

**SCHOOL OF PUBLIC HEALTH
COLLEGE OF HEALTH SCIENCE
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**ASSESSMENT OF BARRIERS TO PHYSIOTHERAPY SERVICES FOR STROKE
PATIENTS AT TEMA GENERAL HOSPITAL**

BY

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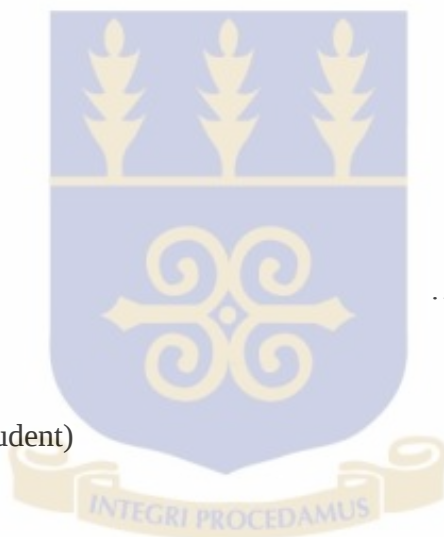
DECLARATION

I, Mercy Nketia-Kyere certify that this dissertation is the result of research undertaken towards the award of Master of Public Health at School of Public Health, University of Ghana, Legon. This research has been undertaken with the guidance and supervision of Professor Moses Aikins, School of Public Health. I do hereby declare that except for references to the work of others and textbooks that have been cited and appropriately acknowledged, this work is the result of my own original research and it has not been previously submitted elsewhere either in whole or in part for the award of any degree.

.....

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Date

.....

Professor Moses Aikins

(Academic Supervisor)

.....

Date

DEDICATION

To my husband, Stephen Nketia-Kyere and my lovely children, Brian, Nana Ama, Papa Yaw and Kwaku Nketia-Kyere for their love, encouragement, support, patience and understanding. I also dedicate this study to my parents and siblings, for their love and opportunities given me in life.

I love you all.



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To the authors and publishers whose journals, articles and books were used as references in this dissertation, I am thankful for the diverse perspectives and ideas they shared.

ALMIGHTY GOD BLESS YOU ALL.

ABSTRACT

Background: Physiotherapy has been shown to reduce the risk of disability among stroke patients. Poor adherence to physiotherapy can negatively affect outcomes and healthcare cost. However, very little is known about the barriers to physiotherapy services in Ghana.

Objective: The objective of this study was to assess the barriers to physiotherapy services for stroke patients at TGH. The individual / personal and health system barriers to physiotherapy services at TGH were determined.

Methods: A cross-sectional study design was employed. A simple random sampling technique was used to recruit 207 respondents for a face-to-face interview. Interviewer-administered questionnaires were used to collect data on individual/personal barriers and health system barriers of respondents to physiotherapy services and were described using the Likert's scale. Respondents' adherences to Medication were assessed with the Morisky 8-item medication adherence questionnaire. Data were entered and analysed using Epi info 7 and STATA 12.0. Associations between the variables were determined using a chi-square test and logistic regression was used to test the strength of associations between the independent and the dependent variables. The level of statistical significance were set at $p < 0.05$.

Results: Majority (76.3%) of the respondents indicated economic barrier as their main individual barrier to physiotherapy services. Most (72.0%) respondents indicated exercise therapy as most difficult modality. For medication adherence level, patients with low medication adherence level were about 21 times the odds of defaulting on accessing physiotherapy services five times or more as compared to those with medium adherence level (OR 20.63, 95% CI 8.96, 42.97).

Conclusion: Personal barriers of stroke patients were found to be the most significant barriers to accessing physiotherapy services at Tema General Hospital.

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LIST OF ABBREVIATIONS

ACL	Anterior Cruciate Ligament
ADLs	Activities of Daily Living
CSP	Chartered Society of Physiotherapy
ERC	Ethical Review Committee
FAC	Functional Ambulation Classification
GDHS	Ghana Demographic and Health Survey
GHS	Ghana Health Services
GPA	Ghana Physiotherapy Association
GSS	Ghana Statistical Service
PFPS	Patella Femoral Pain Syndrome
PHC	Population Health Census
PNF	Proprioceptive Neuromuscular Facilitation
SGS	School of Graduate Studies
SIGN	Scottish Intercollegiate Guidelines Network
SPH	School of Public Health
TGH	Tema General Hospital
USAID	United States Agency for International Development
WHF	World Heart Federation
WHO	World Health Organisation

DEFINITION OF TERMS

Barrier	A barrier is anything that restrains or obstructs progress or access
Cryotherapy	Physiotherapy modality / intervention with the use of ice/cold
Electrotherapy	A form of physiotherapy modality / intervention by the use of low / medium and safe electrical equipment
Physiotherapy	Healthcare profession that assesses, diagnoses, treats and works to prevent disease and disability through physical means.
Physiotherapist	A healthcare professional primarily concerned with remediation of impairments and disabilities, promotion of health and prevention of diseases through physical means.
Stroke	Is a condition that occurs due to disruption of blood supply to the brain as a result a burst of a blood vessel or a block by a clot.
Thermotherapy	Physiotherapy modality/intervention with the use of heat/warmth.
Massage Therapy	It is manual manipulation of soft tissue of the body (muscle, ligament, tendons, ligaments and connective tissues), in order to enhance one's health and well-being.

CHAPTER ONE

INTRODUCTION

1.1 Background

According to the WHO (2014), stroke results from an interruption of blood supply to the brain, as a result of burst of blood vessel or a block by a clot. Stroke has been found to be the second leading cause of death in the world and the most frequent cause of severe adult disability (Donkor et al., 2014). Studies by Adamson et al., (2004) suggested that 70,000 individuals are living with stroke and its consequences, and each year, there will be approximately 12,500 new stroke events. Stroke has also been found to be a major contributor to disability and reduced quality of life (Agyemang et al., 2012) with more than half of all stroke survivors left dependent on others for everyday activities (Royal College of Physicians National Sentinel Stroke Clinical Audit, 2011). Stroke cases appear to be a major global health problem in terms of death and major disability that will continue to increase over the next 20 years as the population ages (Donnan et al., 2008).

Patients suffering from stroke are often placed on some forms of treatment after they have been diagnosed to help improve their conditions. According to Wissel et al. (2013), there is an immediate need to establish a comprehensive post stroke continuum of care to cater for the varied needs of stroke survivors, caregivers, and society at large since stroke is not only an acute condition, but also a lifelong disease process. Majority of post stroke treatment often involves coordinated, multidisciplinary evaluation and intervention, involving physiotherapy and occupational therapy, pharmacotherapy, and in severe cases, surgical intervention (Young and Forster, 2007).

Some form of barriers to an effective treatment of stroke patients appears to exist and this can influence the rate of improvement of patients with stroke condition. Wissel et al. (2013) suggested that in order to best manage stroke, there is the need for an integrated continuum of rehabilitative care which commences in an acute hospital setting and actively follows and supports patients as they progress through post-acute rehabilitative phases. Present barriers to an integrated care pathway can be identified on many levels, affecting the success of treatments.

The Chartered Society of Physiotherapy (2014) defines physiotherapy as a healthcare profession that helps to restore movement and function after being affected by injury, illness or disability. Igwesi (2012) found that, many people live with physical disabilities globally, especially in rural Africa despite expertise of physiotherapists and available evidence of effectiveness of physiotherapy.

Available statistics show that, about 77 million people worldwide would suffer stroke by the year 2030 (WHO, 2011). According to Pandian et al., (2007), 243 people of every 100,000 population in rural South Africa suffer stroke. In Nigeria, the prevalence of stroke has increased to 1.14 per 1000 population (Birabi et al., 2012). Agyemang et al., (2012), found that 9.1% of adult admissions are stroke patients in Ghana. There has been a remarkable increase in the attendance of stroke patients at the physiotherapy department at Tema General Hospital (TGH-GHS 2012). Subsequently, according to De-Graft Aikins et al. (2013), stroke patients will further increase due to factors such as lifestyle and unhealthy dietary practice.

In Ghana, the burden of stroke is not only high in mortality but also in morbidity (Donkor et al, 2014). In addition to this, inadequate access to rehabilitation has been reported in some developing countries, with its associated socio-economic and social

implications (Webster et al., 2008). Despite large literature supporting the importance of physiotherapy in rehabilitation of individuals, there are some barriers to its accessibility. The USAID Health Policy Initiative, Task Order (2010), assessed barriers to accessibility among the urban and rural poor and the indigenous populations in some developing countries and identified such barriers as misinformation and misconceptions, socio-cultural barriers, costs and frequent stock-outs, behaviour of healthcare provider, unsuitable conditions in facilities, restrictive social and familial environments, and lack of appropriate information materials among others.

The increasing number of patients necessitates an effective and a more efficient health delivery system that would cater for them to achieve better outcome and prevent or manage disability. Hence the need to comprehensively assess the barriers that mitigate physiotherapy services for stroke patients at Tema General Hospital (TGH).

1.2 Statement of the Problem

According to Donkor et al. (2014), Stroke is responsible for 50% chronic disability among its survivors. Thus, stroke is a disease of immense public health importance with economic and social consequences. Stroke causes major global health problems and disabilities. It has been predicted to continue to increase over the next 20 years as the population ages (Donkor et al., 2014). It is also ranked by Imam and Jarus (2014) as the second highest cause of death and as one of the main causes of acquired adult disability. The WHO estimates the prevalence of stroke survivors to reach 77 million by the year 2030 (WHO, 2008).

