 20 million people (Varrella, 2021). Incidentally, individuals within the second, third and fourth group are the groups (i.e. age range of 25-60 years) are those who experience a stroke in Nigeria (Ezejimofor,et al., 2017).

A stroke impacts the functioning of the individual resulting in disability. There are differences between functioning and disability (WHO, 2001; 2007). ''Functioning is an umbrella term that encompasses all body functions and structures, activities and participation, while disability is an overarching term for impairments, activity limitations and participation restrictions.'' (WHO, 2001 Pg 8; 2007 Pg 8; McDougall et al., 2011 Pg 41)

A person's functioning and disability is conceived as a dynamic interaction between health conditions (diseases, disorders, injuries, traumas, etc.) and contextual factors. Contextual factors include both personal and environmental factors. The International Classification of Functioning Disability and Health (ICF) includes a comprehensive list of environmental factors as an essential component of the classification. Environmental factors interact with all the components of functioning and disability. The basic construct of the environmental factors component is the facilitating or hindering impact of features of the physical, social and attitudinal world. (WHO 2001; 2007). Etiology does not differentiate disability; it emerges from the interaction of health conditions with contextual factors (WHO, 2013). Disability post-stroke includes, impairments, activity limitations, and participation restrictions as articulated within the International Classification of Functioning, Disability, and Health (World Health Organization [WHO], 2001) Impairments post-stroke includes the physical, behavioural, cognitive, social, vocational, as well as adaptive aspects of an individual. The following impairments are caused by a stroke: paralysis or restraint of movement; sensory impairments that include pain, communications problems, aphasia, problems with attention and memory, fatigue as well as emotional disturbances(National Institute of Neurological Disorders and Stroke [NINDS], 2014).Activity limitations are a major challenge to patients, who have experienced stroke. These activities could be divided into basic activities of daily

living, which include mobility, washing, dressing, and eating, as well as instrumental activities of daily living (Rhoda et al., 2011). These authors referred to instrumental activities of daily living as comprising activities that are necessary for individuals to function in their communities, and coordinate their households. Stroke patients often are unable to perform the following general imperative activities: washing with a cloth, shopping, and household work, as well as travelling by public transport (Rouillard, 2006.,Hartman-Maier, Soroker, Ring, Avni, & Katz, 2007; Rhoda, Mpofu, &De Weerdt, 2011). The inability to perform these everyday activities makes the stroke patient reliant on someone to care for them, probably, on an almost full-time basis. As a result, they often experience feelings of helplessness and frustration. Stroke survivors always have body function and structure disorders, activity limitation, and participation restriction, due to environmental and personal factors. A major activity limitation and participation restriction post-stroke is the individual's inability to return to work. Stroke impacts the survivor's ability to return to work, thereby affecting participation in community activities, especially when they are still in the working age range; returning to work can also be seen as both an activity and as participation (Saeki, 2000). Return-to-work (RTW) contributes to life satisfaction and social identity, through the independence gained from income generation (Waddell & Burton, 2006). Unless work absence is medically necessary, abstinence from work hinders recovery (Royal Australasian College of Physicians [RACP], Australasian Faculty of Occupational and Environmental Medicine [AFOEM], 2010). However, it is possible to transform work disability into work ability depending on the severity of the stroke and the side affected. The independence of stroke survivors, as well as their socio-economic contribution to the family and community at large will bring great relief to them, their immediate families, as well as the community (Waddell & Burton, 2006).

Waddell, Burton, and Aylward (2007, p. 109) summarises the evidence as follows: "Worklessness carries more risk to health than many killer diseases and more risk than most dangerous jobs". The risks include cancer of the lungs, cardiovascular diseases, infections of the chest, poor general wellbeing, and an increase in suicidal tendencies (Waddell et al., 2007). The proper rehabilitation of post-stroke survivors must incorporate detailed training and tutoring on overcoming difficulties in work places, to enhance easy adaptation after returning to work (Wolfenden & Grace, 2009; Balasooriya-Smeekens, Bateman, Mant, & Simeoni, 2016). As mentioned previously, going back to work after injury, or illness, is an action that is influenced by physical, psychological, and social factors (Franche & Krause, 2003). It has been proven over the past 20 years that people, who do not return to work, eventually are at greater risk of harmful health outcomes (Artazcoz, Benach, Borrell, & Cortes, 2004; Waddell & Burton, 2006; Waddell, Burton, & Kendall, 2008; Balasooriya-

Smeekens, Bateman, Mant, & Simeoni, 2016). Therefore, the use of standardised measurement tools, to assess the outcome of rehabilitation on aspects such as work, is important.

Functional scales that focus on the measurement of the impact of disease on performance of everyday tasks, are now commonly employed by clinicians and researchers (Muller, Roder, & Greennough, 2006; Sinha, Nijhawan, & Grover, 2014). Functional scales are usually classified as generic, or disease-specific. General Health outcome measures are intended towards recapitulating or summarising details of outcome of most health conditions among patients and populations, while disease specific outcome measures evaluate the impact of specific health conditions on the functional status of patients (Partrick, 1990; Kampstra et al., 2018). These disease specific outcome measures are observed to be more responsive to the target population, when compared to generic measures (Davidson & Keating, 2002; Muller et al., 2006; Kampstra et al., 2018).

The International Classification of Function (ICF) components are made up of multiple domains, which could give conceptual framework to any novel instrument of disability (World Health Organization [WHO], 2001, 2013). Kendall, Burton, Main, & Watson (2011) reported that terms such as, functioning, disability, body function and structure, impairments, activity limitation, participation restriction, as well as environmental and personal factors, were similarly defined in the ICF and the Flag Model, in the context of health. In the Flag Model, flags could be likened to warning signals surrounding an individual, acting as hindrances to full recuperation and returning to work (Kendall et al., 2011). Flags could be observed in three areas, namely: (1) Yellow flags, relating to an individual's thoughts, feelings, and behaviour; (2) Blue flags, depicting the place of work, work, and health concerns; and (3) Black flags, describing the contextual issues, such as relevant people, system, and policies. The flag system has been refined, to include the orange flag (concept of mental health), as well as the red flag (Pathology or disease) (Kendall et al., 2011). The identification of these flags involves the detection of negative behaviours and circumstances that could influence returning to work (Kendall et al., 2011).

Similarly, the ICF could give a conceptual underpinning to any novel outcome measure of function and disability (WHO, 2001), as one of its international references. The ICF provides a general means of identifying and understanding issues of function and disability among patients and the population (WHO, 2001, 2013). This is essential, because persons with performance difficulties, such as stroke, would be able to communicate their difficulties, if

standardised concepts could be accepted by the professionals and the system, through the development of novel health-specific outcome measures, to measure their difficulties and progress (Davidson & Keating, 2002; Muller et al., 2006; Weldring & Smith, 2013). Currently, this applies, as most disability agencies or organisations are able to provide assistance for people affected by a disabling condition, such as stroke. Organised data could be collected, and multi-purpose tools could be developed, such as the development of a novel health-specific instrument, to determine return-to-work for post-stroke survivors, which is the gap the researcher aims to fill through this current research.

The theoretical framework in this current study is straddled with the C-OAR-SE Theory (Rossiter 2002), the ICF and the Flag model. The ICF (with its codes and components); and the Flag Model provided a conceptual map for the content of the instrument, while the C-OAR-SE Theory, provided the theoretical underpinning for instrument validation. Over decades, the *Flags Model* has been developed and refined, although originally designed to assess return-to-work among individuals living with lower back pain. In this current research, therefore, it has been used in conjunction with the ICF, to develop an instrument, which could identify the common barriers of returning to work in post-stroke survivors, as well.

The researcher uses the conventional ICF, with the ICF codes, to produce a novel conceptual framework, complementing it with the *Flags model*, by using the warning signals that surround individuals who suffer from lower back pain, which act as hindrances to full recuperation and returning to work, and transferring them to the stroke survivor with impairments, activity restriction, and limitations, due to the disease. The stroke patient, because of his/her needs must move on with life, but activity restriction and limitation are hindrances to a good quality of life. However, returning to work does not necessarily mean going back to a paid job, because work could also be done on a voluntary basis, such as serving on a school board, and rendering community services. Additionally, it can also mean going back to essential life activities, and being reintegrated into the society.

This current study, therefore, used the ICF codes and Flags model, with the modified C-OAR-SE theory, as the conceptual and theoretical frameworks for the development of a novel instrument, to assess return-to-work among post-stroke survivors. Considering the three domains of the Return-to-work Assessment Scale, the similarities to the ICF codes and Flags model are very striking. The three flags of the Flags model (yellow, blue, and black),as well as the codes and components of body function and structure, activities limitation, participation restriction, environmental and personal factors, each signify a part of the

Return-to-work Assessment Scale. This confirms the appropriateness of the Return-to-work Assessment Scale, as concurring with previous works of Kendall et al. (2011),Main & Spanswick (2000),Nicholas, Linton, Watson, Main, and "Decade of the Flags" Working Group (2011), as well as Shaw, Dineen, Fang, and Vellella (2009). Currently, there is no instrument that could be used to assess return-to-work from a multi-perspective (varied) view, namely, from the employees', employers', and contextual viewpoints. Therefore, the need exists to develop a multi-perspective instrument, which could view return-to-work from different angles, specifically, the employer's, the employee's, as well as psychosocial, physical, and contextual viewpoints. Culler, Wang, Byers, and Trierweiler (2011) observed variables that functioned as barriers to return-to-work in stroke survivors, involving employers, rehabilitation professionals, and stroke survivors, in a qualitative study, using the Flags model. These factors included thoughts, feelings, behaviour, work and health concerns, relevant people, the system, and policies.

In this current study, an instrument was developed to assess return-to-work among post-stroke survivors. The ICF, with its codes and components, and The Flag model, with its flags were adopted, to determine the variables (factors), or domains required in the instrument, as authenticated by post-stroke survivors, their caregivers, rehabilitation professionals and employers. Once established, the psychometric properties of the scale, inclusive of these variables (factors) and domains, were determined, using the modified C-OAR-SE theory.

1.3. The research problem

The available epidemiology on the prevalence and incidence of stroke reveals that stroke is becoming a pandemic in Nigeria, which is a developing country in Africa (Danesi et al., 2013; Okon et al., 2015; Wahab, 2008). As stated previously, stroke impacts on a survivor's ability to return to work, thereby affecting participation in community activities, especially individuals who are still in the working age range (Saeki, 2000), which creates activity limitation and participation restriction. Return-to-work (RTW) contributes to life satisfaction and social identity through independence gained from income generation. Recovery and living in contentment are also enhanced from a psychosocial point of view. To improve the employment outcomes of stroke survivors, factors that influence job retention, linked to return-to-work, as well as society's opinion of disability, are imperative for edification. Return-to-work has been investigated empirically; however, two core concerns have been raised; the need for a comprehensive and multi-perspective measurement of the factors that predict RTW and the cited differences in issues related to stroke, between developed and developing countries (Soklaridis, Ammendolia, &Cassidy, 2010).

Therefore, in this current study, the researcher aimed to develop a multi-perspective instrument that could assess return-to-work, as no outcome measure exists, specifically designed for the purpose of measuring return-to-work among stroke survivors. However, there are many outcome measures used for the measuring of various variables among stroke patients, including: The Gross Motor Rivermead Assessment Scale by Lincoln and Gladman (1962); The Barthel index by Mahoney and Barthel (1965); The Nottingham extended activities of daily living by Finch et al. (2002), to mention but a few. Developing a health-specific outcome measure, to assess return-to-work among stroke survivors, will help to assess their readiness, as well as the monitor return-to-work stages. With no means of evaluating return-to-work among post-stroke survivors, they will not be accepted back into their formal employment, which could affect their self-esteem, confidence, and social identity (Balasooriya-Smeekens et al., 2016). When subjected to an assessment with a multi-perspective instrument that is valid and reliable, the employers would have more confidence to reinstate affected employees, from an objective and unbiased point of view, should they be considered ready to return. In addition, it would provide a means of officially monitoring recovery and readiness, as, currently, no multi-perspective instrument exists, to measure, or be adapted to measure, readiness to return to work among post-stroke survivors. Consequently, there is need to develop an instrument that takes into consideration the contextual issues, as well as the viewpoints of the employers and employees, as well as other important issues, peculiar to post-stroke survivors, namely, psychosocial and physical issues of the clime and region.

1.4. Aim of the study

To develop a multi-perspective conceptualisation of return-to-work. to evaluate the physical and psychosocial factors of return-to-work of post-stroke survivors.

1.5. Study objectives

1. To develop a multi-perspective conceptualisation of return-to-work.
2. To evaluate the physical and psychosocial factors of return to work.
3. To develop an objective, instrument of return-to-work that is contextually relevant.
4. To produce theoretical definitions for identified domains.
5. To identify scale decisions that would assist in the construction of a draft instrument to measure return-to-work.
6. To develop a pool of items that will operationalise the theoretical definitions.

7. To determine the psychometric properties of the developed instrument.

1.6. Delimitation and assumption of the study

The scope of this current study was delimited to the use of the developed Return-to-work Assessment Scale, to conduct the cross-sectional study, for the purpose of validation and reliability of the instrument. Additionally, it is assumed that all information provided during the in-depth interviews and survey study is truthful and accurate.

1.7. Operational definitions

- **Work**

When reviewing the definition of work, it is inclusive of volunteering, training others and tasks done when caring for others including family. It is therefore broader than activities described as a job or activities done for paid remuneration. Work usually involves commitment over time, and a need to labour, or exert oneself. Additionally, it involves physical or mental effort on the part if the individual, and is inclusive of skills, knowledge, or other personal resources (Waddell & Burton, 2006; Balasooriya-Smeekens et al., 2016).

- **Worklessness**

Worklessness suggests not being "engaged *in any form of work, which includes, but is broader than, economic inactivity and unemployment*" (Waddell & Burton, 2006; Balasooriya-Smeekenset al., 2016).

1.8. Outline of dissertation

Chapter 1: In the first chapter, the researcher introduces the research project, by providing a background and problem statement for the current study.

Chapter 2: The researcher provides an academic rationale for the study in this chapter. The chapter has two phases. In Phase A the epidemiology of stroke, review of empirical literature and summary of literature review are discussed, while in Phase B, the conceptual and theoretical frameworks of this current study are presented with validation and reliability reviews.

Chapter 3: In this chapter, the researcher focuses on the methodology of this current study. Ethical considerations, the procedures and steps taken towards designing, validating and determining the reliability of the Return-to-work Assessment Scale are discussed.

Chapter 4: The results and discussion for the Phase one (Construct development) are presented in this chapter.

Chapter 5: The results and discussion for Phase two (Scale construction and validation) are presented in this chapter.

Chapter 6: The results and discussion for Phase three (Psychometric property testing) are presented in this chapter.

Chapter 7: In this chapter, the researcher provides the summary, conclusion, limitations and recommendations for the study.

Published Article:

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CHAPTER TWO

PHASE A

LITERATURE REVIEW

2.1. Introduction

In this chapter, the researcher provides an academic rationale for this current study. There are two phases: in Phase A, the epidemiology of stroke, review of empirical literature, and summary of literature review are discussed, while in Phase B, the conceptual and theoretical frameworks of the study, with validation and reliability reviews, are presented.

2.2. Epidemiology of stroke

An epidemiologic study on stroke enhances knowledge of the causes, risk factors, and prognosis of the disease (Ovbiagele & Nguyen-Huynh, 2011). It informs researchers of likely new presentations, as they evolve for directed studies. These assist in identifying people, nations, and continents, most likely to be affected by stroke and their presentations. Subsequently, this information assists authorised persons to find solutions that may prevent epidemics, and reduce the occurrence of stroke, universally. Determining stroke prevalence estimates, therefore, is vital in the provision of response to the disease, as well as the planning of stroke rehabilitation and prevention. Consequently, stroke data from Asian regions offer a basis for assessment, alongside Western estimates and trends (Tan, Wong, & Venketasubramania, 2006).

Since 1599, the term, *stroke*, was used to describe apoplectic seizures (Mandal, 2019). In 1658, in his book titled *Apoplexia*, Johann Jacob Wepfer, describes the causes of apoplexy as bleeding in the brain, which frequently causes death and disability universally, as well as a medical emergency (Mandal, 2019). Globally, stroke is the second most widespread reason for mortality, subsequent to heart disease, as well as superior to cancer, as a cause of death (Mandal, 2019).

Stroke is defined as “an acute focal injury of vascular origin to the central nervous system (CNS) which manifest as a neurological deficit” (Sacco et al., 2013, p. 1). Depression and dementia were reported to be associated with stroke (Dong, Zhang, Tong, & Qin, 2012; Pendlebury& Rothwell, 2009). Regardless of the large-scale severity of stroke, stroke

occurrence estimates outside Western countries are not as readily available (Burke &Venketasubramanian, 2006; Mehndiratta, Khan, Mehndiratta, & Wasay, 2014). A gendered and racialised pattern to death rates was reported. For example, in White males, the death rate was reported as 40.2, while in Black males, it was 67.1 per 1000 population. In White females, the death rate was 39.3, while in Black females; the death rate was 55.0 per 1000 population (Roger et al., 2011). Recently, increased frequency of intracranial atherosclerotic disease has been observed among Asians, Blacks, and Hispanics (Qureshi et al., 2009).

Stroke is the second primary cause of death, and the third highest significant contributing source of disability universally (Johnson, Onuma, Owolabi, & Sacher, 2016; WHO, 2013). In most Nigerian tertiary healthcare institutions, the fatality rate of stroke is between 1.8% and 15.6% of all deaths. As mentioned before, this constituted a significant health concern and burden of disease (Bell-Gam et al., 2012; Wahab, 2008). There is a differential pattern for the prevalence of stroke in urbanised and emergent countries (Danesi et al., 2007). In a study, conducted in Lagos, South West Nigeria, the gender specific rate was 28.3 per 100,000 population for males, and 21.3 per 100, 000 for females (Danesi et al., 2013). The age adjusted rate was 54.08% per 100,000 populations, per year; the hospitalisation rate was 84.6%, while the CFR (hospitalised) was 16.2% per 100,000 populations, per year, in the Surulere suburb of Lagos (Danesi et al., 2013). Okon et al. (2015) reported that 75% of the cases in Ondo, Southwest Nigeria were diagnosed, as confined.

Unlike in developed countries, there are scant reliable figures for the developing world, because of the poor registry system and rapid urbanisation, which is not conducive to information system records. Consequently, inaccurate statistics result, which, in turn, negatively impact the allocation of resources, as well as the planning, or prioritising of services (Owolabi et al., 2017; WHO, 2013).

A study conducted in rural South West Nigeria placed the prevalence of stroke at 0.58 per 1,000 population, while the incidence was found to be 26 per 1,000 population, using the urban register (Enwereji et al., 2014). Recently, another study placed the prevalence at 1.14 per 1,000 population in an urban community in South West Nigeria (Danesi et al., 2007). In Ukpo, Onitsha, Anambra state, rural South East Nigeria, stroke prevalence was 1.63 (95% confidence interval [CI] 0.78–3.00) per 1,000 population. When adjusted for gender, it was 1.99 (95% CI 0.73–4.33) per 1,000 among males, while among females, it was 1.28 (95% CI 0.35–3.28) per 1,000 population (Enwereji et al., 2014). Additionally, when the adjustment was made for age, the peak prevalence of stroke was 12.08 (95% CI 3.92–28.19) per 1,000

population, and after considering and adjusting to the WHO world population, the peak was 1.0 (95% CI 0.33–2.33) per 1,000 (Enwereji et al., 2014).

2.2.1. Risk factors

Risk factors are variables that increase the prevalence and incidence of stroke. There are ten (10) modifiable risk factors that can be associated with stroke prevalence and incidence, which could be arranged in the following order: Psychosocial stress and depression; hypertension; diabetes; Alcohol consumption; Physical inactivity; current smoking patterns; hyperlipidemia; cardiac causes; diet; and abdominal obesity (Martinet al.,2010).The unmodifiable risk factors include: race; ethnicity; age; and gender(Mandal, 2019). Certain individuals could be more prone to stroke, because of race and ethnicity, for example, people from Asia, Africa, or the Caribbean (Mandal, 2019).

Other risk factors include genetic and lifestyle factors (Mandal, 2019; Ovbiagele & Nguyen-Huynh, 2011). In addition, age is another significant risk factor, specifically, from 30 years to 65 years, globally. The majority of stroke cases occur among people aged 65, and the risk of dying increases with age (Roger et al., 2011) Nigeria has a labor force of over 80 million people (Varrella, 2021). As of 2020, Nigerians aged 25 to 34 years old represented the largest labor force population in the country, with around 23 million people. Individuals from 35 to 44 years old made up the second most numerous groups, with over 20 million people (Varrella, 2021). The ability to recover from paralysis and disabilities, as a result of stroke, reduces with age (Mandal, 2019; Roger et al., 2011).

Gender influences stroke occurrence, as males are more prone than females (Mandal, 2019). However, due to an increase in the rates of diseases of civilization, women are becoming more prone to stroke attacks, similar to their male counterparts (Mandal, 2019). The high incidence of stroke, universally, can only be reduced by prevention, which remains the most viable option (Chong & Sacco, 2005; Wolf, Gearing, Snowdon, Mori, Markesbery, & Mirra, 1999).

Hypertension is the known as the most amendable risk factor for stroke, with a positive correlation among cardiovascular parameters**.** It is a strong risk factor because it's a major cause of stroke (Boehme, Esenwa, & Elkind, 2017). Normal blood pressure is below 120/80, any higher pressure, depending on age, gender, or race, could be risky. Hypertension has been determined to be a major stroke risk factor. A study which combined the history of hypertension and a blood measurement of 160/90mmHg and classified the population as

hypertensive diagnosed 54% of the population, as hypertensive (Whelton et al., 2017; Boehme et al., 2017; Martinet al., 2010).

Smokings, drinking of alcohol and drug abuse are also major risk factors to hemorrhagic stroke. Depending on the type of stroke, there seems to exist a strong correlation between drinking of alcohol and risk of stroke affectation (Boehme et al., 2017). In women consuming more than one drink per day could increase the blood pressure while in men the same could occur when drinking two or more per day. Overindulge drinking, could result in stroke (Whelton, 2017; Boehme et al., 2017). A significant correlation was reported between hemorrhagic stroke and alcohol consumption (Whelton, 2017). Alcohol consumption was correlated with hypertension and poor control of blood pressure in hypertensive patients (Boehme et al., 2017). Substance abuse, such as cocaine, heroin, amphetamine, and smoking, remains major risk factors for ischemic and hemorrhagic stroke. Smoking causes blockages in blood vessels which causes stroke (Boehme et al., 2017).

Diabetes mellitus accounts for about 20% of deaths (Banerjee et al., 2012). There is a double risk of stroke occurrence for diabetic patients (Sui et al., 2011).Diabetic patients, who tend to have stroke, are young, most likely to be Black, with a high prevalence of other stroke risk factors (Kissela et al.,2004). Swinburn, Caterson, Seidell, and James (2004) identified sedentary behaviour, diet/nutrition, obesity and metabolic syndrome as vital risk factors that must be addressed for stroke prevention. Stroke can result when arteries become blocked as a result of high cholesterol (Whelton, 2017).

Diet is also a strong risk factor of stroke. In hypertensive patients increased salt intake is connected with stroke (Boehme et al., 2017). These authors argued that the risk of stroke can be decreased by increasing potassium intake. Additionally, physical inactivity and obesity could increase the risk of heart disease and stroke (AHA, 2017). Physical activity reduces blood pressure, diabetes mellitus and obesity (Zhou et al., 2007; Boehme et al., 2017).

2.3. Review of local and international literature on return-to-work (Appendix 11).

Local and international literatures on return-to-work were reviewed, to highlight the research that had been conducted on this important subject.

Busch (2009) investigated the occurrence of and factors that determine returning to paid work, subsequent to stroke, in a multi-national municipal population. The study was

conducted in United Kingdom. He discovered that many post-stroke survivors did not return to their work, despite good recovery through rehabilitation. This could be worse in Nigeria, considering that Nigeria is a developing country which is multi-ethnic with infrastructural decays and of recent considered as the poverty capital of the world. Therefore, there is need to consider and assess return to work because of its implication on the affected population. Nigeria is a third world country; recently called the poverty capital of the world. Nigeria overtook India as the poverty capital with the largest rate of people living in extreme poverty, about 86.9million people live in severe poverty, which is about 50% of its entire population. Health facilities and funds for rehabilitation may not be as communal, available and sophisticated as those in advanced countries like the United Kingdom. This is the main reason why post stroke survivors should be rehabilitated and assisted to return to work to improve their quality of life, self esteem and efficacy. Developing the RAS is fundamental in facilitating early return to work.

In a Dutch, Level 1 trauma centre, Vles et al., (2005) assessed the frequency and factors that determine disabilities and returning to work, following severe injury. The study which was carried out in Netherlands revealed the factors as the number of body areas affected, severity of the injury and gender. Two hundred and ninety-five patients were hospitalised (295), 34% (99) died in the hospital, 33% out of the remaining patients had to change their occupation, 26 %(33) of 127 working class could not return to work and eventually depended on social security. Problems observed on returning to work were mobility related, self-care, daily activities, pain/discomfort, anxiety/depression and cognitive ability affectation. The findings of Vles et al., 2005 could be applied to post stroke survivors because they also suffer from disability which is an overarching term for impairment, activity limitation and participation restriction including fatigue.

Van Velzenet et al., (2009), in their systematic review, investigated the number of people, who returned to work (RTW), after acquiring brain injury (ABI), due to traumatic or non-traumatic causes. Two (2) years after their injury, 39.3% with non-traumatic cause returned to work, 40.7% of patients with traumatic brain injury also returned to work after one year. There was a need for change of occupation because many were not able to sustain their jobs or return permanently.

Wolfenden and Grace *(*2009), in their systematic review, discovered that returning to work and employment sustainability were vital for stroke recovery. Both physical and psychosocial

perspectives were affected by stroke experience. Activities that facilitated return-to-work included specific preparation for returning to work and education within the work place.

Alaszewski, Alaszewski, Potter, and Penhale (2007) reported that people, who were able to return to work, after illness, recognised the challenges, but had devised means of handling them. Some Post stroke survivors took return to work as a means of recovery while some took it as a cause of their stress. The survivors, who were resolute to return to work, reported that they were influenced by the nature and extent of their outstanding disabilities. The various disabilities determined the capability of the survivors to returning to work .Most of them had a lot of barriers because of the severity of their disabilities while some were able to manage themselves in their work place. A flexible working environment and supportive social networks were cited as facilitators of returning to paid employment. The participants of the study by Alaszewski et al., (2007) reported that returning to work would enhance their recovery but most of the participants could not overcome the barriers of returning to work. Mostly due to the severity of their disabilities, the need to change occupation and readiness of their employers to assist in modification of their formal workstations and workplace. The study was conducted in the United Kingdom. Basically, the barriers are loss of functional abilities, limitation in functional abilities which affects the survivors' workers role, Assess to rehabilitation intervention, inadequate rehabilitation of stroke survivors, employers' priority. Realistically all these barriers can only be overcome by change of occupation and readiness of the employers to assist in modification of employees work stations and workplace.

Medin, Barajas, and Ekberg (2006) described the experience of return-to-work (RTW) after stroke from the patient's perspective in Sweden. The qualitative study comprises of six (6) patients who had their first ever stroke in 2001, and were less than 65 years old. They were gainfully employed at the time of their stroke and their experiences of return-to-work after stroke were summarised in the following six (6) factors: (1) they primarily perceived rehabilitation as a means of recovering to perform their activities of daily living instead of a means of enhancing return to work. (2) They accepted that their workplace could enhance their rehabilitation to recovery. (3) They resorted to self-help in the process of their rehabilitation when their rehabilitation specialist was not available. (4) They were able to adapt at their work place based on the support enjoyed from co-workers. (5) Most of the stroke survivors were able to return to work through motivation, self-efficacy in conjunction with external support. (6) They were able to improve their self-efficacy through sincere interaction with contextual conditions. It was concluded that there are great similarities between Health promotion and return to work. Self-efficacy was not only a personal trait or

internal factor; it was enhanced and encouraged in interaction with contextual conditions. Based on the author's conceptual design, self efficacy which is defined as belief in ones abilities to meet challenges and to complete a task successfully was evoked with motivation in conjunction with external support. These were similar concepts applied in health promotion; the authors discovered that the patients were able to return to work when these concepts were evoked. The message of the authors was that patients should be determined to return to work and believe that they could return. Self efficacy coupled with motivation in conjunction with external support will always produce a positive result.

Lock, Jordan, Bryan, and Maxim (2005) conducted some focus group discussions among stroke survivors in the United Kingdom to discover from their experience factors that hinder or assist return to work. Thirty-seven (37) stroke survivors were part of the group discussions. Four key themes were discovered: Rehabilitation process, employer agency; social structural; and personal evidences of social oppression through infrastructures, institutional structures and practice as well as individuals' attitude.

Kauranen et al., (2013) explored whether predictors for the inability to return to work after stroke included the initial cognitive severity of stroke when comparing this to other influential factors. One hundred and forty (140) patients from the United kingdom were assessed with a mean age of 52years. Despite their minor neurological and functional impairment only 41% of the patients were able to return to work after six months. Early cognitive deficit and neuropsychological assessment within the first week after stroke were significant predictors for ability to return to work.

Harnnerz, Pedersen, Poulsen, Humle, and Lars (2011) conducted a study on possibility of returning to work amongst 19,985 stroke patients ranging from 20 to 57years, previously employed, hospital-treated between 1996-2006 in Denmark. Two years after stroke the patients were traced with the National stroke register and it was observed that 62% of them were gainfully employed. It was also observed that male patients return too early to work than their female counterparts. This study of Harnnerz et al., (2011) provides a basis for the studying of stroke populations in their national and regional contexts. The differences between models of care, medical infrastructure, as well as the frequency and intensity of treatment, cause variations in the prognoses and outcomes of treatment. Therefore, it is recommended to conduct studies at a contextualised, and a country level.

Gilworth, Phil, Sansam, and Kent (2009) conducted in-depth interviews on 13 patients on their expectations and experiences as stroke survivors in relation to return-to-work; they were gainfully employed at the onset of stroke. They concluded that the provision of information, changing of life roles and support system for return to work were essential aspects to consider, when assessing the impact of stroke, and the management of its consequences in people still within the working age range.

Wozniak, Kittner, Price, Hebel, Sloan, and Gardner (1999) conducted a prospective study in the United States of America among first ischemic stroke patients between the ages of 24-64 who were fully employed after being discharged home or acute rehabilitation on their ability to return to work and sustain their jobs. It was discovered that their ability to retain their jobs depended on the nature of their new jobs and the severity of the stroke attack. Job modifications and environmental factors were also crucial in re-employment after stroke.

Black-Schaffer and Osberg (1990) looked at variables which had significant impact on rehabilitation interventions among stroke patients aged 65 years and younger. The significant variables which were relevant and had impact on rehabilitation intervention were (1) understanding return-to-work from different perspectives by patients; (2) patients of different ages having different results; (3)Having rehabilitation programmes with different purposes (4) Contextual factors/cultural factors, such as the availability of support from family, nature of the disability, and compensation affecting return-to-work.

Baldwin and Brusco (2011) determined the effect of vocational rehabilitation programmes on return-to-work rates post-stroke. An inadequate number of high-quality trials are available which supports, or counters, the use of specific vocational rehabilitation programmes, to increase return-to-work rates, following a stroke. Standardised definitions of terminology, as well as quality, randomised controlled trials are required, before conclusions could be made about the effect of vocational rehabilitation programmes on the return-to-work rates for stroke survivors.

Peters, Buni, Oyeyemi, and Hamzart (2012) in their study explored the occurrence and factors that enhance returning to work among stroke survivors. In their study 101 stroke survivors, who received physiotherapy at seven teaching and specialist hospital centres in North East Nigeria participated in the study. Functional outcome affected vocational outcome; therefore, it is necessary to improve the functional status of stroke survivors, and promote returning to work. Consequently, it was noted that in order to enhance quick

recovery which would facilitate patients returning to work within the first year of stroke attack; specialised rehabilitation centres should be built all over Nigeria for the purpose of giving specific treatment instead of depending on the existing and not sufficient outpatient clinics which are already available in Nigeria.

Graham, Pereira, and Teasell (2010) in their article revealed the number of successfully managed young stroke survivors with aphasia who were able to return to work. It was observed that 28.4% young stroke survivors with aphasia were able to return to work compared to 44.7% for all young stroke survivors without aphasia. It was noted that Aphasia could be a barrier to returning to work successfully among younger stroke survivors. Means of reducing this inequality can be achieved by establishing specialised vocational rehabilitation centres for this affected population.

Doucet, Muller, Verdun-Esquer, Debeleix, and Brochard (2012) monitored return to work in France among patients who suffered a stroke at least 3 years previously. It was observed that being able to resume driving facilitated ability of patients to return to work, and that there was a positive correlation between resumption of driving and returning to work. A number of barriers affecting return to work were also identified which included living on one's own, severe functional impairment and speech impairments. The facilitators included support from specific professionals and early involvement of the occupational physician. Collaboration between occupational health services and the centre for physical and rehabilitation medicine (CPRM) seemed necessary in order to accelerate returning to work for stroke survivors.

Daniel, Wolfe, Busch, and Mckevitt (2009) used 78 studies to identify the social consequences of stroke in working-aged adults. Sixty-six (66) quantitative observational studies, Two (2) quantitative interventional studies, Nine (9) were qualitative studies, and one (1) used mixed methods. Social consequences identified included: negative impact on family relationship, deterioration in sexual life, economic difficulties and deterioration in leisure activities.

Hofgen, Bjorkdahl, Esbjornsoon, and Stibrant-Sunnerhagen (2006) examined the recovery of cognitive function, activities of daily living (ADL) ability, and the vocational situation after stroke. The study assessed cognitive function, personal and instrumental ADL, pre-stroke vocational situation after discharge, 1year and 3years after discharge among subjects under 65years. Fifty-eight patients participated in the study, during the first year after discharge, all examined variables improved. Data collected a year after discharge revealed that, 83% still

had cognitive dysfunction, while 20% were still dependent in ADLs. Data relating to return-to-work revealed that only after 3 years only 20% returned to gainful employment. Recovery of ADL and cognition occurred, however only a few individuals returned to work. Good neurological status made a greater significant contribution to cognitive recovery than to return-to-work.

Anderson, Christensen, Kirkevold, and Johnson (2012) recruited 83 first-ever stroke patients, under 60 years of age, who were employed, Seventy-seven (77) were employed full time while six(6) were part-time. General fatigue on a continuous scale recorded high scores which were also negatively correlated with return to paid work. Post-stroke fatigue was discovered to be a strong factor affecting returning to paid work after stroke.

Saeki (2000) conducted an observational study which was retrospective involving 126 patients, the study sought to statistically associate stroke location and return to work after initial stroke encounter. It was concluded that associating stroke location and return to work was not significantly necessary using the Cox model; it rather revealed other variables such as Heart rate, apraxia, and type of occupation (white versus blue collar) as relevant and significant predictors to return to work.

Tanaka, Toyonaga, and Hashimoto (2014) in Japan for 18months observed the predictive effect of function and occupation on return to work. The study was conducted in 21 hospitals between February 1 2005 to July 31 2006. It was reported that type of job, work designation, diagnosis/cause of stroke, functional upper limbs, ability to ambulate, spasticity, visuospatial neglect, aphasia, attention dysfunction were associated with returning to work. Predictors were walking (ability to walk), Profession (white collar job), aphasia and attention dysfunction. It was concluded that highly skilled persons had a greater chance of returning earlier to work even for patients at chronic stage of stroke recovery. However, modifications and appropriate redesign of their previous work place may brighten their chances.

Trygged, Ahacic, and Kareholt (2012) investigated predictors of return to work among younger stroke survivors and also the role of education and income in their returning to work. Seven thousand and eighty one (7,081) inpatients out of 11,864 registered survivors aged between 40-59 and had survived first stroke who were discharged between the periods of 1996-2000 in Sweden participated in the study. Sixty-nine percent returned to work after discharge, it was observed that those with higher education and income returned to work significantly more than those with obligatory education and low income. Additionally, there

was a strong association between length of hospital care and the probability of returning to work.

Morris (1999) conducted a review among stroke survivors in the United kingdom under the age of 65 years; the review focused on the consequence of stroke on the psychology of the affected patients as regarding employment. Return to work and sustaining a paid job was salient and very vital to the psychology of recovery of the affected patients.

Vestling, Tufvesson, and Iwarsson (2003) in their study sought to establish indicators for return to work after stroke as well as how individuals viewed work in terms of its impact on their well-being and life satisfaction. Sixty-five (65) persons participated in the study, the result revealed that a total of 41% of the individuals returned to work of which 35% were women and 65% were men. It was reported that walking (without assistive device), profession (white collar) and cognitive ability (preserved) were the most important indicators of readiness for returning to work. It was also reported that retuning to work provided a significantly higher life satisfaction and wellbeing for the stroke survivors.

Soeker and Olaoye (2017) conducted a study in Southwest Nigeria which explored and described the experience of rehabilitated stroke survivors and stakeholders with regards to return to work. The researchers used focus group discussions with the caregivers and semi-structured interviews with the stroke survivors and rehabilitation specialist. Three themes emerged which described the factors that facilitate the resumption of the worker role. Theme one and two related to barriers hindering return to work while theme three related to the facilitator assisting the survivor's return to work. However, the study had two limitations which were inability to generalize its findings to the larger population due to the inherent nature of qualitative research and limited number of study participants. Also, because all the participants were mainly males and their experiences may differ from the female participants.

Huang et al. (2018) investigated whether the WHODAS 2.0 could be used to predict return-to-work, but determined that environmental factors such as unemployment rates as well as social welfare and insurance policies are not accounted for, as these factors are different for different countries. The authors hence acknowledge that their results could be limited to Taiwan, hence recommending for further investigations of the effects of these environmental factors.

Olaoye, Soeker and Rhoda (2021) identified predictors of return to work among stroke survivors in South west Nigeria. Two hundred and ten stroke survivors participated in this

study with mean age of 52.90±7.92 years. Sixty percent (60%) of respondents returned to work with half of them in full time employment. The symptoms of stroke, the environment, as well as activity and participation problems were significant predictors. Meanwhile, side of hemiplegia/hemiparesis played a prominent role in resumption of the worker role of stroke survivors in south west Nigeria. However, the limitation was that the study design was cross-sectional survey which could influence the predictor power of independent variable on return to work of stroke survivors, the authors' recommended longitudinal survey to address the limitation in future.

2.4. Summary of literature review (Phase A)

The review of literature revealed that future research studies should explore the development of a standardised tool which could be used to assess the ability of individuals to return to work, as well as determining an operational definition for the aspect of successful employment. In addition, the following were revealed:

- As documented in the literature, the factors that are definitely related to RTW in stroke patients are: age less than 65 years; high level of education; and white-collar employment, activity and participation problems symptoms of stroke, affected side and the environment. The significant negative predictor is the severity of stroke.
- RTW is also impacted by financial and social factors.
- Success of stroke rehabilitation programmes could be measured by RTW in stroke patients as returning to work influences aspects such self-image, well-being, and life satisfaction.
- Information that is lacking in the literature includes effective assessments and interventions in vocational rehabilitation in stroke patients.
- The ability to return to work and employment stability can be predicted by the combination of demographic, function and injury severity factors.
- Early identification of those at risk for poor employment outcomes could assist planning and implementation of rehabilitation programmes.
- The ability to return to work is especially key rehabilitation considerations for younger stroke patients.
- Returning to work has a psychosocial effect in that it enhances recovery and improves life satisfaction, as it affects self-esteem, confidence, and social identity.
- Higher functioning stroke survivors, with minimal or no obvious physical disability, may experience workplace challenges.

- Harmful predictive factors for return-to-work were: living alone; the presence of severe functional impairment; and the presence of speech disorders. Affirmative predictive factors included: specific, professional support; and early involvement of the occupational physician.
- The ability to drive is positively associated with returning to work, and there was a positive correlation between the time to work re-entry, and the time to the resumption of driving.
- Three factors that were indicative of readiness for return-to-work were identified, providing implications for more efficient vocational rehabilitation programmes.
- Barriers to return to work are experience of loss by stroke survivor, returning to work is a struggle and rehabilitation and social support as enablers or facilitators to resume stroke survivor's roles after stroke.

Studies focused on the clinical indicators and predictors of RTW, the variation in the medical infrastructure, intensity and frequency of treatment, and access to treatment, were identified across settings, based on country and socio-economic status. Therefore, it was recommended that the phenomenon be studied at a country level, in order to ensure that a contextually sensitive enquiry was conducted. The research on RTW for this population did not report extensively on the instrumentation for the assessment of return-to-work, but used a combination of older, conventional instruments, with a more clinical focus. The present study noticed the vacuum or lack of an outcome measure/instrument designed specifically to measure or assess return to work from all these studies. This however was the gap which the researcher sought to fill with this current study.

PHASE B

FRAMEWORK OF RESEARCH

2.5. Overview

The conceptual framework employed for this current study was triangulated and drew on three separate theories and models. First, the International Classification of Functioning Disability and Health model for disability (ICF), with its codes and components, was complemented by the Flags model. This assisted with the development of content. The theoretical framework also included the C-OAR-SE theory to guide the construction process. Thus, the framework for the present study straddled content and process in pursuit of the aims of the study.

2.6. Origin of scale development

Scale development originated from France, at the beginning of the early twentieth century. Alfred Binet and his associate developed a test intended to assess young school children in 1905. This test was used for proper placement of school pupils in Paris (Cohen &Swerdlik, 2010).This test eventually influenced other schools, beyond Paris, within 10 years, while an English version was ready to be utilised in the United States of America and Germany (Cohen & Swerdlik, 2010). During the great wars, the first and second, this test was used to recruit the military personnel, especially when aptitude needed to be assessed. Eventually, after the great wars, many tests became available to assess diverse variables (Cohen &Swerdlik, 2010).

2.7. Developing a multi-perspective instrument to assess return to work

Measurement is a conception that entails creating guidelines for the allocation of scores, which should relate to the concept (Portney&Watkins, 2000). In order to create these guidelines, the researcher should simplify the concept, by concentrating on its most significant areas, to achieve his/her aims (Finch, Brooks, & Stratford, 2002; Roach, 2006). It is important to understand the reason for creating a measurement tool. Measuring tools, or instruments, are used to determine health outcomes, which facilitate decision-making about the provision of care for patients (Finchet al., 2002; Granger, 1998). One outcome measure may not be able to assess all the variables that interest a researcher; therefore, several outcome measures are developed, in the form of clinical indices, which are applied to assess

variables of concern, by ascribing scores to them, and subsequently, summarising them to generate item level scores. Most indices measure item scores at the nominal or ordinal level (Roach, 2006).

Currently, no instrument exists that could be used to assess return-to-work from various perspectives. Consequently, there is a need to develop a contextually sensitive, multi-perspective instrument that could assess return-to-work from various perspectives, specifically, the employer's, the employee's, as well as psychosocial, physical, and contextual viewpoints. In addition, it has to be specific to the Nigerian context and culture. In this current study, the researcher aims to develop an indigenous, multi-perspective instrument that could assess return-to-work in Nigeria. This would help to assess post-stroke survivors and their readiness to return to work, thereby monitoring the stages of return-to-work. Without the means of assessing post-stroke survivors for their readiness to return to work, they might not be accepted back into formal employment, which could affect their self-esteem, confidence, and social identity. When subjected to assessment, using an indigenous and multi-perspective instrument that is valid and reliable, the employers may be reassured to reinstate affected employees, objectively and unbiasedly, should they be deemed ready to return to work. In addition, it could provide a means of officially monitoring survivors' recovery and readiness to return to work.

2.8. Developing outcome measures to assess variables

The tests and interpretation of scores from subjective instruments are related to measures such as, validity and reliability (Beauchamp, David, & Johnnesson, 2017). Cohen and Swerdlik (2010, p. 5) describe a test simply as a "measuring device or procedure". In a similar approach, a "psychological test" is defined as a method intended to assess psychological variables (Cohen & Swerdlik, 2010, p. 5). Different tests are guided by various rules, intended to assess and understand the variables. Some tests are self-administered, while others are patient/participant administered, or even computer-based (Cohen &Swerdlik, 2010). Most aptitude-based tests have test manuals that instruct researchers on how to administer the test, and explain the results. Tests also differ, in terms of their *technical quality* and *psychometric soundness*.