Stroke has a substantial impact on society, resulting from diminished workplace productivity not only of stroke victims and survivors, but also of their caregivers, who

often have their own job commitments interrupted or are forced to leave their jobs in order to provide care for a family member (Coleman, 2011). According to Alguren et al., (2009), abrupt onset of a stroke constitutes a major disruption of continuity of a person's life experience. Consequently, a high case fatality rate has been recorded among patients who suffer in Ghana (Sarfo et al., 2014). To prevent further damage and disability, physiotherapy plays a key role, and medications are also very essential.

There has been a significant rise in the prevalence of stroke among Ghanaians which has, in turn, increased the need for physiotherapy services by all agencies (De-Graft Aikins et al., 2012). Most stroke patients after diagnosis undergo treatment which usually involves physiotherapy and medication at hospitals or clinics. Although not every district in the country has access to physiotherapy services, there are a few centres in Ghana which provide physiotherapy services to patients with stroke. The Physiotherapy Department of Tema General Hospital (TGH) is one of such centres. It takes care of an average of 54 patients a day from the southern part of Greater Accra and some parts of Eastern Region of Ghana.

It has been found that, physiotherapy improves patients' lives by reducing pain and preventing complications and improving general quality of life (Ruszel et al, 2014). However, many patients do not benefit from physiotherapy due to financial constraints and associated physiotherapy barriers (Ruszel et al, 2014). Poor adherence to treatment is capable of having negative effects on outcome and healthcare, but not much is known about barriers to treatment adherence as far as physiotherapy services are concerned (Jack et al., 2010). Success of the treatment usually involves the commitment of the stroke patients to the treatment regimen. Similarly, other factors such as the ability of the individual to afford and sustain the treatment and the kind of facilities available, medications and physiotherapy are vital to treatment success. Furthermore, lack of

follow-up involved in accessing physiotherapy services and medications can adversely affect stroke patients (May, 2001). There has been a consistent increase of stroke patients in the attendance at Tema General Hospital physiotherapy department. The last three years annual reports have shown remarkable increase of stroke patients at the physiotherapy department of TGH. In 2011, 25% of the total attendance was stroke patients, 38% of the total attendance for the year 2012 constituted stroke patients and in 2013, stroke patients increased to 40% of the total attendance, (TGH-GHS, 2011, 2012 and 2013).

Despite this increase, in the same report, it was highlighted that default of stroke patients was high, most of them did not complete the 18 (eighteen) recommended number of sessions of physiotherapy at TGH. This non adherence of physiotherapy was found to negatively affect the outcomes and cost of healthcare (Jack et al., 2010). It is therefore of much importance to assess the barriers to physiotherapy services for stroke patients, in order to render effective and efficient physiotherapy services. The research would thus assess the various barriers to stroke patients who visit the TGH for physiotherapy services. This would help find possible ways to minimise the rate of default and improve the accessibility in order to prevent complications that may result from lack of adherence to physiotherapy services for stroke at TGH.

1.3 Justification

Stroke is a major cause of premature mortality. It is also one of the leading causes of disability in Ghana. The general perception has been that, the condition does not allow the patients to live for a longer time. However, studies have shown that if stroke patients

are made to undergo an effective treatment they can survive or better still improve their conditions (Langhorne et al., 2012).

A number of studies have also suggested that rehabilitation programmes lead to an improvement in functional status that cannot be attributed merely to spontaneous recovery (Edzard, 2014). The introduction of physiotherapy departments have also brought about a significantly higher hospital discharge rate of stroke patients than historical controls.

However, the individual undergoing the treatment, the kind of facilities available, the quality of staff managing the facilities and quality of medication available could be contributing factors to the success of treatment regimen undertaken by stroke patients here in Ghana. Unfortunately, the actual effect of these variables on physiotherapy treatment of stroke patients is not yet known. Consequently, the impact of physiotherapy in the management of stroke patients may not be better appreciated. Hence, the assessment of barriers to physiotherapy services for stroke patients is of much importance because it would help improve access to physiotherapy services for stroke patients. This would ensure adequate and effective physiotherapy services and remarkable health outcome to improve general functions and wellbeing of stroke patients and prevent complications.

To this end, this study seeks to assess the barriers to physiotherapy services for stroke patients. It thus, will provide useful information to the hospital management on how to tackle most of these barriers. In addition, the study would in turn help to enhance adherence to physiotherapy services to achieve better outcome of stroke patients and ensure effective and efficient management of stroke patients

1.4 Study objectives

General Objective

The general objective of the study was to assess the barriers to physiotherapy services for stroke patients at TGH.

Specific objectives

1. To determine the individual / personal barriers to physiotherapy services for stroke patients at TGH
2. To determine the health system barriers to physiotherapy services for stroke patients at TGH.

1.5 Research Questions

1. What are the individual barriers to physiotherapy services for stroke patients at TGH?
2. What are the health system barriers to physiotherapy services for stroke patients at TGH?

1.6 Conceptual Framework

The barriers to physiotherapy services can be discussed under two main categories, namely individual (personal) and health system barriers. The individual / personal barriers are the barriers that pertain to the stroke patients, comprising of economic, socio-cultural, background characteristics, medication barriers and medication adherence levels. As illustrated in Figure 1.

The health system barriers are those barriers that affect the service delivery system; it includes; human (physiotherapists' attitude), physiotherapy modalities (exercise therapy,

thermotherapy, electrotherapy, cryotherapy, massage therapy, among others) waiting time, physical barriers (distance to the physiotherapy facility and wheelchair/walking aid accessibility) and material/equipment.

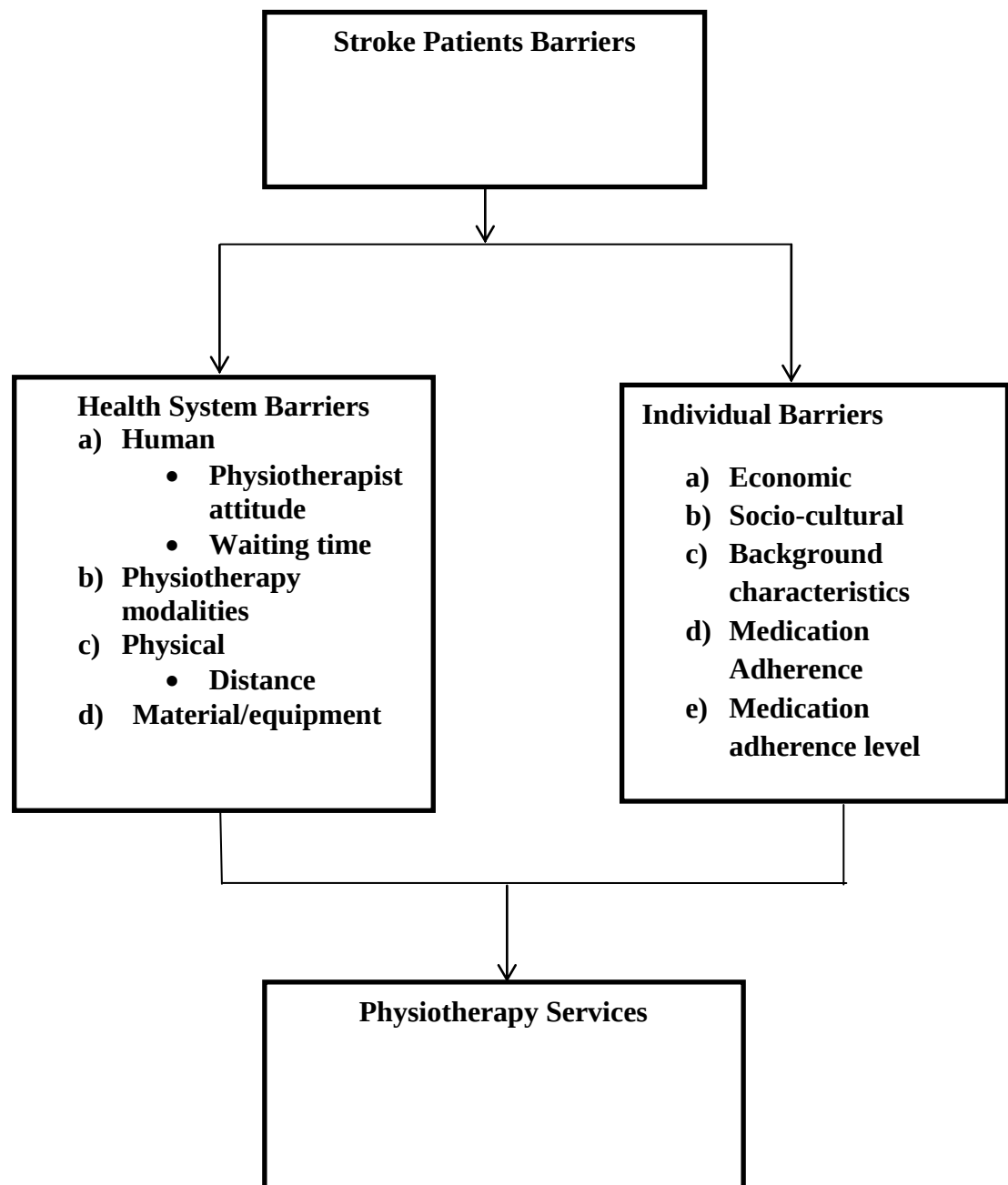


Figure 1: Conceptual Framework of Barriers to Physiotherapy Services for Stroke patients

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This section reviews literature on issues relating to the barriers to physiotherapy services for stroke patients. It describes the theoretical framework of the study and relevant literature reviewed. The possible barriers that are capable of constraining stroke patients in receiving physiotherapy services would be explained. Physiotherapy service is very beneficial to everyone. The benefits of physiotherapy include; improving and maintaining health, managing disabilities and preventing complications among others.

2.2 The burden of Stroke

According to Tortora, and Derrickson (2011), stroke or cerebrovascular accident is the most common brain disorder and is characterised by sudden neurological symptoms, such as paralysis or loss of sensation resulting from the destruction of brain tissue. Intracerebral haemorrhage, haemorrhage stroke and emboli (blood clots), or atherosclerosis (formation of plaques that block blood flow) of the cerebral arteries— ischemic stroke are the common causes of stroke. It is estimated that, 87% of stroke patients are ischaemic type of stroke, 10% are intracerebral haemorrhage, and 3% being subarachnoid haemorrhage strokes (Go et al., 2014). Sullivan and Schmitz (2007) identified the risk factors of stroke as including high blood pressure, high blood cholesterol, heart disease, diabetes, smoking, obesity, and excessive alcohol intake, among others.

Stroke is a universal health-care problem that causes a substantial burden of disease (Feigin et al., 2009). It is estimated to be the second most common cause of death

worldwide and the seventh leading cause of disability (Lopez et al., 2006). According to Donkor et al. (2014), stroke is ranked as the second cause of death worldwide (5.5 million) and also 50% of survivors being permanently disabled. Stroke incidence is increasing more rapidly in low-income than high income countries and as a result, the burden of stroke is increasing more rapidly in poorer than in richer communities (Johnston et al., 2009).

Mergenthaler and Meisel (2012) also found that, stroke is the second most frequent cause of death worldwide and the biggest reason for long term disability. According to Lancet Neurology (2011), by the year 2030, the worldwide burden of stroke in disability adjusted life years is expected to be more than three times that of tuberculosis and more than four times that of malaria.

Dobkin (2005) also identified stroke as the most frequent cause of disability in adults in the industrialised world, and the cost of stroke-related care is increasing rapidly. The United States (US) has identified that, about 795, 000 people become victims of a new each year or a recurrent stroke with about 610,000 of these being first attacks (Go et al., 2014). Findings also from the 2000 US population census indicated that the annual incidence (number of new cases of a disease that develop in a population per unit of time) of stroke per 1000 population was around 2.16 (Price, 2001). Studies conducted by Heuschmann et al. (2009) between 2004 and 2006 in 6 European countries found an annual stroke incidence of stroke per 1000 population of 1.41 in men and 0.94 in women. Williams et al. (1999) in their study identified approximately 750,000 individuals in the US and 1 million individuals in the European Union to be affected each year by stroke.

Adeloye et al., (2014), indicated that, stroke is hugely becoming a public health issue in Africa, and the non-availability of data has limited research output and response to this

burden, It has been found out by Agyemang et al 2012 that in Ghana, stroke forms 9.1% of total medical adult admissions. Mukherjee and Patil (2011) identified stroke as one of the most devastating neurological conditions, associated with a detrimental impact on patients' health-related quality of life and high economic costs. It accounts for more than five million deaths annually, and 44 million disability-adjusted life-years lost worldwide.

Stroke according to Go et al. (2014) is a leading cause of long-term disabilities, such as hemiparesis, inability to walk without assistance, and dependence on others for Activities of Daily Living (ADLs. Mergenthaler and Meisel (2012) also found that, stroke is the second most frequent cause of death worldwide and the biggest reason for long term disability. According to Lancet Neurology (2011), by the year 2030, the worldwide burden of stroke in

Stroke conditions come with motor impairments which are characterised by paralysis (hemiplegia) and weakness (hemiparesis), contralateral to the affected hemisphere of the brain (Sullivan and Schmitz, 2007). Postural imbalance, muscle weakness (paresis), spasticity, asymmetrical movements between lower limbs, abnormal movement synergies, lack of mobility, loss of inter-joint coordination, and loss of sensation have been identified in hemi-paretic patients with stroke (Masiero et al., 2014). The performance of continuous and smooth reciprocal movements, such as walking has been identified by Sibley et al. (2008) as a very difficult task for hemi-paretic stroke patients.

Rehabilitation is quite important for patients with stroke conditions. Regaining one's ability to walk is of great importance for stroke survivors and is a major goal of all rehabilitation programmes. It has been found that 55% of stroke survivors who had used the functional ambulation classification (FAC) achieved independent walking after three months but that 45% of the patients were discharged with residual gait impairment (Lord

et al., 2004). Hill et al. (1997) identified the treatment of hemiplegic patients in the acute phase after stroke with the use of early movement therapy as being technically difficult because of their motor weakness and balance disturbances.

Dickstein (2008) suggested the recovery of walking ability to be the major objective of lower limb rehabilitation after stroke. The extent of recovery have been identified by Sullivan and Schmitz (2007) to depend on several factors, such as lesion location, severity, and capacity for adaptation through training, and is higher in the first month after stroke. Currently stroke rehabilitation approaches empathise task-specific training with intense practice of functional tasks.

Studies by Van Peppen et al. (2004) revealed that no effective treatments are currently available to prevent or reduce stroke-related neurological damage, or to promote recovery after stroke, and only physiotherapy seems to support spontaneous functional recovery after the acute event. Clinical trials of pharmacological agents in stroke have focused mainly on therapeutic steps that need to be taken in the very acute stage, for example to restore blood flow (thrombolytic therapy) or reduce the effects of ischaemia (neuro-protective therapy) (Chaudhary et al., 2011).

2.3 Management of stroke Patients

Holloway et al., (2014) concluded that, palliative care needs of patients and families should be addressed to complement existing practices and improve the quality of life of stroke patients. Although impressive developments have been made in secondary prevention of stroke there is still lack of a strong, affordable, acute drug that can be easily given to most patients with stroke (Langhorne et al., 2009).

Due to this, stroke continues to rely on rehabilitation interventions (Langhorne et al., 2011). Findings from randomised trials and systematic reviews have however shown that provision of care in a stroke unit can increase the number of patients who survive, return home, and regain independence in daily activities (Langhorne and Dennis, 2004). Most high income and developed countries recommend stroke units as clinical practice guidelines and national strategies whiles in many countries; associated improvement has been made in access to stroke-unit care (SIGN, 2008).

Improvement in the access has been directly linked to improved patient outcomes with most clinical trials of stroke-unit care being carried out in high-income countries (Thijs et al, 2009). A study by Alguren et al. (2008) indicated that more than 50% of stroke patients do experience physical and environmental barriers. Barriers to physiotherapy services are enormous for stroke patients with high disability of about 50% (Donkor et al., 2014). Kolt et al. (2007) explained that the type and frequency of physiotherapy can be a barrier.

There is restrained direction with regards to how best to measure and which theoretical models are appropriate to comprehend the maintenance of exercise in patients with fibromyalgia (Dobkin et al., 2006). Peppen et al. (2008) suggested the need for implementation strategies for reported barriers to physiotherapy services for stroke patients. Igwesi (2012) found that, many people live with physical disabilities globally, especially in rural Africa despite expertise of physiotherapists and available evidence of effectiveness of physiotherapy.

2.3.1 Physiotherapy Modality

Chartered Society of Physiotherapy (CSP) (2013) defines physiotherapy as the process by which movement and physical function are treated when an individual experiences

some injury, illness, or disability. Professionals engaged in physiotherapy treatments are referred to as physiotherapists. Physiotherapists possess a wide range of scientifically-based clinical skills that can be combined to different degrees and integrated in different contexts of rehabilitation. The core skills of the physiotherapists include manual therapy, electrotherapy, and exercise therapy, all underpinned with a foundation of evidence-based clinical reasoning (Watson, 2000). Physical modalities have a long history of application to patients with neurological conditions. The rehabilitation of people with central nervous system disorders such as stroke involved a compensatory approach, using bracing and aids to counteract any impairments and teaching the patients to be as independent as possible (Galea, 2012). As poliomyelitis waned, more attention was given to the management of impairments experienced by people with central nervous system disorders and the theoretical framework for the application of specific modalities has changed over time according to the available scientific knowledge (Galea, 2012).

Galea (2012) suggested that therapeutic interventions have been directed towards the positive feature of spasticity for many years under the assumption that spasticity is the major cause of dysfunction after central nervous system lesions. Interventions have included physical inhibitory techniques such as inhibitory casting or prolonged ice, or surgery, or pharmacological agents including baclofen.

Farrell and Jensen (1992) refers to manual therapy in physiotherapy as assessment and treatment of the musculoskeletal system using the hands, and typically includes passive movements of a patient's body parts such as accessory and physiological joint mobilization with the electrotherapy including the treatment of a patient using electro-physical agents such as neuromuscular electrical stimulation (NMES) and cryotherapy as adjunct interventions to influence specific physiological processes (Watson, 2000).

According to Clark and Lephart (2015), exercise therapy refers to performing repeated movements as part of a goal-directed training programme, specifically directed at altering some physical or physiological characteristic and enhancing overall functional ability. Physiotherapy interventions including combinations of manual therapy, electro-physical agents and exercise therapy can significantly improve objective (physical) and subjective (patient-relevant) outcomes such as Anterior Cruciate Ligament (ACL)-deficiency, ACL reconstruction, patella femoral pain syndrome (PFPS) and meniscal tears (Tagesson et al., 2008; Yim et al., 2013; Frobell et al., 2010; Dolak et al., 2011).

Flegal et al. 2007, found that, adherence to physiotherapy modalities by stroke patients plays an essential role in rehabilitation of stroke patients. Adherence to physiotherapy is promoted by the belief that an intervention will be effective (the outcome expectancy), as well as the belief that the individual is capable of following the requirements of the intervention (the efficacy expectancy).