2.9. Conceptual framework

The conceptual framework adopted for this current study was the International Classification of Functioning Disability and Health (ICF). The ICF is the primary conceptual framework for

this current study, while the Flags model is complementary, and will be used conceptually to assist with construct definition.

2.9.1. International Classification of Functioning, Disability and Health (ICF)

Disability was viewed by the ICF as not merely a handicap, but also the restriction of normal social, societal, environmental, and economic functioning of an individual (WHO, 2013).This implies that an individual is disabled when s/he is unable to perform routine functional activities, due to pathology and/or a health condition (for example, stroke); therefore, such functional restrictions should be noted in the course of health assessment, and could be used as a measure of outcome of intervention (WHO,2013).The ICF reveals the multifaceted connection and relations between the dimensions, as indicated in Figure 2.1. Stroke offers a standard example of these connections (WHO, 2001). The condition, *stroke*, could lead to impairments, activity limitations, participation restrictions, or all three. This could occur directly, such as when someone suffers social rejection because of the diagnosis of stroke, or through a sequence of events, such as when a woman develops a paralysed hand, then a limitation of dexterity, and finally, loses her job as a secretary, because of her inability to type at her optimal speed. The International Classification of Functioning, Disability, and Health (ICF) improved the perception and measurement of disability. The difference between the ICF and the previous International Classification of Impairment, Disabilities and Handicap (ICIDH), is the emphasis of environmental factors, in creating disability (WHO, 2001).

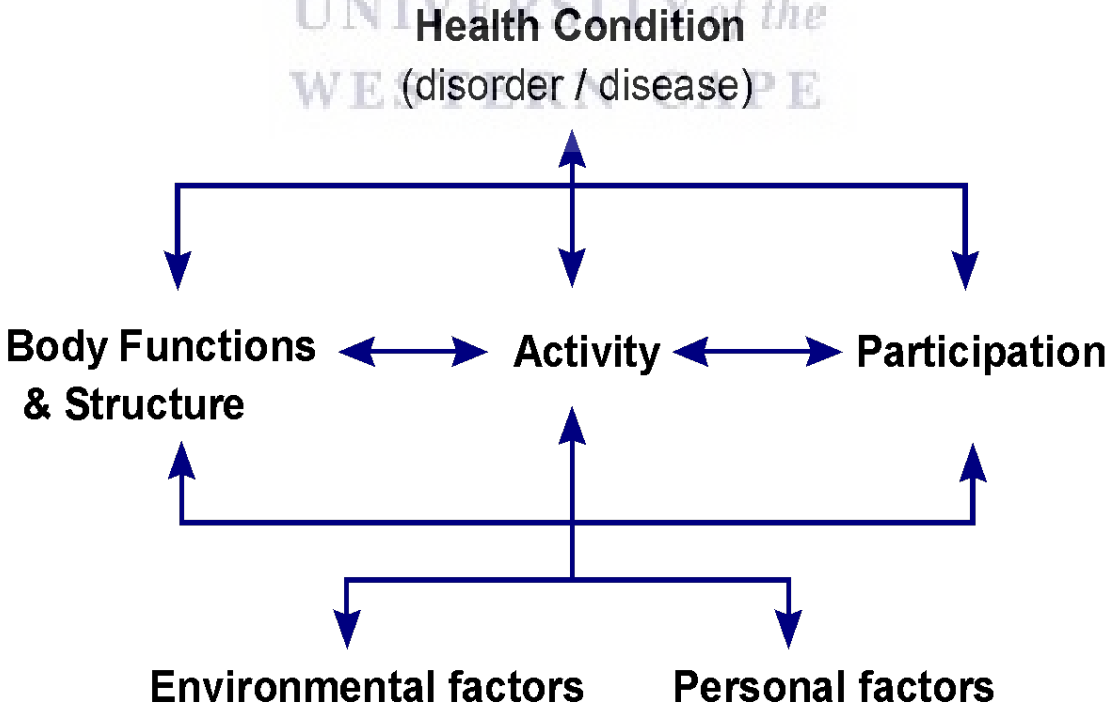

Figure2.1: Representation of the International Classification of Functioning, Disability and Health (Copyright: WHO, 2001)

Disability could be defined as a deficiency in the capacity to execute a movement in a manner considered normal for an individual. Disability involves the restriction of abilities, in the form of complex performance and behaviours that are generally acknowledged as important mechanisms of day to day living (Reed et al., 2005). The following examples refer: disorder in displaying suitable behaviour; disorder in personal care, such as urinary control and the capacity to perform self-care; disorder in the execution of other day-to-day activities, as well as in locomotor performance, such as the ability to walk (WHO, 2001).French & Swain (2013) observed that disability is a form of social oppression, especially when used to segregate people, in order to deny them social participation in their communities.

The ICF is a multipurpose classification with various specific aims:(1) providing a scientific basis for the comprehension of health and health-related outcomes and instruments; (2) providing a systematic coding scheme for health care discipline; (3) permitting comparison of data across countries, health care disciplines, service, and time; (4) providing a common language to describe health and health-related outcome measures, for health providers, such as policy-makers, researchers, health workers, as well as the general public. The ICF it could be applied as a statistical, research, clinical, social policy, and educational tool. In addition, it provides a description of a situation, with regards to human functioning and its restriction, and serves as a framework to organize this information (WHO, 2001, p. 5). Therefore, in this current research, the ICF was used as a conceptual framework for the development of the Return-to-work Assessment Scale.

The ICF could be classified into two parts. The first part covers the component of functioning and disability, which includes body components, as well as the activities and participation components WHO, 2001, pp, 7–8). The second part covers contextual factors that comprise environmental and personal factors (Figure 2.1).Each component could be displayed in both positive and negative terms, which consist of various domains and categories. The appropriate category codes, which are numeric codes, specify the extent of functioning and disability in that category, or the extent to which an environmental factor is a facilitator, or a barrier (WHO, 2001). The Return-to-work Assessment Scale is grounded in the conceptual framework of the ICF, and captures the individual level of functioning in three (3) major domains, and 86 items:

2.9.1.1. Personal (Domain 1)

- **Instrumental activities of daily living**: This domain scores the functional status of the stroke survivor.
- **Cognition**: This domain scores the cognition status of the stroke survivor.
- **Communication:** This domain scores the expressive status of the stroke survivor.
- **Coping**: This domain scores the coping status of the stroke survivor.
- **Motivation for return-to-work**: This domain assesses the employees' motivation towards return-to-work.

2.9.1.2. Work (Domain 2)

- **Employees' motivation**: This domain assesses the employees' attitude towards return to work.
- **Reasonable accommodation**: This domain assesses the previous accommodation of the post-stroke survivor, prior to present stroke incident.
- **Employers' attitude**: This domain assesses the employer's attitude towards the circumstances of the post-stroke survivor.

2.9.1.3. Contextual factors (Domain 3)

- **Social Support**: This domain scores the social support status of the post-stroke survivor.
- **Local Transport**: This domain scores the mobility status of the post-stroke survivor.
- **Attitude of communities**: This domain scores the attitude of the communities of the post-stroke survivor.

All domains were developed from comprehensive sets of ICF items (**See Appendix 12**), and made to correspond directly with the ICF activity and participation dimension, which is applicable to any health condition. The three (3) domains of RTW provide a profile and summary measure of functioning and disability that is reliable and applicable across cultures and adult populations.

2.9.2. The Flags model

Flags could be compared to warning signals that surrounds an individual, acting as hindrances to full recuperation, and returning to work (Kendall et al., 2011). Flags could be observed in three areas, namely: (1) Yellow flags that relate to the Person [thoughts, feelings and behaviour]; (2) Blue flags that depict the Place of work [work and health concerns]; and (3) Black flags that describe the Contextual issues [relevant people, system and policies]

(Kendall et al., 2011). Identifying these flags involves detecting unhelpful behaviours and circumstances that could influence return-to-work. The Flags model was developed and refined over decades. In this current study, it was adopted as complementary to the International Classification of Function (ICF), for the purpose of construct definition in the first phase of the study. It could be used to identify the common barriers of returning to work, as well as assist in discovering ways to overcome those (Kendall et al., 2011).

Culler et al. (2011) identified factors that contribute to, or act as barriers to return-to-work in post-stroke survivors, involving employers, rehabilitation professionals, and post-stroke survivors, in a qualitative study, using the Flags model. These factors could include thoughts, feelings, behaviour, work and health concerns, relevant people, as well as the system and policies. In this current study, the researcher seeks to develop an instrument to assess return-to-work among post-stroke survivors. The Flags model was adopted as complementary to the ICF, to determine the variables (factors), or domains to be included in the domains proposed by the ICF and in the resultant instrument as identified by stakeholders.

2.10. Theoretical framework

The theoretical framework of this study was the Modified C-OAR-SE Theory (Rossiter 2002). The ICF and the Flags model provide a conceptual map for the content of the instrument, while the Psychometric Theory provides the theoretical underpinning for instrument validation. The Psychometric Theory assumes that constructs exist objectively, and therefore, can be measured, to accurately reflect reality, while acknowledging the probability of measurement error (Foxcroft & Roodt, 2013).The inevitable measurement error has to be managed and curtailed to an acceptable level, within which the probability of significant errors are eliminated, or reduced (Anastasi & Urbina, 1997). This ontological assumption (nature of reality) translates into two important psychometric properties that have to be fulfilled, in order for measurements to be useful, namely, validity and reliability (Drummond 1992). Psychometric theory provides clear operational definitions and statistical procedures for instrument development, through which reliability and validity are established (Nworgu, 2006). Reliability and validity are expanded below to reveal its importance in the development of the research instrument, to be used in this current study.

Validity is the extent to which an instrument measures what it is designed to measure (Murphy & Davidshofer, 1998). It is the extent to which the measurements accurately represent the construct under investigation (Walsh & Betz, 2001). There are four types of validity, namely, face-validity, content, criterion-related and construct validity (Walsh & Betz,

2001). Face validity is very popular, because of its simplicity, although technically, it is not a type of validity (Nworgu, 2006).

The *reliability* of an instrument refers to the degree of consistency with which the instrument measures whatever it measures (Anastasia & Urbina, 1997). In this current study the researcher uses the Psychometric theory to develop an instrument to assess physical and psychosocial determinants of return-to-work that satisfies the psychometric criteria, as evidenced by the validity and reliability estimates computed. Psychometric theory provides the theoretical framework, and the operational steps, to determine the reliability and validity of the proposed instrument, to assess return-to-work.

2.10. 1.Psychometric Theory adapted: C-OAR-SE Theory

Traditional Psychometric theory emphasises measurement for the purposes of establishing reliability and validity. Traditional Psychometric theory emphasises the measuring of the validity of the construct, by examining the relationship between the measure used to assess the construct in question, and the scores that such a measure produces (in essence, evaluating a measure's validity from the scores it produces). The major criticism against traditional psychometric theory is that the generation of quantitative indices was prioritised at the expense of thorough construct clarity and design procedures. The resultant statistical indices were thought to be sufficient evidence of good construction and construct validity. Therefore, for the purpose of this current study, the researcher considers a more recent theory and procedure, namely, the C-OAR-SE method by Rossiter (2012).

C-OAR-SE is an acronym for the six aspects of the theory: 'C' [construct definition], 'OAR' [object representation, attribute classification, and rater entity identification], and 'SE' [selection of item type and answer scale, as well as, enumeration and scoring rule] (Diamantopoulos, 2005; Rossiter, 2011a). It is both a theory and a procedure that is testable through proof of rational argument (Rossiter, 2011a). In this way, the method is a drastic option to the conventional approach of psychometric theory (Finn & Kayande, 2004). The C-OAR-SE method is based on expert content validation (Diamantopoulos, 2005; Finn & Kayande, 2004). Specifically, it is a rational, rather than an empirically-based theory and procedure (Rossiter, 2012). The C-OAR-SE method assigns greater value to content validity, by ensuring that the measure represents the construct, accurately, as defined (Diamantopoulos, 2005; Rossiter, 2011a); specifically, observing whether the measure examines the conceptual definition and the content universe of the construct. Ultimately, when the content validity is ignored, the construct is ignored (Diamantopoulos, 2005;

Rossiter, 2011a). Additionally, for items to be content valid, it should have the properties of both high item-content validity, as well as, high answer-scale validity.

The operational steps, or processes included in the model are: construct definition; object representation; attribute classification; rater-entity identification; and scale construction (selection of item type and answer scale, enumeration and scoring). These processes concur with the phases of this current study and its objectives. For example, the FLAG model guided the construct definition. The psychometric theory (C-OAR-SE) was the primary framework, and the FLAG model was a second complementary theory. An overview of the traditional C-OAR-SE theory by Rossiter (2011a, 2011b), reveals that the theory is made up of three main principles, which differentiates it from the conventional psychometrics approach. The three major principles are: 1) Expert-assessed high content validity of items and the answer scale; 2) Predictive validity of the measure is additionally desirable for a predictor construct, as the notion of construct validity is non-sensical and misleading. In the last principle, the psychometrics approach goes badly astray (Rossiter, 2002).These two initial principles distinguish the C-OAR-SE theory, drastically, from the psychometrics theory.

2.10.2. C-OAR-SE Theory (Appendix 13)

The C-OAR-SE theory was developed by Rossiter (2002), as a procedure for scale development, which places entire emphasis on the high content validity of the items, and answers scale, or answer scales, should varied ones be used for each item (Rossiter,2012). C-OAR-SE theory regards reliability as the only reference to the statistical precision of observed scores obtained from it in a particular application. Content validity therefore becomes necessary for reliability, reversing psychometric arguments which states that reliability is necessary for validity. The new procedure C-OAR-SE is an acronym for Construct definition, Object classification, Attribute classification, Rater identification, Scale formation, Enumeration and reporting (Appendix 13). These six steps are the most essential when developing a proper measure of any construct.

The C-OAR-SE approach is made up of contributions from previous works on conceptualisation of construct by authors like Blalock (1964), McGuire (1989), Bollen and Lennox (1991) and research on attribute classification from authors like, Fornell and Bookstein (1982), Cohen, Cohen, Teresi, Marchi, and Velez (1990), as well as Law and Wong (1999), Edwards and Bagozzi (2000), to mention just a few (Rossiter, 2002, 2012).

1. **Construct definition**

This is defined as a conceptual term, used to describe a phenomenon of theoretical interest (Edwards & Bagozzi, 2000).C-OAR-SE theory demands that the constructs be described theoretically, in terms of: *the object*, *the attribute and the rater entity* including its constituents or components. If this is not done, there will be an operational inadequacy in the definition and how the construct is measured (Rossiter, 2002, 2012).

2. **Object Classification**

This is the second step in the C-OAR-SE procedure, which is made up of the classification of the central object in one of three categories, namely: concrete singular, abstract collective and abstract formed. It must be noted that different types of objects require different types of measures (Rossiter 2002, 2012).

3. **Attribute classification**

The third step in the C-OAR-SE procedure is attribute classification, classifying the attribute of the construct that is "the dimension in which the object is being judged" (Rossiter, 2002, p. 7).There are three distinct types of attributes, namely: concrete, formed, and eliciting (Appendix 13).

4. **Rater identification**

The fourth step in the C-OAR-SE procedure is the identification of the rater entity, which is considered to be an intrinsic component of a marketing construct(Rossiter, 2002, 2012).Three types of rater entities are identified, namely, individual raters, expert raters, group raters, which require different approaches to reliability assessment (Appendix 13). The construct differs, depending on whose perspective they represent, and concludes that the rater entity is part of the construct (Rossiter, 2002, 2012).

5. **Scale formation**

Scale formation in C-OAR-SE requires the assembling of object item parts with their corresponding attribute item parts, to form scale items, technically, to form the stem of the scale items, as the response alternatives. Six distinct ways of deriving a total score from scale items are proposed, namely: Object item parts; attribute item parts; pre-testing scale item; response formats; randomised order, and reporting scale formation (Rossiter, 2002, 2012).

6. **Enumeration**

The next step in the C-OAR-SE procedure is the scale enumeration, because of the different types of objects, types of attributes, and scale enumeration rules under C-OAR-SE (Appendix 13). The scale enumeration could range from a single-item score, equaling the total score, two types of indexes, a double index, an average, and averages, which are

subsequently indexed (Rossiter, 2002, 2012). Due to the different object and attribute types, which possibly could be combined in a construct, the enumeration rules (procedures to derive a total score from the scale items) will vary. This could be achieved by indexes, averages, and single-item scores, as well as reporting scale scores (Rossiter, 2002; 2012)

2.11. Summary of the conceptual and theoretical framework (Phase B)

The ICF was the primary conceptual framework for this current study, while the Flags model was complementary. The Flags model was included and used conceptually, as part of the construct definition, while the primary conceptual model was the ICF, with its codes and components. The psychometric theory (C-OAR-SE) was the primary framework, and the Flags model was a second complementary theory. An overview of the traditional C-OAR-SE theory by Rossiter (2011a, 2011b) reveals that the theory is built around three major principles, which distinguish this method of measure design, from the now standard psychometrics approach. The aim was to discuss the theoretical and conceptual framework, on which the development of the *Return-to-work Assessment Scale* was grounded, and the need to develop an Assessment Scale, as revealed during the literature review, which is the gap that this current research intended to fill.

C-OAR-SE as adopted in the development of the RAS combines the construct development with the face and content validation composing of the attribute classification, raters identification, enumeration and scale formation which were authenticated in the Delphi panel study (table 2.1) and eventually in the pilot/psychometric study for the determination of the structural validity and reliability of the Return to work assessment scale.

TABLE 2.1: SUMMARY OF THEORITICAL AND CONCEPTUAL FRAMEWORK

C-O-ARS-E	ICF	FLAGS	PROCEDURE
Construct definition	Activity (Work)	Concepts of flags	Theoretical definition
Object classification	Body structure Body function environmental factors personal factors Participation	Red, Blue and Black flags	Domain identification
Attribute Classification	ICFcodes	Risk factors (Flags) Participation barriers Participation facilitators	Item generation
Rater Identification	Post Stroke survivors	Post stroke survivors	User group identification
Enumeration	Post stroke survivors	Post stroke survivors	Measurement and response scale development
Scale formation	Expert Delphi panel	Expert Delphi panel	Scaler decisions and construction,

CHAPTER THREE

RESEARCH METHODOLOGY

3.1. Introduction

In this chapter, the researcher includes the methodology applied to conduct this current study. The study setting, population of study, sample size and technique, study design, data collection procedures, data analyses, and ethics considerations are all presented in this chapter. In addition, explanations are provided on the procedures of the steps taken towards designing, validating, and determining the reliability of the Return-to-work Assessment Scale, namely, the in-depth interviews, the Delphi and the Psychometric studies.

3.2. Aim of the study

To develop a multi-perspective conceptualisation of return-to-work.

Study setting

This current study was conducted in south east Nigeria, which consists of five states (Abia, Anambra, Enugu, Ebonyi, and Imo). Williams (2005), described Nigeria as a country having many cultures, with 18% of the total population of 177 million, people being in the south-eastern part of the country and being Igbo speaking, one of the main indigenous languages. The post-stroke survivors and health professionals were recruited from selected tertiary hospitals in south east Nigeria. The hospitals were randomly selected, as follows: Nnamdi Azikiwe University Teaching Hospital, Nnewi, Anambra state; Anambra State University Teaching Hospital, Amaku, Awka, Anambra state; Enugu State University Teaching Hospital, Park lane, Enugu state; Neuropsychiatric Hospital, New haven. Enugu; Federal Teaching Hospital, Abakaliki, Ebonyi state; Federal Medical Centre Owerri, Imo State; and Federal Medical Centre, Umuahia, Abia state.

In a rural study, in south west Nigeria, the crude prevalence of stroke reported was 0.58 per 1,000 population, while 26 per 100,000 population was observed to be the incidence of stroke in a southwest urban register-based study in Nigeria (Enwereji et al., 2014). These studies had been conducted more than two decades ago. A prevalence study, conducted in a south west Nigerian urban community, was observed to report a prevalence of 1.14 per

1,000 population (Danesi et al., 2007). In Ukpo, Onitsha Anambra state, south east Nigeria, the crude prevalence was 1.63 (95% confidence interval [CI] 0.78–3.00) per 1,000 population. When adjusted for gender, in males it was 1.99 (95% CI 0.73–4.33) per 1,000 population, while in females, it was 1.28 (95% CI 0.35–3.28) per 1,000 population (Enwereji *et al.,* 2014).When age adjusted, the peak age prevalence of stroke was 12.08 (95% CI 3.92–28.19) per 1,000 population, while considering and adjusting the prevalence to the WHO world population, the peak was 1.0 (95% CI 0.33–2.33) per 1,000 population (Enwereji et al., 2014). Based on this large prevalence and incidence of stroke survivors in rural south east Nigeria, as highlighted by Enwereji et al., (2014), it is vital to explore how the stroke survivors adjust themselves regarding returning to work.

In this study, the researcher aims to develop an indigenous, multi-perspective instrument that could assess return-to-work in Nigeria, using the south-eastern cities of Nigeria as a case example. This could assist in the assessment of post-stroke survivors, and their readiness to return to work, while monitoring the stages of return-to-work. Without a means of assessing return-to-work among post-stroke survivors, they would not be accepted back into formal employment, which could affect their self-esteem, confidence, and social identity. When subjected to an assessment with an indigenous, multi-perspective instrument that is valid and reliable, the employers of labour may have enhanced confidence to reinstate affected employees, from an objective and unbiased point of view, should they be considered ready to return. In addition, it could provide a means of officially monitoring recovery and readiness of post-stroke survivors to return to work.

However, unlike in developed countries, there are no reliable figures for the developing world, because of the poor registry system, and rapid urbanisation, which is not commensurate with information system, records (Aliyu & Amadu, 2017). Consequently, the result is inaccurate statistics, which in turn, negatively impact the allocation of resources, as well as the planning, or prioritising of services (WHO, 2013; Owolabi et al*.,* 2017). As mentioned before, the WHO has projected that, during the next two decades, the incidence of stroke is likely to worsen in developing countries, due to the increase in civilisation, and the adaptation of lifestyles, which are integral to healthy living (WHO, 2013). Presently there is no instrument that could be used to assess return-to-work, from various stakeholder views, and other contextual viewpoints. There is a need to develop an indigenous and multi-perspective instrument that could assess return-to-work from different angles, specifically, the employer, employee, psychosocial, physical and contextual viewpoints.

3.3. Overall research design

The overall research design was a Sequential multiphase study design, comprising three phases. Every phase had its own methodological elements, and the findings of each phase fed into subsequent phases. Multiple methods or multiphase design are two or more complete projects attached to an overall inductive aim (called the inductive thrust) (Morse & Cheek., 2014). The research questions for each study are separate, but complementary to the overall aim. Because each study (or "component") is a separate study answering a different question, each is less dependent on the other components in the study. Therefore, multiple methods are not as difficult to conduct as a mixed-method project: they do not have the sampling concerns, or the interaction and changes from interproject reflexivity; that is, until you get to writing the integrated article that combines the findings of all the projects (two or more) and which addresses the overall inductive aim of the project (Morse & Cheek, 2014). By contrast, mixed-method design consists of one complete project (one study that may be published by itself) that includes an additional supplemental strategy that uses a different analytical technique and is not comprehensive enough to stand alone; that is, the supplemental strategy is only "complete," or interpretable, within the context of the core component (Morse, 2003; Morse & Niehaus, 2009; Morse & Cheek, 2014).). Thus, mixed-method design consists of "one and a half" projects, with the supplemental component adding scope, depth, or description to the core component. The supplemental component does not "make sense" on its own: qualitatively it lacks saturation; quantitatively it may consist of a set of scores (Morse & Cheek, 2014). The mixed-method design is referred to in the singular, because it must be considered as one method, one combined project, not two methods (Morse & Cheek, 2014).

Table 3.1: The Multiphase study Design

Phases	Definition of each phase
1	Construct Development
2	Scale Construction & Validation
3	Psychometric properties

3.3.1. Phase One: Construct development

3.3.1.1. Aim

The first objective of construct development is addressed in this phase.

3.3.1.2. Study design

The first phase adopted exploratory research as the primary design. Exploratory research is appropriate, when there is a need to obtain information about a situation, phenomenon, community, or individual (Blaikie, 2000). This type of study is needed as there could be a lack of basic information about a new area of interest, or to become acquainted with a situation/phenomenon, in order to formulate a problem, or develop a hypothesis. Consequently, Kreuger and Neuman (2006) assert that exploratory research may be the first type of study to be conducted to address the gap in the gap in the knowledge. In addition, exploratory research favours qualitative methods. Therefore, in this phase, exploratory research was employed.

Qualitative methods are appropriate when conducting exploratory research (Walsh & Betz, 2001).

In qualitative research, the researcher is wants to gain an understanding as opposed to explaining, within the natural setting rather than controlled measurement and setting, as well as with subjective exploration of reality, from the perspective of an insider, as opposed to that of an outsider (Fouché & Schurink, 2012). Qualitative research is not a linear process, and therefore, it is suitable for the gathering of nuanced information regarding a topic under scrutiny, from various perspectives (Nworgu 2006; Fouché & Schurink, 2012).

3.3.1.3. Target group and study sample

For this phase, the researcher used purposive sampling to recruit participants from four different groups. In purposive sampling, the focus is on selecting participants, who could provide the most/best information (Palys, 2008). Robinson (2014) asserted that purposive sampling ensures that individuals from specific groups are recruited in the final sample. The individuals from targeted groups are perceived to possess specific insights that could help to enhance the understanding of the research topic (Creswell, 2011).

The participants for this phase were selected from four groups, namely, post-stroke survivors, employers, rehabilitation professionals, and caregivers, as each group provided a unique perspective on RTW for stroke survivors. The uniqueness emanates from the diverse vantage points of the respective groups, with each providing their own responses on the issue of return-to-work, and offering various angles to the subject under scrutiny.

- **Post-stroke survivors**: Post-stroke survivors who satisfied the inclusion criteria were selected consecutively when they became available from the Department of Physiotherapy, Nnamdi Azikiwe University teaching Hospital, and the Landmark Physiotherapy clinic, both in Nnewi, Anambra state, south east Nigeria. These two centres were chosen because of their proximity to the researcher. The stroke survivors, who had a score of greater than 23 on the Mini-Mental State Examination (MMSE) 34, were included in the study. This score signifies that they are stable, and well oriented in time and space.

The stroke survivors were still in employ at the time of their interviews, and had been discharged from the rehabilitation centre. This implies that they were gainfully employed before having a stroke, as well as at the time of their participation. Individuals with stroke, who were *aphasic*, were excluded from the study, as the criterion was that they should be mentally fit, well oriented in time and space, and able to communicate effectively, without hindrance. Stroke survivors, who were medically unstable (for example, unconscious), or suffering from major impairments, such as orthopaedic, oncology, or non-related to stroke, were excluded. All post-stroke survivors, who had been discharged from the Teaching Hospital, at least six months prior to the time of this current study, and not on admission, were eligible to participate in the interviews.

- **Caregivers**: Informal caregivers, who were either the spouses of the post-stroke survivors, or individuals responsible for their day-to-day care, were invited to participate in this current study. Their involvement was intended to inspire the confidence of the post-stroke survivors, as well as add insight to the interviews, by supplying information to the stroke survivors, who may have missed out important information due to forgetfulness, or they may have been unconscious at the time of the incident.
- **Rehabilitation specialists**: Health professionals, who had practiced for, at least, six years post-qualification, and were currently practicing at the Teaching Hospital, were eligible to participate. They were recruited from the Nnamdi Azikiwe University teaching Hospital in Nnewi, and the Neuropsychiatric Hospital in Enugu. These two hospitals were chosen because of their proximity to the researcher. Five rehabilitation professionals (three physiotherapists, one occupational therapist, and one occupational nurse) were selected, based on their years of experience in the field of rehabilitation. One person from each profession, with at least five years of working experience post-graduation, was selected.
- **Employers**: Employers of labour, or their representatives, who had up to twenty employees on their payroll, were also qualified to participate. Employers with at least 10 years' experience as an employer were included. Their proximity to the researcher was also considered, due to physical constraints. Three employers were recruited into the study sample.

3.3.1.4. Sample size

There is no consensus on the optimal sample size in qualitative studies (Vasileiou, Barnett, Thorpe,& Young, 2018). Consequently, the aim was to ensure that the voices of the identified stakeholder groups were included. The researcher did not aim to secure equal representation for each group, but focused on the recruitment of appropriate participants from each group (Fouché & Schurink, 2012). The overall sample size was 18, which included seven (7) post-stroke survivors, three (3) caregivers, five (5) rehabilitation specialists, and three (3) employers of labour.

3.3.1.5. Data collection methods

Semi-structured, face-to-face interviews with post-stroke survivors, caregivers, employers, and clinical professionals. Interviewing is a common method of data collection in qualitative research (Depoy & Gilson, 2008). Researchers obtain information through direct engagement with an individual that has knowledge in the field being explored (Depoy & Gilson, 2008). The quantity and quality of information obtained depends on the ability of the interviewer in being creative at understanding and managing the relationship between the him or herself and the interviewee. (Monette, Sullivan,& De Jong, 2005). The semi-structured interviews were guided by an interview guide that was developed by the researcher and the study supervisors (Appendix 4). The interviews were conducted by the researcher and lasted between 60-120 minutes. The employers of labour and the three rehabilitation specialists were interviewed in their offices, while the post-stroke survivors were interviewed in the Department of physiotherapy, Nnamdi Azikiwe University Teaching Hospital, and the Landmark Physiotherapy Clinic in Nnewi, Anambra State, after their daily routine treatment. They were interviewed in a consulting cubicle, in order to ensure privacy. These interviews were conducted in English, and were audio-taped, after permission had been granted by the participants. The interviews for this current study took place between June and September 2015.

3.3.1.6. Data collection procedure

Prior to the interviews, the researcher informed all the prospective participants about the scope and purpose of the study, as well as their rights regarding participation. Subsequently, after they agreed to participate, the researcher sought and obtained their informed consent. Appointments were set, at their earliest convenience, for the post-stroke survivors, some with their caregivers, to be interviewed conjointly (for reasons stated previously under section 3.3.1.3. Target group and study sample - Caregivers), until data saturation was

reached. The Health professionals and employers were interviewed by the researcher in their various clinics and offices, after their duty for the day. The interviewing process took approximately four months to complete, because of the busy schedules of the health professionals and the employers of labour. The participants of the three interviewing groups were interviewed until data saturation was reached.

The present study used theoretical saturation which meant that data collection was discontinued when the resulting data no longer elaborated on the understanding of the research topic. Specifically, the data no longer contributes to the ability to build theory as suggested by Guest, Bunce, and Johnson (2006). This was signaled by a repetition of thoughts or ideas when conducting the interviews. This saturation point essentially is when new information no longer emanates from interviews with participants. Greeffe (2012) recommended that the saturation point is an indication to terminate the interview process, and move on to the analysis stage with the data that had been collected to that point. All the interviews were recorded and fully transcribed for data analysis .

3.3.1.7. Data analysis

The audio-taped qualitative data, captured during the interviews were transcribed verbatim. Subsequently, thematic content analysis was conducted to establish themes. Firstly, common concepts were identified, and thereafter, the concepts were reduced into categories, with subsequent themes being developed as recommended by Griffee (2018).

The process of thematic analysis, as proposed by Braun & Clarke (2006), involves reading all the transcripts thoroughly, selecting sentences that relate to key questions, and coding quotations, being alert for codes that may overlap, in order to merge them. Subsequently, the categories are grouped into themes, theoretical and methodological comments are recorded in writing, while the validity of the codes, categories, and themes, are checked by the researcher, as well as the study supervisors, who are experts in the process of thematic analysis. Generalisations are set, and linked to the formalised body of knowledge, in the form of constructs, or theories.

The Atlas Ti. Version 7.5.0 software for the analyses of qualitative research was used for this current qualitative data analysis. The Atlas.ti facilitates textual analysis and interpretation, particularly, selecting, coding, annotation, and comparing important segments of text

(www.atlasti.com). To facilitate evidence-based research, the findings, theses, and interpretations are grounded in the evidence. The transcribed interviews were transformed to PDF and uploaded together into the qualitative analysis tool. Common concepts are identified, from which codes/quotations are derived, and later themes emerge, which are extracted and transcribed. One-hundred-and-sixty-six (166) codes emerged, and subsequently distilled into five themes.

3.3.2. Phase Two: Scale construction and validation

The second phase addressed the construction and validation of the preliminary measure. This phase is presented in two sub-sections:

3.3.2.1. Sub-section A: Construction

Aim

1. To produce theoretical definitions for identified domains.
2. To identify scale decisions that would assist in the construction of a draft instrument to measure return-to-work.
3. To develop a pool of items that will operationalise the theoretical definitions.

Process

The findings from Phase 1, as well as the review of the literature were used to inform scale decisions, identify domains for the instrument, and potential items that could assess the identified domains. The researcher developed a draft instrument, based on the following decisions. For ease of coherence, and the flow of the thesis report, the outcomes of sub-section A, are presented below.

1. Theoretical definitions

The literature was consulted along with the results from interviews to derive a theoretical definition for the core construct and identified domains.

2. Scale decisions

Proposed name: Return-to-Work Assessment Scale.

Purpose of the measure: The scale measures return-to-work

User group: Rehabilitation specialists, medical personnel, and employers of labour.

Respondent group: Post stroke survivors, employers of labour and Rehabilitation specialist.

Language: English.

Administration

The scale is anticipated to be an interview-based questionnaire. The scale could be self-administered, or completed by an individual, who has substantial knowledge of the stroke survivor. The scale will be both electronic, as well as a pencil-and-paper administration.

Type of measure: Outcome measure

The instrument was conceptualised as an outcome measure, which is defined as a measurement tool, for example, an instrument, questionnaire, or rating form that is used to document changes in one, or more patients' characteristics, over time (Cole, Finch, Gowland, & Mayo, 1995; Maleka, 2010). The purposes of an outcome measure are: to determine the patient's ability at baseline; to document and measure progress and change and finally, to enhance clinical decision-making about the patient and the rehabilitation programme. The use of outcome measures in healthcare enables total clinical quality management (Cole et al., 1995; Maleka, 2010). Consequently, the purpose of this current research is to develop an instrument, to assess return-to-work among post-stroke survivors.

3. Structure

Domains: The domains of measure were determined after the results from the first phase. The domains drew on the Flag system and the ICF (Appendix 5).The researcher and the study supervisors decided on three domains of measure, each containing items that sum up separately, to measure return-to-work independently. The proposed structure is presented in Chapter 4, as the results.

4. Measurement: Ordinal scale

The researcher, as well as the study supervisors, deemed an ordinal scale most appropriate. This is an itemised rating scale which offers a series of statements, designed to rank different positions on the variable being measured (Strydom & Delport, 2012).

Category partitioning, or Likert scaling, which was adapted, involves breaking up a continuum into a collection of equal intervals, or categories. The minimum number of response categories is two, while the maximum is undetermined. However, Faul (1995) recommends five, seven, or nine, as the ideal number of response categories.

The Likert scaling is a type of ordinal scale, which is the scale that was adopted for the Return-to-work Assessment Scale in this current study, under three variables, namely: independence; ability to cope at the work place; and favourable contextual factors.

5. Scoring

Hudson (1982, cited in Faul & Hudson, 1999) suggests a universal scoring formula that could be used in the scoring of multi-item measurement tools. This formula ensures that the final score will always range between 0 and 100, and provision is made for the respondents, who do not complete all the questions. Actually, up to 20 per cent of the questions need not be completed by the respondents, for such a score to be computed.

The scoring system decided upon would use the Likert scoring numbering from 1-to-3, and 1-to-5. The instructions for administration and scoring would be developed by the researcher.

6. Length/ Number of items

Faul and Hudson (1999) contend that since ecometric assessment tools need to be administered frequently, during the course of a rehabilitation to test their effectiveness, unidimensional scales should not exceed 40 items. Lengthy scales have obvious disadvantages. Various authors argue that the reliability of a scale increases as its length increases, and scales with many items are usually more reliable than those with only a few. Therefore the scale was designed to be in sections and not to add up as a single scale. There will be sections measuring different aspects of return to work among the stroke survivors. Validation and reliability of these different sections will be conducted during the psychometric/pilot testing.

Summary

These scalar decisions were implemented to construct a draft measure that was used for content validation.

3.3.2.2. Sub-section B: Validation

Aim:

To validate the content and structure of the draft instrument.

- **Design**:

The Delphi survey technique was used to establish face and content validation of the scale, as this technique is reported to be a useful research tool to obtain consensus from a selected group (Gupta & Clarke, 1996). The Delphi survey technique was selected to obtain expert opinion, as it allows for wide consultation, while eliminating geographical constraints (Gupta & Clarke, 1996). The Delphi survey technique is used to arrive at a consensus of professional opinion on a given topic. In this current case, consensus was sought on the domains and items to be included in an instrument that would be used to assess return-to-work after a stroke. The Delphi survey technique was deemed appropriate, as it addressed face and content validation. The main objective of this current study was to develop a multi-perspective instrument, to assess the physical and psychosocial determinants of return-to-work in post-stroke survivors. Additionally, the aim of the study was to determine the psychometric properties of the developed instrument. The purpose of the Delphi survey technique is to arrive at a consensus of professional opinion on a given topic, in this current case, domains and items to include in this outcome measure, to assess return-to-work among post-stroke survivors. The Delphi survey technique was selected to obtain expert opinion, as it allowed for wide consultation, beyond geographical borders (Gupta & Clark, 1996). The Delphi survey technique, is a widely used and accepted method of achieving consensus concerning real world knowledge, from experts within certain topic areas (Hsu& Sandford,2007). Applying the rationale that, “two heads are better than one, or..n heads are better than one” (Dalkey, 1972, p. 15), the Delphi technique is designed as a process that aims to conduct detailed examinations and discussions of a specific issue using groups, for various purposes which includes setting goals, exploring policies and predicting the occurrence of future events (Ludwig, 1997; Turoff & Hiltz, 1996;Ulschak, 1983). Common surveys seek to identify, *what is*, whereas the Delphi survey technique attempts to address, *what could/should be* (Miller, 2006).

- **Delphi study**

The Delphi survey technique involves eliciting the opinions and submissions of a group of experts, on a subject, with which they are vastly familiar, in order to reach consensus (Hasson, Keeney, & McKenna, 2000). The RAND Corporation developed the Delphi survey method, to arrive at consensus on any topic, from a group of about 130 experts, in the early 1950s (Hsu & Sanford, 2007). This involves employing multiple iterations that are supposed to bring an agreement of opinions about a subject of discussion. The experts assess and reassess their responses, through a set of numbers, which, when analysed, provides understanding on the subject of discussion. The anonymity and controlled feedback of the experts and participants are also guaranteed. Generally, three rounds of the Delphi process would suffice during information gathering; however, guidelines have been provided for four rounds, in the event that the researcher decides to continue the process beyond three rounds. This present study was concluded after the third round, consensus was reached among the participants. Theoretically, the Delphi process could be continuously iterated, until consensus is reached (Hsu & Sandford, 2007). However, Brooks (1979), Custer, Scarcella, and Stewart (1999), Cyphert and Gant (1971), as well as Ludwig (1994, 1997), emphasise that three iterations, in most cases, are sufficient to collect the needed information, and reach consensus. In this current study, the Delphi process was planned for three rounds.

However, the general standard adopted in all Delphi studies is stated below;

Round 1: The first round begins with questions that are open-ended**,** and used as a foundational probe to gather opinions, ideas, and information about a specific subject from the participants involved in the opinion gathering (Custer, Scarcella, & Stewart, 1999; Hsu & Sandford, 2007). After receiving the participants' responses, the researcher needs to convert the information gathered into a well-arranged instrument of data collection (Hsu & Sanford, 2007). Subsequently, this well-arranged instrument is applied as a survey questionnaire; however, it is also acceptable to develop the instrument of data collection through an extensive literature review (Hsu & Sanford, 2007).

Round 2: After receiving the survey questionnaire, the second round continues, during which each participant/panelist is required to review the concise items, as concluded by the researcher, in relation to his/her opinions provided in the first round. Subsequently, the panelists are expected to peruse the items, with the objective of reducing and prioritising important ones that are relevant to the subject of discussion. Areas of divergence and harmony are determined, after the results of round 2 are disclosed (Hsu & Sandford, 2007). Additionally, the panelists are required to declare their motivation, regarding rating priorities among the items (Hsu & Sandford, 2007). In due course, consensus is reached, and the

authentic outcomes are presented among the participants' responses (Hsu & Sandford, 2007).

Round 3: In this round, each participant receives a questionnaire, which contains summarised contributions from all the participants, to observe the level of consensus, and to identify whether any dissenting voices still persist (Hsu & Sandford, 2007; Pfeiffer, 1968). Finally, the decisions taken by the panelists, on important items, are clarified (Hsu & Sandford, 2007).

Round 4: Any outstanding items, scores, and minor opinions, are distributed to the participants concerned, in this round (Hsu & Sandford, 2007). However, this would only be necessary, when dissenting opinions on the issue of consensus, still persist. Alternatively, the investigator could discontinue the process, once total consensus has been reached by the panelists (Hsu & Sandford, 2007).

Data collection and stimulus prompt

The draft instrument was used as the stimulus prompt in the Delphi process.

Procedure

Delphi round 1

The purpose of this round was to comment on the appropriateness of the items contained in the developed instrument, as well as corrects errors and ambiguity. In round one, a questionnaire was emailed to the participants who agreed to participate in the study. In this round the preliminary instrument developed was distributed with instructions. The experts were given three weeks to respond and a follow up email was sent at regular intervals, to remind the experts of the submission date. All non-responders were contacted via email, after the submission date, and reminded of their commitment.

Delphi technique round 2

Round two was used to continue with the item reduction, and participants were asked to comment on the appropriateness of the amended items, corrected errors, and any items that seemed ambiguios. In this round, a questionnaire was sent to the experts, with all the changes, amendments and newly suggested items from round one. All the items that had not obtained 100% consensus from the experts in the first round were also sent back to the experts concerned. The experts also imparted comments on the ambiguity of the items.

Delphi technique round 3

In round three the aim was to firstly, requested to suggest a scoring system for all the items contained in the developed instrument, and secondly, comment on the appropriateness of the items in measuring return-to-work among post-stroke survivors.

In this third and last round, the third draft with all corrections effected, was sent to the experts, who raised issues on the items and were not in total agreement with the second draft of the developed instruments. All suggestions from the second draft were addressed, and subsequently, sent to the experts for final consensus. All the items with the scoring pattern of each domain were also scrutinised and checked for the final consensus.

From the commencement of the Delphi study, the psychologists were involved, to ensure that issues of psychometrics were considered as well; however, more critically at this final stage. In addition, the health statistician was involved from the start, especially regarding issues related to the scoring system. . They accepted the scoring system as presented by the researcher, and perceived no need for any change. The new instrument had to cover the domains that constitute return-to-work among post-stroke survivors. The level of consensus reached at the end of the Delphi study was 100%.

There is no consistent reference available to determine the standard level of consensus. The three rounds of the Delphi technique were hence used to facilitate reaching consensus while a more reliable indicator of consensus could be reached through a series of three rounds,

The percentage set for consensus was 100%.

Time requirements

A minimum of two weeks is recommended for participants to respond to each round of the Delphi process. Other authors recommend 45 days, as a minimum, for administering the study to the participants. (Hsu & Sandford, 2007).This study adopted the three weeks for each rounds of the Delphi process.

Target group and sample

Experts in the field of rehabilitation, for example, academics, healthcare practitioners, as well as patients, were targeted as possible participants in the Delphi survey. Of the twenty-five experts and stakeholders targeted, ten experts originated from South Africa, ten from Nigeria, and five were post-stroke survivors, who were also stakeholders. Eight professionals, two each from the four professional areas, were experts in their respective fields, as evidenced by, at least, five or more years of clinical experience in neurological rehabilitation. Each field had a bearing on either the content, or psychometrics of the instrument. The group included two rehabilitation experts, two psychologists, two employers, and two statisticians. The employers had, at least, 10 years' experience of recruiting workers for employment. The psychologists, as experts in the development of instruments, were consulted to assist with the psychometric properties of the outcome measure. The statisticians, who had experience in health statistics, assisted with the development and finalisation of a scoring system of the instrument being developed. The rehabilitation

specialists, who had at least 10 years' experience in stroke and disability rehabilitation, contributed significantly, by sharing their experience with stroke survivors. A Google form was developed for the purpose of the Delphi survey, with each participant, including their ID numbers on their responses, which were received centrally by the researcher.