Most stroke patients are put on treatments and this is very critical to the improvement of their conditions. Adherence with therapy is an important factor which can influence the outcome of that treatment (Hayden et al., 2005). Stroke patients usually undergo physiotherapy and are put on medication during their treatment regime. The identified potential barriers to exercises is very important as this prevent the challenges of maintaining the exercise programme for the stroke patients (Gohner and Schlicht, 2006; Ziegelmann et al., 2006).

2.4 Adherence for stroke treatment

Adherence is defined as the extent to which a person's behaviour coincides with medical or health advice with the adherence rate being worse in chronic conditions compared to acute conditions and drops very abruptly after 6 months of treatment in chronic

conditions (Osterberg and Blaschke, 2005). The WHO also defines adherence as: “the extent to which a person’s behaviour corresponds with agreed recommendations from a healthcare provider” (WHO, 2003).

According to Kolt et al., (2007) within physiotherapy, the concept of adherence is multi-dimensional and could relate to attendance at appointments, following advice, undertaking prescribed exercises, frequency of exercise, acceptable performance of exercises or doing more or less than advised. Physical activity level at baseline if low may elicit pain during exercise and this can be a barrier, (Schoo et al., 2005; Dobkin et al., 2006).

Studies by Sjosten et al. (2007) have shown that good reachability and continuous motivation might also increase participation in physiotherapy. Forkan et al. (2006) also suggested the education of patients by the physiotherapists on the importance and value of exercise, as it relates to optimal physical function, wellness and quality of life to be helpful in physiotherapy adherence. Stineman et al. (2011) stated emphatically that reduced mental wellbeing presents a greater barrier to exercise adherence than reduced physical wellbeing. Within physiotherapy it is not clear which factors act as barriers to adherence. Depression has been found to be major causes of non-adherence to physiotherapy by stroke patients. Jack et al. (2010), in their studies have also suggested anxiety as one of the major causes to non-adherence of physiotherapy by stroke patients. They also found helplessness to be a barrier to adherence to physiotherapy services for patients suffering from stroke.

Beinart et al. (2013) in their studies identified higher health locus of control, supervision, participation in an exercise programme, and participation in a general behaviour-change programme (BCP) incorporating motivational strategies as factors contributing to

adherence to physiotherapy treatments of stroke patients. According to Ogunlana et al. (2013), rehabilitation (physiotherapy) gives a remarkable reduction in disability after stroke. Stroke patients undergoing physiotherapy are on medications for the treatment of underlying conditions. Green et al. (2004) found evidence to conclude that consistency in physiotherapy is more effective in improving disabilities following stroke.

McLean et al. (2010) also reviewed interventions for enhancing adherence to physiotherapy whiles examining attendance to appointments together with adherence to home exercise and found strong evidence that adherence strategies were not effective at increasing long term (>1 year) adherence. Petursdottir et al. (2010) suggests that patients who are influenced mainly by facilitators are likely to be more successful in integrating physiotherapy into their lifestyle, compared to participants who are predominantly influenced by barriers.

Clinicians and general practitioners suggest not being able to follow people up sufficiently due to time restraints and cost (Holden et al., 2009), limited access and availability of allied health professionals, lack of government support impacts on overall management choices and the relative high costs involved in physiotherapy are major barriers to referring patients for individual or group exercise in physiotherapy (Australia Arthritis, 2012). Damush et al. (2005) suggested that factors contributing to physiotherapy adherence include the presence of social support, the presentation of an organized exercise opportunity conducted by professionals, having a partner exercise alongside them, being familiar with the exercise task, and having positive outcome expectations of exercise. Campbell et al. (2001) in their study on physiotherapy involving primarily home based strengthening exercises found out that patient were most adherent with the physiotherapy regime in the initial period while still seeing the

physiotherapist regularly but the adherence drops off once contact with the physiotherapist ceases.

Picorelli et al. (2014) found that there are person-level factors associated with better adherence of physiotherapy which can be classified as demographic, health-related, physical and psychological. They also found out that better physiotherapy program retention is evident in people with higher socioeconomic status and better education and that living alone was associated with better physiotherapy program attendance (Picorelli et al., 2014). Studies by Rejeski et al. (2007) indicated that physiotherapy programme attendance is better in people with better health measured by fewer health conditions, better self-rated health, taking fewer medications and lower body mass index. They also suggest that there is a better adherence in people with a pacemaker, which may reflect a greater motivation to exercise after the diagnosis of a heart condition (Rejeski et al., 2007). Better physical function, as measured by gait speed or endurance (6-minute walk test), was associated with better adherence.

2.5 Barriers to adherence of stroke treatment

Jack et al. (2010) examined barriers to treatment adherence to physiotherapy and found strong evidence that poor adherence was associated with low self-efficacy, depression, anxiety, low social support/activity, low physical activity at baseline, helplessness, greater perceived barriers to exercise, and increase pain levels during exercise. Psychological factors are associated with poorer adherence to physiotherapy and these factors include depression, loneliness, lower scores on the Mini-Mental Status Examination, psychoactive medication use and a higher perceived risk of falling (Picorelli et al., 2014).

2.5.1 Social Barriers

Lack of family support can be a great barrier in the physiotherapy process. The support provided by the physiotherapist, the development of the patient practitioner relationship and feedback from the physiotherapist may also serve as a barrier to adherence (Jack et al., 2010). The active involvement of partners of stroke patients in the rehabilitation process to encourage and motivate the patient may help in improving adherence to physiotherapy treatment (Fekete et al., 2006).

Milne et al. (2005) identified low self-efficacy as a barrier to treatment adherence in physiotherapy. Sniehotta et al., (2005) also explains poor self-efficacy with a patient's low confidence in their ability to overcome obstacles to initiating recovery from relapses in exercise. Factors such as social support are likely to be interactive and cumulative over lifespan; the health of an individual is probably a determinant as well as an outcome of the socioeconomic status of stroke patients (Cox et al., 2006).

Jack et al., (2010) found that low levels of physical activity at baseline or in previous weeks, low in-treatment adherence with exercise, low self-efficacy, depression, anxiety, helplessness, poor social support or activity, greater perceived number of barriers to exercise and increased pain levels during exercise are all barriers to treatment adherence but found out there was conflicting evidence regarding age and pain at baseline and limited evidence for many other barriers and suggested that identification of these barriers during patient assessments may be important in order to adopt appropriate management strategies which help to counteract their effects and improve treatment outcome (Jack et al., 2010).

Jack et al. (2010) also suggested that physiotherapists should be concerned about the attitudes, beliefs and barriers facing their patients and act collaboratively with their

patients to design realistic treatment plans which are customised to the patient's life circumstances. Friedrich et al. (2005) found out in a study that subjects receiving a motivation programme to promote adherence significantly increased attendance with exercise-based clinic sessions compared with subjects who did not receive motivation training.

2.5.2 Adherence to medications

Prevention of stroke is the most effective strategy to reduce its burden but remarkable therapeutic changes are capable of improving outcomes (Patarroyo and Anderson, 2012). However, there are some challenges with the adherence of patients to drugs. According to Joshi et al. (2006) adherence involves, not only taking the prescribed medications, but also compliance with follow up appointments and maintaining the suggested lifestyle modifications.

Krousel-Wood et al., (2004) reported that factors that influence adherence include patient demographics, side effects of medication, convenience of drug dosing, cost and number of medications, patients' knowledge, beliefs and attitude and treatment, patients' involvement with their care and health care system issues. Rate of adherence to medication is worse for patients with chronic and acute conditions (Joshi et al., 2006; Thomas et al., 2010).

Asymptomatic existences and lifelong nature of hypertension are two other key factors that undoubtedly contribute to poor patient adherence to drug regimens (Krousel-Wood et al., 2004). Buabeng et al., (2004) have also reported that an unaffordable drug price is the main reason for non-adherence in 96% of patients in Ghana.

Studies by Thomas et al., (2010) revealed that a barrier inability of a patient to recall as the common observed reason for non-adherence. They suggested in their study that recall barrier can be an important factor that can lead to non-adherence if the patient is prescribed multiple drugs with different frequency of administration. Thomas et al., (2010) in the same study also reported that 83% of patients had barrier to accessing drugs. Belief in drugs was also observed by Thomas et al., (2010) as a barrier to adherence to drugs. They stated that, patients with belief barrier had concerns that either their medications were not working or that their drugs would cause adverse events and suggested that health care providers should spend time in reassuring patients and explaining to them the benefits and risks of their hypertensive medications.

2.5.3 Economic Barriers

According (WHO, 2005) stroke is an expensive disease and it imposes a significant societal and economic burden on human. According to Rimmer et al. (2008), the cost of exercise programme was rated as the highest barrier for the stroke patients of 61%. Barriers which affect the adherence to stroke need to be managed effectively to ensure effective treatment of stroke patients. Studies by Snozzi et al. (2014) revealed that stroke is a huge challenge for patients and their families and also a major financial burden for the health-care system. There are high direct costs incurred by the expensive acute care and rehabilitation as well as high indirect costs because of loss of productivity on the part of both the patient and the relatives (Snozzi et al., 2014).

2.5.4 Cultural Barriers

Divergent views on culture must be considered when providing care to people with disability, as culture variations affect how caregivers understand the burden of caregiving (Payne, 2011). Knowledge on culture embodies a number of dimensions such

as ethno history, health beliefs, stereotypes, barriers and sociological issues with different group of people showing some level of diversity within as well as similarities and to resist templates of information that may lead to stereotyping and subsequent negligent care (Campinha-Bacote, 2003). Culturally the needs of an individual differ from those of the family or the community (Niemeier et al., 2003). Failure to respect and recognise the patients' culture and beliefs can be a barrier for accessing physiotherapy services.