The 25 purposefully selected experts were invited to participate in the Delphi survey. The invitations were sent via e-mail, along with an information sheet explaining the purpose and aim of the entire study, as well as the specific input required for this process. A consent form was also enclosed in the invitation, which included their demographic information. Twenty (20) experts consented to participate, and signed the consent forms, after studying the information sheet, thereby offering their informed consent. The response rate, therefore, was 80%, while no reasons were submitted by the participants who declined. The final panel of experts for the Delphi survey was 20 (8 physiotherapists, 2 occupational therapists, 3 psychologists, 2 employers, and 5 patients).

The rationale and purpose behind soliciting input from the patients, was to offer them an opportunity to provide their input on the content and construct of the instrument. The health psychologists were pre-informed on the need to check the scoring system, as it was their area of specialty

Delphi survey technique - Rounds 1 to 3

A three round e-Delphi technique was employed for this current study. The objectives of these rounds were:

1. To establish face and content validity.
2. To obtain consensus regarding items to be included in the outcome measure, to assess return-to-work among post-stoke survivors
3. To develop the overall scoring system.

The draft measure was revised during the Delphi rounds. The revised measure was used in Phase 3 to establish the psychometric properties.

3.3.3. Phase 3: Psychometric property testing/Pilot testing

3.3.3.1. Aim

To assess the psychometric properties of the developed instrument.

Methodology

3.3.3.2. Study design

The research design was a cross-sectional survey research design. Data were collected from a population (a representative sub-set) at one time point, over a short period (Nworgu, 2006).A cross-sectional survey design is easier and less expensive to conduct, because the time of testing is short, and the drop-out of participants are also minimised (Fouché & Schurink, 2012).This approach allows many subjects to be studied, and is cheaper, as well as and quicker than a longitudinal approach (Nworgu, 2006).

3.3.3.3. Participants

The population of this study was adult patients, aged 40 years and above, who were post-stroke survivors from the Physiotherapy department, and met the inclusion criteria. This selected age group is within the working age range in Nigeria; also this study is on return to work and the age group likely to have cerebrovascular accident/stroke (Soeker and Olaoye, 2017). They were recruited from the following health institutions in the five states of south east Nigeria:

1. Nnamdi Azikiwe University Teaching Hospital, Nnewi, Anambra State.
2. Anambra State University Teaching Hospital, Amaku, Awka, Anambra State.
3. Enugu State University Teaching Hospital, Park Lane, Enugu State.
4. Federal Teaching Hospital, Abakaliki, Ebonyi State.
5. Federal Medical Centre Owerri, Imo State.
6. Federal Medical Centre, Umuahia, Abia State.

3.3.3.4. Inclusion criteria

The participants in this study included:

1. Patients, who were post-stroke survivors in the Physiotherapy department of the south-eastern hospitals.
2. Patients, who were aged 40 years and above.
3. Patients, who are literate/fluent in the English language.

3.3.3.5 Exclusion criteria

The following were excluded from the study:

1. Patients with a symptom-duration of less than 2 months.
2. Patients, who were unable to complete questionnaires, because of cognitive impairment, or a language barrier.

3.3.3.6. Sample size and sampling technique

The sample size was determined using the following formula:

$n= (z/e)^2$ (Thomas, Olson, Tapscott, &Zhao, 2001).

Where, n=sample size

z= degree of freedom (1.96)

e= acceptable margin of error (0.20)

$n= (1.96/0.2)^2 = 96.04$

One-hundred-and-one (101) participants were recruited from the selected hospitals in south east Nigeria. Purposively recruited samples of 101 post-stroke survivors, admitted to, or receiving rehabilitation at the rehabilitation settings that were part of the research setting, were recruited to participate in this phase of this current study.

3.3.3.7. Instrument for data collection

- **Return-to-work Assessment Scale**

The Return-to-work Assessment Scale was designed to assess stroke survivors' readiness to return to work. The scale comprised two sections, namely, A and B. Section A comprised general questions regarding personal information, while section B included three parts, referred to as domains, which were important to consider in the decision to return to work. The three domains of return-to-work in section B were scored separately, with each domain assessing a different concept of return-to-work, specifically, domain 1 (personal), domain 2(work), and domain 3 (contextual factors). The three domains were assessed independent of the other; therefore, their scores do not sum up overall. The three (3) domains of the RAS are outlined as follows:

- ***Domain 1: Personal***

1.1. Instrumental activities of daily living: This domain scores the functional status of the stroke survivor. (**Likert 1-3**)

1.2. Cognition: This domain scores the cognition status of the stroke survivor. (**Likert 1-4)**

1.3. Communication: This domain scores the expressive status of the stroke survivor. **(Likert 1-3)**

1.4. Coping: This domain scores the coping status of the stroke survivor. (**Likert 1-3**)

1.5. Motivation for return-to-work: This domain assesses the employees' motivation towards return to work. (**Likert 1-3**)

- ***Domain 2: Work***

2.1. Employees motivation: This domain assesses the employees' attitude towards return-to-work. (**Likert 1-3**)

2.2. Reasonable accommodation: This domain assesses the previous accommodation of the post-stroke survivor, prior to the current stroke incident. (**Likert 1-3**)

2.3. Employers attitude: This domain assesses the employer's attitude towards the situation of the post stroke survivor. (**Likert1-3)**

- ***Domain 3: Contextual Factors***

3.1. Social support: This domain scores the social support status of the post-stroke survivor. (**Likert 1-5**)

3.2. Local transport: This domain scores the mobility status of the post-stroke survivor. (**Likert1-5**)

3.3. Attitude of communities: This domain scores the attitude of the communities of the post stroke survivor. (**Likert 1-5**)

3.3.3.8. Return-to-work Assessment Scale (scoring and interpretation)

In the scoring of the RAS scale, each of the three domains stands independently, and do not sum up as a whole (see Appendix 1). This instrument was designed to assist post-stroke survivors to assess their readiness to return to work. The scale consists of two sections, A and B. Section A comprises general questions, regarding personal information, while section B includes three parts that are important to consider in the decision to return to work. The three domains of return-to-work in section B are scored separately, as each domain assesses a different concept of return-to-work, namely, domain 1 (personal), domain 2(work), and domain 3 (contextual factors). The three domains are assessed independent of the other, outlined as follows:

- **Domain 1**
  - 0-53 Poor, not ready to return
  - 53-106 Moderate, ready to return
  - 107-140 Independent and ready to return
- **Domain 2**
  - 0-22 Poorly able to cope
  - 23-46 Moderately able to cope
  - 47-93 Able to cope at work place
- **Domain 3**
  - 0-19 Poorly supportive
  - 20-39 Partially supportive
  - 39-57 Moderately Supportive
  - 58-95 Contextual factors supportive

Interpretation of scores

In domain one any score less than 53 is not ready to return to work, Domain two focuses on being able to cope at work, any score less than 23 cannot cope at work. Domain three focuses on contextual factors being supportive to return to work or not. Any score less than 39 is partial and unsupportive to the post stroke survivor. A post stroke survivor is only ready to return to work if He/She has at least 53 in domain 1, 23 in domain 2 and 39 in domain 3.

3.3.3.9. Procedure for data collection

The names of potential participants were obtained from the rehabilitation professionals. The potential participants were approached, either in the wards, or at the therapy departments, and invited to participate. Each potential participant received an information sheet that outlined what participation entailed, as well as their rights and responsibilities (Appendix 5-8). The research details were explained, to ensure that they understood the research process. No financial inducement was made to influence their decision to participate. The researcher visited the neuro rehab clinics to train the physiotherapist in charge, as research assistants, on the use of the Return-to-work Assessment Scale. The researcher provided the research assistants (physiotherapists in charge) with copies of the questionnaire, and requested that they distribute these questionnaires to their patients, the post-stroke survivors, whose informed consent was sought, and obtained, before the questionnaires were distributed to them. The distribution of the questionnaire was performed in the same order to all participants, the questionnaires were self administered. The questionnaires were later returned to the physiotherapist in charge whose duty was to cross-check and ensure that it was properly filled. Each questionnaire took approximately 30 minutes to be completed. Another set of questionnaires were redistributed after 5 days to the same participants; this was used to determine the Test-retest reliability**.** The completed questionnaires were later returned by post to the researcher.

3.3.3.10. Data analysis

Data analysis followed a four -pronged process

1) Data adequacy and assumption testing

2) Internal consistency

3) Test-retest reliability

4) Data reduction

The data analysis was computed using SPSS v23. Significance testing was computed at a 0.05 alpha level. Descriptive statistics was used to form a summary of the sample characteristics.

3.3.3.11. Testing data set for assumptions

In this current research, the data set was tested for *sample adequacy*, *assumption of normality* (using the Shapiro-Wilk test), *assumption of homogeneity of variance* (using the Bartlett's test of sphericity), and *principal component analysis*, as recommended by Field(2009;2013).Before conducting multivariate statistical analysis, three core, or major assumptions must be assessed. The following were tested for in all the data: Sample adequacy; Assumptions of normality; and homogeneity of variance (Field, 2009). In order to determine whether the data set would support the use of factor analysis for data reduction, the assumptions of sample adequacy (size), and the assumption of correlation between variables were also tested(Field, 2013).

- **Assumption of normality**

The Shapiro-Wilk test was recommended by Field (2013), as a strong and accurate test for the assumption of normality. A non-significant ($p > .05$) statistic shows that the distribution of the particular sample is not significantly different from a normal distribution, which indicates that the distribution of the data approximated normality. However, a significant ($p < .05$) statistic would indicate that the distribution of data differed from a normal distribution, which in turn, would suggests that the distribution was not normal (Field, 2009, 2013).

- **Assumption of homogeneity of variance**

The Bartlett's test of sphericity was used to test for the assumption of homogeneity of variance (Field, 2013). It assesses the inter-correlations between variables, as well as whether the correlation matrix differed significantly from an identity matrix. When significant, it indicates that the correlations between variables are significantly different from zero. Therefore, a significant value of this test is desirable. A non-significant value of this test is undesirable; however, the significance of tests does not necessarily imply that the correlations are extensive enough for meaningful analysis. Low correlations on any identified variables against other variables should be considered a reason for exclusion from the factor

analysis (Field, 2013). Similarly, extreme multi-collinearity (variables that are highly correlated), and singularity (variables that are perfectly correlated) are considered issues in factor analysis (Field, 2009). Field (2013) observed that the distinctive contribution a variable makes to a factor is difficult to establish, when variables are highly correlated. Moderate multi-collinearity would not pose a concern for factor analysis; therefore, significant moderate correlations are desired.

3.3.3.12. Internal consistency

The Cronbach's Alpha was used to determine the internal consistency of the Return-to-work Assessment Scale. Internal consistency is defined as the extent of consistency, with which the items of an instrument measures a given attribute. Ideally, scales designed to measure an attribute, comprises a set of items, all of which measure the critical attribute, and nothing else. An instrument may be said to be internally consistent, or homogenous, to the extent that all its sub-parts, measure the same characteristics (Nworgu, 2006).The estimate of internal consistency was specifically obtained, by using the Cronbach's Alpha method. The procedure applies to instruments that are polytomously scored, and provides an index of reliability (Krueger& Casey, 2000; Nworgu, 2006).

3.3.3.13. Stability (Test-Retest Reliability)

The stability of an instrument refers to the extent to which, the same results are obtained on repeated administration of the instrument (Nworgu, 2006). The evaluation of reliability focuses on the instrument's propensity to provide superfluous factors from one application to the next. Evaluating the stability of a measuring tool is determined through a procedure, referred to as Test-Retest Reliability (Nworgu, 2006). The researcher administers the same test to a sample of individuals on two occasions, and subsequently, compares the scores obtained. The comparison is performed objectively, by computing a reliability coefficient, using either, Pearson Product Moment, or Spearman Rank Order correlation coefficient. The time interval between the first and the second test may range from days to several months. An interval of between 7-14 days could be appropriate (Nworgu, 2006).The Intraclass Correlation Coefficient (ICC), as well as the Bland and Altman plotting method, were used to compare the scores on the Return-to-work Assessment Scale on two different occasions, in order to determine the test-retest reliability of the scale.

3.3.3.14. Data reduction

Exploratory factor analysis was used to determine the factor structure of the instrument, as an estimate of construct validity. From factor analysis, the minimum number of factors that would explain the data set, or structure of the instrument, best can be identified. The factor loadings (correlation coefficients) of each item, on each of the factors, emerged. An item that is highly loaded on only one factor, is said to be factorially pure, or factorially simple. Alternatively, if an item loads highly on two or more factors, it is said to be factorially complex. The selected items are arranged under those factors, on which they are highly loaded. Depending on the results of the analyses, final revisions are made to the instrument (Anastasi &Urbina, 1997;Kingry, Tiedje, & Friedman, 1990; Krueger & Casey, 2000, Nworgu, 2006). Principal component analysis was used for the extraction of factors.

- **Principal components analyses**

The method of extraction selected was the Principal Components Analysis (PCA), which was used for item reduction and the development of the return-to-work assessment scale. The PCA, as a statistical method was used to transform the original variables into smaller sets of linear combinations, with all the variance in the variables being used. The PCA was preferred for various reasons. Firstly, it is psychometrically sound and simpler, mathematically. Secondly "factor indeterminacy" is avoided, which is a potential problem associated with factor analysis. Finally, the PCA is an empirical summary of the data set, which is a better choice (Stevens, 1996; Tabachnick & Fidell, 2013). When conducting PCA or factor analysis (FA), there are three main steps: *Evaluation of the appropriateness of the data for factor analysis*; *Factor extraction*; and *Factor rotation and interpretation.*

- **Step 1**: **Evaluation of the appropriateness of the data for factor analysis.**

Two main issues were determined in this current data set, namely, sample size, and the strength of the relationships among the variables (or items).Tabachnick and Fidell (2013) suggest at least 300cases for factor analysis; however, they concede that a smaller sample size of 150cases may suffice, when solutions have several high loading marker variables (above.80).Stevens (1996) suggests that the choice of samples, advocated by the researcher, has been reducing over time, as more researches are conducted. However, this author made a number of recommendations concerning the reliability of the factor structure and the sample size requirement.

In this current study, the sample size involved 101 participants, who were post-stroke survivors. This could be appropriate because the participants were stroke patients, and not apparently healthy people. In this case, there is always an exception to the rule, regarding sample size, as stipulated by Tabachnick and Fidell (2013). It is a type of purposive or

judgmental sample technique with post-stroke survivors only, and the population of post-stroke survivors cannot be compared with apparently healthy individuals.

In the second issue, regarding the strength of the intercorrelations among the items, Tabachnick and Fidell (2013) recommend an inspection of the correlation matrix for evidence of a coefficient greater than 0.3.The Bartlett's test of sphrericity (Bartlett, 1954), and Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy(Kaiser, 1974; Kaiser& Cerny1979), generated by the SPSS, also assist in assessing the factorability of the data. Bartlett's test should be significant, for factor analysis to be appropriate, while the KMO index range from 0 to 1, with 0.6 being suggested as a minimum value for a good factor analysis (Tabachnick and Fidell, 2013).In this current study, the values for the Bartlett's test and Kaiser-Meyer-Olkin were appropriate, and the Return-to-work Assessment Scale was factorable, as the majority of the correlation matrix coefficients were greater than 0.3.

- **Step 2**: **Factor extraction**

In step two of PCA, three techniques assist in the decision concerning the number of components, or factors to retain, namely, Kaiser's criterion, scree test, and the parallel analysis. In Kaiser's criterion or the eigenvalue rule, only factors with an eigenvalue of 1.0 are retained. The eigenvalue represents the amount of total variance explained by the factor (Pallant 2013). The scree plot, established by Cattell (1966), involves plotting each of the eigenvalues of the factors. This author recommended retaining all factors above the elbow, or break in the plot (Cattell, 1966). The parallel analysis, also referred to as Horn's parallel analysis, compares the size of the eigenvalues with those obtained from a randomly generated data set of the same size, and only those that exceed the corresponding values from the random data set are retained (Pallant 2013).

- **Step 3**:**Factor rotation and interpretation**

Subsequent to knowing the number of factors, they need to be interpreted, by means of the rotation of the factors. There are two main approaches to rotation, namely, orthogonal [uncorrelated], or oblique [correlated] (Pallant 2013).In this current study, the oblique rotation was used in the analysis. Oblique analysis includes direct oblimin and Promax. Direct oblimin was used in this current study. After rotation a "simple structure" is obtained (Pallant 2013, p. 205), which involves each of the variables loading strongly on only one component, with each component being represented by a number of strongly loading variables.

3.3.3.14. Ethics

- **Ethics clearance**: Ethics approval and project registration was sought and obtained from the Senate Research Committee of the University of the Western Cape (Registration number 15/2/20). In Nigeria ethics approval was also sought from the Faculty of Health Sciences and Technology ethics committee of Nnamdi Azikiwe University (ERC/FHST/NAU/2018/028).
- **Permission to access the research setting and recruit participants**: Access to the clinical sites was requested from the relevant persons, namely, the Heads of Physiotherapy Departments at the clinical sites. Verbal consent was given to the researcher to proceed with the in-depth interviews.
- **Recruitment**: Recruitment followed the same process as phases 1 and 2. Each potential participant received an information sheet that outlined what their participation entailed, as well as their rights and responsibilities (Appendix 6-11). The research details were explained to all the participants, to ensure that they understood the research process. No financial inducement was made to the participants, to influence their decision to participate.
- **Ethics principles**: Phase one was made up of in-depth interviews with eighteen participants; their names and details were recorded anonymously. All recorded information (tapes) was kept in a secret vault from unauthorized personnel. Phase two involved the Delphi panel whose personal identities and responses were kept anonymous and their Google forms were pass-worded from unauthorized persons. Phase three which was the pilot/psychometric section included completing the RAS and keeping all identities anonymous including all completed RAS forms. All data entries into the computer were protected with a password by the researcher, including the details of the 101 patients who participated in the pilot study for determining the psychometric properties of the RAS. All these were kept also in a secret vault from unauthorized personnel. All ethics principles were upheld including anonymity, confidentiality, voluntary participation, and the right to withdraw, in accordance with the UWC protocol. All collected data were treated with the utmost confidentiality, and stored safely, away from all unauthorized persons. The voluntary participants were identified and informed about the study. The participants included post-stroke survivors, health professionals, and employers. The purpose of the study was explained to them, to ensure that they understood their role. The prospective participants tendered their consent by signing the consent forms. They were informed that some questions would be asked about their health condition. Ultimately, the participants were not compelled to participate against their will.

CHAPTER FOUR

CONSTRUCT DEVELOPMENT OF RETURN-TO-WORK AND THE DEVELOPMENT OF THE PRELIMINARY INSTRUMENT

4.1. Introduction/overview of the chapter

This chapter contains the results and discussion of phase one which is exploratory research in service of construct clarification.

4.2. Methodology

4.2.1. Study population and sample

As indicated in the previous chapter, the overall sample size was 18. The sample included seven (7) post-stroke survivors and three (3) caregivers, five (5) rehabilitation specialist and three (3) employers. The Health professionals included physiotherapists, occupational therapists, as well as occupational nurses, and employers were also interviewed. In this phase, the Likert scale was used during the scale construction.

4.2.2. Study design

This phase adopted exploratory research as the primary design. Consequently, an exploratory study, using qualitative methods was designed, which is appropriate, when conducting exploratory research (Walsh & Betz, 2001). It is also suitable for gathering nuanced information from various perspectives about a given topic (Nworgu, 2006).

4.2.3. Data collection instrument

Semi-structured interviews were conducted with the recruited participants. The semi-structured interviews were guided by an interview guide that was developed by the researcher and the study supervisors (Appendix 4).

4.2.4. Data collection procedure

The post-stroke survivors, some with their caregivers, were given appointments and interviewed, conjointly, to saturation. The Health professionals and employers were also interviewed, after their informed consent was sought and obtained. They were interviewed by the researcher at their various clinics, and in their offices, after their duties for the day were completed. The interviewing process was completed in 4 months, because of the busy schedule of the health professionals and the employers of labour.

4.2.5. Data Analysis

Thematic content analysis was conducted in order to establish themes.

4.3. Results

4.3.1. Socio-demographic distribution of Phase One participants.

Seven (7) post-stroke survivors, 3 caregivers, 5 rehabilitation specialists, and 3 employers participated in the semi-structured interviews of this current study's first phase (**Appendix14)**. Table 4.1 contains their details.

4.3.2. Emerging themes

One-hundred-and-sixty-six (166) codes emerged, which were distilled into five themes. Using the Atlas.ti.7 version, quotations were extracted from the transcribed interviews, to which codes were assigned. The data analysis revealed five themes, which included: impairment and functional limitations resulting from stroke; cognitive and psychological limitations resulting from stroke; barriers to return-to-work post-stroke; facilitators of return to work post-stroke; and stroke as a social responsibility.

4.3.2.1. Impairment and functional limitations resulting from stroke

Stroke survivors reported physical impairments, such as weakness, fatigue, loss of energy, pains, restricted mobility. The following quotations illustrate the physical impairments expressed by the participants (**Appendix14**).

Participant 1 – Post-stroke survivor (Registered Nurse): *''I use to come to work with my bike but that time I couldn't lift up my leg not to talk of riding a motorcycle. I thought I couldn't make it. When I started coming it was difficult task. But I managed to come to the office with the difficulty of entering bus, shifting and coming out, it was really a problem but I managed it. How to move and to go back? How do I meet the demand of patients? I do give health talk, counsel and advice patients, give injections and even write reports, and I couldn't do all these things. So when I came back I don't participate in most of the rounds. Coming on time was also a difficulty. I was given a query and several times by the employer for coming late. Before I come to work I must do some exercises and if not I cannot move very well. I answered the query and I went and met the supervisor in charge of monitoring lateness and immediately I told him I had a stroke, he had pity on me, he apologized and since then they showed mercy. Yes. The transition was not smooth, it was very very rough. I have returned to work for*

3months now. I had an ergo meter in the house I use for my exercise. Whenever I feel I am not alright I exercise. My leg is heavy I will come to physiotherapy they will allow me to use the ergo meter, I saw the ergo meter sometimes, I bought it and I am using it at home. Since then it's become easy for me. I have told my department that I will soon start evening duty since I came back I've not been doing evening duty and alternating it with morning duty''.

Participant 2 – Post-stroke survivor (Farmer): *''I want to go back to work, although I do my work on my own farm. I don't think I can start yet. My hands have not fully recovered; I cannot face the demands of work yet. I feel am not ready yet to face the demands of going back to my farming''.*

Participant 3– Post-stroke survivor (Businessman/entrepreneur): *''I can't do the activities of daily living. I cannot walk with my affected leg. My left hand and leg cannot function properly. My office is upstairs on the second floor and when I think of climbing upstairs it is really very difficult for me. There is no elevator in my office and I have to climb upstairs despite my disability. But I still manage to do it all the time I go to work''.*

Participant 4 – Post-stroke survivor (Entrepreneur): *''I need to travel most times to do my business. I do supplying of products and goods, financial and accounting decisions. If I have an honest partner to help me with my business I will be happy. I own my business. I need to go around getting my goods when they arrive and get them cleared. Who will do that for me now?''*

Participant 5 – Post-stroke survivor (Banker/entrepreneur): *''Mobility is all I need now. I was on a job when I had stroke. I was the manager of a big Hospitality industry in Adamawa, in the Northern part of the country. But now, I am contained in this wheel chair. I can't work by myself without support''.*

Table 4.1: Demographic characteristics of participants in Phase One (n=18)

ID	Age	Gender	Occupation	Years of experience in occupation	Role in Stroke Rehabilitation/employment
1.A.A	50	F	Registered Nurse	30	Post-stroke survivor
2. K.A	55	M	Businessman	20	Post-stroke survivor
3. C.C	45	M	Businessman	25	Post-stroke survivor
4.D.E	65	M	Ex-Banker/Businessman	35	Post-stroke survivor
5.D.J	60	F	Farmer	30	Post-stroke survivor
6.G.H	57	M	Banker	35	Post-stroke survivor
7.H.H	50	M	Businessman	25	Post-stroke survivor
8.J.J	20	M	Caregiver	15	Caregiver
9.K.C	40	F	Banker	25	Caregiver
10.H.J	25	M	Caregiver	13	Caregiver
11.U.C	38	M	Banker	12	Employer
12.C.U	50	M	Human resource manager	20	Employer
13.D.A	35	M	Neuro Physiotherapist	18	Rehabilitation specialist
14.K.K	39	M	Neuro Physiotherapist	18	Rehabilitation specialist
15. S.S	45	F	Occupational nurse	20	Rehabilitation specialist
16.G. G	38	M	Neuro physiotherapist	18	Rehabilitation specialist
17.U.T	30	M	Occupational therapist	5	Rehabilitation therapist
18.U.U	45	F	Head teacher	15	Employer

Key:

M-Male

F-Female

Participant 6 – Post-stroke survivor (Farmer): *''All I need is for my hands to be properly strong. I can go to my farming. I don't need any modifications. All I want is proper recovery. My affected hand and leg which are yet to fully recover are the difficulties I might face. My hands are still recovering. I envisage difficulty with proper use of my hand. I need the proper use of my two hands''.*

Participant 7 – Post-stroke survivor (entrepreneur): *''I am back to work 60%. It was hard as I think of returning to work. It was very hard for me. I still come for my exercises. I thought it will be difficult for me to return to work. Yes, but not fully. I am back to work 60% after my stroke experience; I went back to my office''.*

4.3.2.2. Cognitive and psychological limitations resulting from stroke

Perceptual difficulties were reported by all the stroke survivors, as well as the clinical professionals tending to their rehabilitation. Specific difficulties in these areas included, the inability to perform duties, anxiety, discouragement, optimism, pessimism, feeling of helplessness, depression, thinking of the past, and fear of loneliness. The following quotations elucidate:

Participant 1 – Post-stroke survivor: ''*I thought I needed some help. If the management where I work can help me. I didn't feel very well, I needed some help from people, suggestions, advice, and I needed it urgently. I don't want to be coming to work every day, it's a challenge. I decided to be coming once a week or twice a week, so that I will have some rest but at home, I won't be well. I will be disturbed psychologically. I won't be myself, a lot of problems psychologically, thinking I will not be able to do what I have been doing before''.*

Participant 2 – Post-stroke survivor: *''I don't like staying idle. I like to go to work every day. Even after coming back from work I go out to chart with my friends. Staying alone is not good for someone that once had stroke. You need to talk with people and socialize .This can come as you work and relate with other people''.*

Participant 3 – Rehabilitation specialist: *''I think it is the psychological aspect of his health. Most of them come out with the notion that they cannot make it again. When you ask will this person survive the physician will say if he wants to live he will live. For that it was a reality, a times you find out that it was a reality. At times you find people and ask them how they feel they will say my own is finished and truly he will die .but some who believe still survive. Predisposing factors what led to that stroke so that the stroke patient does not relapse''*

Participant 4 – Employer: *''He/she should be independent, and be able to balance and perform certain functions, those are the basic thing. If the employee is able to ambulate to his/her work place. The employee can still be coming for rehabilitation as he/she goes to work. Mentally he/she must be stable, ability to understand certain instructions and some level of psychological stability that must be maintained''*

4.3.2.3. Barriers to return-to-work post stroke

Post-stroke survivors and rehabilitation specialists identified cardiovascular challenges, Fatigue, pessimism, lack of motivation, procrastination, and poor clinic management, relationships with family and fellow workers, and accessibility to the work place, as barriers. The following quotations elucidate:

Participant 1 – Employer: *''The work structure determines the type of work he/she does. If the limbs are affected and cannot be put to use again. He may not be able to return to work. Relationship with family members and fellow workers can also be a barrier, in case he is deployed to another area, a place that may need lighter job and if he has been active before taking authority and now he needs to sit down and be less active. It might be a barrier''.*

Participant 2 – Employer: ''*They may not have attained the highest level of function but at that their level of function. We start adaptations''.*

Participant 3 – Employer: ''*Barrier to return to work, looking at it from Nigeria factor. In the disability act, it has not been passed. There is a universal design everyone able or unable to assess the roads. The way people perceive people with disability in our environment''.*

Participant 4 – Rehabilitation specialist: ''*Apart from the cardiovascular challenge, sensory deficit is the major challenge cognition problem. It depends on how they are managed clinically. We once had a patient who was a driver with these deficits. He had to import a car with a lot of modifications''*

Participant 5 – Rehabilitation specialist: *''Early intervention would help. They don't come in time when they have the problem''*

Participant 6 – Rehabilitation specialist: *''Self-Motivation. Some employee if properly motivated would return. Home programmes. If the employee is not ready to translate all the therapy it would not work. The patient needs to be self-motivated otherwise whatever you do will not work. Social reintegration, knowledge and*

education of what stroke is also vital. The management may be part of the problems of returning to work. If there are deformities and the patient outlook is affected, some employers may not want to retain the employee for that''.

Participant 7: Post stroke survivor: ''*Placing the person where he can fit in and less strenuous or in a light duty area.(2).Less busy unit is also okay for a person returning to work Post stroke. The employer should consider the post stroke survivor exempt him /her from late coming queries in case he/she can't make it initially until he/she has recovered fully well. The survivor should know her work, be straight forward in doing things not pretending to be ill and serious with his/her duties. I look okay but I still feel heaviness, my affected limbs are heavy if I exercise I feel light but initially in the morning is heavy although I look well outside but there is still heaviness inside. A Post stroke survivor should be exempted initially from night duties''.*

Participant 8: **Post stroke survivor**: "*I needed a driver; I considered it important to get a driver. Although I have returned to work but my level of return to work if assessed is only 60%.i still need help to get to work. A stroke survivor needs a better way of mobility to get to work. I do my toiletries by myself. As a director, my nature of work does not require too much energy. All I do is to sign documents and cheques which I can do conveniently at this level of recovery. I discuss easily with people because I can talk. Anybody who has had stroke before and survived must have a good social life interact and chart with people. Check the blood pressure every month and take your drugs''.*

Participant 9: Post stroke survivor: "*I don't have a good family support. My wife doesn't show any concern and some of my children. Not everybody is careful to look after one another. I need family support which is really lacking. My wife has not being here with me before. She is showing little or no interest.''*

Participant 10: Post stroke survivor: ''*I am not back to work yet but planning to return. The manager of the formal place has invited me to come back to work as I earlier mentioned to you but I don't want to return to them because of the way I was treated. Now I am considering chicken farming. I have designed a farm facility where I would continue my work but the greatest challenge I may have is mobility. I am still using a wheelchair to move around I can't properly move about now. I can do other things. I have employees; I will do my part as the director.''*

Participant 11: Post stroke survivor: ''*My hand is still a problem. Every other thing is fine; the place I live is not a problem to me.''*

4.3.2.4. Facilitators of return-to-work post-stroke

Rehabilitation specialists and employers of labour identified early intervention, interpersonal relationships with fellow workers, retentive memory, alertness of mind, accessibility, social reinterpretation, optimism for living, sensory stability, and proper orientation, as facilitators of return-to-work. Post-stroke survivors, with their caregivers, identified consideration from employers, sincerity with self, motivation from caregivers, as well as being realistic and focused, as facilitators for early return-to-work. The following quotations elucidate:

Participant 1 – Post-stroke survivor :*(1).'' Placing the person where he can fit in and less strenuous or in a light duty area. (2).Less busy unit is also okay for a person returning to work Post stroke. The employer should consider the post stroke survivor exempt him /her from late coming queries in case he/she can't make it initially until he/she has recovered fully well. The survivor should know her work, be straight forward in doing things not pretending to be ill and serious with his/her duties. I look okay but I still feel heaviness, my affected limbs are heavy if I exercise I feel light but initially in the morning is heavy although I look well outside but there is still heaviness inside. A Post stroke survivor should be exempted initially from night duties''*.

Participant 2 – Rehabilitation specialist: ''*Family support can facilitate return to work. Care and love from the family can go a long way. I once had a patient who had no support from the spouse and he was always depressed. Family support is one of the major facilitators for someone getting back to work. There is a way the family will support and the patient will want to return. Family support is one of the major facilitators''.*

4.3.2.5. Stroke as a social responsibility

This question was only addressed to the employers; most employers of labor had no specific policies for post-stroke survivors, when they returned to work, but treated stroke as a dynamic issue. To them, post-stroke survivors, who return to work, must be able to withstand stress and pressure, be physically fit, as well as psychologically and cognitively stable. Most employers specified that empathy should be exercised, when an employee has a stroke, which should be treated as their social responsibility. Stroke, to them, is a limiting factor, which could restrict the productivity of an individual affected by it.

Participant 1 – Employer: ''*First and foremost, No. Not necessarily stroke. Not particularly stroke, but related illnesses. Yes. According to the labour law for the first 3months they get their normal payment or salaries. But if after 3months illness persist*

for the next 3months they are placed on half payment after that the next 6months if there is no recovery we can let them go, At times we keep managing them. I once had a colleague who had to go for surgery, came back, company bore the cost .We had not translated to National health insurance (NHIS) then, we bore the cost, rehabilitation all the treatment. He was still retained but along the line the company had a retrenchment exercise and he was retrenched. The company first deal with the situation by empathizing with the employee assist in whatever way possible, keep him/her on the payroll, after some months the doctors will advise ,at that point we may have to follow the advice of the physicians''.

Participant 2 – Employer: ''*Well, I have been in the industry for 12 years. There is really no clear- cut policy. They are just dynamic issues. I have not seen any policy but like I said in the two instances I gave about a gunshot that affected a colleague in the leg not his brain he was moved to another area. The other case because of his qualifications. There was no place he could be moved to and so he was relieved of his appointment. So I believe they are dynamic issues''.*

Participant 3 – Employer: *''For return to work, after a stroke related sickness in as much as the only one I know about, after that incident he came to work but was relieved of his duty. I know for one to come back after such illness the doctors' report is very important. This is general, then the zonal and possibly to some extent the branch management report has to the person's productivity, output is also very important. If from their appraisal of performance and productivity is not decreased. Then the employee will be retained but if it is affected, then the employee may be relieved. The doctors report, the zonal and branch management report is very important. Possibly, they may even call the employee to interview him/her but if the person is strategically hired and the sack will affect the company or bank the employee may be retained. If they feel that relieving the person will affect bank or company business, because of the contribution they may ask for a replacement for such a person if it becomes very difficult to retain the employee''.*

Participant 4 – Employer: ''*Yes, we have a central policy. Once the specialists certify that the employee is fit and the assessment has been done by the occupational health department, then he/she will be allowed .We still carry out intermittent reassessment along the line to ascertain that indeed the employee is indeed fit. As a matter of fact audit medical assessment is being done for all staff members here every 2 weeks. These periodic exams help us to find out on time the fitness level of every employee''.*

Participant 5 – Employer: *''When a staff takes permission and knowing the duration for the recovery to return to work. It depends on the health challenge. If the staff members does not return to work. I will call to check-up. If the staff still does not return I will stop calling .Maybe he /she has found an alternative. The next thing is to replace the employee. I believe a staff should keep me informed and if there is lack of communication from the voice even when I call to find out, I will know if indeed the employee is willing to return, even my instinct help me in decision making.''*

Participant 6 – Employer: *''I have a policy, but in case of a stroke condition, we are not praying for such. I once worked as a class room teacher and teachers are not well paid. I won't want to humiliate my worker because of nature. If I have such I will be paying the person .If the employee can still do some other things, it doesn't affect the person's speech or movement then I will find a place for the employee. I was working in a school before I established my own school, there was a teacher there that had an accident that affected her movement and she was sacked. I employed her; she can teach she still teaches with me''.*

Participant 7 – Employer: *''We don't have one (policy) now that we use. Just as I said to us they are dynamic issues. It will be good if we have an instrument and should be critically looked into. It may not be okay for someone with stroke health challenge to work in the bank. The work itself can cause stroke if the person in the banking sector is not properly managed. The person who will work in the banking sector who has stroke may be a social responsibility with a tailored function otherwise it may be very impossible for the people with such health challenges to function effectively in the bank. There is no policy which can help people with disability to keep work in the banking sector and if there were any no one is implementing them. All these policies of 2% for disability who is implementing them?''*

Participant 8 – Employer: *''For the banking sector which I know is very peculiar. He/she should be able to find out his ability to withstand stress. Demands from the superiors, pressure from the industry''. ''Will that person be able to withstand such pressures the demands of the pressure and stress? For an example operational unit, you may need to stay back to work late to meet some deadlines, may be regulatory deadline, competition deadline, business deadlines''. ''Also look at the impact of stroke and it won't be that the individual will fall back into health distress. Stress and pressure of work''.*

4.3.2.6 Construction of the measure:

Theoretical definition of RTW

Work is not only *a job*, or paid employment, but includes unpaid or voluntary work, education and training, family responsibilities and caring. Work usually involves commitment over time, and a need to labour, or exert oneself. Additionally, it connotes the application of physical or mental effort, skills, knowledge, or other personal resources (Waddell & Burton, 2006; Balasooriya-Smeekens et al., 2016). However, returning to work does not necessarily mean going back to a paid job, because work could also be done on a voluntary basis, such as serving on a school board, and rendering community services. Additionally, it can also mean going back to essential life activities, and being reintegrated into the society.

The RAS was developed for the purpose of measuring return to work; The ICF and the Flag model were used for the conceptual mapping and the theoretical framework adopted for the measure was the modified C-OAR-SE theory. The three (3) phases of development of the RAS were construct development, integration and reduction of draft instrument and finally item reduction and validation of instrument. Return to work can be conceptualized in three views; 1. Personal factors that include grooming, independence, psychological and emotional balance.2.Work related issues like Mobility, employees/employers attitude and Infrastructures.3.Contextual issues which includes support from family, relations, co-workers and society. These three issues gives theoretical definition to return to work, each aspect answering to the capacity of the post stroke survivor to predict returning to work which brings independence, self esteem and improved quality of life which are the core values that can be achieved through rehabilitation.

Domain identification

The five themes that emerged from the codes were: impairment and functional limitations resulting from stroke; cognitive and psychological limitations resulting from stroke; barriers to return-to-work post-stroke; facilitators of return to work post-stroke; and stroke as a social responsibility. The five themes were distilled into seven (7) initial domains, which were further distilled by the researcher and the study supervisors, who are experts in instrumentation development, to produce three (3) domains and 86 items. This was achieved by the researcher and his supervisors who were experts in instrumentation in a focus group discussion where they harmonized the previous seven domains into three removing all overlaps and trimming down on the repetitions. The development of the RAS was grounded on the ICF, with its codes and categories (***see appendix 12***), and complemented by the Flags model. These were the conceptual maps, while the theoretical framework was based on the C-OAR-SE theory.

The ICF codes (***See appendix 12***)for body functions are classified as follows: b1 -Mental functions; b2-sensory functions and pain; b3-voice and speech functions; b4- functions of the cardiovascular, hematological, immunological and respiratory systems; b5-fuctions of the digestive, metabolic and endocrine systems; b6-genitourinary and reproductive functions; b7 - Neuromusculoskeletal and movement-related functions; and b8-functions of the skin and related structures. The ICF codes (domains) for activities and participation are classified as follows: d1- learning and applying knowledge; d2-general tasks and demands; d3 – communication; d4 – mobility; d5- self-care; d6-domestic life; d7-interpersonal interactions and relationships; d8-major life areas; and d9-community, social, and civic life.

The ICF codes (domains) for environmental factors are as follows: e1-products and technology; e2-natural environment and human-made changes to environment; e3-support and relationships; e4 – attitudes; and e5-services, systems and policies. Regarding the three (3) domains of the Return-to-work Assessment Scale, the similarities to the Flags Model and the ICF categories and codes, are remarkable. The ICF does not model the process of functioning and disability, but it could be used to describe the process, by providing the means to map the different constructs and domains (WHO, 2001). It provides the building blocks for users, who wish to create models, as well as study different aspects of this process. The ICF employs terms like *functioning*, *disability*, *body function and structure*, *impairments*, *activity limitation*, *participation restriction*, *environmental* and *personal factors*, while the three flags of the Flags model are Yellow, Blue, and Black, each signifying a part of the Return-to-work Assessment Scale. This highlights the appropriateness of the Return-to-work Assessment Scale, concurring with previous studies by Kendall et al. (2011), Shaw et al. (2009), Main & Spanswick (2000),Nicholas et al. (2011), as well as WHO (2001, 2013).

More recently the flag system has been refined with the addition of the concepts of mental health (orange flag), and Pathology or disease (red flag).

The Flags model and ICF codes and classifications were adopted to determine the variables (factors), or domains, required in the instrument, as authenticated by post-stroke survivors, their caregivers, rehabilitation professionals and employers.

The return-to-work scale, developed in this current study, has three separate domains. Domain 1, explores the *Personal* aspects of the post-stroke survivor, domain 2 deals with

Work aspect of the post-stroke survivor, while domain 3 interrogates the *Contextual factors*, as it relates to the post-stroke survivor.

4.3.3 Domains on the initial draft of the return–to-work outcome measure for post-stroke survivors (Appendix14)

The data analysis yielded five themes, namely: impairment and functional limitations resulting from stroke; cognitive and psychological limitations resulting from stroke; barriers to return-to-work post-stroke; facilitators of return to work post-stroke; and stroke as a social responsibility. The researcher and the study supervisors, who are experts in designing outcome measures, initially identified seven domains from the five themes and 166 codes/quotes of the return-to-work interviews. The initial domains were:

1. Domain 1: Nature of illness
2. Domain 2: Nature of employment
3. Domain 3: Reasonable accommodation
4. Domain 4: Support/Barriers
5. Domain 5: Employers' attitude
6. Domain 6: Employees' attitude
7. Domain 7: Capacity & Functional impairment

4.3.4. Domains of return-to-work outcome measure for post-stroke survivors

The Return-to-work Assessment Scale (RAS) was further revised and the domains reduced, after several revisions, by removing repetitions, to capture all relevant discussions, during the qualitative research conducted. The researcher and the study supervisors, who are experts in questionnaire development, accomplished this before the Delphi study was conducted. Three domains were finalised, in conjunction with the ICF codes and categorisation (Table 4.2), which formed the conceptual map, being complemented by the Flags model, for the development of the return-to-work scale.

Table 4.2: FIVE THEMES AND THEIR DOMAIN CLASSIFICATIONS

Definition	Link to ICF	Link to flags	Sample item	Rating
Domain 1:Nature of illness	Personal factors	Yellow flag	1. Are you psychologically (mentally) fit to return to your work 2. Are you emotionally fit to return to your work? 3. Are you physically fit to return to your work? 4. Are you functionally fit to return to work? 5. Are you able to walk as you intend before returning to your work? 6. Are you able to get to work on your own?	Impairment and functional limitation
Domain 2: Nature of employment	Environmental factors	Blue flag	1. Are you able to do your work in the present condition you are now? 2. Are you able to do your normal duties if you return to work? 3. Are you able to work in full capacity if you return to work? 4. Are you able to go back to your former job description/duties if you return to work? 5. Are you able to face the pressure and stress of your former duties if you return to work? 6. Are you able to face the mental challenges of your duties if you return to your work? 7. Are you able to face the emotional challenges of your	Psychological limitation

			former duties if you return to work?	
Domain 3:Reasonable accommodation	Environmental factors	Blue flag	1. Are you able to get back to your former duty post without difficulty? 2. Are you able to comfortably access your former office in your present condition? 3. Are you able to comfortably perform your former duties in your office if you return to work? 4. Do you need to change your former duties/job if you return to work? 5. Are you going to be able to attend to all your former duties if you return to work?	Barriers and facilitators
Domain 4: Support/Barrier	Activity limitation with participation restriction	Black flag	1. Would you need any psychological /mental support in order to perform your former duties if you return to work? 2. Would you require any social support in order to perform your former duties if you return to work? 3. Would you require any physical support /modifications to perform your former duties if you return to work? 4. Would you require any infrastructural modification/support to perform your formal duties when you return to work? 5. Would you	Psychological /Physical limitation

			require any instrumentation modification/support to enable you perform optimally when you return to work 6. Would you require any environmental modification/support to enable you perform your former duties 7. Would you require any social reintegration to enable you perform your previous duties optimally 8. Would you designate yourself Self-motivated enough to return to your previous duties 9. Would your present health challenges affect your ability to feel objects and work instruments in your formal work station? 10. Would your present health challenge affect your reasoning capacity towards your previous duties? 11. Would your present challenge affect your ability to move properly and freely to your formal duty post?	
Domain 5: Employers attitude	Environmental factors	Blue flag	1. Is your employer willing to retain you in order to accommodate you when you return to work? 2. If you cannot perform your former duties, will you be	Social responsibility

			transferred to another unit by your employer? 3. If you cannot perform your former duties will you be sacked by your employer? 4. Will you be able to get along with your duties, your former colleagues and employer when you return to work? 5. Does your employer place serious value on cosmetics and physical appearance? 6. Will your employer be willing to give you less duty if you cannot perform your previous duties? 7. Will your employer be willing to help you get back into your former duties?	
Domain 6: Employees attitude	Environmental factors	Blue flag	1. Are you willing to return to your former duties when you return to work? 2. Are you willing to work again considering your present health challenge? 3. Are you emotionally fit to return to your former duties? 4. Are you willing to return to your previous employment if you are treated as a social responsibility? 5. Are you willing to perform your previous duties without being	Barriers and facilitators

			compelled to do so or threatened? 6. How do you feel at the thought of returning to work with your present health challenge? 7. Are you willing to return fully to your former duties in your present health challenge? 8. Do you feel physically ready to return to your former duties in your present health challenge? 9. Would you prefer staying idle/at home instead of returning to work, even if your employer offer to pay you without working 10. Would you like to return to your formal duties, when you return to work? 11. Would you feel disturbed if you cannot perform your former duties when you return to work?	
Domain 7: Capacity and functional impairment	Personal factors	Yellow flag	1. Can you function at full mental capacity when you return to work? 2. Can you function at full physical capacity when you return to work? 3. Can you function at full emotional capacity when you return to work? 4. Can you independently take care of your daily needs when you return to work?	Cognitive limitation

			5. Can you do your daily grooming (bathing, toileting, feeding) without assistance when you return to work 6. Can you carry out your formal duties without distraction in your present health condition if you return to work?	

There was a supervisors/researcher meeting where the initial divisions from the conceptualized interviews were harmonized into two sections. Section A comprised of general questions about the post stroke survivors which are not scored, while section B includes three parts that are important to consider, when deciding to return to work. The seven previous domains were harmonized into three to reduce the overlap and unnecessary repetitions discovered in the initial phase. The formulation below was developed from the initial phase and reduced to three domains from seven domains and the five themes derived from the qualitative analysis using the Atlas ti software.

The RAS section B is scored on a Likert scale with 3 domains, 11 sub-domains and 86 items (Neuman, 2006, 2007). The domains in the RAS are outlined as follows:

4.3.4.1. Domain 1: Personal

1.1. Instrumental activities of daily living: This domain scores the functional status of the stroke survivor **(Likert 1-3**).

1.2. Cognition: This domain scores the cognition status of the stroke survivor **(Likert 1-4)**.

1.3. Communication: This domain scores the expressive status of the stroke survivor **(Likert 1-3)**.

1.4. Coping: This domain scores the coping status of the stroke survivor**(Likert 1-3)**.

1.5. Motivation for return-to-work: This domain assesses the employees' motivation towards return-to-work **(Likert 1-3)**.

4.3.4.2. Domain 2: Work

2.1. Employees motivation: This domain assesses the employees' attitude towards return-to-work **(Likert 1-3)**.

2.2. Reasonable accommodation: This domain assesses the previous accommodation of the post-stroke survivor, prior to present stroke incident **(Likert 1-3)**.

2.3. Employers attitude: This domain assesses the employer's attitude towards the situation of the post-stroke survivor **(Likert1-3)**.

4.3.4.3. Domain 3: Contextual factors

3.1. Social support: This domain scores the social support status of the post-stroke survivor **(Likert 1-5)**.

3.2. Local transport: This domain scores the mobility status of the post-stroke survivor **(Likert1-5)**.

3.3. Attitude of communities: This domain scores the attitude of the communities of the post-stroke survivor **(Likert 1-5)**.

Return-to-work Assessment Scale (RAS)

Instruction:

Returning to work is an important decision for all survivors of stroke. This instrument is designed to assist stroke survivors with assessing their readiness to return to work. The scale is made up of two sections, A and B. Section A is made up of general questions about yourself while section B includes three parts that are important to consider in your decision to return to work. In each section you will be asked to respond to questions. Carefully think about the question and indicate your answer by ticking your response to the questions. You may need to fill in some response where required. Your response on each of the part indicates the extent to which there are concerns that require attention in facilitating your return to work. Each part is scored independently

SECTION A: GENERAL INFORMATION

a. **DEMOGRAPHIC INFORMATION**

1. **Gender: (male/female)** ☐

2. **Race :(African/Hispanic/Caucasian/Asian)** ☐☐☐☐

b. **TYPE, AREA AND SEVERITY**

1. **Type of stroke? (Right side/left side/both sides)** ☐☐☐

2. **Location or area of the brain affected? (Right/left)** ☐☐

3. **Grading of the stroke? (Total/partial weakness)** ☐☐

c. **IMPAIRMENT**

Was there any of the following:

1. **Paralysis? (Which side? Which limbs were affected?)Right** ☐ **Left** ☐

2. **Speech impediment? Yes** ☐ **No** ☐

3. **Walking impediments Yes** ☐ **No** ☐

d. **POSTSTROKE MANAGEMENT**

Which of the following was required?

1. **Hospitalization (which level and how long?)----------**

2. **Which of the rehabilitation services were provided? ----------**

3. **Speech, Physio, OT, Psychiatric, home-based care, others.☐☐☐☐☐☐**

4. **At what intensity and frequency (how many times weekly/daily and how long?)----------**

5. **Improvement with treatment. {Good//moderate/poor}☐☐☐**

6. **Co morbid diagnoses (hypertension, diabetes, renal impairment/failure etc.)----------**

e. **NATURE OF EMPLOYMENT**

1. **Is your employment temporary, casual, contract or permanent? ☐☐☐☐**

2. **Period off from work:----------**

3. **Remuneration during time off:----------**

4. **Are you required to return to work or are you ready to return? Yes ☐ No ☐**

5. **Is there any policy for disability in your workplace? Yes☐ No ☐**

6. **Are you on any health insurance policy? Yes ☐ No☐**

7. **My current position can be classified as Administrative, technical etc.----------**

8. **General work hours are:----------**

9. **Does Work include shifts? Yes ☐ No ☐**

10. **Does work include travel? Yes No ☐ ☐**

11. **Is work desk bound or office bound? ----------**

12. **Level of verbal communication required: [I must speak fluently/I must not speak fluently] ☐☐**

13. **Level of written communication required :(I must write legibly/I must not write legibly) ☐☐**

14. **Level of interaction with colleagues, other departments, external agencies etc. {I need to communicate with people: Daily/once a week/once a month} ☐☐☐**

SECTION B

Domain 1: PERSONAL

Sub-domains:

1.1. Instrumental activities of daily living

Activities of daily living	Unable to =1	With assistance =2	Independently =3
1. I can bathe myself			
2. I can groom myself (shave or put on make-up)			
3. I can dress myself			
4. I can feed myself			
5. I can use the bathroom			
6. I can exercise bowel control			
7. I can exercise bladder control			
8. I can work unaided			
9. I can use public transport			
10. I can drive myself			
11. I can travel from home to required destination			

1.2. Cognition

Do you display the following behaviours and feelings?	Always[1]	Frequently [2]	Rarely [3]	Not at all [4]
1. Loss of interest in activities				
2. Difficulty in remembering events				
3. Difficulty in remembering people				

4. **Difficulty in articulating words**				
5. **Talking excessively**				
6. **Restless and agitated**				
7. **Difficulty in remembering places**				
8. **Becoming sad, depressed and unnecessarily emotional**				
9. **Becoming anxious and worried**				
10. **Becoming angry**				

1.3. Communication

To what extent do you agree or disagree with the following	**Unable to=1**	**With assistance= 2**	**Independently=3**
1. **I can follow discussions**			
2. **I can articulate (express) my thoughts clearly to others** 3. **I can interact with others without difficulty**			

1.4. Coping at place of work

	Unable to=1	**With assistance= 2**	**Independently=3**
1. **I can work with instruments in my former work station**			
2. **I can feel objects when handling them**			
3. **I can do my normal duties**			
4. **I can work at full capacity**			

5. **I can withstand the pressure and stress of my former duties**			
6. **I can withstand the rational challenges of my job**			
7. **I can withstand the expressive challenges of my former duties**			

1.5. Motivation to return to work

My motivations for returning to work are	**Sure=1**	**Unsure= 2**	**Never thought about it=3**
1. **Fear of impact on career development**			
2. **Fear of loss of employment**			
3. **Financial**			
4. **Social isolation**			
5. **Negative impact of absence on work**			
6. **Negative impact of absence on perceptions of others**			
7. **Negative impact of absence on my mood**			
8. **Improved physical health**			
9. **Improved participation**			
10. **Improved ability to function independently**			
11. **Concerns about being perceived as disabled**			

If you have any additional comments about personal issues, please write them in here

Domain 2: WORK

Sub-domains:

2.1. Employees motivation

Do you agree or disagree with the following statements.	Never thought about it=1	Unsure= 2	Sure=3
1. I am recognised by my employer as important at work irrespective of my disability.			
2. There are opportunities for personal growth at work irrespective of my disability.			
3. I will get promoted as at when due irrespective of my disability.			
4. I feel in control and empowered as I discharge my duties irrespective of my disability.			
5. I feel secure about my job and position irrespective of my disability.			
6. I am happy with my work and I enjoy doing it irrespective of my disability.			
7. I achieve my set goals at work irrespective of my disability.			
8. I have the opportunity to organise my approach to work irrespective of my disability.			

2.2. Reasonable accommodation

Do you agree or disagree with these statements	Never thought about it=1	Unsure=2	Sure=3
1. I don't need modifications to the staircase			

2. **I don't need an elevator to ascend to my office**			
3. **I don't need access to a bathroom close to my office**			
4. **I don't need a change of job description**			
5. **I don't need a shift of duty to enable me to cope**			
6. **I can work normal hours despite my disability**			
7. **I can comfortably work from home and still meet my quota**			

2.3. Employers motivation

Do you agree or disagree with these statements	**Never thought about it =1**	**Unsure=2**	**Sure=3**
1. **My employer will retain me irrespective of my disability if I return to work**			
2. **My employer will transfer me to another unit if I cannot perform my former duties**			
3. **My employer will not sack me if I cannot perform my former duties**			
4. **My employer takes cordial relationship with colleagues seriously**			
5. **My employer does not prioritise cosmetics and physical appearance**			
6. **My employer is willing to give less duties if I cannot perform my previous duties**			
7. **My employer is emphatic and sympathetic with me due to my disability**			
8. **My employer does not think less of me because of my disability.**			

If you have any additional comments about the system and policies of your work place, please write them in here

Domain 3: Contextual factors

Sub-domains:

3.1. Social support

Do you agree or disagree with these statements	Definitely disagree	Mostly disagree	Neither agree nor disagree	Mostly agree	Definitely agree
1. It's really easy for me to talk about my problems with my family and friends					
2. My spouse and children are really very supportive during difficult times					
3. My family and extended family assist me when making difficult decisions					
4. Sharing my pains and joy with my spouse and children gives me comfort and relieve					
5. Sharing my pains and joys with my co-workers, friends, neighbours brings relieve to me.					
6. I get moral and emotional help from my spouse and children					
7. I get help from my family and friends when					

making important decisions that affecting my work and health.					
8. **I get enough assistance from people around me whenever I need help.**					

3.2. Local transport

Do you agree or disagree with the following statement	**Definitely disagree**	**Mostly disagree**	**Neither agree nor disagree**	**Mostly agree**	**Definitely agree**
1. **I don't need anyone to accompany me when going outdoor because of my disability**					
2. **My condition allows me to board, ride or disembark from a public mode of transportation(cars,bus,train)**					
3. **I can ride a motorcycle or drive a car to work without assistance.**					
4. **My condition does not prevent me from travelling to my work or to disembark at my destination.**					

3.3. Attitudes of communities

Do you agree or disagree with the following statement	**Definitely disagree**	**Mostly disagree**	**Neither agree nor disagree**	**Mostly agree**	**Definitely agree**
1. **I wouldn't be asked to stay away from work, religious and social groups**					
2. **I wouldn't be avoided by the community members because of my condition.**					

3. **My condition doesn't make people to despise me and think less of me.**					
4. **My condition doesn't expose me to shame and embarrassment in my community.**					
5. **People don't avoid me because of my condition.**					
6. **Returning to work and getting a new job is not difficult.**					
7. **My neighbours, friends colleague and others show love for me despite my condition**					
If you have any additional comments about contextual factors, please write them in here					

Scoring of Domain: Return-to-work Assessment Scale

Domain 1 contains five sub-domains:

Domain 1.1 – Instrumental activities of daily living

Domain 1.2 – cognition and psychosocial factors

Domain 1.3 – communication

Domain 1.4 – coping at place of work

Domain 1.5 – Motivation to return to work.

Domain 2 contains three sub-domains:

2.1 – Employees motivation

2.2 – Reasonable accommodation

2.3 – Employers motivation.

Domain 3 deals with contextual factors, and contains three sub-domains:

3.1 – Social support

3.2 – Local transport

3.3 – Attitude of communities

SCORING AND INTERPRETATION OF RETURN TO WORK ASSESSMENT SCALE (RAS)

- **Domain 1**
  - 0-53 Poorly, not ready to return
  - 53-106 Moderately ready to return
  - 107-140 Independent and ready to return
- **Domain 2**
  - 0-22 Poorly able to cope
  - 23-46 Moderately able to cope
  - 47-93 Able to cope at work place
- **Domain 3**
  - 0-19 Poorly supportive
  - 20-39 Partially supportive
  - 39-57 Moderately Supportive
  - 58-95 Contextual factors supportive

Interpretation of scores

- In domain one any score less than 53 is not ready to return to work,

- Domain two focuses on being able to cope at work, any score less than 23 cannot cope at work.

- Domain three focuses on contextual factors being supportive to return to work or not. Any score less than 39 are partial and unsupportive to the post stroke survivor.

- A post stroke survivor is only ready to return to work if He/She has at least 53 in domain 1, 23 in domain 2 and 39 in domain 3.

4.4 SUMMARY OF PHASE ONE

The first phase was primarily concerned with construct development distilled from in-depth interviews of about eighteen (18) participants (**Appendix 14**) who eventually came up with five themes as stated above. These themes were transformed into three domains which are: 1) Personal factors/issues (2) Work and (3) Contextual factors. These are three aspects of return to work which are to be assessed and used to monitor return to work. The development of the Return to work assessment scale (RAS) is similar to the research of Usten et al. (2010), who developed the World Health Organization Disability Assessment Schedule 2.0 (WHODAS 2.0), to measure functioning and disability, in accordance with the International Classification of Functioning, Disability, and Health. The WHODAS 2.O has 36 items, with six domains (cognition, mobility, self-care, inter-personal, household work, participation in the society) with the corresponding ICF codes. The WHODAS 2.0 is an assessment schedule for people living with disability, and its focus was purely on disability; hence the sole use of the ICF. However, the RAS combined the ICF codes and categories, with the Flags model as complementary, to produce a more exhaustive construct/conceptual definition for return-to-work, as combined with the C-OAR-SE theory. The return-to-work scale comprises three (3) domains, 11 sub-domains, and 86 items (Instrumental activities of daily living, cognition, communication, coping, motivation to return to work, employees' motivation, reasonable accommodation, employers' motivation, social support, local transport, and attitude of communities). Huang et al. (2018) investigated whether the WHODAS 2.0 could be used to predict return-to-work, but determined that it does not account for environmental factors, such as the unemployment rate, social welfare policies, and insurance policies. In addition, because environmental factors differ from country to country, their study results may be limited to Taiwan. Therefore, further investigation, aimed at evaluating the effects of these environmental factors, is warranted. Other limitations were, firstly, the study population comprised only patients disabled by chronic stroke, while those with acute stroke were excluded. Therefore, it was concluded that the use of the WHODAS

2.0, to predict RTW status, is currently limited to patients disabled by chronic stroke, and further research on patients, hospitalised for acute stroke, was warranted. Secondly, the study only evaluated cross-sectional data; a longitudinal prospective data analysis was not conducted. Therefore, the patients' ability to maintain stable employment could not be assessed. Thirdly, the economic and occupational status of the study patients, which could influence their RTW rate, was not considered. However, all these limitations could be addressed by using the newly developed Return-to-work Assessment Scale (RAS).

The RAS development is also similar to the works of Maslach et al., (1996) The Maslach Burnout Inventory (MBI) was used to assess the burnout syndrome. The third edition was constructed by Maslach, C and Jackson S.E in 1996. The MBI is a 22-item self-assessment tool that assesses the degree or stages of burnout syndrome in terms of 3 subscales; emotional exhaustion (9 items), depersonalization (5 items) and decreased level of personal accomplishment (8 items). The RAS is designed similarly like the Maslach burnout inventory to interpret return to work in three subdivisions with each aspect measuring an aspect of return to work. The Scale is designed not to add up but to be measured in three separate domains as already stated above. This decision was used as a platform for the next phase which is the Delphi study phase.

CHAPTER FIVE

VALIDATION OF THE CONTENT AND STRUCTURE OF THE RETURN TO WORK ASSESSMENT SCALE

5.1. Overview of the chapter

In this chapter, the researcher addresses the second phase of this current study, which consists of the construction decision and validation of the preliminary measure.

5.2. Methods summary

The sample for this current study comprised a group of South African and Nigerian neurological and psychology experts, as well as employers and patients, with some of their caregivers. The neurological experts were physiotherapists and occupational therapists, who had ten or more years of clinical experience in neurological rehabilitation. The psychologists were experts in determining psychometrics and the development of outcome measures.

This current study concurred with the research of Yu, Chen, Chou, Hsueh, and Hsieh (2013), they conducted a research on the hierarchical balance short form in people with stroke, and found it sufficient, after thorough content with predictive validity. Similarly, the results were also consistent with the research of Sullivan et al. (2012), who researched the outcome measures of stroke sufferers, with a panel of seven (7) physical therapists, using a modified Delphi consensus, and eventually rated 14 measures as highly recommended. Glassel, Kirchberger, Kollierits, Amann, and Cieza (2011), also researched the content validity of the extended ICF core set for stroke, using a Delphi survey panel of 125 therapists, concur, and observed that the ICF core set covered the problems that their interventions addressed. All these studies indicate the effectiveness of the Delphi survey consensus in addressing issues, as well as its sufficiency in matters involving face and content validity.

5.3. Results

5.3.1. Socio-demographic distribution of Phase Two participants

Twenty participants were involved in the Delphi study, which included 16 males and four females. Their ages, years of experience and occupations are presented in Table 5.1. The Delphi technique was used for three rounds with the group of experts. The first step in the Delphi study involved sending open letters of invitation, containing their socio-demographic

information and identification number, as well as an information sheet, and a consent form, to twenty-five (25) participants. Twenty (20) participants consented; therefore, the response rate was 80%.

Subsequently, round one proceeded with the item reduction process, through comments on the appropriateness of the items, the scoring system, and any ambiguity of the items. Round two continued with the item reduction process, through comments on the appropriateness of the amended/corrected items, the scoring system, and any ambiguity of the items, at which point, a total consensus was not reached. Round three was conducted to reach final consensus on all the items, which was achieved when 100% of the participants agreed to all sections, and the various domains.

The rationale for soliciting input from the patients was to afford them the opportunity to provide input on the instrument's content and construct. The health psychologists were pre-informed to check the scoring system, which was their area of specialty. The scoring system was accepted as presented by the researcher, with no need for any changes. A Google form was developed for the purpose of the Delphi study, with each participant's ID number, and their responses were received centrally by the researcher.

Table 5.1: Demographic characteristics of the panel of participants (n=20)

ID	Age	Sex	Highest qualification	Current Occupation of participants.	Years of experience	Role in Stroke rehabilitation
1	50	M	Higher diploma	Businessman	20	Post-stroke survivor
2	45	M	MBA	Banker	15	Post-stroke survivor
3	55	M	Diploma	Civil servant	20	Post-stroke survivor
4	59	M	Diploma	Businessman	30	Post-stroke survivor
5	50	F	B.Sc	Nurse	30	Post-stroke survivor
6	39	M	PhD	Health psychologist/statistician	8	Health psychologist involved in rehabilitation
7	50	M	PhD	Clinical psychologist/statistician	25	Academic, Lecturer
8	30	M	B.sc	Occupational therapist	5	Clinician
9	35	M	BMR(PT)	Neurophysiotherapist	18	Clinician
10	39	M	BMR(PT)	Neurophysiotherapist	18	Clinician
11	50	M	PhD	Applied social psychologist/statistician	20	Professor
12	48	F	PhD	Physiotherapist	29	Senior Lecturer and academic
13	50	M	MBA	Human resources manager	20	Human resources manager
14	38	M	MBA	Bank manager	13	Employer
15	38	M	BMR(PT)	physiotherapist	10	Clinician
16	50	M	PhD	Physiotherapist	29	Senior lecturer, physiotherapist
17	50	F	PhD	NeuroPhysiotherapist	20	Professor
18	43	F	PhD	Physiotherapist	18	Senior lecturer
19	50	M	PhD	Physiotherapist &exercise physiologist/statistician	30	Professor
20	43	M	PhD	Occupational therapist	19	Professor

Key

M- Male.
F- Female.
PhD-Doctor of philosophy.

M.Sc-Masters of science.

MBA-Masters in Business Administration.

B.Sc-Bachelors of science. *BMR (PT)-Bachelors of Medical Rehabilitation (Physiotherapy).*

5.3.2. Results of Delphi Study- Round 1

5.3.2.1. Section A of the return-to-work scale

- **Demographic information**

This sub-section involved two items, namely, Gender and Race. The total responses were 20, of which, 19 agreed. One expert suggested that age should be included; therefore, the initial level of consensus was 95%.

- **Types, area, and severity**

Four items were included in this sub-section, namely, side affected by stroke, location or area of brain affected, grading of the stroke, date of onset of stroke. The initial consensus level was 100%.

- **Impairments/defects**

This subsection involved four items. The level of consensus reached was 90%. The initial question was, “Do you have any of the following? Paralysis? Which side? Which limbs are affected? Speech defect? Cognitive defects?” Suggestions were made to break down the questions, and simplify cognitive defects.

- **Post-stroke management**

Six items were included in this sub-section, namely, hospitalisation, rehabilitation services, intensity, frequency, length, and co-morbid diagnoses. The consensus was 90%.There was a suggestion to break down the level of hospitalisation for improved understanding.

- **Nature of employment**

This sub-section comprised 17 items, including the nature and period of employment, health policy in place of employment, type of employment, as well as level of communication and interaction in place of employment. The initial consensus level was 80%. Suggestions were made to redefine the type of employment.

5.3.2.2. Section B of the return-to-work scale

This section contains the three domains, 11 sub-domains, and 86 items that were endorsed to assess return-to-work among post-stroke survivors. These, along with their scoring patterns, are presented in Tables 5.2 to 5.12.

Domain 1: Personal

Sub-domain 1.1: Instrumental activities of daily living

The items that were included in this sub-domain, on which consensus was reached by the experts and patients, are presented in Table 5.2.

Sub-domain 1.2: Cognition (with psychosocial factors)

The items that were included in this sub-domain, on which consensus was reached by the experts and patients, are presented in Table 5.3.

Sub-domain 1.3: Communication

The items that were included in this sub-domain, on which consensus was reached by the experts and patients, are presented in Table 5.4.

Sub-domain 1.4: Coping

The items that were included in this sub-domain, on which consensus was reached by the experts and patients, are presented in Table 5.5.

Sub-domain 1.5: Motivation to return to work

The items that were included in this sub-domain, on which consensus was reached by the experts and patients, are presented in Table 5.6.

Table 5.2: Included items in sub-domain 1.1

Items	No. of responses (n)	Level of consensus (%)	Comments of experts
1. I can bathe myself.	20/20	100%	None
2. I can groom myself (shave or put on make-up).	20/20	100%	None
3. I can dress myself.	20/20	100%	None
4. I can feed myself.	20/20	100%	None
5. I can use the bathroom.	20/20	100%	None
6. I can exercise bowel control.	20/20	100%	None
7. I can exercise bladder control.	20/20	100%	None
8. I can work unaided.	20/20	100%	None
9. I can use public transport.	20/20	100%	None
10. I can drive myself.	20/20	100%	None
11. I can travel from home to required destination.	20/20	100%	None

Table 5.3: Included items in sub-domain 1.2

Items	No. of responses (n)	Level of consensus/agreement (%)	Comments of experts
Cognition			
1. Loss of interest in activities.	20/20	100%	None
2. Difficulty in remembering events.	20/20	100%	None
3. Difficulty in remembering people.	20/20	100%	None
4. Difficulty in articulating words.	20/20	100%	None
5. Talking excessively.	20/20	100%	None
6. Restless and agitated.	20/20	100%	None
7. Difficulty in remembering places.	20/20	100%	None
Psychosocial factors			
8. Becoming sad, depressed & unnecessarily emotional.	20/20	100%	None
9. Becoming anxious and worried.	20/20	100%	None
10. Becoming angry.	20/20	100%	None
11. Becoming hostile.	20/20	100%	None

Table 5.4: Included items in sub-domain 1.3

Items	No. of responses (n)	Level of consensus(%)	Comments of experts
My motivation for returning to work is			
1. I can follow discussions.	20/20	100%	None
2. I can articulate/express my thoughts clearly to others.	20/20	100%	None
3. I can interact with others without difficulty.	20/20	100%	None

Table 5.5: Included items in sub-domain 1.4

Item	No. of responses (n)	Level of consensus (%)	Comments of experts
1. I can work with instruments in my formal work station.	20/20	100%	None
2. I can feel objects when handling them.	20/20	100%	None
3. I can do my normal duties.	20/20	100%	None
4. I can work at full capacity.	20/20	100%	None
5. I can withstand the pressure and stress of my formal duties.	20/20	100%	None
6. I can withstand the rational challenges of my job.	20/20	100%	None
7. I can withstand the expressive challenges of my formal duties.	20/20	100%	None

Table 5.6: Included items in sub-domain 1.5

Item	No. of responses (n)	Level of consensus (%)	Comments of experts
My motivation for returning to work is			
1. Fear of impact on career development.	20/20	100%	None
2. Fear of loss of employment.	20/20	100%	None
3. Financial.	20/20	100%	None
4. Social isolation.	20/20	100%	None
5. Negative impact of absence on work.	20/20	100%	None
6. Negative impact of absence on perceptions of others.	20/20	100%	None
7. Negative impact of absence on my mood.	20/20	100%	None
8. Improved physical health.	20/20	100%	None
9. Improved participation.	20/20	100%	None
10. Improved ability to function independently.	20/20	100%	None
11. Concerns about being perceived as disabled.	20/20	100%	None

Domain 2: Work

Sub-domain 2.1: Employees' motivation

The items that were included in this sub-domain, on which consensus was reached by the experts and patients, are presented in Table 5.7.

Sub-domain 2.2: Reasonable accommodation

The items that were included in this sub-domain, on which consensus was reached by the experts and patients, are presented in Table 5.8.

Sub-domain 2.3: Employers' motivation

The items that were included in this sub-domain, on which consensus was reached by the experts and patients, are presented in Table 5.9.

Domain 3: Contextual factors

Sub-domain 3.1: Social support

The items that were included in this sub-domain, on which consensus were reached by the experts and patients, are presented in Table 5.10.

Sub-domain 3.2: Local transport

The items that were included in this sub-domain, on which consensus was reached by the experts and patients, are presented in Table 5.11.

Sub-domain3.3: Attitudes of communities

The items that were included in this sub-domain, on which consensus was reached by the experts and patients, are presented in Table 5.12.

Table 5.7: Included items in sub-domain 2.1

Item	No. of responses (n)	Level of consensus (%)	Comments of experts
Do you agree or disagree with the following statements.			
1. I am recognised by my employer as important at work irrespective of my disability.	20/20	100%	None
2. There are opportunities for personal growth at work irrespective of my disability.	20/20	100%	None
3. I will get promoted as at when due irrespective of my disability.	20/20	100%	None
4. I feel in control and empowered as I discharge my duties irrespective of my disability.	19/20	95%	Replace "Discharge" with "Perform"
5. I feel secure about my job and position irrespective of my disability.	20/20	100%	None
6. I am happy with my work and I enjoy doing it irrespective of my disability.	20/20	100%	None
7. I achieve my set goals at work irrespective of my disability.	20/20	100%	None
8. I have the opportunity to organise my approach to work irrespective of my disability.	20/20	100%	None

Table 5.8: Included items in sub-domain 2.2

Item	No. of responses (n)	Level of consensus (%)	Comments of experts
Do you agree or disagree with these statements			
1. I don't need a staircase	20/20	100%	None
2.I don't need modifications to the staircase	20/20	100%	None
3.I don't need an elevator to ascend to my office	20/20	100%	None
4.I don't need access to a bathroom close to my office	20/20	100%	None
5.I don't need a change of job description	20/20	100%	None
6.I don't need a shift of duty to enable me to cope	20/20	100%	None
7.I can only work for normal hours despite my disability	20/20	100%	None
8.I can comfortably work from home and still meet my quota	20/20	100%	None

Table 5.9: Included items in sub-domain 2.3

Item	No. of responses (n)	Level of consensus (%)	Comments of experts
Do you agree or disagree with these statements			
1. My employer will retain me irrespective of my disability if I return to work	20/20	100%	None
2. My employer will transfer me to another unit if I cannot perform my formal duties	20/20	100%	None
3. My employer will not sack me if I cannot perform my formal duties	20/20	100%	None
4. My employer takes cordial relationship with colleagues seriously	20/20	100%	None
5. My employer does not prioritise cosmetics and physical appearance	19/20	95%	Remove this item. It looks redundant.
6. My employer is willing to give less duties if I cannot perform my previous duties	20/20	100%	None
7. My employer is emphatic and sympathetic with me due to my disability	20/20	100%	None
8. My employer does not think less of me because of my disability.	20/20	100%	None

Table 5.10: Included items in sub-domain 3.1

Item	No. of responses (n)	Level of consensus (%)	Comments of experts
Do you agree or disagree with these statements			
1. It's really easy for me to talk about my problems with my family and friends.	20/20	100%	None
2. My spouse and children are really very supportive during difficult times.	20/20	100%	None
3. My family and extended family assist me when making difficult decisions.	20/20	100%	None
4. Sharing my pains and joy with my spouse and children gives me comfort and relief.	20/20	100%	None
5. Sharing my pains and joys with my co-workers, friends, neighbors bring relieve to me.	20/20	100%	None
6. I get moral and emotional help from my spouse and children.	20/20	100%	None
7. I get help from my family and friends when making important decisions that affects my work and health.	20/20	100%	None
8. I get enough assistance from people around me whenever I need help.	20/20	100%	None

Table 5.11: Included items in sub-domain 3.2

Items	No. of responses (n)	Level of consensus (%)	Comments of experts
Do you agree or disagree with the following statement			
1. I don't need someone to accompany me when going outdoor because of my disability.	20/20	100%	None
2. My condition allows me to board, ride or disembark from a public mode of transportation (cars, bus, train).	20/20	100%	None
3. I can ride a motorcycle or drive a car to work without assistance.	20/20	100%	None
4. My condition does not prevent me from travelling to my work or to disembark at my destination.	20/20	100%	None

Table 5.12: Included items in sub-domain 3.3

Items	No. of responses (n)	Level of consensus (%)	Comment from experts
1. I would not be asked to stay away from work, religious and social groups	20/20	100%	None
2. I would not be avoided by the community members because of my condition.	20/20	100%	None
3. My condition doesn't make people despise me and think less of me.	20/20	100%	None
4. My condition doesn't expose me to shame and embarrassment in my community.	20/20	100%	None
5. People won't avoid me because of my condition.	20/20	100%	None
6. Returning to work and getting a new job is not difficult.	20/20	100%	None
7. My neighbours, friends colleague and others show love to me despite my condition	20/20	100%	None

5.3.3. Summary of Delphi Study– Round 1

In Section A, the following sub-sections reached various levels of consensus: Demographic information (95%), Impairment/defects (90%), Post-stroke management (90%), and Nature of employment (80%).Suggestions were made by the experts and patients to improve the section. In section B, for Sub-domain 2.1: Employees' motivation, item 4, a word replacement was suggested, while for Sub-domain 2.3: Employers' motivation, it was suggested that item 5 be removed.

5.3.4. Results of Delphi Study – Round 2

The Round 2 was a follow up to Round 1.Due to the high consensus level in Round 1, Round 2merelyserved to reach total consensus in areas, where 100% agreement was not obtained. This was re-sent to the participants concerned to ensure total consensus. The following items were included in the Delphi Round 2: Demographic information, Impairments/defects, Post-stroke management, and Nature of employment.

5.3.4.1. Section A of return-to-work scale

- **Demographic information**

This sub-section involved two items, namely, Gender and Race. Age was included resulting in three items. The total responses were 20, of which, 20 agreed. The consensus reached 100%

- **Impairments/defects**

This subsection involved four items. The level of consensus reached was 90%. The initial question was, "Do you have any of the following? Paralysis? Which side? Which limbs are affected? Speech defect? Cognitive defects?" Suggestions were made to break down the questions, and simplify cognitive defects. The suggestion was implemented, and after this inclusion, consensus reached 100 %.

- **Post-stroke management**

Six items were included in this sub-section, namely, hospitalisation, rehabilitation services, intensity, frequency, length, and co-morbid diagnoses. The consensus was 90%. There was a suggestion to break down the level of hospitalisation for improved understanding. The suggestion was implemented and the consensus level reached 100 %.

- **Nature of employment**

This sub-section comprised 17 items, including the nature and period of employment, health policy in place of employment, type of employment, as well as level of communication and interaction in place of employment. The initial consensus level was 80%. Suggestions were made to redefine the type of employment. Employment was subdivided into contract, casual, temporary and permanent, the suggestion was implemented and the consensus level reached 100 %.

5.3.4.2. Section B of return-to-work scale

This section contains the three domains of the return-to-work scale. Two domains reached 100% consensus from the experts and patients. However, in Domain 2, Sub-domains 2.1 and 2.3 were re-sent, after the changes were effected .

Domain 2: Work

Sub-domain 2.1: Employees motivation

The items that were included in this sub-domain, on which consensus was reached by the experts and patients, are presented in Table 5.13.

Sub-domain 2.3: Employers motivation

The items that were included in this sub-domain, on which consensus was reached by the experts and patients, are presented in Table 5.14.

5.3.5. Results of Delphi Study – Round 3

The third round of Delphi was conducted to achieve final consensus, which materialised, when every participant agreed to all the sections, as well as the various domains, after the suggested changes were implemented. The scoring system was assessed, along with the study, and agreed upon by the twenty experts. The scoring system was presented with other aspects of the RAS in each round; however, more attention was drawn to it in the third round specifically to the psychologist and statisticians for precision and other members of the Delphi panel for ease of use.

Table 5.13: Included items in sub-domain 2.1

Item	No. of responses (n)	Level of consensus	Comments of experts
Do you agree or disagree with the following statements			
1. I am recognised by my employer as important at work irrespective of my disability.	20/20	100%	None
2. There are opportunities for personal growth at work irrespective of my disability.	20/20	100%	None
3. I will get promoted as at when due irrespective of my disability.	20/20	100%	None
4. I feel in control and empowered as I perform my duties irrespective of my disability.	20/20	100%	None
5. I feel secure about my job and position irrespective of my disability.	20/20	100%	None
6. I am happy with my work and I enjoy doing it irrespective of my disability.	20/20	100%	None
7. I achieve my set goals at work irrespective of my disability.	20/20	100%	None
8. I have the opportunity to organise my approach to work irrespective of my disability.	20/20	100%	None

Table 5.14: Included items in sub-domain 2.3

Item	No. of responses (n)	Level of consensus (%)	Comment sof experts
Do you agree or disagree with these statements			
1. My employer will retain me irrespective of my disability if I return to work.	20/20	100%	None
2. My employer will transfer me to another unit if I cannot perform my formal duties.	20/20	100%	None
3. My employer will not sack me if I cannot perform my formal duties.	20/20	100%	None
4. My employer takes cordial relationship with colleagues seriously.	20/20	100%	None
5. My employer is willing to give less duties if I cannot perform my previous duties.	20/20	100%	None
6. My employers is emphatic and sympathetic with me due to my disability.	20/20	100%	None
7. My employer does not think less of me because of my disability.	20/20	100%	None

5.4. Summary: Delphi Study – Phase Two

The second phase was concerned with face and content validation. The Delphi technique was deemed appropriate, as it addressed face, as well as content validation. This is a vital part of the C-OAR-SE theory, which was used to develop the return-to-work assessment scale. The remaining components of the C-OAR-SE theory, namely, rater identity, scale formation, and enumeration with reporting were followed in this phase. The raters, as suggested by the C-OAR-SE theory, were individuals, experts, and groups, an assortment of raters to enhance the quality of the content validity (Rossiter, 2002; 2012). The C-OAR-SE method assigns greater value to content validity by ensuring that the measure accurately represents the construct, as defined (Diamantopoulos, 2005; Rossiter, 2011a); consequently, exploring whether the measure examines the conceptual definition and the content universe of the construct. Ultimately, if content validity is ignored, evidently the construct is ignored (Diamantopoulos, 2005; Rossiter, 2011a). Additionally, for items to be content valid, they should have the properties of high item-content validity, as well as high answer-scale validity (Halek, Holle, & Bartholomeyczik, 2017).

The return-to-work outcome measure has two sections. Section A focuses on general socio-demographic issues, as they relate to the post-stroke survivors, while Section B contains the three main domains. In section A, the participants in the Delphi study were asked to indicate how relevant each question in the general section was to their respective sub-heading. They were asked to answer Yes, or No; Yes, if relevant, and No, if not. They were also given the option of suggesting any relevant question, if it was not included already. In Section A, the following sub-sections reached various levels of consensus: Demographic information (95%), Impairment/defects (90%), Post-stroke management (90%), and Nature of employment (80%). Suggestions were made by the experts and patients on ways of improving the section. A consensus of 100% was reached after effecting the suggestions. In section B, for Sub-domain 2.1: Employees' motivation, item 4, a word replacement was suggested (*Replace the word 'discharge' with 'perform'*), while for Sub-domain 2.3: Employers' motivation, it was suggested that item 5 be removed (*Remove this item 'My employer does not priorities cosmetics and physical appearance'*).

Round 2 was a follow up to Round 1. Due to the high consensus level in Round 1, Round 2 merely served to reach total consensus in areas, where 100% agreement was not obtained..

This was re-sent to the participants concerned to ensure total consensus. The third round of Delphi was conducted to achieve final consensus, which materialised, when every participant agreed to all the sections, as well as the various domains.

The aim of Phase Two was to establish the face and content validity of the newly developed instrument, as well as reduce the items contained in the outcome measure. The initial developed instrument had three domains and eleven sub-domains. Three rounds of the Delphi technique were conducted with a panel of experts and patients, and after reaching 100% consensus, 85 of the initial 86 items were retained. The scoring system was assessed, along with the study, and agreed upon by the experts. The health psychologists were pre-informed about the need to check the scoring system, which was area of specialty. The scoring system was accepted as presented by the researcher, with no need for any changes. The composition of the Delphi panel was proper and the outcome useful, the panelist were made up of patients these were stroke survivors who had returned to work , learned and professionals nurses, businessmen, bankers and civil servants their role was to prove the ease of use and understanding of the RAS. Their opinion was highly valued as they reflects a percentage of the stakeholders and people for who an instrument was designed. Employers of labor were also part of the panel, their opinion helped to improve the perspective of the employers who were also a significant percentage of the stakeholders for who the RAS was designed. The decision to including stakeholders in the panel was a logical thing to do because in the process of designing the RAS it was important to factor in the opinion of people who will be the end users. Eleven (11) academics were also part of the panelist, Professors, senior lecturers and Health clinicians who were Physiotherapists, Psychologist, applied social psychologist, occupational therapists and statisticians. These constituted the core of the think- tank who gave structure and validation to the draft instrument referred to as Return to work assessment scale (RAS).Combining the ICF codes and the flag theory with the C-OAR-SE theory the validation of the content of the RAS by the Delphi panel constitute a significant and major part of the theoretical framework as already documented and supported by Rossiter (2002, 2011a,2011b) , Yu et al.,(2013), Sullivan et al.,(2012) &Glassel et al.,(2011). The C-OAR-SE theory was developed by Rossiter (2002), as a procedure for scale development, which places entire emphasis on the high content validity of the items, and answers scale, or answer scales, should varied ones be used for each item (Rossiter,2012). C-OAR-SE theory regards reliability as the sole reference to the statistical precision of observed scores obtained from it in a particular application. These arguments and definition posit content validity as necessary for reliability, reversing the usual psychometric argument that reliability is necessary for validity (Rossiter, 2012)

The next step was item reduction and factor analysis, to determine the structural validity and reliability of the newly developed instrument.

CHAPTER SIX

PSYCHOMETRIC PROPERTIES OF THE RETURN TO WORK SCALE

6.1. Overview of the chapter

In this chapter, the researcher reports the results, and discusses the psychometric properties of the developed instrument.

6.2. Methods

The research design was a cross-sectional survey research design. Data were collected from a representative subset of a population over a short period in one stage (Nworgu, 2006). A sample of 101 respondents was recruited from the selected hospitals in the South-eastern part of Nigeria using purposive sampling. These post-stroke survivors, who confirmed that they had received rehabilitation at the rehabilitation settings under study, were recruited to participate in this section of the study. The Return-to-work Assessment Scale was distributed to the post-stroke survivors by the physiotherapist in charge of the neuro rehabilitation clinic in each of the selected teaching hospitals. Their informed consent was sought and obtained before distributing the questionnaires to them. The researcher visited the physiotherapist in charge of the neuro rehab clinics, and trained them, as research assistants, to use the Return-to-work Assessment Scale. Subsequently, they were provided with copies of the questionnaire and tasked with administering these to their patients. Each questionnaire involved approximately 30 minutes to complete. The intraclass correlation coefficient and the Bland Altman plotting method were used to compare the two scores on the RAS, at two separate intervals, in order to determine the test-retest reliability of the RAS. The completed questionnaires were later returned, by post, to the researcher.

6.3. Results

6.3.1. Sociodemographic distributions of Phase three participants

Table 6.1 shows that One-hundred-and-one patients, who were stroke survivors, participated in the psychometric testing of the Return-to-work Assessment Scale, specifically, 58 (57.4%) males and 43 (42.6%) females, with mean ages of 53.88±10.68.They were all members of the Black African race group (100%), with 51 (50.5%) affected on the right side, and 49(48.5%) on the left side, while 1(0.99%)was affected on both sides. When grading the

affectation, eight (7.92%) experienced total weakness, while 93 (92.1%) endured partial weakness. Thirty eight (37.6%) were inflicted with speech defect, while the remaining 63 (62.4%) were not. Sixty two (61.4%) experienced hypertension, 10(9.9%) were diagnosed with diabetes, 1 (0.99%) suffered renal impairment, 14 (13.9%) endured two other types of co-morbidities, while 14 (13.9%) had none. Forty-six (45.54%) had recovered satisfactorily, 41 (40.6%) moderately, 8 (7.92%) poorly, while 6(5.94%) displayed scant recovery. These results were collated from Section A of the Return-to-work Assessment Scale.

6.3.2. Nature of employment, work type, and remuneration

The result in table 6.1 reveals that 23 (22.8%) respondents held temporary appointments, 10 (9.9%) were casual workers, 9(8.91%) were on contract, 47 (46.5%) were in permanent employment, while 4 (3.96%) were retired, and 8(7.92%) were non-committal. Thirty three (32.7%) received remuneration from their employers while off work, 45 (44.6%) were not remunerated, while 23 (22.8%) were self-employed. Fifty one (50.5%) were required to return to work, while 43 (42.6%) were not, and 7(6.93%) were about to retire. Nine (8.91%) were mandated to return to work, 25 (24.8%) were returning because they needed the income to care for their families, while 7 (26.7%) were about to retire, and 20 would be retiring due to their condition. The remaining 40 (39.6%) were still indecisive. Thirty four (33.7%) were ready to return to work, and 51(50.5%) were not, while 16 (15.8%) were contemplating whether to return. Seventeen (16.8%) had policies for disability in their work place, 63 (62.4%) had none, while 17 (16.8%) were unaware of any policy in their work place, 4(3.96%) were non-committal. Fourteen (13.9%) had insurance policies, 63 (62.4%) had none, while 25(23.8%) were unaware of health insurance. Eleven (10.9%) were sedentary workers, 19 (18.8%) did light-based work, 52 (51.5%), medium-based work, and 12(11.9%), heavy-based work. Two (1.98%) could not articulate their type of work, and 5(4.95%) were non-committal. Thirty five (34.7%) needed to travel, 56 (55.4%) did not, and 10(9.9%) travelled infrequently, in the course of their duties. Eighteen (17.8%) performed shift work, 76 (75.2%) did not, while 7 (6.9%) performed shift work infrequently. Twenty four (23.8%) commuted by air, 21 (20.8%) by road, 5 (4.95%) by rail, while 51(50.5%) used none these means of transport. These results were collated from Section A of the Return-to-work Assessment Scale.