Ramsden (2002) argued that physiotherapy occurs within a particular context and professional explanatory model of health care has its own social, cultural and institutional contexts. Hence a consideration of ethnocentricity therefore needs to include health beliefs and the potential cultural gap that exists between users and providers of health care. Shaughnessy and Tilki (2007) examined the values, beliefs and ideas of physiotherapist as well as their therapeutic relationships with clients and observed that cultural knowledge facilitates information about different ethnic minority groups. It helps to understand the health and illness, and the social factors that influence the patients. Thus it allows patients to articulate concerns about limitations in knowledge or confidence that may contribute to culturally insensitive care.

According to Ekelman et al (2003), skill in interpreting cultural attitudes and behaviours enables sensitive therapeutic interactions and appropriate care thus understanding and accommodating differing cultural values, beliefs and behaviours and subsequently integrating them into care can help to eliminate barriers to high-quality physiotherapy. Shaughnessy and Tilki (2007) indicated that if physiotherapists are to practice in a culturally competent way, it is important that patients assessment is done from a sociocultural perspective as well as a biomedical position since some studies have shown that physiotherapist lacking cultural knowledge may make incorrect clinical judgements

about the nature or severity of clients' problems with an example, being patients may report emotional states in terms of physical illness.

Studies by Kvaren and Johansson (2004) also suggested that culture shapes how pain is given meaning and expressed, and influences beliefs about therapy and self-management since this has been shown in studies where asylum seekers and refugees frequently present to physiotherapy with symptoms arising from physical trauma or emotional distress related to situations in their homeland and/or isolation in a new country (Claude, 2001). Marshall (2003) acknowledged that although physiotherapy, like other healthcare services, may discriminate and thus creating a barrier to progress, it is possible that, with sensitivity, the patient may be encouraged to explore differing therapeutic perspectives appropriate with cultural or religious beliefs. In facilitating treatment in healthcare especially with physiotherapy, appreciating the problem, setting goals and undertaking tailored rehabilitation within the patient's explanatory model of health is important for all patients and their diverse cultures (Christie and Cross, 2003; Edwards et al., 2004).

2.5.5 Health System Barriers

Physiotherapists' attitude if poor can be a barrier (Jack et al 2010). Langhorne et al. (2012) suggest that an adequate number of skilled staff is an essential requirement of stroke-unit care and various skills will be needed to provide comprehensive care. Some of these skills can be supplemented with existing training resources, including online materials.

Nursing, medical, and physiotherapy staff is key in the development and dissemination of stroke expertise. When key skills, such as speech and language therapy for dysphagia assessment, are not widely available, teaching of the skill to other team members might be necessary (Langhorne et al., 2012).

In settings where skilled staffs are few, options might include supplementary training for nursing staff, and training for family members and support workers. The inclusion of family members in routine nursing care and rehabilitation activities allows them to be trained without the need for additional family training sessions. According to Agyemang et al. (2012), further studies on stroke is required to know what happens to stroke after discharge from hospital, follow-up is therefore very important to prevent disability. Lack of follow-up/ referral for physiotherapy is a barrier.

Medical expertise in stroke care might be limited by a shortage of trained staff. Capacity could be increased by provision of training for physicians to develop knowledge and skills in stroke care. The development and implementation of practical protocols that can be used by generalist doctors could standardise and improve the medical care of most patients with stroke (de Villiers et al., 2009). The practical protocols for the medical care of most patients with stroke according to de Villiers et al. (2009) should include stabilisation on admission, diagnostic assessment, investigations, management of risk factors, and prevention and management of complications. When medical expertise and supervision of patients is restricted, early detection of common complications can be associated by adaptation of the nursing process. Examples might include the regular use of urine testing and recording of the respiratory rate to identify urine infections, pneumonia, and pulmonary embolism (de Villiers et al., 2009).

According to Langhorne et al. (2012) equipment and medication are also necessary in managing barriers faced by stroke patients. Adequate bedding, aids, seating and equipment to assist with monitoring and fluid management are very important in stroke facilities. Some basic drugs are needed, particularly aspirin and antihypertensive drugs. Furthermore, generic drugs for lipid lowering and for diabetes management are important.

2.6 Conclusion

The literature reviewed shows evidence of increase of prevalence of stroke globally, sub-Saharan Africa and Ghana. It also shows positive effect of physiotherapy in the management of stroke, improving functions and preventing disabilities and other complications associated with stroke. The gaps that remain in the literature are that, though studies have been carried out in other countries on stroke and physiotherapy, not much has been done in the area of barriers to physiotherapy services so literatures on general rehabilitation were used. In Ghana however, not much has been done on stroke in general and the barriers to physiotherapy services for stroke in particular. Furthermore, not much work has been done or published in the area of stroke and physiotherapy in Ghana. A review on the barriers to physiotherapy services for stroke patients revealed that very little work has been published on Ghana. As such, studies on general management/ rehabilitation of stroke were included in this literature review.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This session presents the various techniques and tools that were used to collect data from the participants. It also describes the type of study, study location, variables that were measured, sampling plan and analytical tools that were used to analyse data. Furthermore, it presents the ethical considerations and issues of the study.

3.2 Type of study Design

Cross-sectional study design was employed to assess the individual and the health system barriers to physiotherapy services for stroke patients.

3.3 Study Location /Area

The study was conducted at the Tema General Hospital in Tema (TGH), Greater Accra Region of Ghana. Tema is one of the 16 districts of Greater Accra Region, and situated about 30Km east of Accra. TGH was constructed in 1954 by J.W Harrow and Sons Ltd and was handed over to the government of Ghana in 1965. Tema has a population of 402,637 (GSS PHC 2010).

TGH has a bed capacity of about 300 and bed occupancy of 80 % (TGH report 2013). There are several departments at TGH of which Physiotherapy Department is one. Other departments include Surgical, Medical, Dental and Eye Departments among others. The hospital delivers physiotherapy services to both in-patients and out-patients. Stroke appears among the top ten (10) commonest conditions at the physiotherapy department at TGH. For the past three years, there has been increase in attendance of stroke patients at

TGH Physiotherapy Department. The 2013 annual report showed 5,017 stroke patients' attendance, representing 35% of total patients accessing physiotherapy services (GHS-TGH Report, 2013).

The area was selected because of its population size and its numerous work forces with diverse socio-economic backgrounds within the metropolis. Furthermore, Tema was considered due to the high physiotherapy attendance and the wide catchment area it covers. It renders physiotherapy services to all the communities within Tema metropolis, Nungua, Spintex, Sakumono, Tema New Town, Manhean and Afienva, among others. The Physiotherapy Department at TGH is the only government owned Physiotherapy Department in the area. Also Tema metropolis has diverse socio-economic classes of population, which are low, medium and high income brackets; this would make it possible to have a general picture of people with different socio-economic status. Map of Tema showing TGH is shown in figure 2.



Figure 2: Map of Tema showing Tema General Hospital.

3.4 Study Variable

The dependent variable of the study is physiotherapy services and the barriers are the independent variables which were measured in the study. The barriers were classified into two main barriers; individual and health system barriers.

3.4.1 Dependent variable

The dependent variable was measured as the number of times a patient had defaulted on accessing physiotherapy services per the 18 recommended sessions for stroke patients at TGH.

3.4.2 Independent variable

The independent variables or exposure variables that can influence the outcome variable include:

Table 1: Independent Variables

Variable	Description
1) Individual/ personal barriers	1) Economic 2) Sociocultural 3) Background characteristics 4) Medication barriers 5) Medication adherence
2) Health system barriers	1) Human -Physiotherapists' attitude -Waiting time 2) Physiotherapy modalities 3) Physical -Distance 4) Material/equipment

Individual/personal barriers were assessed under five broad headings; Economic, socio-cultural, background characteristics, medication barriers and medication adherence. To

assess economic factors, patients' perception of the cost of physiotherapy treatments, cost of transportation and affordability of physiotherapy service were obtained. To determine the socio-cultural factors health beliefs, social support from family and friends were obtained. Background characteristic factors were determined by age, sex, educational level, employment status and marital status of the stroke patients. Those of medication barriers were; cost of medication, adherence, and side effects. For the medication adherence, Morisky 8 item medication adherence questionnaire was used and Likert's scale was used to describe the other individual and health system barriers.

Health system barriers were assessed under four broad headings; Human factors, physiotherapy modalities, physical barriers and Material/ equipment factors. To assess human factors, time spent waiting for physiotherapist and attitude of physiotherapist towards patients were obtained. Physiotherapy modality factors were electrotherapy, exercise therapy and massage therapy among others. Physical factors were determined by assessing patient's distance from the facility and the availability and accessibility of a transport medium. Materials / equipment factors were determined by obtaining information on the availability and accessibility of patients to some basic physiotherapy materials and equipment.

3.5 Study Population

The population for this study constituted all stroke patients who received physiotherapy services at TGH and lived in Tema and its environs.

3.6 Sampling Method/ Technique

A random sampling technique was used to select the potential respondents. This was done by getting the register of all the stroke patients and selecting from the attendance

register the folders of all stroke patients who access physiotherapy services at the Physiotherapy Department of TGH. Folders of stroke patients who did not complete their therapy or have defaulted two consecutive or more sessions/visits for the past six months were selected. A total of 430 stroke patients were obtained from the department which served as the sample frame. The identification numbers of all these patients were entered into a computer. Then, 216 (sample size) random numbers of patients were generated from the sample frame of 430 with the aid of Microsoft Excel 2007. Patients whose numbers were selected were then identified and subsequently interviewed.