6.3.3. Level of communication and interaction

The result in table 6.2 reveals that 62 (61.4%) required fluency in communication to return to their work place, 30 (29.7%) did not require verbal fluency to return to work, while 9(8.9%) were unaware of such a requirement to return to work. Twenty eight (27.7%) were desk-

bound workers, 39 (38.6%) were office-bound workers, while 36(33.7%) were neither office-, nor desk-bound workers. Sixty nine (68.3%) required writing ability, before they could return to work, 26(25.7%) did not, while 6 (5.94%) were unaware of such a requirement. Eighty eight (87.1%) interacted with people daily in their work place, 4 (3.96%) did so once a week, while 9(8.9%) did not need to interact with clients in the place of work. These results were collated from Section A of the Return-to-work Assessment Scale.

6.3.4. Data adequacy and assumption testing

- Assumption of normality (Shapiro-Wilk) Domain 1

From Table 6.4 it is evident that the Shapiro Wilk statistics for the items tested were significant at 0.01 alpha levels. This suggests that the distribution of scores for the sample was significantly different, compared to a normal distribution (Field, 2013).An assessment of the normality of data is a prerequisite for many statistical tests, as normal data is an underlying assumption in parametric testing.

6.3.5. Internal Consistency

Internal consistency was high across all aspects of the RAS, with a Cronbach's Alpha coefficient of for Domain 1, for Domain 2, and for Domain 3(Table 6.5b). The Domain scores were interpreted using Field (2013)

6.3.6. Test-Retest Reliability

Test-Retest Reliability was analysed for the three domains, 1 to 3(Table 6.3 and Figures 6.3, 6.6, 6.9).The initial scores for the domains were 89.21±6.20, 53.07±7.04, 64.64±9.53, respectively. After the second visit, the scores obtained were 90.14±6.16, 53.00±5.42, 65.57±8.35.The Test-Retest Reliability analysis delivered an ICC of 0.85(p=0.001) for Domain 1, 0.91 (p= 0.001) for Domain 2, and 0.99 (p=0.001) for Domain 3.The Bland Altman plotting method revealed that the Test-Retest Reliability results were not strictly centred, and the bias was only -0.93 for Domain 1, 0.07 for Domain 2, and -0.93 for Domain 3.The limits of agreement for the two scores of each domain were -3.16 to 1.31,-6.99 to 7.14, and -13.6 to 11.74, respectively.

6.3.7. Structural validity (Factor analysis) Domain 1

The Kaiser-Meyer-Olkin measure of the sampling Adequacy (KMO) value for Domain 1 was X^2=0.63, and the Bartlett's test of Sphericity value was significant (p= 0.000); therefore, the data were suitable and adequate for factor analysis.

6.3.8. Part 1: Principal Component Analysis (Domain 1)

The Principal Component Analysis revealed the presence of 10 factors with the Eigen values exceeding 1 in Domain 1 (Table 6.5). Ten factors emerged from extraction as shown in the Scree plot (Figure 6.1). Using Cattell's (1966) Scree test, it was decided to retain five components for further investigation in Domain 1.This was further supported by the result of the Monte Carlo parallel analysis (Watkins, 2000), which revealed five components with Eigen values exceeding the criterion values for randomly generated data matrices of the same size (Table6.3). In Figure 6.2, the scree plot, generated after subjecting the Eigen values to oblimin rotation, to obtain the perfected scree plot, is revealed. Tables 6.5a and 6.5b, which are tables of communalities, illustrate the factor loading of each of the 43 items of Domain 1. All the scale items had factor loading that were above 0.3, which indicated that all the items were to be retained for use on the scale.

6.3.9. Part 2: Oblimin rotation of the factors of the Domain 1

The percentage of variance explained for the factors are revealed in Table 6.5.The pattern matrix demonstrated the factor loading of each of the variables (Tables 6.6, 6.7a and 6.7b).The pattern matrix indicates the factors of each variable. The items with the highest loadings in labeling the components for Domain 1 were, in component 1: 1.3, 1.1, 1.4, 1.5, 1.7, 1.2;in component 2:1.56, 1.51, 1.53, 1.52, 1.55, 1.54;in component 3:1.45, 1.47, 1.44, 1.43;in component 4: 1.2.10, 1.2.9, 1.2.8, 1.2.5, 1.2.11;and in component 5: 1.23, 1.24. The structure matrix, which is unique to the oblimin output, provides information about the correlation between variables and factors, and was r=-0.27 for Domain 1.

Table 6.1: Nature of employment, Type of work and remuneration

Variables	Frequency	Percentage
Nature of Employment		
Temporary	23	22.8
Casual	10	9.90
Contract	9	8.91
Permanent	47	46.5
Retired	4	3.96
No answer	*8*	*7.92*
Remuneration during illness		
Yes	33	32.7
No	45	44.6
Self employed	*23*	*22.8*
Return to work		
Not required to return	51	50.5
Required to return	43	42.6
Retiring	7	6.93
Reason for returning to work		
Mandated to return	9	8.91
Financial reasons	25	24.8
Retiring because of disability	27	26.7
Indecisive to return	40	39.6
Readiness to return to work		
Ready to return	34	33.7
Not ready to return	51	50.5
Contemplating to return	16	15.8

Policy for Disability		
Yes	17	16.8
No	63	62.4
Not sure	17	16.8
No answer	4	3.96
Insurance Policy		
Yes	14	13.9
No	63	62.4
Not aware	24	23.8
Type of work		
Sedentary	11	10.9
Light based	19	18.8
Medium based	52	51.5
Heavy based	12	11.9
Not sure	2	1.98
No answer	5	4.95

Table 6.2: Level of work, communication and interactions

Variables	Frequency	Percentage
Travelling		
Required	35	34.7
Not required	56	55.4
Once in a while	10	9.9
Shift Duty		
Yes	18	17.8
No	76	75.2
Once in a while	7	6.9
Mode of transportation		
Air	24	23.8
Road	51	50.5
Rail	5	4.95
Not relevant	21	20.8
Fluency in communication		
Required	62	61.4
Not required	30	29.7
Not aware	9	8.9
Work description		

Desk bound	28	27.7
Office bound	39	38.6
Neither	34	33.7
Communication in Writing with clients		
Required	**69**	**68.3**
Not required	26	25.7
Not aware	6	5.94
Daily interaction with clients		
Required	88	87.1
Not required	9	8.9
Not aware	4	3.96

Table 6.3: Internal Consistency for domains 1-3

Return to work scale (RAS)	Interclass Correlation	Lower -Upper Limit
Domain 1:	0.85	0.53 - 0.85
Domain 2	0.91	0.72 – 0.97
Domain 3	0.99	0.97 – 0.99

Table 6.3 b: Result of Cronbach alpha

Scale section	Cronbach Alpha	Interpretation	Suitability for use in research
Domain 1	0.81	Excellent	Recommended
Domain 2	0.93	Excellent	Recommended
Domain 3	0.76	Very Good	Recommended

Table 6.4a: Shapiro Wilks Domain 1 (Personal)

Item	Statistic df	N	Sig
Item 1.1	.800	102	.000
Item 1.2	.752	102	.000
Item 1.3	.794	102	.000
Item 1.4	.625	102	.000
Item 1.5	.773	102	.000
Item 1.6	.607	102	.000
Item 1.7	.651	102	.000
Item 1.8	.803	102	.000
Item 1.9	.806	102	.000
Item 1.10	.543	102	.000
Item 1.11	.794	102	.000
Item 1.21	.871	102	.000
Item 1.22	.873	102	.000
Item 1.23	.776	102	.000
Item 1.24	.798	102	.000
Item 1.25	.787	102	.000
Item 1.26	.819	102	.000
Item 1.27	.758	102	.000
Item 1.28	.857	102	.000
Item 1.29	.876	102	.000
Item 1.2.10	.859	102	.000

Table 6.4b: Communalities for Domain 1 (Personal)

Item	Statistic df	N	Sig
Item 1.2.11	.782	102	.000
Item 1.3.1	.641	102	.000
Item 1.3.2	.681	102	.000
Item 1.3.3	.722	102	.000
Item 1.4.1	.788	102	.000
Item 1.4.2	.770	102	.000
Item 1.4.3	.737	102	.000
Item 1.4.4	.715	102	.000
Item 1.4.5	.695	102	.000
Item 1.4.6	.707	102	.000
Item 1.4.7	.716	102	.000
Item 1.5.1	.695	102	.000
Item 1.5.2	.707	102	.000
Item 1.5.3	.716	102	.000
Item 1.5.4	.705	102	.000
Item 1.5.5	.684	102	.000
Item 1.5.6	.743	102	.000
Item 1.5.7	.760	102	.000
Item 1.5.8	.750	102	.000
Item 1.5.9	.745	102	.000

Item 1.5.10	.779	102	.000
Item 1.5.11	.778	102	.000

Table 6.5: Comparison of Eigen values to PCA & Criterion values from parallel analysis

Component number	Actual Eigen value from PCA	Criterion value from parallel analysis	Decision
1.	10.485	2.52	Accept
2.	5.820	2.34	Accept
3.	4.179	2.20	Accept
4.	3.212	2.07	Accept
5.	2.082	1.9656	Accept
6.	1.722	1.8687	Reject
7.	1.489	1.8687	Reject
8.	1.304	1.6116	Reject
9.	1.226	1.5385	Reject
10.	1.066	1.4696	Reject

Monte Carlo's PCA for parallel analysis (Watkins, 2000)

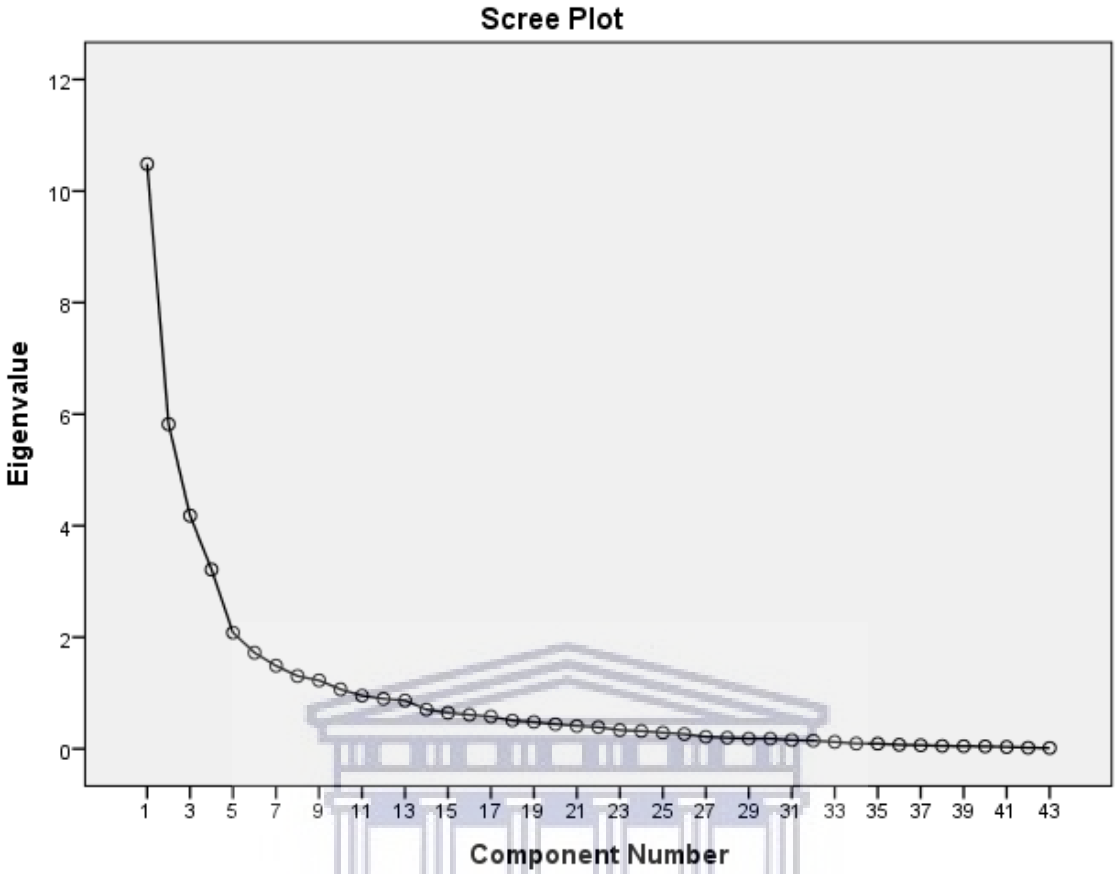

Figure 6.1: Scree plot before Oblimin rotation of the 10 factors

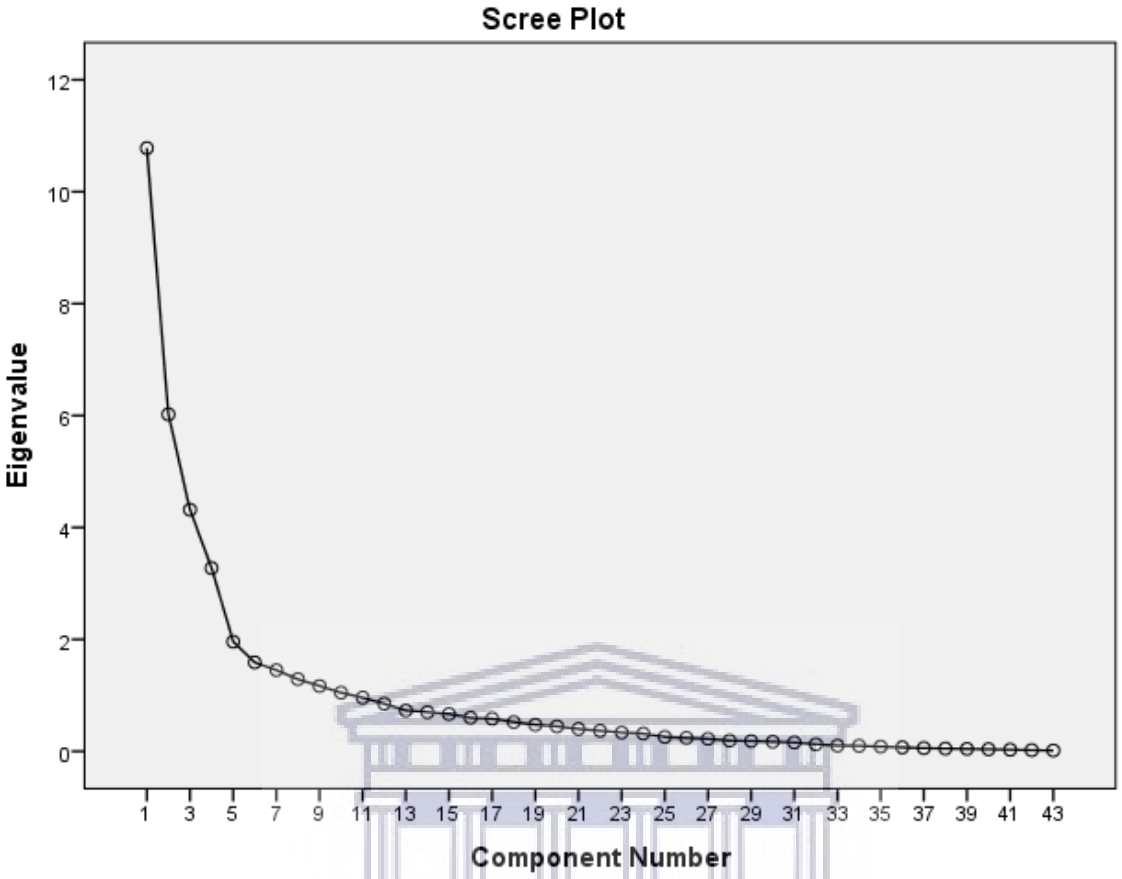

Figure 6.2: Scree plot after Oblimin rotation of the 10 factors

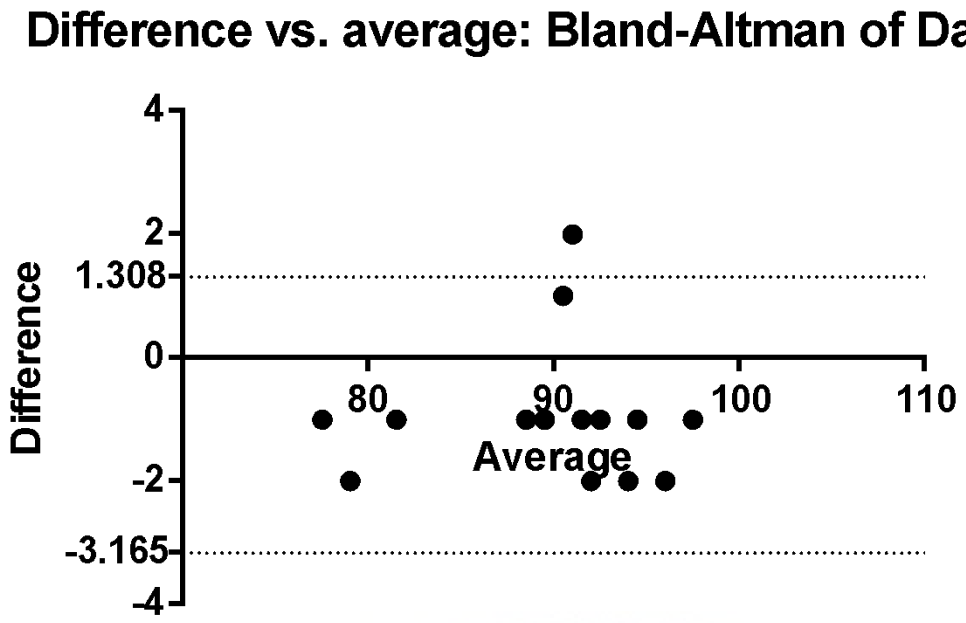

Figure 6.3: Bland-Altman plot of test retest scores of the RAS (Domain 1).The difference between scores=Scores at first visit-RAS (Domain 1 score at the second visit)

Table 6.6a: Pattern matrix for Domain 1 (personal)

Item	1	2	3	4	5
Item 13	**.884**				
Item 11	**.865**				
Item 14	**.856**				
Item 16	**.838**				
Item 15	**.831**				
Item 17	**.811**				
Item 12	**.808**				
Item 19	.569				
Item 18	.470	.302			
Item 1.11	.433	.418			
Item 1.56		**.820**			
Item 1.51		**.795**			
Item 1.51		**.773**			
Item 1.53		**.750**			
Item 1.55		**.739**			
Item 1.54		**.729**			
Item 1.511		.585			
Item 1.57		.545			
Item 1.58		.547			
Item 1.59		.454			
Item 1.510		.389			
			.908		

Table 6.6b: Pattern matrix for Domain 1

Item	1	2	3	4	5
Item 1.46			**.891**		
Item 1.47			**.861**		
Item 1.44			**.851**		
Item 1.43			**.745**		
Item 1.41			.580		
Item 1.10			.443		
Item 1.210				**.826**	
Item 1.29				**.787**	
Item 1.28				**.773**	
Item 1.25				**.713**	
Item 1.211				**.710**	
Item 1.27				.512	.361
Item 1.26		-.326	.482		
Item 1.23					**.751**
Item 1.24					.694
Item 1.32		.393			.613
Item 1.31		.342			.595
Item 1.22					.576
Item 1.33		.463			.572
Item 1.42				.390	.538
Item 1.21					.498

Table 6.7a: Structure matrix for Domain 1 (Personal)

Item	1	2	3	4	5
Item 14	**.884**				
Item 11	**.876**				
Item 13	**.874**				
Item 16	**.871**				
Item 15	**.859**		.329		
Item 17	**.842**				
Item 12	**.802**				
Item 19	.661		.447		
Item 18	.583		.561		
Item 1.11	.573		.448		
Item 1.53		**.825**			
Item 1.51		**.800**			
Item 1.56		**.755**			
Item 1.55		**.746**			
Item 1.52		**.739**			
Item 1.54		**.710**			
Item 1.511		.640			
Item 1.58		.607			
Item 1.57		.579			
Item 1.59	.365	.504			
Item 1.510		.406			

Table 6.7b: Structure matrix for Domain 1 (Personal)

Item	1	2	3	4	5
Item 1.4.5			**.908**		
Item 1.4.6			**.891**		
Item 1.4.7			**.861**		
Item 1.4.4			**.851**		
Item 1.4.3			**.745**		
Item 1.4.1			.580		
Item 1.10			.443		
Item 1.2.10				**.826**	
Item 1.2.9				**.787**	
Item 1.2.8				**.773**	
Item 1.2.5				**.713**	
Item 1.2.11				**.710**	
Item 1.2.7				.512	.361
Item 1.2.6			-.326	.487	
Item 1.2.3					**.751**
Item 1.2.4					.694
Item 1.3.2	.393				.613
Item 1.3.1	.342				.595
Item 1.2.2					-.576
Item 1.3.3	.463				-.572
Item 1.4.2			.390		.498

Table 6.7c: Structure matrix for Domain 1 (Personal)

Item	1	2	3	4	5
Item 1.2.7				.577	.416
Item 1.2.6			-.423	.575	
Item 1.2.3					773
Item 1.2.4	-.303				**735**
Item 1.3.2	-.558				**733**
Item 1.3.3	.610				**.706**
Item 1.2.4	.507				**-608**
Item 1.2.2					**.629**
Item 1.2.1	-.390		-.387	.345	.622
Item 1.4.2			.448		.560

Table 6.8a: Communalities for Domain 1 (Personal)

Item	Initial	Extraction
Item 1.1	1.00	.802
Item 1.2	1.00	.668
Item 1.3	1.00	.784
Item 1.4	1.00	.826
Item 1.5	1.00	.773
Item 1.6	1.00	.812
Item 1.7	1.00	.739
Item 1.8	1.00	.567
Item 1.9	1.00	.570
Item 1.10	1.00	.292
Item 1.11	1.00	.511
Item 1.21	1.00	.555
Item 1.22	1.00	.625
Item 1.23	1.00	.675
Item 1.24	1.00	.570
Item 1.25	1.00	.544
Item 1.26	1.00	.499
Item 1.27	1.00	.456
Item 1.28	1.00	.708
Item 1.29	1.00	.692
Item 1.2.10	1.00	.658

Table 6.8b: Communalities for Domain 1 (Personal)

Item	Initial	Extraction
Item 1.2.11	1.000	.635
Item 1.3.1	1.000	.623
Item 1.3.2	1.000	.680
Item 1.3.3	1.000	.693
Item 1.4.1	1.000	.489
Item 1.4.2	1.000	.465
Item 1.4.3	1.000	.634
Item 1.4.4	1.000	.751
Item 1.4.5	1.000	.785
Item 1.4.6	1.000	.723
Item 1.4.7	1.000	.791
Item 1.5.1	1.000	.705
Item 1.5.2	1.000	.571
Item 1.5.3	1.000	.746
Item 1.5.4	1.000	.555
Item 1.5.5	1.000	.592
Item 1.5.6	1.000	.713
Item 1.5.7	1.000	.411
Item 1.5.8	1.000	.520
Item 1.5.9	1.000	.451
Item 1.5.10	1.000	.204
Item 1.5.11	1.000	.471

6.3.10. Assumption of normality (Shapiro-Wilk) Domain 2

In Table 6.9 it is evident that the Shapiro Wilk statistic for items tested were significant at 0.01 alpha levels. Therefore, this suggests that the distribution of scores for the sample was significantly different, compared to a normal distribution (Field, 2013).An assessment of the normality of data is a prerequisite for many statistical tests, as normal data is an underlying assumption in parametric testing. This reveals that only a non-parametric statistical test would be appropriate for inferential analysis, because if the data had not been normally distributed, it would not be appropriate for parametric statistics.

6.3.11. Structural validity (Factor analysis) Domain 2

The Kaiser-Meyer-Olkin measure of sampling adequacy (KMO) value for Domain 2 was 0.839, and the Bartlett's test of Sphericity value was significant (p= 0.000). Ideally, the KMO value has to be 0.6 or above, and the Bartlett's test of Sphericity value has to be significant (0.05 or smaller) to verify that the data used are suitable for factor analysis.

6.3.12. Part 1: Principal Component Analysis (Domain 2)

In Table 6.13, which is the table of communalities, the factor loading of each of the 24 items of Domain 2 are presented, with all the scale items revealing a factor loading that was above 0.3, which indicated that all the items were to be retained for use on the scale. The principal component analysis recommended 4 factors with the Eigen values that exceeded 1 in Domain 2, explaining the variance, respectively (Table 6.10). Four factors emerged from extraction, as shown in the Scree plot (Figure6.4). Using Cattell's (1966) Scree test, it was decided to retain three components for further investigation in Domain 2. It was further supported by the result of the Monte Carlo parallel analysis (Watkins, 2000), which revealed five components with Eigen values that exceeded the criterion values for randomly generated data matrices of the same size (Table6.10).Figure 6.5 illustrates the Scree plot, generated after subjecting the Eigen values to Oblimin rotation, in order to obtain the perfected scree plot.

6.3.13: Part 2: Oblimin rotation of the factors of the Domain 2

The percentage of variance explained for the factors are displayed in Table 6.8.The pattern matrix demonstrated the factor loading of each of the variables (Table 6.12). In Domain 2: component 1 the highest items are 2.3.6, 2.3.5, 2.3.7, 2.3.3, 2.3.8, 2.34, 2.3.2; in component 2 they are items 2.4, 2.5, 2.3, 2.1, 2.2, 2.6; and in component 3 they are items 2.2.1, 2.2.2, 2.2.8. The structure matrix, which is unique to the oblimin output, provides information about the correlation between variables and factors, and was r=0.28 for Domain 2.

Table 6.9: Shapiro-Wilk for Domain 2 (work)

Item	Statistic df	N	Sig.
Item 2.1	.758	102	.000
Item 2.2	.769	102	.000
Item 2.3	.779	102	.000
Item 2.4	.803	102	.000
Item 2.5	.789	102	.000
Item 2.6	.743	102	.000
Item 2.7	.788	102	.000
Item 2.8	.795	102	.000
Item 2.2.1	.801	102	.000
Item 2.2.2	.792	102	.000
Item 2.2.3	.765	102	.000
Item 2.2.4	.744	102	.000
Item 2.2.5	.819	102	.000
Item 2.2.6	.755	102	.000
Item 2.2.7	.770	102	.000
Item 2.2.8	.793	102	.000
Item 2.3.1	.767	102	.000
Item 2.3.2	.789	102	.000
Item 2.3.3	.774	102	.000
Item 2.3.4	.779	102	.000
Item 2.3.5	.730	102	.000
Item 2.3.6	.777	102	.000
Item 2.3.7	.770	102	.000
Item 2.3.8	.802	102	.000

Table 6.10: Comparison of Eigen values from PCA & Criterion Value from parallel analysis

Component number	Actual Eigen value From PCA	Criterion value from parallel analysis	Decision
1	9.623	2.002	Accept
2	3.994	1.8347	Accept
3	1.790	1.7053	Accept
4	1.186	1.5849	Reject

Monte Carlos PCA for parallel analysis (Watkins, 2000)

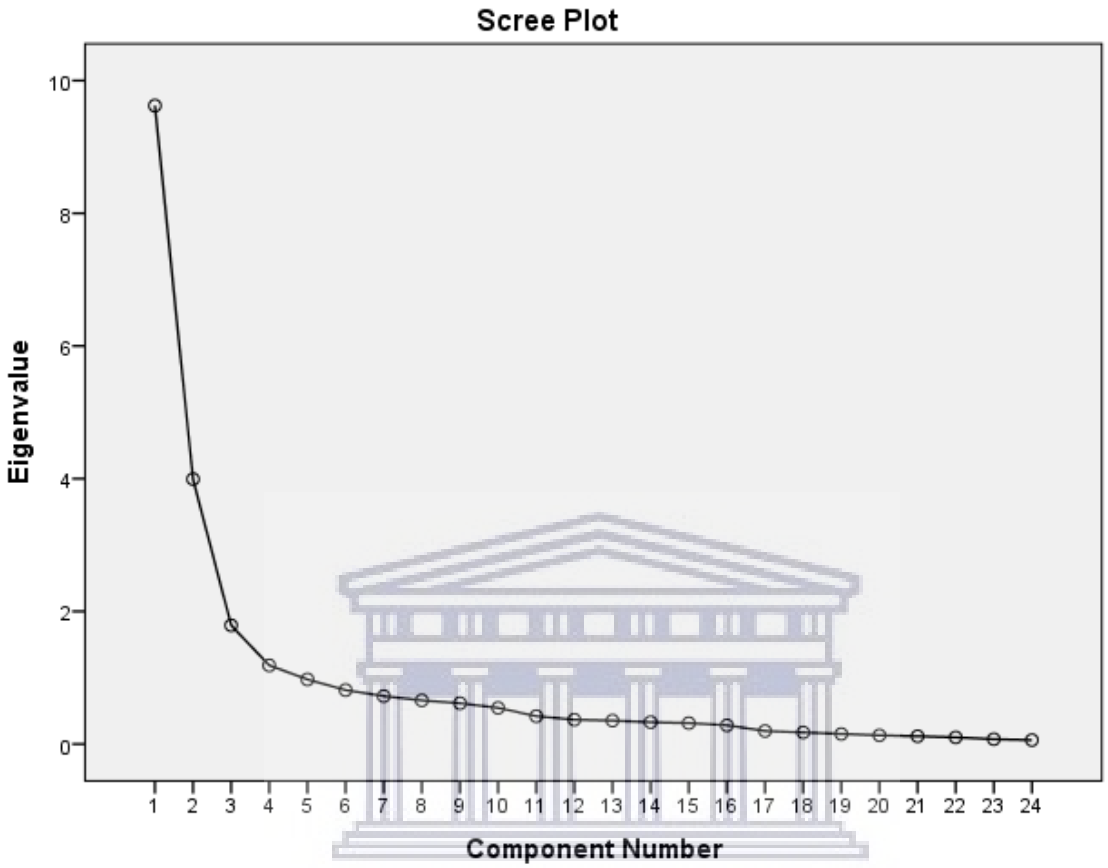

Figure 6.4: Scree plot (Domain 2) 4 factors before Oblimin rotation

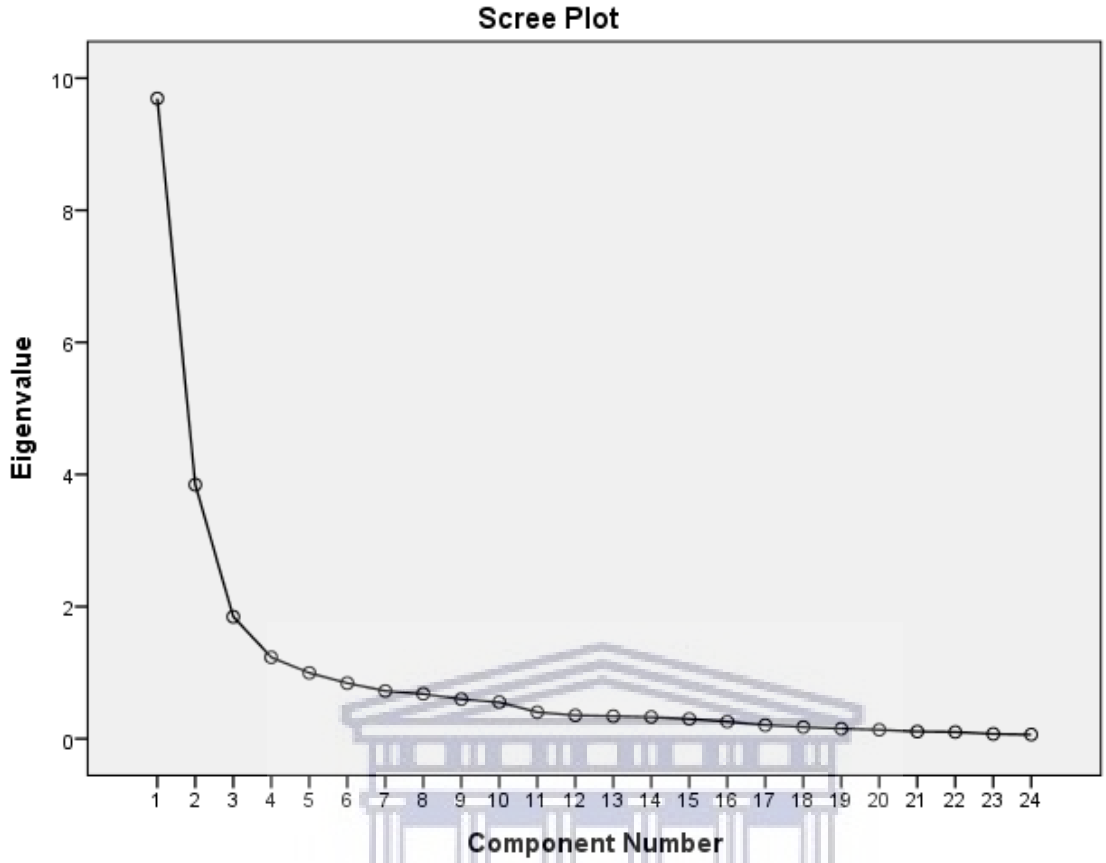

Figure 6.5: Scree plot (Domain 2) of 4 factors after Oblimin rotation

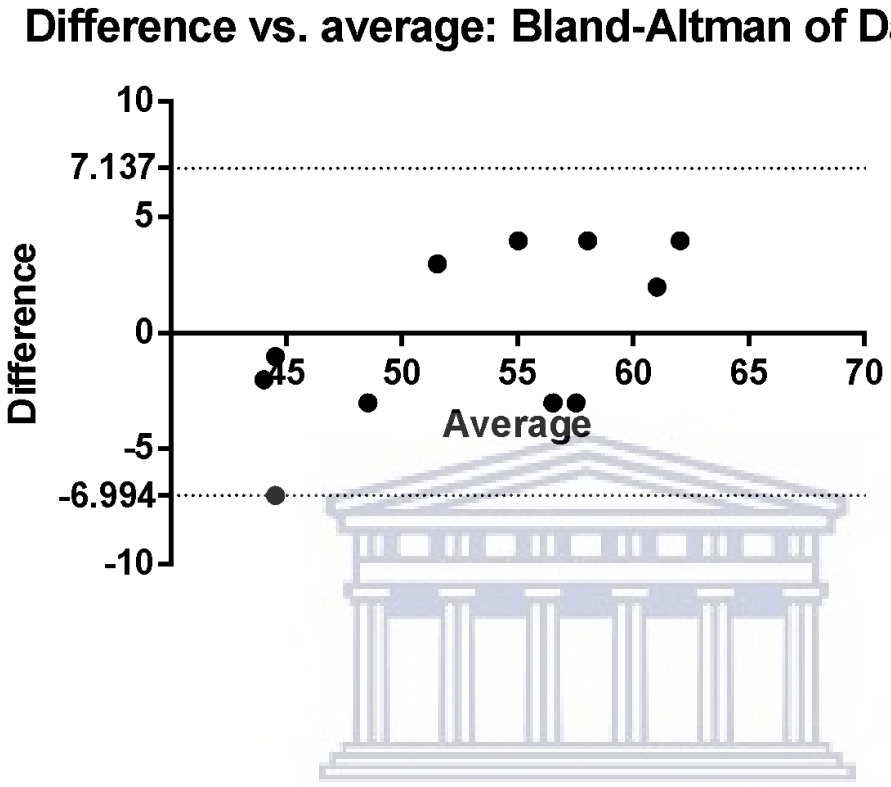

Figure 6.6: Bland–Altman plot of Test-Retest scores in analysis of the RAS (Domain 2).The difference between scores= Scores at the first visit –RAS (Dom 2) scores at the second visit.

Table 6.11: Pattern Matrix for Domain 2 (work) Component

Item	1	2	3
Item 2.36	**.907**		
Item 2.35	**.886**		
Item 2.37	**.874**		
Item 2.33	**.870**		
Item 2.38	**.792**		
Item 2.34	**.791**		
Item 2.32	**.712**		
Item 2.26	.698		.353
Item 2.25	.668		.336
Item 2.31	.613	.348	
Item 2.27	.465		.381
Item 2.4	**.903**		
Item 2.5	**.887**		
Item 2.3	**.882**		
Item 2.1	**.836**		
Item 2.2	**.807**		
Item 2.6	**.709**	.336	
Item 2.7	.641	.321	
Item 2.8	.588		
Item 2.23	.502		
Item 2.21			.692
Item 2.22			.682

Item 2.28			.687
Item 2.24			.581

Extraction Method: Principal component Analysis 1 station method oblimin with Kaiser Normalizations @ Rotation converged in 6 iteration.

Table 6.12: Structure Matrix for Domain 2 (Work)

Item	1	2	3
Item 2.36	**.890**		
Item 2.35	**.872**	.334	
Item 2.37	**.861**		
Item 2.33	**.815**		
Item 2.38	**.803**		
Item 2.34	**.791**		
Item 2.32	**.787**	.440	
Item 2.26	.764		.509
Item 2.25	.728		.484
Item 2.31	.707	.523	
Item 2.27	.540		.479
Item 2.5		**.877**	
Item 2.4		**.867**	
Item 2.1	.378	**.844**	
Item 2.2	.319	**.838**	.308
Item 2.3		**.820**	
Item 2.6		**.781**	.526
Item 2.7		**.738**	.515
Item 2.8		.647	.360
Item 2.23	.406	.609	.336
Item 2.28	.367	.387	.721

Item 2.24	.448	.494	.713
Item 2.21			.692
Item 2.22			.671

Table 6.13: Communalities for Domain 2 (work)

Item	Initial	Extraction
Item 2.1	1.000	.739
Item 2.2	1.000	.707
Item 2.3	1.000	.720
Item 2.4	1.000	.765
Item 2.5	1.000	.770
Item 2.6	1.000	.710
Item 2.7	1.000	.638
Item 2.8	1.000	.449
Item 2.2.1	1.000	.491
Item 2.2.2	1.000	.452
Item 2.2.3	1.000	.435
Item 2.2.4	1.000	.635
Item 2.2.5	1.000	.630
Item 2.2.6	1.000	.693
Item 2.2.7	1.000	.420
Item 2.2.8	1.000	.572
Item 2.3.1	1.000	.603
Item 2.3.2	1.000	.662
Item 2.3.3	1.000	.657
Item 2.3.4	1.000	.626
Item 2.3.5	1.000	.796
Item 2.3.6	1.000	.796
Item 2.3.7	1.000	.743
Item 2.3.8	1.000	.646

6.3.14. Assumption of normality (Shapiro-Wilk) Domain 3

In Table 6.14, it is evident that the Shapiro Wilk statistics for items tested were significant at 0.01 alpha levels. This suggests that the distribution of scores for the sample was significantly different, compared to a normal distribution (Field, 2013).An assessment of the normality of the data is a prerequisite for many statistical tests, as normal data is an underlying assumption in parametric testing. This reveals that only a non-parametric statistical test would be appropriate for inferential analysis, because if the data had not been normally distributed, it would not be appropriate for parametric statistics.

6.3.15. Structural validity (Factor analysis) Domain 3

The Kaiser-Meyer-Olkin measure of sampling adequacy for Domain 3 was 0.658, while the Barlett's test of Sphericity was significant (p = 0.001). Kaiser (1974) recommends that values of Kaiser-Meyer-Olkin (KMO) greater than 0.5 is acceptable. Values below this should lead to the collection of more data or a rethink of the variable to include. Therefore, the data were suitable for factor analysis, and adequate for data reduction.

6.3.16. Part 1: Principal Component Analysis (Domain 3)

In Table 6.16, which is a table of communalities, the factor loading of each of the 19 items of Domain 3 are presented, on the scale after extraction. Every scale item had a factor loading of above 0.3, which indicated that all the items were to be retained for use on the scale. The principal component analysis revealed the presence of 5 factors with Eigen values exceeding 1 in Domain 3, clarifying the variance, respectively (Table 6.15). Five factors emerged from extraction, respectively, as shown in the Scree plot (Figure 6.8). Using Cattell's (1966) Scree test, it was decided to retain five components for further investigation in Domain 3. It was further supported by the result of the Monte Carlo parallel analysis (Watkins, 2000), which revealed three components with Eigen values that exceeded the criterion values for randomly generated data matrices of the same size (Table 6.15).In Figure 6.8, the scree plot is revealed that was generated after subjecting the Eigen values to Oblimin rotation, to obtain the perfected scree plot.

6.3.17. Part 2: Oblimin rotation of the factors of the Domains 3

The percentage of variance, explained for the factors, are revealed in Table 6.15.The pattern matrix demonstrated the factor loading of each of the variables (Table 6.16). In Domain 3: component 1,the highest items are 3.6, 3.2, 3.7, 3.4, 3.3, 3.5;in component 2, they are items 3.34, 3.32, 3.33, 3.35; and in component 3 they are items 3.27, 3.23. The structure matrix,

which is unique to the oblimin output, and provides information about the correlation between variables and factors, was for Domain 3 (Table 6.17)

Table 6.14: Shapiro-Wilk for Domain 3

Item	Statistic df	N	Sig
Item 31	**.771**	102	.000
Item 32	**.672**	102	.000
Item 33	**.750**	102	.000
Item 34	.658	102	.000
Item 35	.800	102	.000
Item 36	.709	102	.000
Item 37	.754	102	.000
Item 38	.759	102	.000
Item 321	.825	102	.000
Item 322	.883	102	.000
Item 323	.784	102	.000
Item 324	.808	102	.000
Item 331	.901	102	.000
Item 332	.902	102	.000
Item 333	.912	102	.000
Item 334	.885	102	.000
Item 335	.888	102	.000
Item 336	.872	102	.000
Item 337	.850	102	.000

Table 6.15: Comparison of Eigenvalues from PCA and criterion values from parallel analysis

Component Number	Actual Eigen values from PCA	Criterion value from parallel Analysis	Decision
1	4.941	1.8542	Accept
2	3.640	1.6804	Accept
3	2.327	1.5430	Accept
4	1.329	1,4374	Reject
5	1.167	1.3362	Reject

Monte Carlos PCA for parallel analysis2000 by Marley W. Watkins.

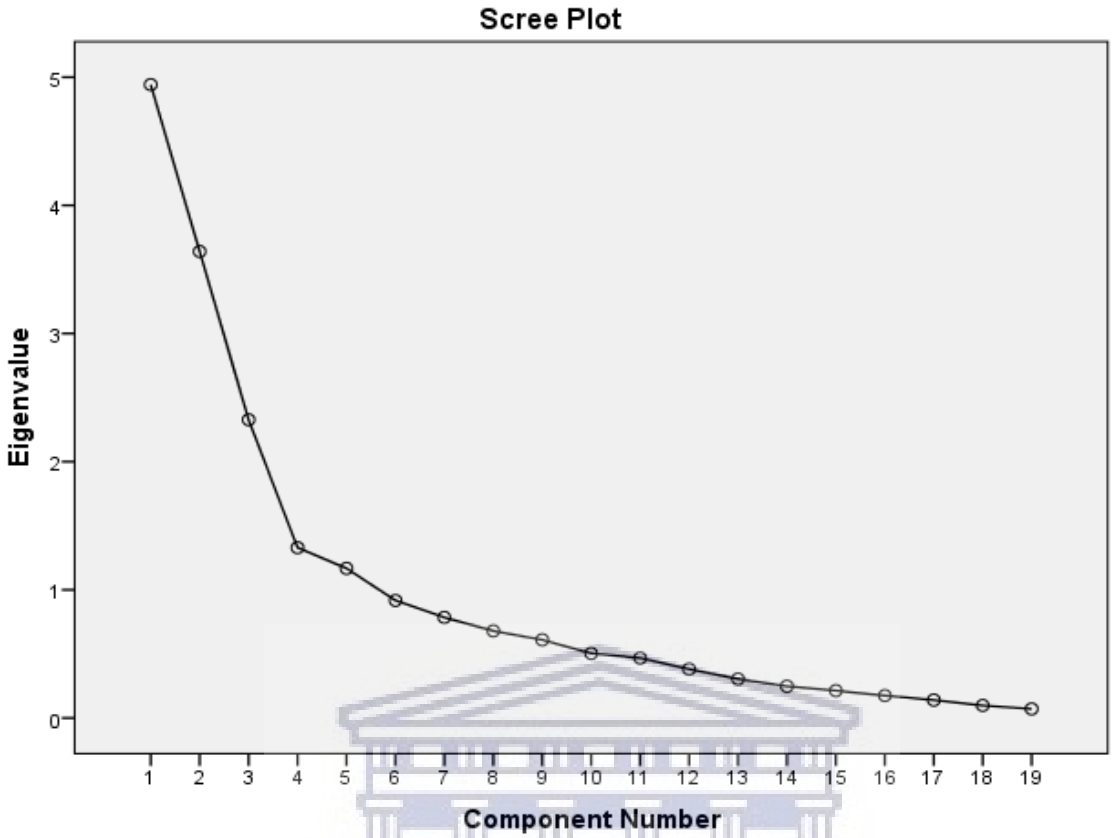

Figure 6.7: Scree plot (Domain 3) 5 factors before Oblimin rotation

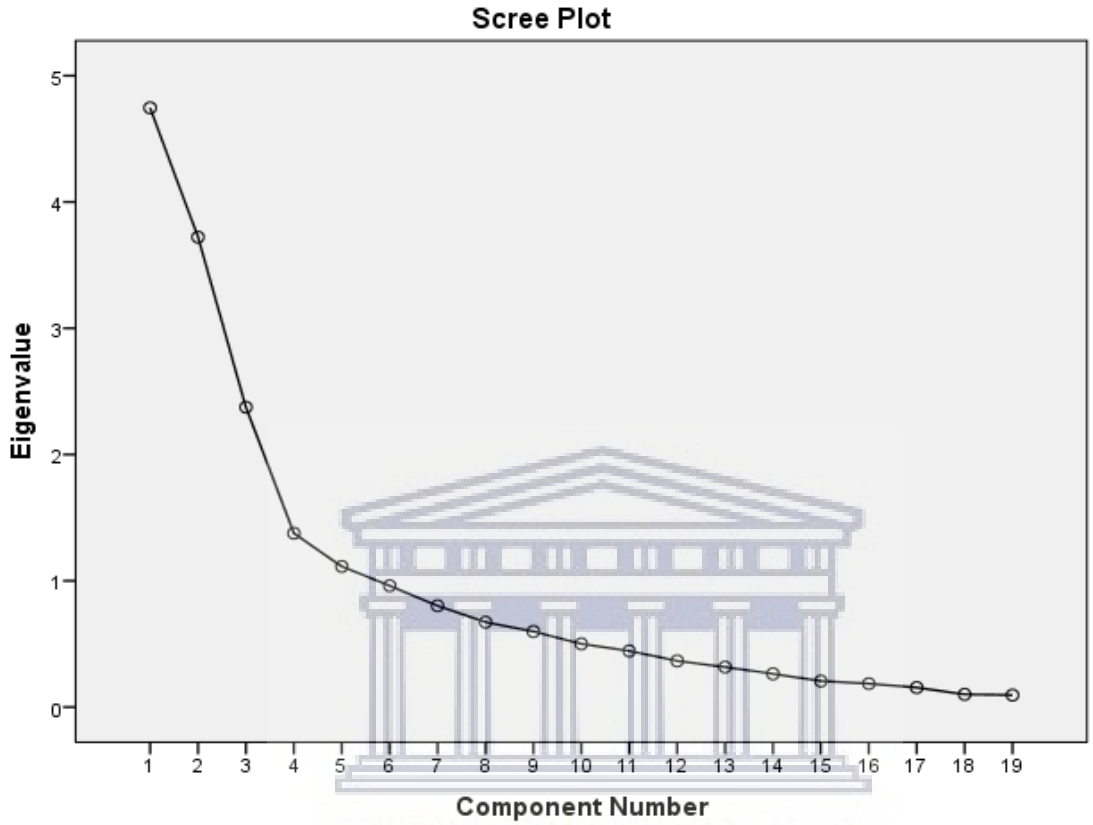

Figure 6.8: Scree plot (Domain 3) 5 factors after Oblimin rotation

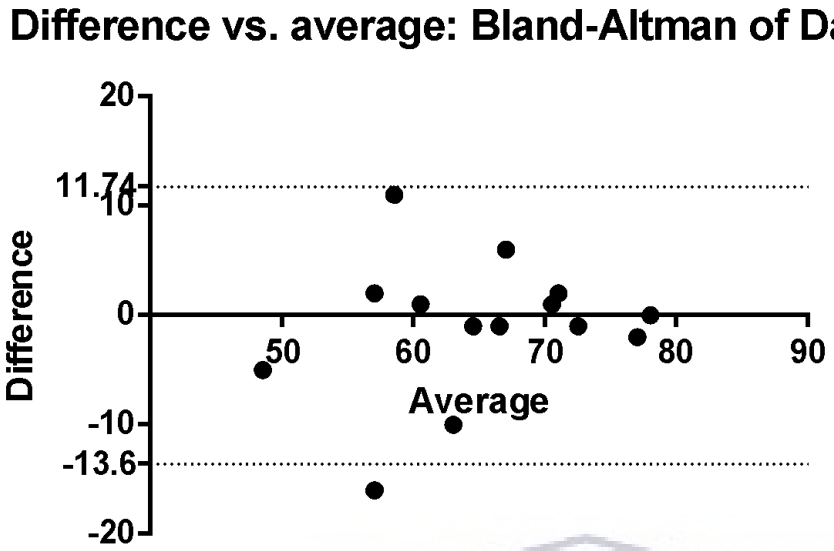

Figure 6.9: Bland –Altman plot of Test-retest scores in analysis of the RAS (Domain 3).The difference between scores= Scores at the first visit –RAS (Dom 3) scores at the second visit.

Table 6.14: Pattern Matrix for Domain 3 (Contextual factor)

Components	1	2	3
Item 36	**.836**		
Item 32	**.829**		
Item 37	**.820**		
Item 34	**.819**		
Item 33	**.798**		
Item 35	**.719**		
Item 38	.551		
Item 31	.549		
Item 3.34		**.846**	
Item 3.32		**.843**	
Item 3.33		**.778**	
Item 3.35		**.701**	
Item 3.36		.595	
Item 3.31		.578	
Item 3.37		.468	
Item 3.24			**.837**
Item 3.23			.787
Item 3.22			.672
Item 3.21			.610

Extraction method: Principal component analysis, rotation method: Oblimin with Kaiser Normalization (a) Rotation converged in 5 iteration.

Table 6.16: Structure Matrix for Domain 3 (Contextual factor)

Components	1	2	3
Item 36	**.833**		
Item 32	**.822**		
Item 37	**.821**		
Item 34	**.813**		
Item 33	**.795**		
Item 35	**.754**		
Item 38	.559		
Item 31	.549		
Item 3.34		**.843**	
Item 3.32		**.838**	
Item 3.33		**.785**	
Item 3.36		**.714**	
Item 3.31		.610	
Item 3.37		.571	
Item 3.24		.440	
Item 3.23			.432
Item 3.24			**.837**
Item 3.23			**.783**
Item 3.22			**.671**
Item 3.21			.628

Extraction method: Principal components Analysis Rotation method: Oblimin in the Kaiser normalization.

Table 6.17: Communalities for Domain 3 (Contextual factor)

Item	Initial	Extraction
Item 31	1.000	.304
Item 32	1.000	.707
Item 33	1.000	.666
Item 34	1.000	.685
Item 35	1.000	.584
Item 36	1.000	.702
Item 37	1.000	.683
Item 38	1.000	.358
Item 321	1.000	.478
Item 322	1.000	.462
Item 323	1.000	.619
Item 324	1.000	.703
Item 331	1.000	.346
Item 332	1.000	.751
Item 333	1.000	.639
Item 334	1.000	.714
Item 335	1.000	.597
Item 336	1.000	.439
Item 337	1.000	.406

6.3.18. Conclusion of Phase Three

The Return-to-work Assessment Scale is a good, internally consistent, and reliable tool that has demonstrated good group and structural validity.

6.4. Summary of phase three

6.4.1. Phase Three: Item reduction and factor analysis

This step in the development of the outcome measure was to conduct a factor analysis to further reduce items, group items appropriately, as well as to assess the internal consistency of the items contained in the outcome measure. One-hundred-and-one patients, who were stroke survivors, participated in the psychometric testing of the Return-to-work Assessment Scale. Factor analysis was conducted, using the Principal component analysis for each domain. Factor analysis, according to Nunnally quoted in Matsunaga, is intimately involved with the question of validity, and is the heart of the measurement of psychological constructs (Nunnally, 1978; Matsunaga, 2010; Odole et al., 2016). Additionally, factor analysis provides a diagnostic tool, to evaluate whether the collected data are in line with the theoretically expected pattern, or structure of the target construct, thereby determining whether the measures used, have indeed measured what they are purposed to measure(Odole et al.,2016). The choice of Principal Component Analysis was informed by the fact that the researcher had already established the scale on an existing theory (The Flags Model and the Psychometric theory).

6.4.2. Assumption of normality (Shapiro-Wilk)

It became evident that the Shapiro Wilk statistic for items tested, was significant at 0.01 Alpha levels in all the three (3) domains. This suggests that the distribution of scores for the sample was significantly different, compared to a normal distribution (Field, 2009, 2013).An assessment of the normality of the data is a prerequisite for many statistical tests, as normal data is an underlying assumption in parametric testing. This reveals that only a non-parametric statistical test would be appropriate for inferential analysis, as, had the data not been normally distributed, it would not have been appropriate for parametric statistics.

Field (2013) recommended that the test be a strong and accurate, for the assumption of normality. In the Shapiro-Wilk test, a non-significant *(p* > .05) statistic revealed that the distribution of the particular sample was not significantly different from a normal distribution (Field, 2009, 2013). This would indicate that the distribution of the data approximated normality. If, the Shapiro Wilk statistic had tested significant (*p* < .05), this would have

indicated that the distribution of data differed significantly from a normal distribution, which, in turn, would suggest that the distribution was not normal(Field,2009, 2013). The sample size may not have been as large as required, while the respondents were post-stroke survivors and not an apparent health population. Large samples sizes could be obtained for a healthy normal population, in which a post-stroke survivor is not totally included. They are a special group of people, with peculiar needs, and the data obtained may not be normally distributed.

6.4.3. Domain 1 (Personal)

The Kaiser-Meyer-Olkin measure of sampling adequacy (KMO) value for Domain 1,was 0.63, and the Bartlett's test of Sphericity value was significant (p= 0.000). Therefore factor analysis was appropriate. Kaiser (1974) recommends that values of Kaiser-Meyer-Olkin (KMO) greater than 0.5 be accepted (Ibikunle, Odole, Akosile, & Ezeakunne, 2017). Values below this should result in the collection of additional data, or a rethink of which variable to include. The Eigen values, obtained using the Kaiser's criterion, highlighted that the researcher should focus on values of 1 or more. The Eigen values for each component, as listed, revealed that ten (10) factors, the first 10 values of the 43 items in Domain 1, had an Eigen value of 1 or more. These ten components explained a total of 75.78% of the variance. Using the Kaiser criterion, while considering the scree plot, reveals a change (elbow) in the shape of the plot. In this example, there was no clear break, but a slight break between components 6 and 7.

Components 1 to 5 explain, or capture much more of the variance, than the remaining components. From this plot, only the first five components should be retained (extracted). Another slight break appears around the 9th component.

Using a parallel analysis, referred to as the Monte Carlo Principal Component analysis (PCA), the first Eigen value obtained from IBM SPSS, was compared with the corresponding five values, from the random results generated by the parallel analysis. If the values obtained were higher than the criterion value from the parallel analysis, the factor was retained. If lower, it was rejected. The results for this example are summarised in Table 6.5. The results of the parallel analysis support the decision from the scree plot, to retain only 5 factors for further investigation (Sheytanova, 2015).

The five factor rotation reveals a 61.28% of the variance, compared to over 75.78% explained by the ten factor solution. After rotating the five factor solution, the component

correlation matrix table revealed the strength of the relationship between the five factors, in this case the value is quite low, at – 0.27. The Pattern matrix table shows the factor loadings of each of the variables. For the five factors loading in Domain 1 (Personal), the highest loading in component 1 was, Dom. 1.3, 1.1, 1.4, 1.5, 1.7, 1.2.;in component 2,1.5.6, 1.5.1, 1.5.3, 1.5.2, 1.5.5, 1.5.4; in component 3, 1.4.5, 1.4.7, 1.4.4, 1.4.3; in component 4, 1.2.10, 1.2.9, 1.2.8, 1.2.5, 1.2.11; in component 5, 1.23, 1.24, and labeling the components as follows: Component 1 – activities daily living; Component 2 – motivation to return to work;Component3 – coping at place of work ;Component 4 – Cognition and psychological factors; Component 5 – Psychosocial factors.

The Structural matrix table provides information about the correlation between the variables and factors. The communalities provide information about how much of the variance is explained in each item. Costello and Osborne (2005) allude to a factor loading of less than .30 on an item as weak, and weak loadings suggest that an item might be unstable. However, a loading of greater than .50 on an item could be viewed as a desirable and strong loading; consequently, proposing a solid item. Low values (less than 3) could indicate that the items do not fit well with other items in the component; the lowest, for example, were items 1.10 and 1.58.

The purpose of the analysis is to improve or refine a scale, and this information is used to remove items from the scale. Removing items with low communality values tends to increase the total variance explained. Communality values could change dramatically, depending on the number of factors that are retained; therefore, it is often better to interpret the communality values, after selecting the number of factors to retain, using the scree plot and parallel analysis. Costello and Osborne (2005) suggest that item communalities higher than .80 are considered to be high, while communalities between .40 and .70 are considered to be low to moderate. Communalities less than .40 indicate that items are not related to other items, or might tap into additional factors that need further exploration. Thus, communalities and high over-determinations (at least *three* to *seven* variables loading strongly on each factor) are important elements to achieve good recovery of population factors (Brandon, 2011).

The 43 items of Domain1 (personal) of the RAS were subjected to a Principal Component Analysis (PCA); however, prior to performing the PCA, the suitability of the data for factor analysis was assessed. An inspection of the correlation matrix revealed the presence of many coefficients 0.3 and above. The Kaiser-Meyer-Olkin value was 0.65, exceeding the

recommended value of 0.6 (Kaiser, 1970, 1974), and the Barlett's test of Sphericity revealed statistical significances, supporting the factorability of the correlation matrix. The Principal Components Analysis revealed the presence of ten components with Eigen values that exceeded 1, explaining 24.38%, 13.54%, 9.72%, 7.47%, 4.82%, 4.0%, 3.46%, 3.03%, 2.89% and 2.48% of variance, respectively. An inspection of the scree plot revealed a clear break after the sixth component. Using Cattell's (1960) scree test, it was decided to retain five components for further investigation. This was further supported by the results of the parallel analysis, which revealed only five components with Eigen values that exceeded the corresponding criterion values for a randomly generated data matrix of the same size. The five component solution explained a total of 61.28% of the variance, with component 1 contributing 25.07%, component 2 contributing 14.00%, component 3 contributing 10.04%, component 4 contributing 7.61%, and component 5 contributing 4.56%. To aid the interpretation of those five components, Oblimin rotation was performed. The rotated solution revealed the presence of simple structure, with all components showing a number of strong loadings, and all variables loading substantially for components 1 to 3. The interpretation of the five components was consistent, and a weak negative correlation existed between the five factors (r = -0.27).

6.4.4. Domain 2 (Work)

The Kaiser-Meyer-Olkin measure of sampling adequacy (KMO) value was 0.839, and the Bartlett's test of Sphericity value was significant (p= 0.000).When Bartlett's test of Sphericity is significant, it indicates that the correlations between variables are, in general, significantly different from zero (Field, 2009; 2013). Therefore, a significant value of this test is desirable. However, although a non-significant value of this test may be undesirable, it is essential to note that the significance of the tests does not necessarily imply that the correlations are large enough to make the analysis meaningful (Field, 2009, 2013). Low correlations on any identified variables against other variables should be considered as a reason for exclusion from the factor analysis (Field, 2013). Ideally, the KMO value is supposed to be 0.6 or above, and the Bartlett's Test of Sphericity value should be significant (the significant value should be 0.05 or smaller), to verify that the data used, is suitable for factor analysis. Kaiser (1974) recommends values of Kaiser-Meyer-Olkin (KMO) that are greater than 0.5 as acceptable. Values below this should result in the collection of additional data, or a rethink of the variables to include. Therefore, factor analysis is appropriate. Using the Kaiser's criterion, only components that have an Eigen value of 1 or more (Odole et al., 2016) are of interest. The Eigen values for each component are listed in the total variance explained table. In this example, only four components are listed, which are the first four values (40.07, 16.64, 7.46,

and 4.94%). These four components explain a total of 69.13% of the variance. Using the Kaiser's criterion, too many components are extracted; therefore, the scree plot is also used. In this result (Figure6.2), there is a clear break between the third and fourth components. There is also a slight break after the fourth component. From this plot, extracting the first four components will be retained. However, using the Monte Carlos PCA for parallel analysis, the first Eigen value, obtained from the IBMSPSS, will be compared with the corresponding first values from the random results generated by parallel analysis. If the values obtained are larger than the criterion value from the parallel analysis, the factor is retained; however, if less, it is rejected. In this analysis, the result of the parallel analysis does not support the decision of the scree plot, to retain the four factors for further investigation.

Using the three factor solution, the total variance explained table for the three factor solution, only explained 64.09% of the variance, compared with the 69.13% explained by the four factor solution. The component correlation matrix, which shows the strength of the relationship between the three factors in this case, the value was – 0.28. The pattern matrix shows the factor loading of each of the variables, considering the highest loading items on each component, to identify and label the component. In this result, the main loadings on component 1 were items 2.36, 2.35, 2.37, 2.33, 2.38, 2.34, 2.32; on component 2 were items 2.4, 2.5, 2.3, 2.1, 2.2, 2.6; and on component 3 were items 2.21, 2.22, and 2.28.The 24 items of the return-to-work Domain 2 (work) were subjected to Principal Component Analysis (PCA), using SPSS version 23. Prior to performing PCA, the suitability of the data for factor analysis was assessed. An inspection of the correlation matrix revealed the presence of many coefficients of .3 and above. The Kaiser-Meyer-Olkin value was .6, and Barlett's Test Sphericity reached statistical significance, supporting the factorability of the correlation matrix. The principal component analysis revealed the presence of four components with an Eigen value exceeding 1, explaining, 40.09%, 16.64%, 7.46%, and 4.94% of the variance, respectively. An inspection of the scree plot revealed a clear break after the fourth component, for further investigation. This was further supported by the results of parallel analysis, which showed only three components with Eigen values that exceeded the corresponding criterion values for randomly generated data matrices of the same size. The three component solution explained a total of 64.09% of the variance, with component1 contributing 40.39%, component 2 contributing 16.02%, and component 3 contributing 7.689%. To aid the interpretation of the two components, oblimin rotation was performed. The rotated solution revealed the presence of simple structure, with all components showing a number of strong loadings, and all variables loading substantially on all components. A weak negative correlation was observed between the three factors (r = - .28).

6.4.5. Domain 3: Contextual factors

The Kaiser-Meyer-Olkin measure of sampling adequacy was 0.658, while the Bartlett test of Sphericity was significant (p = 0.000). Therefore, the factor analysis was appropriate. Using the Kaiser criterion, only components with an Eigen value of 1 or more were of interest. To determine how many components meets this criterion, the total variance explained table should be considered. Kaiser (1974) recommends that Kaiser-Meyer-Olkin (KMO) values greater than 0.5 are acceptable. Values below this should result in the collection of additional data, or a rethink of the variables to include. The Eigen values for each component were listed as follows: five components were listed, 1 to 5, as 4.94, 3.64, 2.32, 1.32, and 1.16, respectively. These five components explain a total of 70.56% of the variance, while the scree plot reveals a break for the fourth and fifth components. Components 1 to 3 captured more variance than the remaining components. To further determine the number of factors to remain, parallel analysis was due. The Monte Carlos PCA for parallel analysis was used, and the results revealed three components.

Revisiting the IBM SPSS output, using the three factors solution, as obtained from the Monte Carlos PCA parallel analysis, the variance obtained after the three factors solution, was 57.06%, compared to over 70.56% explained by the five-factor solution. After rotating, three new tables emerged, which were important to consider. The components correlation matrix, which shows the strength of the relationships between the three factors solution, was -0.28. The Pattern Matrix shows the factor loading of each of the variables. The highest loading items on each component were considered to identify and label the components. In this result, the main loadings on component 1 are items 3.6, 3.2, 3.7, 3.4, 3.3, 3.5;on component 2,they are items 3.34, 3.32, 3.33, 3.35, and on component 3,they are items 3.27, 3.23. The Structure Matrix table provides information about the correlation between variables and factors.

The 19 items of the return-to-work Domain 3, were subjected to the Principal Components Analysis, using SPSS version 23. Prior to performing the PCA, the suitability of the data was assessed for factor analysis. An inspection of the correlation matrix revealed the presence of many coefficients of 0.3 and above. The Kaiser-Meyer-Olkin value was 0.658, exceeding the recommended value of .6, and the Barlett's test of Sphericity reached statistical significance, supporting the factorability of the correlation matrix. The Principal Components Analysis revealed the presence of five components, with Eigen values that exceeded 1, explaining 26.00%, 19.16%, 12.25%, 6.99%, and 6.14% of variance, respectively. Using Cattel's screen test, it was decided retain the five components for further investigation. This was not supported by the parallel analysis, which revealed only two components with Eigen values

that exceeded the corresponding criterion values for a randomly generated data matrix of the same size. The three components solution explained a total of 57.07% of the variance, with component 1 contributing 24.98%, component 2 contributing 19.58%, and component 3 contributing 12.50%. To aid in the interpretation of these three components, oblimin rotation was performed.

The rotated solution revealed the presence of simple structure with both components showing a number of strong loadings, and all variables loading substantially on all the components. A weak negative correlation was observed between the three factors (r= - 28).

6.5. SUMMARY OF RESULT

Phase three focuses on establishing the psychometric properties for the Return to work assessment scale (RAS). In this current study, an instrument was developed to assess return-to-work among post-stroke survivors. The Flags and ICF models were adopted, to determine the variables (factors) or domains required in the instrument, as authenticated by post-stroke survivors, their caregivers, rehabilitation professionals and employers. Once established, the psychometric properties of the scale inclusive of these variables (factors) and domains were determined, using the C-OAR-SE Theory. The result is hereby summarized under the following subheadings:

- **Adequacy of data**

The Shapiro-Wilk test, a non-significant *(p* > .05) statistic, showed that the distribution of the particular sample was not significantly different from a normal distribution (Field, 2013).This would indicate that the distribution of the data approximated normality. If, the Shapiro Wilk statistic tested significant (*p* < .05), it would indicate that the distribution of data differed significantly from a normal distribution, which, in turn suggests that the distribution was not normal. This was the case for this current study, the sample size may not have been as large as required, and the respondents are post-stroke survivors, who are not an apparent health population. Large samples sizes could be selected only from a healthy, normal population, in which a post-stroke survivor is not totally included. They are a special group of people, with peculiar needs, and the data obtained may not be distributed normally (Fields, 2009; 2013).The implication of this in statistical research is that non-parametric statistics would be used in the analysis of the outcome measure, since the population is not distributed normally (Pallant,2013).

- **Adequacy of stability and internal consistency**

These domains have good internal consistency, as Domain 1 had a Cronbach Alpha co-efficient of 0.81; Domain 2 had good internal consistency, with a Cronbach Alpha co-efficient reported at 0.93; while Domain 3 had a Cronbach Alpha co-efficient of 0.76.Cronbach Alphas usually have a value between 0 and 1 (Terwee et al., 2007).Tavakol and Dennick (2011) state that researchers have diverse reports about the acceptable values of alpha, ranging from 0.70 to 0.95.They further explain that a low value might be due to a low number of questions, or poor interrelatedness between items, or heterogeneous constructs. When the value is too high, it may be attributed to redundancies, as well as that these specific items might be omitted, as other similar items, measuring the same construct might exist. The reliability for the RAS is acceptable and within the range of good internal consistency (Tavakol & Dennick, 2011; Terwee et al., 2007). These results are consistent and in agreement with the works of Chen et al. (2012), Tsang et al. (2013), as well as Cael et al. (2015). The stability of the domains of the return-to-work scale was tested, using the test-retest reliability. The instrument was administered initially, and re-administered after an interval of a week. The intraclass correlation (ICC) obtained for Domain 1 (0.85), Domain 2 (0.91), and Domain 3 (0.99) in test-retest, could be considered excellent. The graphic representation of the test-retest scores, through the Bland–Altman method, revealed that, despite a marginal number of outliers, the scores were not all centred, with a systematic trend observed. These results were consistent with the research of Steffen and Seney(2008), Cael et al.(2015),as well as Hsueh et al. (2006)

- **Adequacy of factor structure and length of the instrument in terms of the number of items:**

The Kaiser-Meyer-Olkin measure of sampling adequacy (KMO) value for Domain 1 was 0.63, and Bartlett's test of Sphericity value was significant (p= 0.000) The interpretation of the five components was consistent, and a weak negative correlation existed between the five factors (r = -0.27) Component 1 – activities daily living; Component 2 – motivation to return to work; Component3 – coping at place of work; Component 4 – Cognition and psychological factors; Component 5 – Psychosocial factors.

.For Domain 2 the KMO value was 0.839, and the Bartlett's test of Sphericity value was significant (p= 0.000) The rotated solution revealed the presence of simple structure, with all components showing a number of strong loadings, and all variables loading substantially on all components. A weak negative correlation was observed between the three factors (r = -0.28).while for Domain 3 KMO value was 0.658, while the Bartlett test of Sphericity was

significant (p = 0.000) The rotated solution revealed the presence of simple structure with both components showing a number of strong loadings, and all variables loading substantially on all the components. A weak negative correlation was also observed between the three factors (r= - 0.28). Kaiser (1974) recommends that values of Kaiser-Meyer-Olkin (KMO) greater than 0.5 was acceptable. Values below this should result in the collection of additional data, or a rethink of the variables to include. Hutcheson and Sofroniou (1999) suggest the following interpretation classification for the statistics: values between 0.5 and 0.7 are mediocre; values between 0.7 and 0.8 are good; values between 0.8 and 0.9 are great; and values above 0.9 are superb.

The Return-to-work Assessment Scale is a multidimensional assessment tool, and is an excellent, internally consistent, as well as reliable tool that has demonstrated good group and structural validity.

CHAPTER SEVEN

SUMMARY, CONCLUSION AND RECOMMENDATIONS

7.1. Introduction

In this chapter, the researcher summarises the study, draws conclusions, and offers recommendations.

7.2. Summary

Stroke is a health condition that could result in disability, including absence from work which, in turn, could affect the quality of life of survivors. To enhance the employment outcomes of individuals, who had experienced a stroke, it is important to understand the factors that determine job retention, and relevant factors related to return-to-work. Return-to-work (RTW) after injury or illness is a behaviour influenced by physical, psychological, and social factors.

Return-to-work has been investigated empirically; however, two core concerns have been raised: (1) the need for a comprehensive and multi-perspective measurement of the factors predicting RTW; and (2) the cited differences in issues related to stroke between developed and developing countries (Bell-Gam et al., 2012; Danesi et al.,2007; Danesi et al., 2013; Wahab, 2008). More specifically, the researcher identified the need for a contextualised objective assessment measure, not yet been embarked upon, for the assessment of return-to-work among stroke survivors in Nigeria. Consequently, in this current study, the researcher developed an indigenous, multi-perspective measure, to assess return-to-work (RTW) of post-stroke survivors in Nigeria.

The study was designed in three phases, with each phase addressing different objectives in the aim of developing and validating a psychometrically sound measure, to assess return-to-work in post-stroke survivors.

7.2.1. Phase one:

The first phase used qualitative methods with stakeholders and key informants, to finalise the conceptualisation of the constructs of return-to-work, and domain identification of the intended instrument. In-depth interviews, facilitated with eight (8) post-stroke survivors and three (3) caregivers, three (3) employers, and three (3) rehabilitation professionals were employed for data collection. The data generated were analysed using the AtlasTi. version 7,

with five themes emerging from this analysis, namely, *Impairment and functional limitation resulting from stroke, Cognitive and Psychological limitation resulting from stroke, Barriers to return-to-work post-stroke. Facilitators to return-to-work post-stroke, Stroke as a social responsibility*. These themes were used to design the scale referred to as the Return-to-work Assessment Scale (RAS). The scale consists of two sections, A and B. Section A comprises general information about post-stroke survivors, which would not be scored, while section B includes three parts that are important to consider, when deciding to return to work. This section would be scored on a Likert scale with three (3) Domains: Domain 1 (Personal) consisting of five (5) sub-domains; Domain 2 (Work) consisting of three (3) sub-domains; and Domain 3 (contextual factors) consisting of three (3) sub-domains.

7.2.2. Phase two:

Phase two is the section saddled with the face and content validation of the developed RAS. The aim of section B was to establish the face and content validity of the newly developed instrument, as well as to reduce items contained in the instrument. The initial developed instrument had three domains and eleven sub-domains. Three rounds of the Delphi technique with group experts and patients were conducted, and all items were retained having reached 100% consensus. The scoring system was assessed, along with the Delphi study, and agreed on by experts, as it related to their expertise as Health psychologists, who were specifically asked to check the scoring system.

7.2.3. Phase three:

The third stage involved the determination of psychometric properties, using internal consistency and factor analysis. One-hundred-and-one patients, who were stroke survivors, participated in the psychometric testing of the Return-to-work Assessment Scale. The result reveals that 58 (57.4%) males and 43 (42.2%) females, with a mean age of 53.88, and ±10.68 internal consistency was high with a Cronbach's Alpha coefficient of 0.81 for Domain 1, 0.93 for Domain 2, and 0.76 for Domain 3.The test-retest reliability analysis provided an ICC of 0.85(p=0.001) for Domain 1, 0.91 (p=0.001) for Domain 2, and 0.99 (p=0.001) for Domain 3.The Bland Altman plotting method revealed that the test-retest results were not strictly centred, and the bias was only -0.93 for Domain 1, 0.07 for Domain 2, and -0.93 for Domain 3.The limits of agreement for the two scores of each domain were -3.16 to 1.31 for Domain 1,-6.99 to 7.14 for Domain 2, and -13.6 to 11.74 for Domain 3. The Kaiser-Meyer-Olkin measure of sampling adequacy (KMO) value for Domain 1 was X^2 =0.63, and the Bartlett's test of Sphericity value was significant (P= 0.000); therefore factor analysis was appropriate. The Kaiser-Meyer-Olkin measure of sampling adequacy (KMO) value for Domain 2 was 0.839, and the Bartlett's test of Sphericity value was significant (P= 0.000). Ideally the KMO value is supposed to be 0.6 or above, while that of the Bartlett's Test of

Sphericity value should be significant (0.05 or smaller) to verify that the data used were suitable for factor analysis. The Kaiser-Meyer-Olkin measure of sampling adequacy for Domain 3 was 0.658, while the Barlett's test of Sphericity was significant (p = 0.001). Therefore, the data supported the use of factor analysis.

7.3. Conclusion

Based on the findings of this current study, the following conclusions were made:
A multidimensional instrument was developed, and referred to as the Return-to-work Assessment Scale (RAS), which could be used to assess physical, psychosocial, and contextual factors, related to return-to-work among post-stroke survivors. The multidimensional instrument consisted of Section A that included sociodemographic variables, while Section B comprised three (3) domains and eleven (11) sub-domains, with 86items, as obtained from the exploratory phase, which was the first phase. In the second phase of the study, it was subjected to face, as well as content validity, using the Delphi survey technique, and consensus was reached by the panel of participants that the structure and content of the RAS was deemed valid. In the final phase, it was subjected to item reduction and factor analysis. The RAS is an excellent, internally consistent, as well as reliable tool that has demonstrated good group and structural validity.

The Return-to-work Assessment Scale is a multidimensional assessment tool, which is an excellent, internally consistent, and reliable tool that has demonstrated good group reliability, as well as divergent and structural validity. Consequently, it could be used to assess and monitor return-to-work among post-stroke survivors.

7.4. Significance of study

This study addressed the need for a singular objective, multi-perspective, and contextually appropriate measure that could assist in assessing the RTW of post-stroke survivors. In addition, it could be beneficial in informing interventions, which in turn, might reduce the burden of stroke on a personal, as well as community level. Multi-perspective input into the development of the instrument could increase its applicability to assess return-to-work among stroke survivors. A singular instrument would also provide a cost-effective assessment, for use in the most populous Black African countries, which in turn, would assist in combating the WHO projections of return-to-work among stroke survivors in developing countries. The study made some contributions to the level of practice and application, research methodology and policy as stated below:

7.4.1. Contribution to practice and application

The major contribution towards practice was the production of a draft instrument for assessing return to work among post stroke survivors. This tool can be used by stroke survivors, employers and health professional to assess the level of readiness, ability to cope at work and also how supportive the work environment is to the stroke survivor. Over the years many tools have been developed to address different aspects of disability but no outcome measure exists, specifically designed for the purpose of measuring return-to-work among stroke survivors. However, there are many outcome measures used for the measuring of various variables among stroke patients, including: The Gross Motor Rivermead Assessment Scale by Lincoln and Gladman (1962); The Barthel index by Mahoney and Barthel (1965); The Nottingham extended activities of daily living by Finch et al. (2002), to mention but a few, this is probably the first time an attempt has been made to produce a measure to assess return to work. This does not necessarily mean that the outcome is perfect or without need for improvement but it is merely an attempt to contribute to Knowledge and practice. Developing a health-specific outcome measure, to assess return-to-work among stroke survivors, will help to assess their readiness, as well as the monitor return-to-work stages. With no means of evaluating return-to-work among post-stroke survivors, they will not be accepted back into their formal employment, which could affect their self-esteem, confidence, and social identity (Balasooriya-Smeekens et al., 2016). When subjected to an assessment with a multi-perspective instrument that is valid and reliable, the employers would have more confidence to reinstate affected employees, from an objective and unbiased point of view, should they be considered ready to return. The RAS was designed to measure three aspects of return to work: Personal factors/issues, Work issues and contextual factors. The applicability of the RAS to return to work issues is realistic and practicable, easy to use and it provides a simple and common language for assessing return to work. The instrument could augment other outcome measures designed to assess other variables among post stroke survivors.

7.4.2 Contribution to research methodology

The construction of the RAS was guided by a multiphase research design having three phases; this multiphase approach was not a mixed method, but a continued methodological triangulation that could act as a conceptual and theoretical framework for further studies in return to work. Construct development, validation and item reduction and pilot/psychometric testing. This study was a collaborative effort between the Department of Physiotherapy and

Psychology in the University of the Western Cape where the two Supervisors of the research come from. The methodology employed in the study drew on the well-established traditions within each discipline resulting in a synergy or methods and skills. This study applied the principles of community engagement and Forged important relationships between stakeholders (Stroke survivors, employers, clinicians and academics) that paved way for the development of this screening tool.

7.4.3. Contribution to theory

The Conceptual framework as earlier stated in the thesis was the International classification of Functioning, Disability (ICF) using the components and codes (see appendix 12) complimented with the flag model which both constituted the conceptual mappings and straddled the modified C-OAR-SE theory. The production of the RAS utilizing these great models and theories would be a novel contribution to theoretical application in research, This is probably the first time the ICF Model will be combined with the flag model and the C-OAR-SE(see appendix 12&13) to develop an instrument for validation and reliability testing. As earlier stated in the thesis other works also adopted the ICF components and codes, the development of the RAS is similar the World Health Organization Disability Assessment Schedule 2.0 (WHODAS 2.0), used in measuring functioning and disability, in accordance with the International Classification of Functioning, Disability, and Health developed by Usten et al.,2010. However, the RAS combined the ICF codes and categories, with the Flags model as complementary, to produce a more exhaustive construct/conceptual definition for return-to-work, as combined with the C-OAR-SE theory. Thus, the contribution of the present study was in providing a triangulated theoretical framework for the construction of the measure. This is not typically the case for health outcome measures resulting in instruments that lack reliability and validity due to a lack of construct clarity.

7.4.4. Contribution to policy

The policies around inclusivity and the right to work for disabled individuals are generally well established. However, the acquisition of the rights afforded by those transformational policies is often what poses a challenge. The policies around labour equity and reasonable accommodation do not provide clear instrumentation or processes to guide the disabled, the health or rehabilitation practitioners and the labour practitioners in their roles of facilitating return to work. The RAS makes a contribution to policy implementation that is cost-effective

and user-friendly. A singular instrument would provide a cost-effective assessment, for use in the most populous Black African countries, which in turn, would assist in combating the WHO projections of return-to-work among stroke survivors in developing countries. RAS could be used by the administrators and employers in the human resource departments to assess and re-assess stroke disability among employees for the main purpose of evaluating their readiness to return to work, ability to cope with their work environment and follow-up on contextual issues for the purpose of making far reaching decisions that could help the society and give management a human face to health issues.

7.4.5. Limitation

1. Sex difference of participants was not considered in this study.
2. Comparing rural or urban Nigeria was not consider neither was it the focus of this study.
3. Convergent and Divergent validity were not determined only structural validity was determined.

7.5. Recommendations

Based on the findings of this study, the following recommendations are suggested:

1. The Return-to-work Assessment Scale (RAS) should be used by clinicians, health professionals, and employers of labour, to assess and monitor return-to-work among post-stroke survivors.

2. The RAS could be translated and validated in other major languages of Nigeria, such as Hausa, Igbo and Yoruba. If available in these languages, the instrument could enhance clinical assessment and evaluation, to monitor return-to-work among post-stroke survivors, who are not fluent in English.

3. Urban and Rural Nigeria could be compared perhaps it could influences Return to work.

4. Sex difference could be compared perhaps it could influence Return to work.

5. Convergent and Divergent validity could be determined among the population.

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APPENDICES

APPENDIX 1: Return-to-work Assessment Scale (RAS)

Instruction:

Returning to work is an important decision for all survivors of stroke. This instrument is designed to assist stroke survivors with assessing their readiness to return to work. The scale is made up of two sections, A and B. Section A is made up of general questions about yourself while section B includes three parts that are important to consider in your decision to return to work. In each section you will be asked to respond to questions. Carefully think about the question and indicate your answer by ticking your response to the questions. You may need to fill in some response where required. Your response on each of the part indicates the extent to which there are concerns that require attention in facilitating your return to work. Each part is scored independently

SECTION A: GENERAL INFORMATION

f. **DEMOGRAPHIC INFORMATION**

3. **Gender: (male/female)** ☐

4. **Race :(African/Hispanic/Caucasian/Asian)** ☐☐☐☐

g. **TYPE, AREA AND SEVERITY**

4. **Type of stroke? (Right side/left side/both sides)** ☐☐☐

5. **Location or area of the brain affected? (Right/left)** ☐☐

6. **Grading of the stroke? (Total/partial weakness)** ☐☐

h. **IMPAIRMENT**

Was there any of the following:

4. **Paralysis? (Which side? Which limbs were affected?)Right** ☐ **Left** ☐

5. **Speech impediment? Yes** ☐ **No** ☐

6. **Walking impediments Yes** ☐ **No** ☐

i. **POSTSTROKE MANAGEMENT**

Which of the following was required?

7. **Hospitalization (which level and how long?)----------**

8. **Which of the rehabilitation services were provided? ----------**

9. **Speech, Physio, OT, Psychiatric, home-based care, others.☐☐☐☐☐☐**

10. **At what intensity and frequency (how many times weekly/daily and how long?)----------**

11. **Improvement with treatment. {Good//moderate/poor}☐☐☐**

12. **Co morbid diagnoses (hypertension, diabetes, renal impairment/failure etc.)----------**

j. **NATURE OF EMPLOYMENT**

15. **Is your employment temporary, casual, contract or permanent? ☐☐☐☐**

16. **Period off from work:----------**

17. **Remuneration during time off:----------**

18. **Are you required to return to work or are you ready to return? Yes ☐ No ☐**

19. **Is there any policy for disability in your workplace? Yes☐ No ☐**

20. **Are you on any health insurance policy? Yes ☐ No☐**

21. **My current position can be classified as Administrative, technical etc.----------**

22. **General work hours are:----------**

23. **Does Work include shifts? Yes ☐ No ☐**

24. **Does work include travel? Yes☐o ☐**

25. **Is work desk bound or office bound? ----------**

26. **Level of verbal communication required: [I must speak fluently/I must not speak fluently] ☐☐**

27. **Level of written communication required :(I must write legibly/I must not write legibly)**

28. **Level of interaction with colleagues, other departments, external agencies etc. {I need to communicate with people: Daily/once a week/once a month} ☐☐☐**

SECTION B

Domain 1: PERSONAL

Sub-domains:

1.1. Instrumental activities of daily living

Activities of daily living	Unable to =1	With assistance =2	Independently =3
12. **I can bathe myself**			
13. **I can groom myself (shave or put on make-up)**			
14. **I can dress myself**			
15. **I can feed myself**			
16. **I can use the bathroom**			
17. **I can exercise bowel control**			
18. **I can exercise bladder control**			
19. **I can work unaided**			
20. **I can use public transport**			
21. **I can drive myself**			
22. **I can travel from home to required destination**			

1.2. Cognition

Do you display the following behaviours and feelings?	Always[1]	Frequently [2]	Rarely [3]	Not at all [4]
11. **Loss of interest in activities**				
12. **Difficulty in remembering events**				
13. **Difficulty in remembering people**				

14. **Difficulty in articulating words**				
15. **Talking excessively**				
16. **Restless and agitated**				
17. **Difficulty in remembering places**				
18. **Becoming sad, depressed and unnecessarily emotional**				
19. **Becoming anxious and worried**				
20. **Becoming angry**				

1.3. Communication

To what extent do you agree or disagree with the following	**Unable to=1**	**With assistance= 2**	**Independently=3**
4. **I can follow discussions**			
5. **I can articulate (express) my thoughts clearly to others** 6. **I can interact with others without difficulty**			

1.4. Coping at place of work

	Unable to=1	**With assistance= 2**	**Independently=3**
8. **I can work with instruments in my formal work station**			
9. **I can feel objects when handling them**			
10. **I can do my normal duties**			
11. **I can work at full capacity**			
12. **I can withstand the pressure and stress of my formal duties**			

13. **I can withstand the rational challenges of my job**			
14. **I can withstand the expressive challenges of my formal duties**			

1.5. Motivation to return to work

My motivations for returning to work are	**Sure=1**	**Unsure= 2**	**Never thought about it=3**
12. **Fear of impact on career development**			
13. **Fear of loss of employment**			
14. **Financial**			
15. **Social isolation**			
16. **Negative impact of absence on work**			
17. **Negative impact of absence on perceptions of others**			
18. **Negative impact of absence on my mood**			
19. **Improved physical health**			
20. **Improved participation**			
21. **Improved ability to function independently**			
22. **Concerns about being perceived as disabled**			

If you have any additional comments about personal issues, please write them in here

Domain 2: WORK

Sub-domains:

2.1. Employees motivation

Do you agree or disagree with the following statements.	**Never thought about it=1**	**Unsure= 2**	**Sure=3**
9. **I am recognised by my employer as important at work irrespective of my disability.**			
10. **There are opportunities for personal growth at work irrespective of my disability.**			
11. **I will get promoted as at when due irrespective of my disability.**			
12. **I feel in control and empowered as I discharge my duties irrespective of my disability.**			
13. **I feel secure about my job and position irrespective of my disability.**			
14. **I am happy with my work and I enjoy doing it irrespective of my disability.**			
15. **I achieve my set goals at work irrespective of my disability.**			
16. **I have the opportunity to organise my approach to work irrespective of my disability.**			

2.2. Reasonable accommodation

Do you agree or disagree with these statements	**Never thought about it=1**	**Unsure=2**	**Sure=3**
8. **I don't need modifications to the staircase**			
9. **I don't need an elevator to ascend to my office**			
10. **I don't need access to a bathroom close to my office**			
11. **I don't need a change of job description**			
12. **I don't need a shift of duty to enable me to cope**			

13. **I can work normal hours despite my disability**			
14. **I can comfortably work from home and still meet my quota**			

2.3. Employers motivation

Do you agree or disagree with these statements	**Never thought about it =1**	**Unsure=2**	**Sure=3**
9. **My employer will retain me irrespective of my disability if I return to work**			
10. **My employer will transfer me to another unit if I cannot perform my formal duties**			
11. **My employer will not sack me if I cannot perform my formal duties**			
12. **My employer takes cordial relationship with colleagues seriously**			
13. **My employer does not prioritise cosmetics and physical appearance**			
14. **My employer is willing to give less duties if I cannot perform my previous duties**			
15. **My employers is emphatic and sympathetic with me due to my disability**			
16. **My employer does not think less of me because of my disability.**			

If you have any additional comments about the system and policies of your work place, please write them in here

Domain 3: Contextual factors

Sub-domains:

3.1. Social support

Do you agree or disagree with these statements	Definitely disagree	Mostly disagree	Neither agree nor disagree	Mostly agree	Definitely agree
9. It's really easy for me to talk about my problems with my family and friends					
10. My spouse and children are really very supportive during difficult times					
11. My family and extended family assist me when making difficult decisions					
12. Sharing my pains and joy with my spouse and children gives me comfort and relieve					
13. Sharing my pains and joys with my co-workers, friends, neighbours brings relieve to me.					
14. I get moral and emotional help from my spouse and children					
15. I get help from my family and friends when making important decisions that affecting my work and health.					
16. I get enough assistance from people around me whenever I need help.					