The inclusion criteria were stroke patients 18 years and above, conscious and had good memory, in good state of mind and were capable of giving voluntary consent. All stroke patients who had reported and received services at the Department for the past six months and had defaulted for two consecutive times or more in one week were selected as potential respondents. Stroke patients who were on two and three physiotherapy session programme per week were selected. Patients who have defaulted or stopped receiving therapy as a result of ill-health were excluded. A selected patient who did not qualify within the inclusion criteria was skipped and the next qualified patient in the list (sample frame) was selected and interviewed. Those respondents who were still not visiting the Department for services were reached on phone and face-to -face interview schedules arranged at their convenience in their various homes.

A period of one month was used to interview the 207 respondents. Face-to-face interview was conducted for the selected patients from Monday to Friday within the hours of 7am to 4pm. Each day, three (3) to eight (8) respondents were interviewed. Those who had stopped visiting the department for services and were selected, were reached on phone and appointment scheduled for face-to-face interview at their convenience in their various homes.

3.7 Sample Size

Israel, 2013 indicated various formulae used in calculating sample size.

For the purposes of this study, the sample size (n) was calculated using the Cochran Formula:

$$n_0 = \frac{Z^2 pq}{d^2}$$

Where

n_0 = sample size

Z = Standard normal set at 95 % confidence interval equivalent to 1.96

p = unknown prevalence set at 0.5

q = 1- p = 0.5

d = margin of error (5%)

$$\text{Thus: } n_0 = \frac{1.96^2 \times 0.5 \times 0.5}{0.05^2}$$

$$n_0 = 384$$

A finite population correction factor was used to determine the exact population size (Israel, 2013).

Therefore, for this study:

$$n = \frac{n_0}{1 + \frac{(n_0 - 1)}{N}}$$

Where,

n = final sample size

N = population size = (An average total of 400 old and new stroke cases per month was estimated from TGH report/ record).

n_0 = sample size calculated using Cochran's formula = 384

$$n = \frac{384}{1 + \frac{(384-1)}{400}}$$

Therefore, $n = 196$

A 10% non – response rate was assumed and estimated to be 19.6. This was therefore added to the sample size initially calculated;

$$n=196 +20= 216$$

Thus the sample size for this study was 216 stroke patients. However, 207 respondents were obtained (96% response rate).

3.8 Data Collection Techniques/Methods & Tools

The study employed the use of a structured questionnaire. A face-to-face interview was conducted to obtain the needed information from the respondents. The questionnaire captured information on stroke patients' demographic characteristics as well as their social, economic, cultural and health system barriers and these were described using Likert's scale. The questionnaire also captured information on health system factors which comprised of physiotherapists' attitude, waiting time, physiotherapy modalities, and physical factors such as distance to the physiotherapy department as well as equipment/material and were described using Likert's scale. The structured questionnaire further elicited information on the number of sessions that a respondent has defaulted on assessing of physiotherapy services per eighteen (18) sections programme recommended for all stroke patients at the physiotherapy department of TGH. This eighteen (18)

section programme is carried out within the period of six (6) to eight (8) weeks. Morisky 8 item medication adherence Questionnaire was used to measure medication adherence level of the stroke patients. The Morisky 8 item medication adherence level was used accordingly as; zero (0) as high adherence, one (1) and two (2) as medium adherence and more than two (>2) and above as low adherence. Each interview lasted for about 30 minutes maximum.

3.9 Data Processing

The data collected were screened or validated and coded where necessary before the entry. After data entry using Epi info 7, the data set was cross-checked with hard copies to ensure there were no errors. The data set was then exported to STATA software 12.0 for analysis.

3.10 Statistical Analysis

The data were analysed using STATA 12.0. Descriptive statistics were used to analyse demographic characteristics of respondents and other barriers. The statistical differences between the individual and the health system barriers were analysed using Chi-square test. Associations between dependent variable (physiotherapy service) and independent variables (individual and health system barriers) were also analysed using Logistic regression model. The results were displayed in tables, graphs and charts.

3.10.1 Chi-square Test

A Pearson's Chi squared test was carried out to identify the associations (difference/relationship) between the barriers and the rate of default. The rate of default of physiotherapy was compared with the individual and health system barriers; this was to

ascertain the differences between the independent variables (individual and health system barriers) and the outcome variable (default rate). For values less than 5, a Fisher's exact test was performed.

3.10.2 Logistic regression model

Using statistical approach, the various numbers of times of default on accessing physiotherapy services were estimated to have a median of 4.3 of default. It was therefore assumed that, if the number of default was below 5; it was low and number of default 5 or above was high. So the number of default was categorised into two, below five (5) and five (5) or above. These were coded zero (0) for below five and one (1) for five (5) or more. A logistic regression between rate of defaulting on accessing physiotherapy services and the individual barriers; socio-cultural, economic, background characteristics, medication adherence level and medication barriers were done to test the strength of association.

Furthermore, the variables with significant p-values; were adjusted for and after adjusting, employment and adherence were still statistically significant. The adjusted p-values were those, p-values, when the education, employment, medication barriers and adherence level were held constant.

3.11 Quality Control

Pre-testing/pilot study: The interview questionnaire was pre-tested at Ridge Hospital Physiotherapy Department to ensure its feasibility and accuracy. Necessary corrections were carried out before the actual exercise at TGH Physiotherapy Department.

Training of Research Assistants: The research assistants and data entry clerk were given an orientation and training prior to the exercise. All completed data were validated daily before data entry. The entire uncompleted questionnaires were completed and entered. After data entry process, the dataset was cleaned before running the analysis.

3.12 Study Limitation

The estimated time/how long it took patients to the Physiotherapy Department depended on the patients' ability to recall; hence it may not be entirely accurate. This limitation can be overcome in future studies patients are able to give an accurate time to the facility.

3.13 Ethical Considerations

Ghana Health Service ethical approval was sought: Proposal was sent to the Ghana Health Service Ethical Review Committee of the Research and Development Division for ethical approval.

Approval from the study area: Permission was sought from the authority of TGH through the medical director of the hospital.

Informed Consent: Before the interview the purpose of the study was explained to all respondents.

Potential Risks/Benefits: There was no potential risk or harm that this study posed to any of the participants. Instead, the outcome of this study will help deliver better physiotherapy services to stroke patients.

Privacy and Confidentiality: Each stroke patient was interviewed on individual basis to maintain privacy and confidentiality. The information that was collected from the respondents was treated as confidential.

Data storage and Usage: The information that was obtained from the participants was kept in confidence under lock and key, and only accessible to the researcher and the supervisor.

Voluntary Withdrawal: There was no penalty in opting out of the study. The participants had the right to withdraw at any time from the study if he/she so wishes.

Description of Consenting Process: Participation in the study was voluntarily. Each interview commenced after the participant had read and understood all the content of the information sheet and consent form. Further explanations were ensured where necessary before the participant would sign or thumbprint the information sheet and two consent forms. The procedure and all details were explained to participants who could read or write to their understanding. The participants kept one of the signed consent forms. In situations where participants were uncomfortable responding to any of the questions, he/she was allowed to decide not to answer the question.

Compensation: No financial benefits or any other material was given to participants before or after the interviews or administration of questionnaire.

Declaration of Conflict of Interest: The Principal Investigator has no conflict of interest in this study.

CHAPTER FOUR

RESULTS

4.1 Introduction

This chapter presents the results of the study on the assessment of barriers to physiotherapy services for stroke patients at Tema General Hospital. It presents the background characteristics of the respondents, the individual and health system barriers to physiotherapy services. The section also covers the differences or relationships between the various barriers and the physiotherapy services (default rate). The response rate was 96% (207 out of 216 patients responded) and all questionnaires were completely and correctly answered.

4.2 Background characteristic of respondents

Table 2 shows that most of the stroke patients (57.5%) who visited the Tema General Hospital Physiotherapy Department were males and within 50-59 years (30.1%). A measure of the current level of education indicated that most of the stroke patients had tertiary education (31.9%) with a few (6.3%) being uneducated. Most of the stroke patients were also observed to have had tertiary education as the current level of education. Majority of the stroke patients (73.4%) were married and employed (54.6%).

Table 2: Background characteristics of the respondents

Characteristics (N=207)	Number (%)
Sex:	
Male	119 (57.5)
Female	88 (42.5)
Age:	
<40	21 (10.1)
40-49	43 (20.7)
50 – 59	62 (30.1)
60 – 69	51 (24.6)
70+	30 (14.5)
Educational level:	
No education	13 (6.3)
Primary	13 (6.3)
Middle/JHS	64 (30.9)
Secondary/Vocational	51 (24.6)
Tertiary	66 (31.9)
Marital Status:	
Married	152 (73.4)
Single	17 (8.2)
Divorced	14 (6.8)
Employment Status:	
Unemployed	94 (45.4)
Employed	113 (54.6)
Total	207 (100.0)

4.3 Individual Barriers

The individual barriers comprised of socio-cultural barriers, economic barriers, background characteristics, Medication barriers and medication adherence barriers.

4.3.1 Socio-cultural barriers

The results of the socio-cultural barriers to physiotherapy services showed that most of the stroke respondents 30% (62) had no socio-cultural barrier. Also about 28.0% of the them had the belief that treatment of stroke was spiritual while 27.5% had the view that people seeing them in their physical state as a result of the condition was a barrier to

them on accessing of physiotherapy services. Furthermore, lack of family support (9.2%) and lack of support from friends (5.3%) were also identified as barriers (Figure 3).

4.3.2 Economic barriers

On economic barriers, 44.4% (92) of the stroke patients identified financial dependence and 23.7% (49) indicated affordability of transport as barriers. Affordability of transport and affordability of physiotherapy services were barriers as indicated by 8.2% and 23.7% of the respondents respectively. A small percentage (7.3%) on the other hand selected the payment / hiring of a caregiver as a barrier. However, 16.4 % (34) of the respondents did not identify any economic barrier as shown in Figure 4.

4.3.3 Medication barriers

For medication barriers, medication cost (41.6%), side effect of the medication (22.7%) and medication adherence (21.3%) were identified as the barrier to physiotherapy services. However, 14.5% (30) of the stroke patients opined that they had no medication barrier to physiotherapy services (Figure 4).

4.3.4 Medication adherence level

Most of the patients (58.9%) had a low adherence level to medication, whereas respondents with medium adherence were 41.1% (85) as shown in Figure 5. None of the respondents however, had high adherence level.

4.3.5 Main individual barrier

The results indicated that, 76.3% (158) respondents agreed that the economic barrier was their main individual barrier to physiotherapy services. The respondents who agreed that medication barriers were their main barriers were 12.6% (26) while those with socio-cultural barriers were the least agreed barriers (11.1%) to physiotherapy services as indicated in Figure 7.

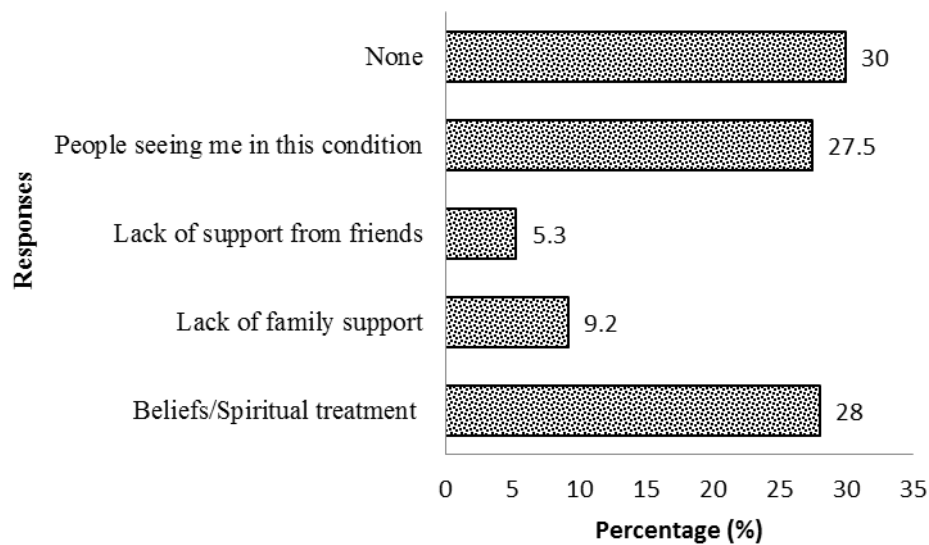


Figure 3: Socio-cultural barriers of respondents

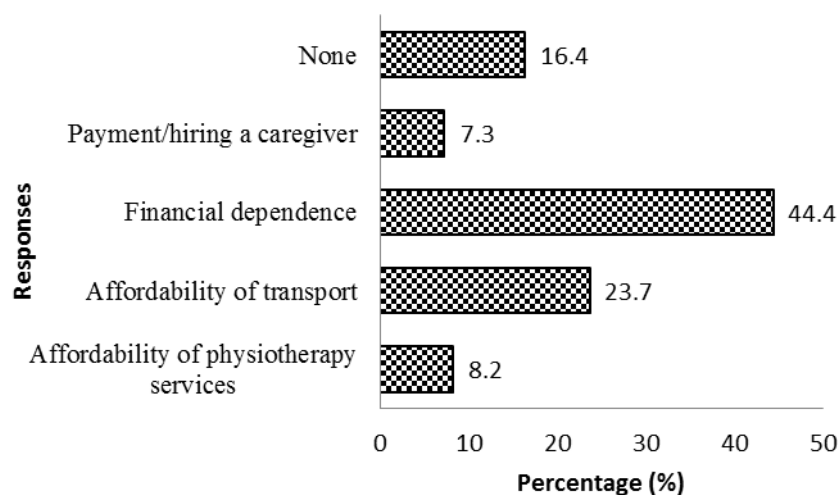


Figure 4: Economic barriers of the respondents

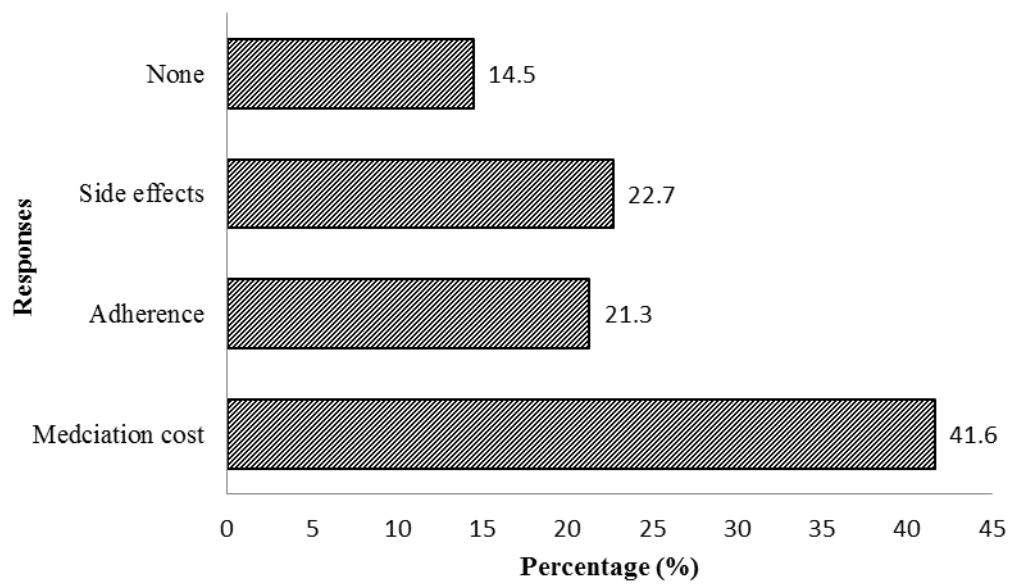


Figure 5: Medication barriers of respondents

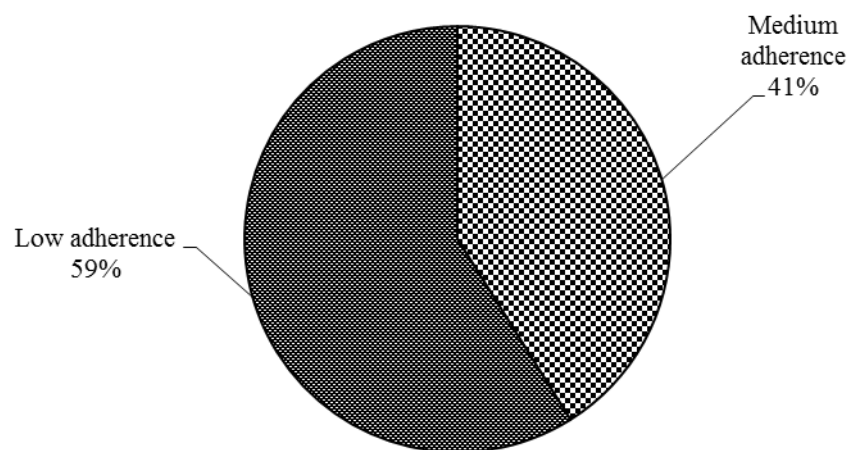


Figure 6: Medication adherence levels of respondents

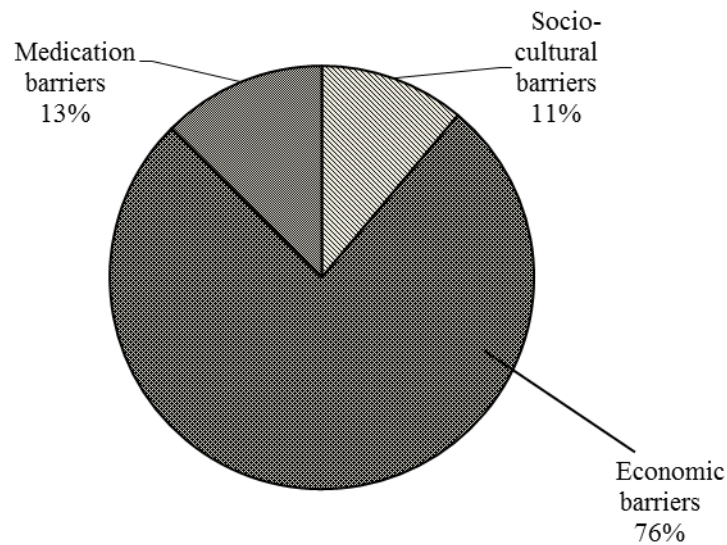


Figure 7: Proportion of main individual barriers of respondents

4.4 Health System Barriers

4.4.1 Physiotherapists' attitude

Majority of the stroke patients (87.0%) disagreed that some physiotherapists were not friendly. However a few; 7.3% (15) agreed that some were not friendly and 5.8% (12) were unsure as shown in Table 3.

On therapists' not assisting in procedures, majority of the respondents, 196 (94.7%) disagreed while 5.3% (11) agreed to the assertion that therapists were not assisting them to go through procedures. Majority (191) of the respondents (92.3%) disagreed while 9 (7.7%) agreed that they waited for too long before they received therapy.

4.4.2 Physiotherapy modality

On the difficulties of the different modalities, 72.0% respondents (149) identified exercise therapy as most difficult, 9.2 respondents (19%) identified electrotherapy and 5.8% (12) each said massage /thermo/ cryotherapy were difficult to undertake. Some of

the respondents said none of the modalities were difficult to undertake (13.0%). Most of them (46.9%) were engaged in two modalities per session while 35.3% (73) were engaged in three modalities per session. About 17.9 % (37) of the respondents received one modality per session as indicated in Table 3.