3.2. Local transport

Do you agree or disagree with the following statement	Definitely	Mostly disagree	Neither agree	Mostly agree	Definitely agree

	disagree		**nor disagree**		
5. **I don't need anyone to accompany me when going outdoor because of my disability**					
6. **My condition allows me to board, ride or disembark from a public mode of transportation(cars,bus,train)**					
7. **I can drive a motorcycle or car to work without assistance.**					
8. **My condition does not prevent me from travelling to my work or to disembark at my destination.**					

3.3. Attitudes of communities

Do you agree or disagree with the following statement	**Definitely disagree**	**Mostly disagree**	**Neither agree nor disagree**	**Mostly agree**	**Definitely agree**
8. **I wouldn't be asked to stay away from work, religious and social groups**					
9. **I wouldn't be avoided by the community members because of my condition.**					
10. **My condition doesn't make people to despise me and think less of me.**					
11. **My condition doesn't causes me shame and embarrassments in my community.**					
12. **People don't avoid me because of my condition.**					
13. **Returning to work and getting a new job is not difficult.**					

14. **My neighbours, friends colleague and others show love for me despite my condition**					
If you have any additional comments about contextual factors, please write them in here					

Scoring of Domain: Return-to-work Assessment Scale

Domain 1 contains five sub-domains:

Domain 1.1 – Instrumental activities of daily living

Domain 1.2 – cognition and psychosocial factors

Domain 1.3 – communication

Domain 1.4 – coping at place of work

Domain 1.5 – Motivation to return to work.

Domain 2 contains three sub-domains:

2.1 – Employees motivation

2.2 – Reasonable accommodation

2.3 – Employers motivation.

Domain 3 deals with contextual factors, and contains three sub-domains:

3.1 – Social support

3.2 – Local transport

3.3 – Attitude of communities

RAS (Scoring)

Domain 1

0-53 Poor not ready to return

54-106 moderately ready to return

107-140 Independent and ready to return

Domain 2

0-22	Poorly able to cope
23-46	moderately able to cope
47-93	Able to cope at work place

Domain 3

0-19	Poorly supportive
20-38	mildly supportive
39-57	Moderately Supportive
58-95	Contextual factors supportive

APPENDIX 2: UWC Senate Research Committee approval letter

UNIVERSITY of the
WESTERN CAPE

OFFICE OF THE DEAN
DEPARTMENT OF RESEARCH DEVELOPMENT

26 May 2015

To Whom It May Concern

I hereby certify that the Senate Research Committee of the University of the Western Cape approved the methodology and ethics of the following research project by:
Dr PO Ibikunle (Physiotherapy)

Research Project:	The development of an instrument to assess return to work amongst post stroke survivors.
Registration no:	15/3/20

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

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

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

Private Bag X17, Bellville 7535, South Africa
T: +27 21 959 2988/2948 . F: +27 21 959 3170
E: pjosias@uwc.ac.za
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APPENDIX 3: FHST Ethical Review Committee letter of approval

FACULTY OF HEALTH SCIENCES AND TECHNOLOGY
COLLEGE OF HEALTH SCIENCES
NNAMDI AZIKIWE UNIVERSITY, NNEWI CAMPUS
P.M.B 5001, NNEWI, ANAMBRA STATE-NIGERIA

OFFICE OF THE DEAN

Our Ref: ERC/FHST/NAU/2018/028 *Your Ref:* *Date:* 15th February, 2018

Dr. P. O. Ibikunle
Department of Medical Rehabilitation,
Faculty of Health Science and Technology,
Nnamdi Azikiwe University,
Nnewi Campus,
Nnewi

Dear Dr. Ibikunle,

RE: THE DEVELOPMENT OF AN INSTRUMENT TO ASSESS RETURN TO WORK AMONG POST-STROKE SURVIVORS

We write to inform you that after due consideration of your research proposal titled: **The Development of an Instrument to Assess Return to Work Among Post-Stroke Survivors,** approval is hereby conveyed for you to commence the study.

Best wishes in your research endeavour.

Thank you.

Yours Sincerely,

Dr. J. O. Umunnah
Chairman, FHST Ethical Review Committee

APPENDIX 4: Interview guide

Group A: (Post-stroke survivors) - Yellow Flags

1. What are/were your thoughts about returning to work after your stroke?

2. What feelings are/were evoked for you about returning to work post stroke?

3. Why did you want to return to work?

4. What difficulties do/did you anticipate facing when you return to work?

5. Have you returned to work? (At what level and in which form? How did you transition back into the work environment?)

6. Were there any infrastructural or formal attempts / process initiated by your employer to assist your returning to work? Tell us about that.

7. What did you find useful? What areas for improvement were there?

8. What areas or issues do you consider must important for employers and survivors to consider when returning to work post stroke (Personal demographics, mobility, participation, function, clinical issues).

Group B: Rehabilitation Specialists- Blue Flags

1. What are the pre requisites for returning to work post stroke? How would you go about a work assessment for a stroke survivor to return to work? What factors would you deem important from rehabilitation point of view?

2. Can you identify barriers to safe return to work post stroke?

3. Can you identify facilitators to safe return to work?

4. How would you formulate the inhibitors of safe return to work post stroke?

5. Do you use any specific instruments in your assessment? Identify strengths and areas of modifications.

6. If there were an instrument that assessed return to work for post stroke survivors which domain/ focus areas do you think should be included?

Group C: (Employers of Labour)

1. What has your experience been in the employees who are survivors of stroke?

2. How did you participate in the decision making around their return to work?

3. From a human resource point of view, how does your company determine suitability for return to work after stroke?

4. What is your company's view or policy regarding disability?

5. How do you go about accommodating such employees?

6. Do you have any returning policy for returning to work after disability?

7. How do your policies affect safe return to work after sickness that leads to disability?

8. If there were an instrument that assessed return to work for stroke survivors which domain focus areas do you think should be undivided?

9. Are there modifications on instruments to enhance safe return to work after sickness that leads to disability?

APPENDIX 5: Information sheet (Caregiver of stroke patients)

Project Title: Development of an instrument to assess return to work among post-stroke survivors

What is this study about?

This is a research project being conducted by Peter Ibikunle at the University of the Western Cape. We are inviting you to participate in this research project because you are a caregiver of an individual who has experienced a stroke and was employed at the time. The purpose of this research project is to develop an outcome measure for assessing return to work in post stroke survivors to assist with the assessment of the ability of these individuals to return to work.

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

You will be asked to participate in a focus group discussion and to also fill a self-report questionnaire. In the focus group you will be asked to provide your views on return to work. The focus group will occur at a time and place that is convenient to participants of the focus group. The focus group could last about one hour

Would my participation in this study be kept confidential?

Your personal information will be kept confidential. To help protect your confidentiality, no participant will be named during the focus group discussion. Tape recorded information will kept in locked filling cabinets and only the researcher will have access to these. These tape recordings will be destroyed as soon as the data has been analyzed for the purposes of this study. In addition no names will be included during the analysis of the interview. If we write a report or article about this research project, your identity will be protected. In accordance with legal requirements and/or professional standards, we will disclose to the appropriate individuals and/or authorities information that comes to our attention concerning neglect or potential harm to you or others.

In accordance with legal requirements and/or professional standards, we will disclose to the appropriate individuals and/or authorities information that comes to our attention concerning neglect or potential harm to you or others.

What are the risks of this research?

There may be some risks from participating in this research study. If your participation in this research project may cause any emotional or psychological difficulties we will refer to an appropriate healthcare professional at the health centre where you are receiving your rehabilitation.

What are the benefits of this research?

This research is not designed to help you personally, but the results may help the investigator learn more about return to work in stroke survivors. We hope that, in the future, other people might benefit from this study through improved understanding of the factors influencing return to work in post stroke patients and also assist healthcare professionals with the assessment of return to work in a developing country.

Do I have to be in this research and may I stop participating at any time?
Your participation in this research is completely voluntary. You may choose not to take part at all. If you decide to participate in this research, you may stop participating at any time. If you decide not to participate in this study or if you stop participating at any time, you will not be penalized or lose any benefits to which you otherwise qualify. This means that the person you are caring for will be able to continue receiving rehabilitation at the hospital without prejudices.

Is any assistance available if I am negatively affected by participating in this study?
If you are negatively affected by participating in this study assistance such as counseling and referral for care will be organized by a healthcare professional.

What if I have questions?

This research is being conducted by Peter Olanrewaju Ibikunle from the Department of Physiotherapy at the University of the Western Cape. If you have any questions about the research study itself, please contact Peter Olanrewaju Ibikunle, Department of Medical rehabilitation, Unizik, Anambra Nigeria +2348033362243 email; po.ibikunle@unizik.edu.ng
Should you have any questions regarding this study and your rights as a research participant or if you wish to report any problems you have experienced related to the study, please contact:

Head of Department:
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APPENDIX 6: Information sheet (Employers)

Project Title: Development of an instrument to assess return to work among post-stroke survivors.

What is this study about?

This is a research project being conducted by Peter Ibikunle at the University of the Western Cape. We are inviting you to participate in this research project because you area employer in a specific sector of the labor market. Your involvement in the study would be useful as it would assist in providing what is expected from employees in your employ. The purpose of this research project is to develop an outcome measure for assessing return to work in post stroke survivors to assist with the assessment of the ability of these individuals to return to work.

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

You will be asked to agree to be engaging in a semi-structured interview. In these interviews you will be asked about your views on what is required from persons with disabilities in the work place. Your views and perceptions about return to work for these individuals will also be explored.

Would my participation in this study be kept confidential?

Your personal information will be kept confidential. To help protect your confidentiality, no participant will be named during the interview. Tape recorded information will kept in locked filling cabinets and only the researcher will have access to these. In addition no names will be included during the analysis of the interview. These tape recordings will be destroyed as soon as the data has been analyzed for the purposes of this study. If we write a report or article about this research project, your identity will be protected. In accordance with legal requirements and/or professional standards, we will disclose to the appropriate individuals and/or authorities information that comes to our attention concerning neglect or potential harm to you or others.

In accordance with legal requirements and/or professional standards, we will disclose to the appropriate individuals and/or authorities information that comes to our attention concerning neglect or potential harm to you or others.

What are the risks of this research?

There may be some risks from participating in this research study. The risk may involve disclosure of information about return to work of stroke patients. The risk will be taken care of via complete confidentiality of the information gathered.

What are the benefits of this research?

This research is not designed to help you personally, but the results may help the investigator learn more about return to work in stroke survivors. We hope that, in the future, other people might benefit from this study through improved understanding of the factors influencing return to work in post stroke patients and also assist healthcare professionals with the assessment of return to work in a developing country.

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

Your participation in this research is completely voluntary. You may choose not to take part at all. If you decide to participate in this research, you may stop participating at any time. If you decide not to participate in this study or if you stop participating at any time, you will not be penalized or lose any benefits to which you otherwise qualify.

Is any assistance available if I am negatively affected by participating in this study?

If you are negatively affected by participating in this study assistance such as counseling and referral for care will be organized by a healthcare professional at the hospital you are attending.

What if I have questions?

This research is being conducted by Peter Ibikunle Olanrewaju from the Department of Physiotherapy at the University of the Western Cape. If you have any questions about the research study itself, please contact Peter Ibikunle Olanrewaju, , Department of Medical rehabilitation, Unizik,Anambra Nigeria +2348033362243 email; po.ibikunle@unizik.edu.ng Should you have any questions regarding this study and your rights as a research participant or if you wish to report any problems you have experienced related to the study, please contact:

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APPENDIX 7: Information sheet (Stroke patients)

Project Title: Development of an instrument to assess return to work among post-stroke survivors.

What is this study about?

This is a research project being conducted by Peter Ibikunle at the University of the Western Cape. We are inviting you to participate in this research project because you are an individual who has experienced a stroke and was employed at the time. The purpose of this research project is to develop an outcome measure for assessing return to work in post stroke survivors to assist with the assessment of the ability of these individuals to return to work.

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

You will be asked to participate in a focus group discussion and to also fill a self-report questionnaire In the focus group you will be asked to provide your views on return to work. The focus group will occur at a time and place that is convenient to participants of the focus group. The focus group could last about one hour. You could also be asked to complete a questionnaire about return to work. These questionnaires will be distributed when you are at visiting the rehabilitation centre for your treatment. The questionnaire will ask about aspects that could assist return to work post stroke.

Would my participation in this study be kept confidential?

Your personal information will be kept confidential. To help protect your confidentiality, no participant will be named during the process of filling in the questionnaire
To maintain the confidentiality of the data, the researcher will have locked filing cabinets and storage areas, will use identification codes only on data forms, and use password-protected computer files. The survey will be anonymous and will not contain information that may personally identify you. The following, if applicable (1) your name will not be included on the surveys and other collected data; (2) a code will be placed on the survey and other collected data; (3) through the use of an identification key, the researcher will be able to link your survey to your identity; and (4) only the researcher will have access to the identification key. In addition no names will be included during the analysis of the focus group data. If we write a report or article about this research project, your identity will be protected. Tape

recordings will be destroyed as soon as the data has been analyzed for the purposes of this study.

In accordance with legal requirements and/or professional standards, we will disclose to the appropriate individuals and/or authorities information that comes to our attention concerning neglect or potential harm to you or others.

What are the risks of this research?

There may be some risks from participating in this research study. If your participation in this research project may cause any emotional or psychological difficulties we will refer to an appropriate healthcare professional at the health centre where you are receiving your rehabilitation.

What are the benefits of this research?

This research is not designed to help you personally, but the results may help the investigator learn more about return to work in stroke survivors. We hope that, in the future, other people might benefit from this study through improved understanding of the factors influencing return to work in post stroke patients and also assist healthcare professionals with the assessment of return to work in a developing country.

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

Your participation in this research is completely voluntary. You may choose not to take part at all. If you decide to participate in this research, you may stop participating at any time. If you decide not to participate in this study or if you stop participating at any time, you will not be penalized or lose any benefits to which you otherwise qualify. This means that you will be able to continue receiving rehabilitation at the hospital without prejudices.

Is any assistance available if I am negatively affected by participating in this study?

If you are negatively affected by participating in this study assistance such as counselling and referral for care will be organized by a healthcare professional at the hospital you are attending.

What if I have questions?

This research is being conducted by Peter Ibikunle Olanrewaju from the Department of Physiotherapy at the University of the Western Cape. If you have any questions about the research study itself, please contact Peter Ibikunle Olanrewaju, , Department of Medical rehabilitation, unizik, Anambra Nigeria +2348033362243 email; po.ibikunle@unizik.edu.ng Should you have any questions regarding this study and your rights as a research participant or if you wish to report any problems you have experienced related to the study, please contact:

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APPENDIX 8: Information sheet: (Rehabilitation Professionals)

Project Title: Development of an outcome measure to assess return to work for post-stroke survivors: A multi-perspective study

What is this study about?

This is a research project being conducted by Peter Ibikunle at the University of the Western Cape. We are inviting you to participate in this research project because you are rehabilitation professional. The purpose of this research project is to develop an outcome measure for assessing return to work in post stroke survivors to assist with the assessment of the ability of these individuals to return to work.

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

You will be asked to participate in a semi-structured to provide your views on return to work of individuals who experienced a stroke. The interview could last about one hour. You could also be asked to complete a questionnaire about return to work. The interview will be conducted at a place and time that is convenient to you.

Would my participation in this study be kept confidential?

Your personal information will be kept confidential. To help protect your confidentiality, no participant will be named during the interview. Tape recorded information will kept in locked filling cabinets and only the researcher will have access to these. These tape recordings will be destroyed as soon as the data has been analyzed for the purposes of this study. In addition no names will be included during the analysis of the interview. If we write a report or article about this research project, your identity will be protected. In accordance with legal requirements and/or professional standards, we will disclose to the appropriate individuals and/or authorities information that comes to our attention concerning neglect or potential harm to you or others.

What are the risks of this research?

There may be some risks from participating in this research study. The risk may involve disclosure of information about return to work of stroke patients. The risk will be taken care of via complete confidentiality of the information gathered.

What are the benefits of this research?

This research is not designed to help you personally, but the results may help the investigator learn more about return to work in stroke survivors. We hope that, in the future, that as healthcare professionals we will have a better understanding of return to work of stroke patients and have an improved understanding of the factors influencing return to work in post stroke patients and also assist healthcare professionals with the assessment of return to work in a developing country.

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

Your participation in this research is completely voluntary. You may choose not to take part at all. If you decide to participate in this research, you may stop participating at any time. If you decide not to participate in this study or if you stop participating at any time, you will not be penalized or lose any benefits to which you otherwise qualify. This means that this will not affect your employment status as rehabilitation professional.

Is any assistance available if I am negatively affected by participating in this study?

If you are negatively affected by participating in this study assistance you would be referred to an appropriate healthcare professional.

What if I have questions?

This research is being conducted by PeterOlanrewaju Ibikunle from the Department of Physiotherapy at the University of the Western Cape. If you have any questions about the research study itself, please contact Peter Olanrewaju Ibikunle, Department of Medical rehabilitation,Unizik, Anambra Nigeria +2348033362243 email; po.ibikunle@unizik.edu.ng
Should you have any questions regarding this study and your rights as a research participant or if you wish to report any problems you have experienced related to the study, please contact:

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Or

Dean of the Faculty of Community and Health Sciences:
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University of the Western Cape
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Bellville 7535

APPENDIX 9: Consent form

Project Title: Development of an outcome measure to assess return to work for post-stroke survivors: A multi-perspective study

The study has been described to me in 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. I agree to be audio-taped during my participation in the study. I also agree not to disclose any information that was discussed during the group discussion.

This research project involves making audiotapes of you.

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

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

Participant's name……..

Participant's signature……

Date……

Should you have any questions regarding this study or wish to report any problems you have experienced related to the study, please contact the study supervisor:

Study Coordinator's Name: Prof. A. Rhoda
University of the Western Cape
Private Bag X17, Bellville 7535
Telephone: (021)959-2543
Cell: 0827757748
Fax: (021)959-1217
Email: arhoda@uwc.ac.za

APPENDIX 10: In-depth interview confidentiality binding form

Project Title: Development of an outcome measure to assess return to work for post-stroke survivors: A multi-perspective study

The study has been described to me 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. I agree to be audio-taped during my participation in the study. I also agree not to disclose any information that was discussed during the group discussion.

Participant's name……..

Participant's signature……..

Date……

APPENDIX 11: Summary of local and international literature review

No.	Author &Date	Title	Country	Research Design	Aims objectives	Population	Methodology	Result
1.	Treger et al. (2007)	Return-to-work in stroke patients	United Kingdom	Review of Literature	To present the current state of knowledge regarding return-to-work (RTW) following stroke	Research articles	Literature review	It was concluded that RTW in stroke patients should be considered one of the indicators of a successful rehabilitation as it influences self-image, well-being and life satisfaction. There is still a considerable lack of knowledge regarding effective assessments and interventions in vocational rehabilitation in stroke patients.
2.	Busch (2009)	Socio-demographic differences in return to work after stroke: the South London Stroke Register (SLSR)	United kingdom	Cross sectional survey	To investigate the frequency and determinants of return to paid work after stroke in a multi-ethnic urban population	2874 patients	Patterns of return to work were examined among people with first ever stroke registered in the population based South London Stroke Register. Employment status and functional outcome (Barthel Index (BI),	Among 2874 patients with first ever strokes in 1995–2004, 400 (15%) were working before the stroke. At 1 year, 94 (35%) of 266 survivors had returned to paid work. Black ethnicity (OR 0.41; 95% CI 0.19 to 0.88), female sex (0.43; 0.21 to 0.91), older age (p<0.001), diabetes (0.25; 0.08 to 0.79) and dependence (BI 19) in the acute phase (0.24; 0.11 to 0.49) were independently

							Frenchay Activity Index (FAI)) were assessed 1 year after stroke. Associations between baseline characteristics and return to paid work were analysed by multivariable logistic regression analysis.	associated with lower odds of return to work in multivariable analysis. Better functional outcome at 1 year was associated with return to paid work (p<0.001) but 53% of 161 independent (BI >19) and 39% of 96 very active (FAI >30/45) individuals had not resumed work.
3.	Kreutzer et al. (2003)	Moderating factors in return-to-work and job stability, after traumatic brain injury (TBI).	Multi-centre analysis of individuals with traumatic brain injury (TBI) who returned for follow-up at 1, 2, and 3, or 4 years post injury, who were of working age (between 18 and 62 years of age at	Cross-sectional survey		186 adults with TBI.	Multi-centre analysis of individuals with traumatic brain injury (TBI) who returned for follow-up at 1, 2, and 3, or 4 years post injury.	Data analysis provided evidence that employment stability is predictable with a combination of functional, demographic, and injury severity variables. Identification of people at risk for poor employment outcomes early on can facilitate rehabilitation planning and intervention.

			injury), and were working preinjury. Six National Institute on Disability and Rehabilitation Research TBI Model System centres for coordinated acute and rehabilitation cares were involved.					
4.	Vleset al. (2005)	Prevalence and determinants of disabilities and return to work after major trauma	Netherlands	Cross-sectional survey	Assessed the prevalence and determinants of disabilities and return to work after severe injury in a Dutch, Level I trauma centre	295 patients with an Injury Severity Score ≥ 16.	All survivors received a mailed questionnaire in 2000, at least 1 year after their initial hospital admission. Health status was measured by the EuroQol-5D instrument, and the Glasgow Outcome Scale. Additional	The EuroQol-5D summary score (0.76) was far below that of the general population norms. The number of body areas affected, injury severity (Injury Severity Score ≥ 25), and gender (female) were significant independent predictors of worse long-term functional outcome. Severe trauma has a substantial impact on long-term functioning. Empiric quantitative data,

							questions were asked about cognitive functioning and return-to-work rates.	as presented in this study, enabled the estimation of the burden of injury and the evaluation of the quality of trauma care programs.
5.	Velzen et al. (2008)	How many people return to work after acquired brain injury?		Systematic review	To investigate the differences in outcome between traumatic and non-traumatic causes, the development of RTW over time and whether or not people return to their former job	49 studies were included. Within 2 years post-injury.	A systematic literature search (1992–2008) was performed using terms of ABI and RTW. The methodological quality of the studies was determined. An overall estimation of percentage RTW 1 and 2 years post-injury was calculated by data pooling.	Among people with traumatic ABI, 40.7% returned to work after 1 year and 40.8% after 2 years. No effect of cause or time since injury was found. Some people with traumatic ABI who returned to work were not able to sustain their job over time. Changes of occupation and job demands are common among people with ABI. About 40% of the people with traumatic or non-traumatic ABI are able to return to work after 1 or 2 years. Among those with acquired traumatic brain injury a substantial proportion of the subjects were either not able to return to their former work or unable to return permanently.
6.	Wolfenden et al., (2009)	Returning to work after stroke: a review		Systematic review	The authors' aim is to present a practice-oriented		Focused on the experiences and rehabilitation needs of working	Returning to work and sustaining employment are considered key aspects of rehabilitation and recovery by

					review that can provide informati on for future practice and research		age, higher functioning stroke survivors in relation to their 'return to work'	younger stroke survivors. From a psychosocial perspective, successful return to work can enhance recovery and life satisfaction by consolidating self-esteem, confidence and social identity. However, even higher functioning stroke survivors with minimal or no obvious physical disability may experience workplace challenges relating to their neurological condition. Appropriate rehabilitation would include specific preparation for return to work, education within the workplace to facilitate return to work, participation by the stroke survivor in all aspects of the management of their return to work, and an on-going role for a stroke educator/workplac e advocate. In conclusion, further research is required in this area to support stroke survivors in returning to and maintaining employment to achieve their post stroke potential. Thirteen recommendations

								arising from the existing literature and the lived experience of one of the authors are presented at the end of the review.
7	Alaszewski et al. (2007)	Working after a stroke: Survivors' experiences and perceptions of barriers to and facilitators of the return to paid employment	United Kingdom	Qualitative research	Examined respondents' relationship with work following a stroke and explores their experiences including the perceived barriers to and facilitators of a return to employment	43 individuals under 60 years who had survived a stroke.	Participants, who had experienced a first stroke less than three months before and who could engage in in-depth interviews, were recruited through three stroke services in South East England. Each participant was invited to take part in four interviews over an 18-month period and to complete a diary for one week each month during this period.	Participants in their study viewed return to work as an important indicator of recovery following a stroke. Individuals who had not returned to work felt that paid employment was desirable but they could not overcome the barriers. Individuals who returned to work recognized the barriers but had found ways of managing them.
8	Medin et al.(2009)	Stroke patients' experiences of return to work		Qualitative research design	Six patients who had their first ever stroke in 2001,	6 Post stroke survivors	Information was obtained via an open-ended interview.	Rehabilitation was perceived as primarily aimed at restoring bodily functions and a return to everyday activities, rather

					were <65 years of age and were working at the time of their stroke were included.		The material was transcribed verbatim and analysed using Giorgi's empirical phenomenology.	than at promoting a return to work. It was not experienced as adapted to the participants' needs or their age. The workplace was experienced as very important in the rehabilitation process. When the informants experienced that the rehabilitation professionals were not taking action, they took control of the situation themselves. The informants expressed pride in their own capacity to take the initiative and in their ability to take action. Both self-employed and employed informants said they had possibilities and opportunities to take action since their work situation were flexible. The informants' adaptation to a new role at work was perceived as facilitated by the understanding and positive attitude of co-workers.Among this group of stroke patients, the individual patient's capacity and ability to return to work was enhanced by motivation or “will” and self-efficacy in combination with external support. Self-efficacy was

								not only a personal trait or internal factor; it was enhanced and encouraged in interaction with contextual conditions. There are similarities between the RTW process and processes of health promotion.
9	Locket al. (2005)	Work after stroke: focusing on barriers and enablers	United Kingdom	Qualitative research design	Explore stroke survivors' own perspectives about what helps and hinders paid or voluntary work after stroke.	Five focus group discussions were held with 37 stroke survivors and 12 of their supporters	Used an inclusive, qualitative methodology (focus groups) to begin to explore stroke survivors' own perspectives about what helps and hinders paid or voluntary work after stroke.	Factors representing barriers to or enablers of work were identified in four key themes: rehabilitation process, employer agency, social structural and personal. The study found evidence of social oppression via infrastructure, institutional structures and practices, and some individuals' attitudes. Alongside this, some supportive individuals, practices and strategies were identified.
10	Shames et al. (2009)	Return to work following traumatic brain injury: Trends and challenges	United Kingdom	Literature review	The authors reviewed the current TBI rehabilitation literature regarding (a) predictive factors			A significant proportion of TBI patients, including those who are severely injured, are able to return to productive employment if sufficient and appropriate effort is invested. A comprehensive approach –

					for successful RTW, and (b) current concepts in rehabilitative strategies for successful RTW.			medical and psychosocial – eventually entailing adequate vocational rehabilitation with supported employment can improve outcomes.
11	Kauranen et al. (2013)	The severity of cognitive deficits predicts return to work after a first-ever ischemic stroke	United Kingdom	Cross-sectional survey	Studied whether the initial cognitive severity of stroke, compared with other influential factors, predicts the inability to return to work after stroke.	140 patients	Consecutive patients aged 18 - 65 with a first-ever ischaemic stroke, working full time previously, were assessed Neuro psychologically within the first weeks after stroke and at the 6-month follow-up. Similarly, 50 healthy demographic controls were assessed twice. The cognitive severity of stroke was operationalised as the number of initial cognitive deficits.	The mean age of the 140 patients assessed both initially and at follow-up was 52 years. They had a mean of 13 years of education and 59% were men. At 6 months, only 41% of the patients had returned to work despite the relatively minor neurological and functional impairments of the cohort. In their model, the number of early cognitive deficits (OR=2.252, CI 1.294 to 3.918) was the only significant predictor of the inability to return to work. The initial cognitive severity of stroke predicts the later inability to return to work. The benefits of neuropsychological assessments within the first weeks after stroke are emphasised

							Cognitive severity as a predictor of the inability to return to work was compared with demographic, occupational, neurological, radiological and functional data, vascular risk factors and mood state.	
12.	Harnnez et al.(2011)	A nationwide prospective cohort study on return to gainful occupation after stroke in Denmark 1996 - 2006	Denmark	Retrospective study	estimated the effect of various predictors on the odds of returning to work after stroke in the total population of 20-57-year-old previously employed hospital treated patients with stroke in Denmark 1996 - 2006 (N=19 985).	19 985 patients.	The patients were followed through national registers; 62% were gainfully occupied 2 years after stroke.	The odds of returning to work were higher among people with intracerebral infarction, OR 1.0 (the reference group), than they were among people with subarachnoid haemorrhage, OR 0.79 (95% CI 0.71 to 0.88), and intracerebral haemorrhage, OR 0.39 (0.35 to 0.43). The odds of returning to work were lower among workers in elementary occupations OR 1.0 (reference group) than they were among workers in occupations that require skills at a basic level, OR

								1.50 (1.38 to 1.64), technicians and associate professionals, OR 2.33 (2.05 to 2.65) and professionals, OR 3.04 (2.70 to 3.43). Patients in municipalities with a brain-injury rehabilitation centre did not have a better prognosis than patients in other municipalities, OR 0.91 (0.78 to 1.06). Being a woman, OR 0.79 (0.74 to 0.84), self-employed, OR 0.87 (0.78 to 0.96), or ≥50 years, OR 0.61 (0.57 to 0.65), was associated with an adverse prognosis. They reported that further research was needed to explain the gender inequality, which suggests either a potential to improve return-to-work rates among the females or a tendency among the males to return too early.
13.	Gilworth et al. (2009)	Personal experiences of returning to work following stroke: An exploratory study		Qualitative research design	Investigated the expectations and experiences of stroke survivors in relationship to return to work.	13 patients	Interviews were conducted between 3 months and 8 years post stroke in order to gain an insight into both individuals' initial	Work related sub-themes included continuing symptoms affecting plans to return to work, experiences of returning to work (including uncertainty over timing of return and fears about coping at work), changing job or career and the emotional

							expectations and their actual experiences in relation to return to work. Full thematic analysis of the interview transcripts was undertaken; findings reported focus on the data relating to work	impact of enforced retirement. Information provision, return to work support systems and potential changes in life roles are important aspects to consider when assessing the impact of stroke and managing the consequences in people of working age.
14	Wozniak et al.(2000)	Job characteristics influence return-to-work after ischemic stroke	United States of America	Prospective study	To determine job characteristics that influences return-to-work after ischemic stroke.	150 stroke patients	Conducted a prospective study of return to work in patients with first ischemic stroke, ages 24 - 64, employed full-time outside of the home immediately prior to the stroke, and discharged to home or acute rehabilitation. At 6 weeks after stroke, the patients completed standardized	Patients employed at 12 months had significantly less demanding jobs (both physically and psychologically) and less job insecurity (all $p < 0.05$) and more decision authority, more job-related social support, more job satisfaction, and fewer job hazards (no significant trends). The independent predictors from the Cox model, in order of entry, were psychological job demands, Barthel Index, job physical exertion, and job insecurity. Job characteristics were strong predictors of return to work after ischemic stroke in

							questionnaires describing job characteristics, including the Job Content Questionnaire. At 6 and 12 months after stroke, time to return to work was determined by telephone interview. Statistical methods were univariate life tables and a multivariate forward stepwise Cox regression model with Barthel Index, age, and the job characteristics as independent variables	patients with mild to moderately severe stroke. Interventions in the work environment may have potential to promote reemployment after stroke.
15	McMahon et al. (2015)	Return-to-work factors following a stroke		Retrospective studydesign	Analysed medical and demographic data of 200 inpatients and outpatients seen	Case files	Black-Schaffer and Osberg (1990) review of the literature on return-to-work	1) differing definitions of return to work; 2) patients of different ages having different results; 3) differences in rehabilitation programs; and 4) cultural factors

					by the Rehabilitation Institute of Chicago Vocational Rehabilitation Programme over a four-year-period.		after a stroke	such as availability of help from family, nature of the disability, and compensation affecting return-to-work
16.	Baldwin et al.(2015)	The effect of vocational rehabilitation on return-to-work rates post stroke: A systematic review		Systematic review. retrospective single cohort design	Determinedthe effect of vocational rehabilitation programmes on return-to-work rates post stroke. Searches were performed in electronic databases and Web-based sites.	Six studies, involving a total of 462 participants, were included in this review.	Searches were performed in electronic databases and Web-based sites. Studies were eligible for inclusion if they included an adult population of working age (18 to 65 years) who had survived a stroke and had participated in a vocational rehabilitation program. The exclusion criteria included any other type of rehabilitation that did	The rates of employment following these vocational rehabilitation programs ranged from 12% to 49%. There were not an adequate number of high-quality trials to make recommendations that support or refute the use of specific vocational rehabilitation programs to increase return-to-work rates following a stroke. Standardized terminology definitions as well as quality, randomized controlled trials are required before conclusions can be made about the effect of vocational rehabilitation programs on the return-to-work rates for stroke survivors.

							not specifically address vocation, other diagnostic groups or studies where stroke population results were not reported independently, as well as publications not translated to English. The primary outcome was return-to-work rates	
17.	Peters et al. (2012)	Determinants of return-to-work among Nigerian stroke survivors	Nigeria	Cross-sectional survey	Explored the frequency and determinants of return to work (RTW) among Nigerian stroke survivors.	101 patients	Stroke patients attending Physiotherapy clinics at seven teaching and specialist hospital centres in north-eastern Nigeria participated in the study. Socio-demographic, clinical and RTW data were obtained from participants while the	Functional outcome influenced vocational outcome, hence the need for rehabilitation efforts at improving functional status of stroke survivors to encourage return to work (RTW).The low rate of RTW within the first year after stroke may be addressed by the establishment of specialized sub-acute and long-term rehabilitation centres in Nigeria instead of depending only on existing inadequate outpatient rehabilitation

							modified Rankin Scale was used to assess functional ability.	practices.
18.	Graham et al. (2010)	Aphasia and return to work in younger stroke survivors		Qualitative research design	Reported the rate of successful return to work (RTW) for younger stroke survivors with aphasia	Nine studies were identified		The average rate of successful RTW for young survivors with aphasia was 28.4% compared to 44.7% for all young stroke survivors. Younger survivors with aphasia were less likely to RTW post stroke than those without aphasia. Strategies to reduce this disparity, such as specialised vocational rehabilitation, should be made available to this population.
19	Hartman-maeir et al. (2006)	Activities, participation and satisfaction one-year post stroke		Cross sectional survey	Evaluated the chronic consequences of stroke in terms of activity limitations, restricted participation and dissatisfaction from life, and the relationship between these variables	56 stroke patients	Stroke patients (mean age: 57.7) who completed an in-patient rehabilitation programme, were evaluated one-year post onset in their homes, using the following instruments: Functional	Stroke survivors dwelling in the community demonstrate long-standing dissatisfaction one-year post onset, correlating with activity limitation and restricted participation. The findings present a compelling need for rehabilitation services with a focus on participation in IADL and leisure activities, in order to improve the satisfaction of this

					, in stroke survivors living in the community one-year post onset		Independence Measure (FIM), Instrumental Activities of Daily Living Questionnaire (IADLq), Activity Card Sort (ACS), a work questionnaire, Life-Satisfaction Questionnaire (Li-Sat 9) and the Geriatric Depression Scale (GDS)	population.
20	Wozniaket al. (1999)	Stroke Location Is Not Associated With Return to Work After First Ischemic Stroke"		Cross sectional survey	Examined the influence of stroke location on vocational outcome in patients with clinically confirmed acute ischemic stroke from the National Institute of Neurological Disorders and Stroke	143 patients		Stroke location, sex, and depression at time of stroke were not associated with vocational outcome. Their data suggested that stroke location may be less important than other more easily measured factors in predicting vocational outcome.

					Data Bank			
21.	Doucet et al. *(*2012)	Returning to work after a stroke: A retrospective study at the Physicaland Rehabilitation Medicine Centre ‘‘La Tour de Gassies	France	Retrospective study	Studied work re-entry by patients having suffered a stroke at least 3 years previously.	56 patients	This was a retrospective survey in which a questionnaire was administered to all patients admitted after a first stroke to the ‘‘La Tour de Gassies’’ Centre for Physical and Rehabilitation Medicine (CPRM) in France between January 2005 and June 2007 and who were in work at the time of the incident	Negative prognostic factors for a return to work were living alone, the presence of severe functional impairment and the presence of speech disorders. Positive prognostic factors included specific, professional support and early involvement of the occupational physician. Patients who resumed driving were more likely to return to work and there was a positive correlation between the time to work re-entry and the time to resumption of driving. Close cooperation between occupational health services and CPRM appears to be necessary to speed the return to work by stroke patients.
22.	Daniel *et al., (*2008)	What Are the Social Consequences of Stroke for Working-Aged Adults? A Systematic Review		Systematic review.	identified the social consequences of stroke in working-aged adults, which might subsequently	Seventy-eight studies were included: 66 were quantitative observational studies, 2 were quantitative	Theyreviewed quantitative and qualitative studies identifying social consequences for working-aged adults with stroke	Seventy studies reported data on return to work after stroke with proportions ranging from 0% to 100%. Other categories of social consequences included negative impact on family relationships (5% to 54%), deterioration in

					inform the development and evaluation of services for this group	interventional studies, 9 were qualitative studies, and one used mixed methods.	using multiple search strategies (electronic databases, bibliographic references, hand searches)	sexual life (5% to 76%), economic difficulties (24% to33%), and deterioration in leisure activities (15% to 79%).Methodological variations account for the wide range of rates of return-to-work after stroke. There is limited evidence of the negative impact of stroke on other aspects of social participation. Robust estimates of the prevalence of such outcomes are required to inform the development of appropriate interventions. We propose strategies by which methodology and reporting in this field might be improved.
23	Hofgren et al. *(*2007)	Recovery after stroke: cognition, ADL function and return to work		Cross sectional survey	Examined the recovery of cognitive function, activities ofdaily living (ADL) ability and vocational situation after stroke.	Fifty-eight (58)patients participated	Cognitive function and personal and instrumental ADL were assessed at discharge and at 1 year. Pre-stroke vocational situation was recorded at baseline and at 1 and 3	During the first year after discharge, cognitive function and ADL ability improved. At 1 year after discharge, 83% still had cognitive dysfunction, 20% were dependent in ADL and few had returned to work. Only 20% returned to gainful employment 3 years later. There was a recovery of cognition and ADL function after stroke but few

							years after discharge	persons returned to work. Good neurological status was found to be a significant factor and recovery of cognitive function a near-significant factor for return-to-work.
24.	Cifu *et al.,* (1997)	Acute Predictors of Successful Return to Work one year after traumatic brain Injury: A Multicentre Analysis investigated the influence of acute injury characteristics on subsequent return to work in traumatic brain injury (TBI) patients.		Cross sectional survey	Patients were selected from a national database of 245 rehabilitationinpatients admitted to acute care within 8 hours of TBI and seen at l-year follow-up	49 TBI patients who were competitively employed at l-year follow-up and 83 unemployed patients	Return to work at l-year follow-up. Persons employed at l year follow-up obtained significantly better scores on specific acute measures of physical functioning (Admission FIM, Admission DRS, Discharge DRS), cognitive functioning (Logical Memory Delay), behavioural functioning (Admission RLAS, Discharge RLAS, NRS Excitement factor), and injury severity (Admission GCS, Highest	Persons obtaining better scores on certain acute measures (eg, Admission GCS) are more likely to return to the workforce. Future research should focus on developing a standardized tool to assess a patient's ability to return to work, as well as an operational definition for successful employment.

							GCS, Length of Coma, Length of PTA) than their unemployed counterparts. Persons obtaining better scores on certain acute measures (eg, Admission GCS) are more likely to return to the workforce.	
25.	Anderson et al. (2011)	Post-stroke fatigue and return-to-work: a 2-year follow-up		Cross sectional survey		83 first-ever stroke patients	Recruited 83 first-ever stroke patients <60 years and employed either full-time (n = 77) or part-time (n = 6) at baseline. The patients were recruited from stroke units at Aarhus University Hospital between 2003 and 2005 and were followed	Post-stroke fatigue appears to be an independent determinant of not being able to resume paid work following stroke.

							for 2 years. Fatigue was assessed by the Multidimensional Fatigue Inventory.	
26.	Saeki et al.,(2000)	"The Association between Stroke Location and Return to Work after First Stroke"		Retrospective cohort study		126 Patients		The Cox model revealed that maximum weakness (HR 3.74, normal vs. severe), apraxia (10.7, no vs. yes), and occupation (2.11, white collar vs. blue collar) were significant predictors, but stroke location was not a significant predictor. They conclude that stroke location is less important than other easily measured factors in predicting RTW.
27.	Takana et al. (2011)	Functional and occupational characteristics associated with very early return to work after stroke in Japan.	Japan	Prospective cohort study	Examine dclinical, functional, and occupational factors associated with very early return-to-work afterstroke, and to identify factors manageable through	335 patients	A Prospective cohort study of acute care of the first stroke event in 21 acute care hospitals specializing in clinical and occupational health. Consecutive patients with stroke in working age (N=335)	Patients with mild physical disability and higher cortical dysfunction found it more difficult to return to work very early compared with those without these conditions .It was discovered that patients with stroke who had mild disability at onset, were in a white collar occupation, and were employed at discharge were more likely to return to work very early, even after

					occupational arrangements, patient education, and other welfare programs.		participated in their study. Data pertaining to demographic, clinical, functional, and occupational factors were collected from hospital records	adjusting for functional levels at discharge. Cognitive rehabilitation is needed for those with mild physical disability and higher cortical dysfunction.
28.	Trygged et al., (2011)	Income and education as predictors of return to working life among younger stroke patients	Sweden	Retrospective study design	Examined whether income and education were predictors of return to work after a first stroke among persons aged 40-59.All first-stroke survivors aged 40-59 who were discharged from a hospital in 1996-2000 and who had received income from	7,081 patients	All first-stroke survivors aged 40-59 who were discharged from a hospital in 1996-2000 and who had received income from work during the year prior to the stroke were sampled from the Swedish national register of in-patient care (n = 7,081). Income and education variables were included in hazard	The study demonstrated that education and income were independent predictors of returning to work among stroke patients during the first post-stroke years. Taking the relative risk of return to work among those in the higher socioeconomic positions as the benchmark, there may be considerable room for improvementamong patients in lower socioeconomic strata.

					work during the year prior to the stroke were sampled from the Swedish national register of in-patient care (n = 7,081).		regressions, modelling the probability of returning to work from one to four years after discharge. Adjustments for age, sex, stroke subtype, and length of in-patient care were included in the models.	
29.	Morris (2010)	The psychology of stroke in young adults: the roles of service provision and return-to-work	United Kingdom	Literature review	Reviewed literature about the psychological consequences of stroke in those under 65, focusing on services and work	Literature review		Despite similarities, young and old survivors have different experiences and needs. These are attributable to the effects of stroke on age-normative roles and activities, self-image, and the young person's stage in the life-cycle, especially family and work. "Hidden" cognitive impairments, a disrupted sense of self, and the incongruity of suffering an "older person's" disease are salient. Young survivors benefit from services, but experience lack of congruence between their needs and service philosophy,method

								s, and aims, and consequently have unmet needs. Employment is psychologically salient, and the evidence about return rates, factors that affect return and the adequacy of employment-related service provision is reviewed. Specific and general recommendations are made for increasing congruence between young survivors' needs and service provision and also for facilitating their return to work.
30.	Vestling et al.(2003)	Indicators for return-to-work after stroke and theimportance of work for subjective well-being and life satisfaction		Cross sectional survey	Focused on the continuation of gainful employment after experiencing stroke, addressing factorsIndicative of readiness for return to work, subjective wellbeing and life satisfaction	120 patients.	The target group comprised 120 patients, studied by means of medical records and postal questionnaires.	A total of 41% had returned to work, although therewere changes concerning employers, assignments and working hours. Individuals who had returned to work reported a significantly higher level in subjective well-being and life satisfaction. Being able to walk meant the greatest chance of returning to work (odds ratio = 3.98) followed by white collar worker (odds ratio = 2.99) and having preserved cognitive capacity (odds ratio = 2.64).Returning to

								work after stroke is a major factor for high subjective well-being and life satisfaction. Three factors indicative of readiness for return to work were identified, providing implications for more efficient vocational rehabilitation programmes

APPENDIX 12: Return to work scale,86 items, over 3 domains, with corresponding ICF codes

Domain 1	ICF codes
1.1. Instrumental activities of daily living	
1. I can bathe myself	d510 washing oneself
2. I can groom myself (shave or apply make-up)	d520 caring for body parts
3. I can dress myself	d540 Dressing
4. I can feed myself	d550 eating
5. I can use the bathroom	d530 toileting
6. I can exercise bowel control	d530 toileting
7. I can exercise bladder control	d598 self-care other specified
8. I can walk unaided	d450 walking
9. I can use public transport	d489 moving around using transport, other specified and unspecified
10. I can drive myself	d475 driving
11. I can travel from home to required destination	d489 moving around using transport, other specified and unspecified
1.2. Cognition	
1. Loss of interest in activities	d160 focusing attention
2. Difficulty in remembering events	b144 Memory function
3. Difficulty in remembering people	b144 Memory function
4. Difficulty in articulating words	b320 Articulation function
5. Talking excessively	b330 Fluency and rhythm of speech functions
6. Restless and agitated	b167 Mental function of language
7. Difficulty in remembering places	b144 Memory function
Psychosocial factors	
8. Becoming sad, depressed &needlessly emotional	b152 Emotional function
9. Becoming anxious and worried	b164,Higher-level cognitive function,b122 global psychosocial function

10. Becoming angry	b152 emotional function,b126 temperament and personality function
11. Becoming Hostile	b126 temperament and personality function
1.3. Communication	
1. I can follow discussions	d329 communicating-receiving, other specified and unspecified
2. I can articulate(express)my thoughts clearly to others	d310 communicating with-receiving spoken messages,d330 speaking
3. I can interact with others without difficulty	d 329 communicating-receiving other specified and unspecified,d330 speaking
1.4. Coping	
1. I can work with instruments in my formal work station	d230 carrying out daily routine,d210 undertaking single task
2. I can feel objects when handling them	d298 General tasks and demands, other specified
3. I can do my normal duties	d298 General tasks and demands, other specified
4. I can work at full capacity	d220 undertaking multiple tasks
5. I can withstand the pressure and stress of my formal duties	d240 handling stress and other psychological demands
6. I can withstand the rational challenges of my job	d298 general tasks and demands, other specified,d299 general tasks and demands, other unspecified
7. I can withstand the expressive challenges of my formal duties	d298 general tasks and demands, other specified,d299 general tasks and demands, other unspecified
1.5. Motivation to return to work	
1.Fear of impact on career development	d845 Acquiring, keeping and terminating a job
2.Fear of loss of employment	d845 Acquiring ,keeping and terminating a job
3.Financial	d850 remunerative employment
4. Social isolation	
5. Negative impact of absence on work	d859 work and employment, other specified and unspecified
6. Negative impact of absence on perceptions of others	d859 work and employment other specified and unspecified

7. Negative impact of absence on my mood	d859 work and employment other specified and unspecified
8. Improved physical health	d898 Major life areas, specified
9. Improved participation	d898 Major life areas, specified
10. Improved ability to function independently	d845 Acquiring ,keeping and terminating a job
11. Concerns about being perceived as disabled	d940 Human rights
Domain 2	**ICF codes**
2.1 Employees motivation	
1. I am recognised by my employer as important at work irrespective of my disability.	d845 Acquiring ,keeping and terminating a job
2. There are opportunities for personal growth at work irrespective of my disability.	d845 Acquiring ,keeping and terminating a job
3. I will get promoted as at when due irrespective of my disability.	d845 Acquiring ,keeping and terminating a job
4. I feel in control and empowered as I discharge my duties irrespective of my disability.	d845 Acquiring ,keeping and terminating a job
5. I feel secure about my job and position irrespective of my disability.	d845 Acquiring ,keeping and terminating a job
6. I am happy with my work and I enjoy doing it irrespective of my disability.	d845 Acquiring ,keeping and terminating a job
7. I achieve my set goals at work irrespective of my disability.	d845 Acquiring ,keeping and terminating a job
8. I have the opportunity to organise my approach to work irrespective of my disability.	d845 Acquiring ,keeping and terminating a job
2.2. Reasonable accommodation	
1. I don't need a staircase	e298 natural environment and human –made changes to environment, other specified,e299 natural environment and human-made changes to environment, unspecified
2.I don't need modifications to the staircase	e298 natural environment and human –made changes to environment, other specified,e299 natural environment and human-made changes to

	environment, unspecified
3.I don't need an elevator to ascend to my office	e298 natural environment and human –made changes to environment, other specified,e299 natural environment and human-made changes to environment, unspecified
4.I don't need access to a bathroom close to my office	e298 natural environment and human –made changes to environment, other specified,e299 natural environment and human-made changes to environment, unspecified
5.I don't need a change of job description	e298 natural environment and human –made changes to environment, other specified,e299 natural environment and human-made changes to environment, unspecified
6.I don't need a shift of duty to enable me to cope	e298 natural environment and human –made changes to environment, other specified,e299 natural environment and human-made changes to environment, unspecified
7.I can only work for normal hours despite my disability	e298 natural environment and human –made changes to environment, other specified,e299 natural environment and human-made changes to environment, unspecified
8.I can comfortably work from home and still meet my quota	e298 natural environment and human –made changes to environment, other specified,e299 natural environment and human-made changes to environment, unspecified
2.3. Employers motivation	
1. My employer will retain me irrespective of my disability if I return to work	d845 Acquiring, keeping and terminating a job
2. My employer will transfer me to another unit if I cannot perform my formal duties	d845 Acquiring, keeping and terminating a job
3. My employer will not sack me if I cannot perform my formal duties	d845 Acquiring, keeping and terminating a job
4. My employer takes cordial relationship with colleagues seriously	d845 Acquiring, keeping and terminating a job
5. My employer does not prioritize cosmetics and physical appearance	d845 Acquiring, keeping and terminating a job
6. My employer is willing to give less duties if I cannot perform my	d845 Acquiring, keeping and terminating a job

previous duties	
7. My employers is emphatic and sympathetic with me due to my disability	d845 Acquiring, keeping and terminating a job
8. My employer does not think less of me because of my disability.	d845 Acquiring, keeping and terminating a job
Domain 3	**ICF codes**
3.1. Social support	
1. It's really easy for me to talk about my problems with my family and friends	e325 Acquaintances, peer colleagues, neighbours and community members
2. My spouse and children are really very supportive during difficult times	e310 immediate family
3. My family and extended family assist me when making difficult decisions	e315 extended family
4. Sharing my pains and joy with my spouse and children gives me comfort and relieve	e310 immediate family
5. Sharing my pains and joys with my co-workers, friends, neighbours brings relieve to me.	e325 Acquaintances, peer colleagues, neighbors and community members
6. I get moral and emotional help from my spouse and children	e310 immediate family
7. I get help from my family and friends when making important decisions that affects my work and health.	e315 extended family
8. I get enough assistance from people around me whenever I need help.	e325 Acquaintances, peer colleagues, neighbors and community members
3.2. Local transport	
1. I don't need someone to accompany me when going outdoor because of my disability	d489 moving around using transportation, other specified and unspecified
2. My condition allows me to board, ride or disembark from a public mode of	d470 using transportation

transportation(cars,bus,train)	
3. I can drive a motorcycle or car to work without assistance.	d475 Driving
4. My condition does not prevent me from travelling to my work or to disembark at my destination.	d469 walking and moving other specified and unspecified
3.3. Attitude of communities	
1. I would not be asked to stay away from work, religious and social groups	d930 Religion and spirituality
2. I would not be avoided by the community members because of my condition.	d998 community, social and civic life , other specified, d 999 Community ,social and civic life, unspecified
3. My condition doesn't make people to despise me and think less of me.	d940 Human rights
4. My condition doesn't causes me shame and embarrassments in my community.	d910 community life
5. People won't avoid me because of my condition.	d998 community, social and civic life , other specified, d 999 Community ,social and civic life, unspecified
6. Returning to work and getting a new job is not difficult.	d845 Acquiring, keeping and terminating a job
7. My neighbors, friends colleague and others show love to me despite my condition	e325 Acquaintances, peer colleagues, neighbors and community members

APPENDIX 13 : Steps in the C-OAR-SE procedure

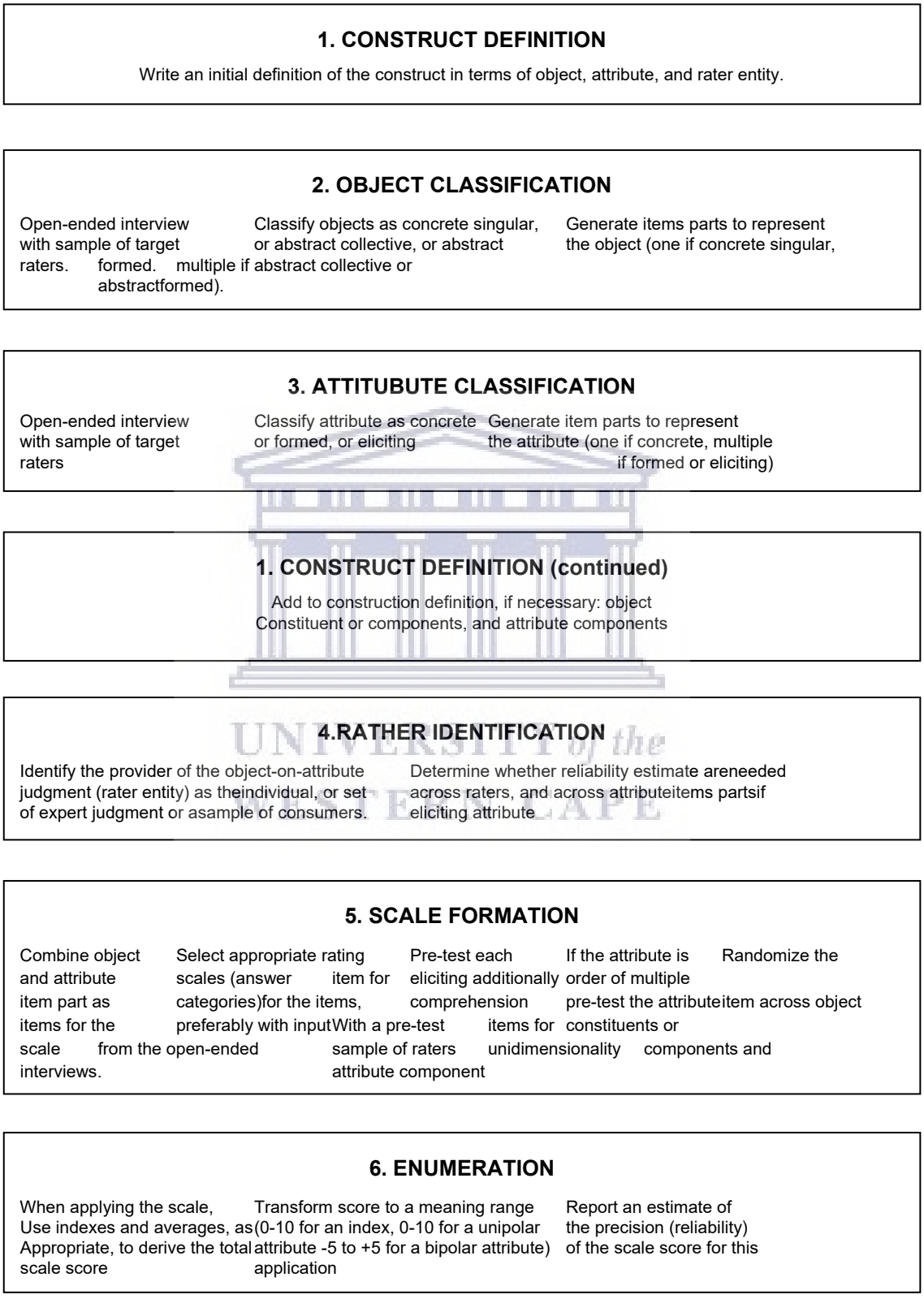
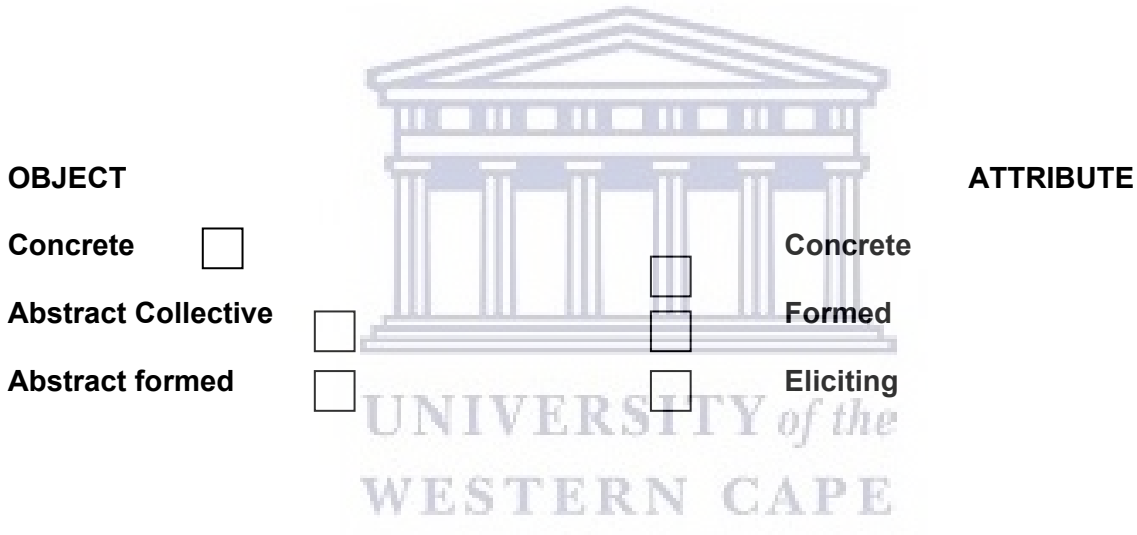


Figure 2.2: Steps in the C-OAR-SE procedure [Adapted from Rossiter (2012)]

APPENDIX 14: Object-attribute-rater entity classification



The arrow at the top indicates that the object is produced onto the attribute. The two arrows from the rater entity indicated the rater is perceiving both the object and the attribute.

Figure2.3: Object-attribute-rater entity classification [Adapted from Rossiter (2012)]

APPENDIX 14: INTERVIEWS ON RETURN TO WORK POST STROKE

GROUP A: YELLOW FLAGS
POSTSTROKE SURVIVORS.

Question 1: What were your thoughts about returning to work after your stroke?

Response 1: I thought I couldn't make it. When I started coming it was difficult task. I used to come to work with my bike but that time I couldn't lift up my leg not to talk of riding a machine. But I managed to come to the office with the difficulty of entering bus, shifting and coming out, it was really a problem but I managed it. When I enter the bus and get to the bus stop. I will stop, I was told that walking is part of the exercise and if I don't walk, I may not recover very well, so I decided to walk to the office from the bus stop. But when l am walking I will have some pressure and pains and I will stop when I feel better I start going again. When I get to work at the clinic, I am a nurse at the clinic I feel tired and work becomes difficult. People will be asking me questions and I will not be able to answer very well. When I enter and sit down, I don't know what the patients and my colleagues all be thinking of me. Whether I don't want to come to work, this disturbs me very much because I am not a lazy person or someone that play truancy. I always like to do my work to the best of my knowledge and helping my patients. So it's a challenge to me returning to work with all the risk involved in entering a bike but I managed to do it.

Response 2: I want to return but not now. If I am fit I will return to work, I am still undergoing treatment. I want to go back to work.

Response3: I am a business man. I am back to work 60%.It was hard as I think of returning to work. it was very hard for me .I still come for my exercises. I thought it will be difficult for me to return to work.

Response 4: I want to go back to work, but have not really started. I will definitely return when I am fully okay. I think I can't start yet.

Response 5: I want to go back to work, although I do my work on my own farm. I don't think I can start yet. My hands have not fully recovered; I cannot face the demands of work yet. I feel am not ready yet to face the demands of going back to my farming.

Care giver to Respondent 5: I want her to go back to work; it will help her and make her busy. It will keep her on her toes

Response 6: I feel positive that I can go back to work now**.** Considering my age now. I will like to be privately employed now.

Response 7: I wish to go back. However; I don't feel up to it yet. I can't use my hands properly yet. I trade in building materials and I am self-employed.

Question 2: What feelings were evoked for you about returning to work post stroke?

Response 1: I think I needed some help. If the hospital management where I work can help me. I didn't feel very well, I needed some help from people, suggestions, advice, and I needed it urgently. I don't want to be coming to work every day, it's a challenge. I decided to be coming once a week or twice a week, so that I will have some rest but at home, I won't be well. I will be disturbed psychologically .i won't be myself, a lot of problems psychologically, thinking I will not be able to do what I have been doing before.

Response2: I feel like going back and I am no fit and it worries me, I will need help in returning to my work.

Response 3: I feel happy when I think of going back although it was difficult for me.

Resonse4: I am feeling fine in my mind and wish to return to work. I will want to go back to work when I get better. I am not yet fit to go back to work.

Response 5: I am still recovering. I can't take care of myself.

Response 6: I feel I can go back to work but I wish to be privately employed as I earlier mentioned**.** I feel ready to return, my brain is not affected. I can think and plan. Although my hands and foot is still weak my mind is sound.

Response 7: I like to return when I feel better. Presently I am ready to return, but I cannot use my hands properly yet and I need my two hands for the type of business I do.

Question 3: Why did you want to return to work?

Response: I want to return to work because I want to be active. I don't want to be bedridden and I want my muscles and everything that has been affected to come back to life. If I just keep staying at home, I may fall a victim of not coming out again. And I want to see people and people to see me. I want to see my patients as a nurse nobody forced me into it. I decided to be a nurse, I can't be a teacher or a physiotherapist and also to earn my salary. I don't want it to be tampered with since I have not retired. To be somebody not a dependent on people.

Response 2: I am not the type that likes to stay idle. I like to move around and go back to my farm.

Respone3: I don't like staying idle .I like to go to work every day. Even after coming back from work I go out to chart with my friends. Staying alone is not good for someone that once had stroke. You need to talk with people and socialize .This can come as you work and relate with other people.

Response 4: I can't walk properly and have pains' fall sometimes when I walk to work. It makes me active and move about, that is why I like to go back to work.

Response 5: I bath myself, eat by myself and do my activities of daily living. I am a farmer; I cannot fully return yet because I am still recovering and not fit to work yet.

Response 6: I can return to work. What I wish to do is poultry farming now. I can employ labor for the other services I need I don't need to do all the work. I am a trained accountant; I can do the planning and the paper work on the farm.
Response 7: I like to return when I feel better. I have not yet returned to work.

Questions 4: What difficulties do/did you anticipate facing if/when you return to work?
Response 1: How to move and to go back? How do I meet the demand of patients? I do give health talk, counsel and advice patients' .I give injections and even write reports, and I couldn't do all these things. So when I came back I don't participate in most of the rounds. Coming on time was also a difficulty. I was given a query and several times by the hospital management for coming late .Before I come to work I must do some exercises and if not I cannot move very well. I answered the query and I went and met the supervisor in charge of monitoring lateness and immediately I told him I had a stroke, he add pity on me, he apologized and since then they showed mercy.

Response 2: I can't do the activities of daily living. I cannot walk with my affected leg. My left hand and leg cannot function properly.
Response3: My office is upstairs on the second floor and when I think of climbing upstairs it is really very difficult for me. There is no elevator in my office and I have to climb upstairs despite my disability. But I still manage to do it all the time I go to work.
Response 4: All I need is for my hands to be properly strong. I can go to my farming. I don't need any modifications. All I want is proper recovery. My affected hand and leg which are yet to fully recover are the difficulties I might face.
Response 5: I am a business man. I need to travel most times to do my business. I do supplying of products and goods, financial and accounting decisions. If I have an honest partner to help me with my business I will be happy. I own my business. I need to go around getting my goods when they arrive and get them cleared. Who will do that for me now?
Response 6: Mobility is all I need now**.** I was once a bank manager. I was on a job when I had stroke. I was the manager of a big Hospitality industry in Adamawa, in the Northern part of the country. But now, I am contained in this wheel chair. I can't work by myself without support.
Response 7: My hands are still recovering .I envisage difficulty with proper use of my hand. I need the proper use of my two hands.

Question 5: Have you returned to work? (At what level and which form? How did you transit back into the work environment?)
Response 1: Yes. The transition was not smooth, it was very very rough. I have returned to work for 3months now. I had an ergometer in the house I use for my exercise. Whenever I feel I am not alright I exercise. My leg is heavy I will come to physiotherapy they will allow me to use the ergometer, I saw the ergometer sometimes, I bought it and I am using it at home. Since then it's become easy for me .I have told my department that I will soon start evening duty since I came back I've not been doing evening duty and alternating it with morning duty.

Response 2: No. I have not returned at all to work.
Response3: Yes but not fully. I am back to work 60% after my stroke experience; I went back to my office.
Response 4: No. I own my business; all I want is to recover properly. My house is alright. I come out of my house but not yet back to work.
Response 5: No. I also want to be alright. My hand is yet to fully recover. I can do everything I wish to do All I need is complete recovery.
Response 6: No**.** I am not yet back to work.
Response 7: Not yet

Question 6: Were there any infrastructural or formal attempt? Processes initiated by your employer to assist your return to work? Tell us about it.
Response 1: None to be precise. They just help me to get free physiotherapy treatment from the hospital was still an assistance. There was nothing they gave ,a lot of things is missing in the physiotherapy department .Initially my hands were not functional ,they were heavy but I was given the dumbbell to use at home .I returned it later when I recovered. Few people have stroke not all the workers, we should be assisted by providing mobility for us by coming to pick us up not just to leave us alone to manage ourselves.
Response 2: I am self-employed. I have not returned at all to work**.**
Response3: I own my business don't have any employer. I use to drive myself to work before the stroke experience. The gear to my car is manual but now I have a driver who drives me to work. I also drive an automatic geared car anytime I want to go out without a driver .There was no infrastructural changes made in my office area.

Response 4: I own my business; all I want is to recover properly. My house is alright. I come out of my house and goes to work.
Response 5: My hands are yet to fully recover. I can do everything I wish to do all I need is complete recovery.

Response 6: The manager of the formal place where I once worked has invited me to come back to work but I don't want to return to them because of the shabby way I was treated when I was hospitalized. The showed no concern about my welfare during my period of stay in the hospital.
Response 7: I own my own business and I can return whenever I feel I am fully recovered.
Question 7: What did you find useful? What areas for improvements were there?
Response 1: I am happy, I am doing my work. I attend to my patients; do my work, started doing my health talk although not very easy. People are seeing me and I am seeing them. We discuss and I forget my problems. Initially, I didn't know about stroke but eventually I discovered that many people have stroke with very bad outcome. I thank God, mine case is not worse like most people I have seen.
Response 3: I feel delighted that I was able to return to work. I find the socialization very useful and helpful. I can talk with other people.Socialisation is very important for a stroke survivor ,whenever I come back from work I go out and socialize with my friends and make myself happy.
Question 8: What areas or issues do you consider most important for employers and survivors to consider when returning working Post stroke)
(1).Placing the person where he can fit in and less strenuous or in a light duty area.(2).Less busy unit is also okay for a person returning to work Post stroke. The employer should consider the post stroke survivor exempt him /her from late coming queries in case he/she can't make it initially until he/she has recovered fully well. The survivor should know her work, be straight forward in doing things not pretending to be ill and serious with his/her duties. I look okay but I still feel heaviness, my affected limbs are heavy if I exercise I feel light but initially in the morning is heavy although I look well outside but there is still heaviness inside. A Post stroke survivor should be exempted initially from night duties.
Reponse 2: Not applicable.
R2 (CAREGIVER): I want her to be functional, wash her clothes make her food and eat. She can go to her farm and come back home. She doesn't want anybody to do something for her. I don't want her to return to farming. She will stay with me and go back to her house, if she recovers, she will stay with me and go back to her house if she recovers.
Response 3: I needed a driver; I considered it important to get a driver. Although I have returned to work but my level of return to work if assessed is only 60%.i still need help to get to work. A stroke survivor needs a better way of mobility to get to work. I do my toiletries by myself. As a director, my nature of work does not require too much energy. All I do is to sign documents and cheques which I can do conveniently at this level of recovery. I discuss easily with people because I can talk. Anybody who has had stroke before and

survived must have a good social life interact and chart with people. Check the blood pressure every month and take your drugs.
Response 4: I don't have a good family support. My wife doesn't show any concern and some of my children. Not everybody is careful to look after one another. I need family support which is really lacking. My wife has not being here with me before. She is showing little or no interest.

Response 5: Not applicable
Response 6: I am not back to work yet but planning to return. The manager of the formal place has invited me to come back to work as I earlier mentioned to you but I don't want to return to them because of the way I was treated. Now I am considering chicken farming. I have designed a farm facility where I would continue my work but the greatest challenge I may have is mobility. I am still using a wheelchair to move around I can't properly move about now. I can do other things. I have employees; I will do my part as the director.
Response 7: My hand is still a problem. Every other thing is fine; the place I live is not a problem to me.

GROUP B: BLUE FLAGS
SPECIALIST-OCCUPATIONAL NURSE
Question 1: What are the prerequisites for returning to work post stroke? How would you go about a work assessment from a stroke survivor to return to work? What factors would you deem important from rehabilitation point of view.
Response: I think it is the psychological aspect of his health. Most of them come out with the notion that they cannot make it again .When you ask will this person survive the physician will say if he wants to live he will live. For that it was a reality, a times you find out that it was a reality .a times you find people and ask them how they feel they will say my own is finished and truly he will die .but some who believe still survive. Predisposing factors what led to that stroke so that the stroke patient does not relapse.
Question 2: Can you identify barriers of safe return to work?
Response: The work structure determines the type of work he/she does. If the limbs are affected and cannot be put to use again. He may not be able to return to work. Relationship with fellow workers can also be a barrier .In case he is deployed to another area, a place that may need lighter job and if he has been active before taking authority and now he needs to seat down and be less active. It might be a barrier.
Question 3: Can you identify facilitators of safe return to work?
Response: Relationship with colleagues can help, can be a facilitator.
Question 4: How would you formulate the milestone of safe return to work post stroke?

Response: Visitation to the worker then counselling then physiotherapy then give a job trial on close management .Closely monitor if he/she can cope if he cannot cope we go back to counselling.

Question 5: Do you use any specific instruments in your assessment? Identify strengths and areas of modification?

Response: No instrument yet. We just evaluate the patient medically. General assessment, then diagnosis.

Question 6: if there were an instrument that assessed return to work for post stroke survivors which domain/focus areas do you think should be included?

Response:

The mind assessment, psychological health, ability and strength and physical assessment. Stamina of the person and normal physical examination.

OCCUPATIONAL THERAPIST:

Question 1: What are the prerequisites for returning to work post stroke? How would you go about a work assessment from a stroke survivor to return to work? What factors would you deem important from rehabilitation point of view.

Response: Basic assessments, we look at the cognitive functions, psychological state, and cognitive skills-level of alertness for the patient. It fluctuates, orientation, alertness around place and persons. Awareness of the surrounding attention space –can he sustain his attention during conversation. Ability to respond to question, memory, ability to recall information. Ability to take commands, How he is able to manipulate tools when doing a work assessment .Visual attention, physical areas range of motion of his affected joints dextility,how has his health affected him. This first before going into occupational assessment.

Question 2: Can you identify barriers of safe return to work?

Response:

They may not have attained the highest level of function but at that their level of function. We start adaptations.

Question 3: Can you identify facilitators of safe return to work?

Response: Barrier to return to work, looking at it from Nigeria factor. In the disability act, it has not been passed. There is a universal design every one able or unable to assess the roads. The way people perceive people with disability in our environment.

Question 4: How would you formulate the milestone of safe return to work post stroke?

Response:

Occupational adaptation in a post stroke, the patients' habitation, and his environment .Before stroke he walks but now he uses a wheelchair. Can he

assess his room? What modifications can you make to help him assess his cloth independently? Past occupation history, present and future occupation history. This can help him .Can he return and if not which other modification can he make to return .Can you modify his vehicles to drive. Job analysis bit by bit. Because the cognitive skill has been affected. We then break the job into components to help him do his job. His abilities will be used to compensate his disabilities.

Question 5: Do you use any specific instruments in your assessment? Identify strengths and areas of modification?

Response: Cognitive skills, his alertness determines the timing of return to work. For example a tailor analyzing sewing he/she must be able to pass the thread through the needle. We begin to work on that in a day we do that. The next day we take measurements that might last for two weeks. Looking at all these, the cognition for me I look at it that in a month, basic things could be done. Depending on the challenge of the post stroke survivor. Take the activity gradually with 6 months we break the activities down into pieces; this is based on my experience in the service.

1. Assessment of motor and cognitive skills.
2. Assessment of living skills and resources.
3. Assessment of motor and processing skills-ADL.
4. Canadian occupational and performance measure.
5. Functional independence Measure.
6. Independent living scale
7. Coleman's evaluation of living skills.
8. Self-care assessment.
9. Neumann's data self-skill measure.
10. Performance resources of self-care.

Our major aim is to ensure that the patient is independent. If that has not been achieved we have done nothing yet. Functional independence measure is good but must be used by a trained person. You are looking and ticking the functional abilities of the patient involved.

Question 6: if there were an instrument that assessed return to work for post stroke survivors which domain/focus areas do you think should be included?

Response:

For me, I don't have to overlook anything Psychological status, Personal hygiene, occupation adaptation if necessary to earn his living. The problems that affect return to work for me is Funding for assistive devices/technology,

Availability of assistive devices/technology; Professionals should recognize others for the goodness of the patient and promote collaboration

NEUROPHYSIOTHERAPISTS (THREE PHYSIOTHERAPISTS IN A GROUP DISCUSSION).

Question 1: What are the prerequisites for returning to work post stroke? How would you go about a work assessment from a stroke survivor to return to work? What factors would you deem important from rehabilitation point of view.

Response:

He/she should be independent, and be able to balance and perform certain functions, that are the basic thing. If the employee is able to ambulate to his/her work place. The employee can still be coming for rehabilitation as he/she goes to work. Mentally he/she must be stable, ability to understand certain instructions and some level of psychological stability that must be maintained.

2nd respondent

I think the first thing is the employee's cognition, based on the level of deficit. Before he or she returns he/she should be re assessed, Is he able to carry out the formal activities? If not he/she can take up another Job. The earlier the employee can get back to work the better if he/she can otherwise there should be re-education for a change of job.

3rd respondent

He should be assessed on functional independence; part of it is mobility and some other things. I wish to give an example, I once had a patient 2 years ago who was a secretary, and he been right handed and had right hemiparesis. Flaccid in the upper limb but the lower limb had some motor function. He was not a retiree; he needed the work .we help him to improve the use of the hand. He was able to return to work and fend for his family .If he is not able to continue in his previous work then the occupational therapist can be consulted. Another problem is the stamina of the employee; if he is not able to continue in his previous work then the occupational therapist can be consulted. Another example is a nurse who had recovered, she could ambulate and do every other thing but she found out that she got tired easily. So we had to inculcate aerobic exercises to help her improve her cardiovascular function. We advised her to go to a less busy area.

Question 2: Can you identify barriers of safe return to work?

Response 1: Apart from the cardiovascular challenge, sensory deficit is the major challenge cognition problem. It depends on how they are managed clinically. We once had a patient who was a driver with these deficits. He had to import a car with a lot of modifications.

Response 2: Early intervention would help. They don't come in time when they have the problem.

Response 3: Self-Motivation .Some employee if properly motivated would return. Home programmes. If the employee is not ready to translate all the therapy it would not work. The patient needs to be self-motivated otherwise whatever you do will not work. Social reintegration, knowledge and education of what stroke is , is also vital. The management may be part of the problems of returning to work. If there are deformities and the patient outlook is affected, some employers may not want to retain the employee for that.

Question 3: Can you identify facilitators of safe return to work?

Response1: Family support can facilitate return to work. Care and love from the family can go a long way. I once had a patient who had no support from the spouse and he was always depressed. Family support is one of the major facilitators for someone getting back to work. There is a way the family will support and the patient will want to return. Family support is one of the major facilitators.

Response 2: Caregivers play a very big role

Response 3: Family support is vital

Question 4: How would you formulate the milestone of safe return to work post stroke?

Response1: One has to simulate the working environment and put the patient there, if the patient scores highly in the system then we can now write a discharge report that the patient can return. But we don't have such facilities here .So what I do I put the through a close system and we put the patient in as open system if he could go through then. Okay. For example, my patient who was a secretary. We get him a cup and water to make tea. Holds the cup, walk with tea and when he became steady we let him go. **Cognition stability** to Sensory **stability** and then **Motor** (balance) **stability**.
Response 2: Milestone to me, means taking the patient from a less difficult part to the difficult part. Activity of daily living should be mastered and be the first thing then to the complex things. If the patient can do the activities of daily living then from there he moves on to higher and complex things. Putting the activities in a formula, to make it easy and gradually bringing stability. Cognition function - sensory stability Motor function - .
Response 3: It still depends on the kind of work. And the decision that need to be taken when working like driving .Removing dangerous things that can harm the patient.
Cognition function - sensory stability Motor function

Question 5: Do you use any specific instruments in your assessment? Identify strengths and areas of modification?
Response 1: ADL and then Barthel index, Frenkel exercise to check cognition
Response 2: Balance, Base of support, Barthel index and gait assessment.
Response 3: Romberg sign, Barthel index and frenkel
Question 6: if there were an instrument that assessed return to work for post stroke survivors which domain/focus areas do you think should be included?

GROUP C: BLACK FLAGS
EMPLOYERS OF LABOR (KEY INFORMANT INTERVIEWS)
Question 1: What has your experience been with employees who are survivors of stroke?
Response1: I have not really had much experience with survivors of stroke. I can relate it to examples like staff that had gunshots and were incapacitated. If such people are in the operational department they don't really move out, there they do analysis, financial reports. However, if you are occupying a sensitive position in the marketing department it may be difficult for such employees in the banking sector. One of my colleagues had a similar problem, when he was in the marketing unit he was no longer in the operational department. He couldn't attend meetings and it affected his productivity, so for such people with

marketing functions, he cannot be as productive as desired. But if in the operational department, and the brain is still active then it may not affect their productivity.

Question 2: How did you participate in the decision-making around their return to work?

Response2: Well, in my organization such decision is been taken by the human resources department. The zonal management and human resources department take that decision. In my own as at the time I was heading the operational department, the best one can do is to make recommendations. In the banking sector especially in the marketing section what speaks for you are your figures, by the time there are challenges and the figures are not working. The Head office will call in to find out why and if they feel the challenges will affect the output expected then the employee will have to go, there is nothing anyone can do about that .The final decision is with the zonal management and the human resources.

Question 3: From human resources point of view, how does your company determine suitability for return to work after stroke?

Response3: For return to work, after a stroke related sickness in as much as the only one I know about ,after that incident he came to work but was relieved of his duty. I know for one to come back after such illness the doctors' report is very important. This is general, then the zonal and possibly to some extent the branch management report has to the person's productivity, output is also very important. If from their appraisal of performance and productivity is not decerased. Then the employee will be retained but if it is affected, then the employee may be relieved. The doctors report, the zonal and branch management report is very important. Possibly, they may even call the employee to interview him/her but if the person is strategically hired and the sack will affect the company or bank the employee may be retained. If they feel that relieving the person will affect bank or company business, because of the contribution they may ask for a replacement for such a person if it becomes very difficult to retain the employee.

Question 4: What is your company's view or policy regarding disability post stroke?

Response 4: Well, I have been in the industry for 12 years. There is really no clear cut policy. They are just dynamic issues. I have not seen any policy but like I said in the two instances I gave about a gunshot that affected a colleague in the leg not his brain he was moved to another area. The other case because of his qualifications. There was no place he could be moved to and so he was relieved of his appointment. So I believe they are dynamic issues.

Question 5: How do you go about accommodating such employees?

Response 5: There is really no clear cut policy. They are just dynamic issues.

Question 6: Do you have any retraining policy for returning to work after disability?

Response 6: There is no such training.
Question 7: How does your policy affect safe return to work after stroke that leads to disability?
Response 7: No clear cut policy.
Question 8: If there were an instrument that assessed return to work for stroke survivor which domain/focus areas do you think should be included?
Response 8: For the banking sector which I know is very peculiar. He should be able to find out his ability to withstand stress. Demands from the superiors, pressure from the industry will that person be able to withstand such pressures the demands of the pressure and stress. For example operational unit, you may need to stay back to work late to meet some deadlines, may be regulatory deadline, competition deadline, business deadlines. Also look at the impact of stroke and it won't be that the individual will fall back into health distress. Stress and pressure of work.
Question 9: Are there modifications on instruments to enhance safe return to work after stroke that leads to disability?

Response 9:
We don't have one now that we use. Just as I said to us they are dynamic issues. It will be good if we have an instrument and should be critically looked into. It may not be okay for someone with stroke health challenge to work in the bank. The work itself can cause stroke if the person in the banking sector is not properly managed. The person who will work in the banking sector who has stroke may be a social responsibility with a tailored function otherwise it may be very impossible for the people with such health challenges to function effectively in the bank. There is no policy which can help people with disability to keep work in the banking sector and if there were any no one is implementing them. All these policies of 2% for disability who is implementing them?

Employer (B)
Question 1: What has your experience been with employees who are survivors of stroke?
Response:
First and foremost, No. Not necessarily stroke. Not particularly stroke. But related illnesses.Yes.According to the labor law for the first 3months they get their normal payment or salaries. But if after 3months illness persist for the next 3months they are placed on half payment after that the next 6months if there is no recovery we can let them go. A times we keep managing them .I once had a colleague who had to go for surgery, came back company bore the cost .We had

not translated to NHIS then, we bore the cost, rehabilitation all the treatment. He was still retained but along the line the company had a retrenchment exercise and he was retrenched. The company first deal with the situation by empathizing with the employee assist in whatever way possible, keep him/her on the payroll, after some months ,the doctors will advise ,at that point we may have to follow the advice of the physicians.

Question 2: How did you participate in the decision-making around their return to work?

Response: The occupational health department of the company takes care of that, the employee will go through their assessment and we get feedback. The specialist in the area certifies that the employee is ready to return to work recommending that he be absorbed .We retain the services of an occupational doctor if they affirm that the employee is ready then the employee will be allowed to return to his/her work

Question 3: From human resources point of view, how does your company determine suitability for return to work after stroke?

Response: Yes, we have a central policy. Once the specialists certify that the employee is fit and the assessment has been done by the occupational health department, then he/she will be allowed .We still carry out intermittent reassessment along the line to ascertain that indeed the employee is indeed fit. As a matter of fact audit medical assessment is being done for all staff members here every 2 weeks. These periodic exams help us to find out on time the fitness level of every employee.

Question 4: What is your company's view or policy regarding disability post stroke?

Response:

We don't necessary have any streamline views but the company does not discriminate and where it is not possible to retain services of such people we let them go under the best possible terms and conditions. It's a mutual thing.

Question 5: How do you go about accommodating such employees?

Response:

The company is like a family .We connects with our employee who has suffered .The company accepts them other employees accept them. Then the employees themselves help one another to get back to normal way of life.

Question 6: Do you have any retraining policy for returning to work after disability?

Response: It depends on the kind of work the employee is trained to do. This is a factory; here we are insured under the employee act .Physical fitness, then generally mental fitness. Has the person fully recovered mentally and emotionally because sometimes somebody gets back to work but psychologically is not ready .If there is an instrument that determines the psychological readiness, physical and mental fitness.

Question 7: How does your policy affect safe return to work after stroke that leads to disability?
Response: we meet the experts and they guide us.
Question 8: If there were an instrument that assessed return to work for stroke survivor which domain/focus areas do you think should be included?
Response: No
EMPLOYER C
Question 1: What has your experience been with employees who are survivors of stroke?
Response: I have not had any employee with stroke.
Question 2: How did you participate in the decision-making around their return to work?
Response: I have had staff off work but not stroke. They recover within two or three days .I ve had staff that had health challenges but even if I give them time off many of them prefer to be at work

Question 3: From human resources point of view, how does your company determine suitability for return to work after stroke?
Response: When a staff takes permission and knowing the duration for the recovery to return to work. It depends on the health challenge. If the staff members does not return to work. I will call to check-up .If the staff still does not return I will stop calling .May be he /she has found an alternative. The next thing is to replace the employee. I believe a staff should keep me informed and if there is lack of communication from the voice even when I call to find out, I will know if indeed the employee is willing to return, even my instinct help me in decision making.

Question 4: What is your company's view or policy regarding disability post stroke?
Response: I have a policy, but in case of a stroke condition, we are not praying for such. I once worked as a class room teacher and teachers are not well paid. I won't want to humiliate my worker because of nature. If I have such I will be paying the person .If the employee can still do some other things, it doesn't affect the person's speech or movement then I will find a place for the employee. I was working in a school before I established my own school, there was a teacher there that had an accident that affected her movement and she was sacked. I employed her; she can teach she still teaches with me.
Question 5: How do you go about accommodating such employees?
Response: My policy is to look at the person's previous record. If hardworking person before the health incident. I will continue to pay the employee. Honestly, I want to break a record in teaching line. If we have the money I will pay the employee. But if the person can still come to work and do other things I will accommodate the disability and continue to pay the employee affected.

Question 6: Do you have any retraining policy for returning to work after disability?
Response: No, we don't have any.
Question 7: How does your policy affect safe return to work after stroke that leads to disability?
Response: Not applicable.

Question 8: If there were an instrument that assessed return to work for stroke survivor which domain/focus areas do you think should be included?
Response: The person's stamina. The strength in the person. How long can his strength to do it. If there is no strength the work will not be well done. We don't sit to teach. The employee must be able to endure the stress it takes to teach.
Question 9: Are there modifications on instruments to enhance safe return to work after sickness that leads to disability?
Response: I don't know of any instrument presently. But just as I earlier said, the employees stamina or strength must be checked and ascertain for return to work to be meaningful.

APPENDIX 15: Editorial Certificate

Idea Corporation t/a

AQUARIAN PUBLICATIONS

30 April 2021

To whom it may concern

Dear Sir/Madam

RE: Editorial certificate

This letter serves to prove that the thesis listed below was language edited for proper English, grammar, punctuation, spelling, as well as overall layout and style by myself, publisher/proprietor of Aquarian Publications, a native English speaking editor.

Thesis title

THE DEVELOPMENT OF AN INSTRUMENT TO ASSESS RETURN-TO-WORK AMONG POST-STROKE SURVIVORS

Author

Peter Olanrewaju Ibikunle

The research content, or the author's intentions, were not altered in any way during the editing process, and the author has the authority to accept, or reject my suggestions and changes.

Should you have any questions or concerns about this edited document, I can be contacted at the listed telephone and fax numbers or e-mail addresses.

Yours truly

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