4.4.3 Physical barriers

Majority of the respondents (72.4%) agreed that the physiotherapy facility was wheelchair/ walking aid friendly, whereas 12.1% (25) of the patients indicated that the facility was not wheelchair/ walking aid friendly and 15.5% (32) were unsure as shown in Table 3.

Most of the patients (62.8%) agreed that distance of the physiotherapy facility from their houses were far. About 30% (63) disagreed that distance from their houses to the facility were far while 6.8% (14) were unsure whether their houses to the facility were far or not.

4.4.4 Material and equipment barriers

About 52% (107) of the respondents agreed that there were enough equipment/ material available for their therapy at the physiotherapy department. However, 29.5% (61) disagreed and 18.8% (39) were unsure (Table 3).

Table 3: Health System Barriers of the Respondents.

Variable	N (%)
Physiotherapists' attitude:	
Physiotherapists not friendly	
Disagree	180 (87.0)
Unsure	12 (5.8)
Agree	15 (7.3)
Therapists do not assist in procedures	
Disagree	196 (92.3)
Agree	11 (5.3)
Waiting Time:	
Wait for too long	
Disagree	191 (92.3)
Agree	16 (7.7)
Physiotherapy Modality:	
Difficult modalities	
Exercise therapy	149 (72.0)
Electrotherapy	19 (9.18)
Massage / Thermo/ Cryotherapy	12 (5.8)
None	27 (13.0)
Number of modalities per session	
One	37 (17.9)
Two	97 (46.9)
Three	73 (35.3)
Physical Barriers:	
Facility is wheelchair/aid friendly	
Disagree	25 (12.1)
Unsure	32 (15.5)
Agree	150 (72.5)
My house is far (Distance)	
Disagree	63 (30.4)
Unsure	14 (6.8)
Agree	130 (62.8)
How many minutes	
<30 minutes	24 (11.6)
30-60 minutes	117 (56.5)
61-120 minutes	48 (23.2)
120 + minutes	18 (8.7)
Material/Equipment:	
Enough equipment available	
Disagree	61 (29.5)
Unsure	39 (18.8)
Agree	107 (51.7)

Data are presented in frequency (N) and proportions (%).

4.5 Association between barriers and default on physiotherapy services.

4.5.1 Association between demographic characteristic and default on physiotherapy services

Male respondents had a high default of 54.8% (57) as compared to females (45.2%). Low default was observed as 60.2% (62) and 39.8% (41) for males and females patients respectively. There was however no significant difference between the sex of the patients and the rate of default ($\chi^2=0.614$; $p=0.433$). For age, respondents in age 50-59 group had 28.2% (29) high default and those 40-49 age groups recorded 25.2% (26). There was no significant difference between age and default ($\chi^2 =4.82$; $p=0.306$). Respondents who had secondary education had a low default of 31.7% (33) while those with tertiary education had the high default rate of 36.9% (38). Respondents who were employed (65.2%) formed the larger proportion of patients with high default rate while those who were unemployed (55.8%) formed larger proportion of patients with low default. There was a significant association between employment status and default ($\chi^2 =9.05$; $p=0.003$) as indicated in Table 4.

Respondents who were married were observed to have high default rate of 76.7% (79) as compared with low default of 70.2% (73), and those who were widowed had 14.4% high default and 8.7% low default. Respondents who were single had 7.7% high and 8.7% low default and those divorced had 7.7% and 5.8% high and low default respectively. No statistical significance was observed when marital status and default rate were compared ($\chi^2 =2.08$; $p=0.557$). For education, a fisher's exact test was performed for the variable (education) because primary education had 4 responses which satisfied the condition for performing a fisher's exact test. There was a significant association between educational level and the default rate ($\chi^2 =12.18$; $p=0.016$) as shown in Table 4.

Table 4: Association between demographic characteristics and default

Variable	Default rate		χ^2	p-value
	Low default	High default		
Sex:			0.6144	0.433
Male	57 (54.8)	62 (60.2)		
Female	47 (45.2)	41 (39.8)		
Age:			4.8217	0.306
<40	8 (7.7)	13 (12.6)		
40-49	17 (16.7)	26 (25.24)		
50 – 59	33 (31.7)	29 (28.2)		
60 – 69	29 (27.9)	22 (21.4)		
70+	17 (16.4)	13 (12.6)		
Education:			12.1772	0.016*
No education	10 (9.6)	3 (2.9)		
Primary	4 (3.8)	9 (8.7)		
Middle/JHS	29 (27.9)	35 (34.0)		
Secondary	33 (31.7)	18 (17.5)		
Tertiary	28 (26.9)	38 (36.9)		
Marital status:			2.0766	0.557
Married	73 (70.2)	79 (76.7)		
Single	8 (7.7)	9 (8.7)		
Widowed	15 (14.4)	9 (8.7)		
Divorced	8 (7.7)	6 (5.8)		
Employment Status:			9.047	0.003
Unemployed	58 (55.8)	36 (35.0)		
Employed	46 (44.2)	67 (65.2)		

* Fisher's Exact Test.

4.5.3 Association between individual barriers and default of physiotherapy services

Most patients who had beliefs/spiritual treatment for stroke were observed to have high proportions of high default rate (30.1%) as compared to those who had other socio-cultural barriers such as being seen in their condition (26.2%) and the others. Respondents with no socio-cultural barriers had low default of 33.7% compared with those with belief/spiritual treatment for stroke (26.0%). Statistically, no significant difference was observed between the socio-cultural barriers of the respondents and default ($\chi^2=4.13$; $p=0.389$). Patients who indicated financial dependence / not working as their economic barrier to physiotherapy services had high default rate (48.5%) and low default (40.4%) rate compared to those who indicated other economic barriers. No

significant association was observed between the patients' economic barriers and the rate of default ($\chi^2 = 3.82$; $p = 0.43$) as indicated in Table 5.

For the medication barriers, the cost of medication was also seen to be the major contributor to high default rate (33.0%), and adherence with high default rate (30.0%) among the stroke patients (Table 5). There was a significant association between the patients medication barriers and the rate of default ($\chi^2 = 16.18$; $p < 0.001$). The respondents with medium adherence to medication were observed to have low default rate of 71.2%, while those with low level of adherence to medication were observed to have 89.3% high default rate. There was a significant association between the patients level of adherence to medication and the rate of default ($\chi^2 = 84.54$; $p < 0.001$) as shown in Table 5.

Table 5: Association between individual barriers and default of physiotherapy services

Variable	Default rate		χ^2	p-value
Socio-cultural barriers	Low default	High default	4.1311	0.389
Beliefs/spiritual treatment for stroke	27 (26.0)	31 (30.1)		
Lack of family support	6 (5.8)	13 (12.6)		
Lack of support from friends	6 (5.8)	5 (4.9)		
People seeing me in this condition	30 (28.8)	27 (26.2)		
None	35 (33.7)	27 (26.2)		
Economic Barriers			3.8236	0.43
Affordability of physiotherapy services	12 (11.5)	5 (4.9)		
Affordability of transport	26 (25.0)	23 (22.3)		
Financial dependence/not working	42 (40.4)	50 (48.5)		
Payment/ Hiring a caregiver	7 (6.7)	8 (7.8)		
None	17 (16.3)	17 (16.5)		
Medication Barriers			16.1834	0.001**
Medication cost	52 (50.0)	34 (33.0)		
Adherence	13 (12.5)	31 (30.1)		
Side effects	19 (18.3)	28 (27.2)		
None	20 (19.2)	10 (9.7)		
Medication Adherence Level			84.5356	0.001**
Medium adherence level	74 (71.2)	11 (10.7)		
Low adherence level	30 (28.8)	92 (89.3)		

P-value < 0.001**

4.5.2 Association between health system barriers and default of physiotherapy services

Respondents who disagreed that the physiotherapists were not friendly had high default rate of 86.4% (89) as compared with those who agreed (7.8%) and respondents who were unsure (5.8%). For the low default, 87.5% (91) respondents disagreed, 7.7 % agreed and 4.5% were unsure. There was no significant association between the friendliness of the physiotherapists and the rate of default ($\chi^2 = 0.108$; $p = 0.947$). Patients who disagreed of physiotherapists not assisting in procedures had high default rate 91.3% (94) and low default rate (97.1%) when compared to the other opinions that were shared. There was no significant association between the patients perception of the physiotherapists not assisting in procedures and the rate of default ($\chi^2 = 0.29$; $p = 0.589$) as indicated in Table 6.

Patients who disagreed that the waiting time was too long had high default rate was 89.3% (92) as well as low default of 95.2% rate compared to those who shared other opinions. There was no significant association between the patients' perception of their waiting time and the rate of default ($\chi^2 = 2.50$; $p=0.114$). For the responses on difficult modalities, exercise therapy was observed to be the most difficult modality and had high default rate (68.0%) as well as low default (76.0%) rate compared to those who indicated other modalities as difficult. The respondents who received two modalities per session have high default rate (42.7%) as well as low default rate (51.0%) as compared with those who received other number of modalities. There was however no significant association between the respondents' perception on difficult modalities they received and default ($\chi^2 = 3.92$; $p=0.270$). Again, there was also no significant association between modalities they received per session and the rate of default ($\chi^2 = 4.30$; $p=0.104$).

Majority of the respondents who agreed that physiotherapy facility was wheelchair/walking aid friendly showed a high default rate of (70.9%), the groups that disagreed or were unsure measured up to a high default rate of 13.6% and 15.5% respectively. On the other hand, 74.0% of respondents who agreed had low default compared to those who shared other opinions. There was a significant association between the responses on the facility's wheelchair / aid friendliness and the rate of default ($\chi^2 = 0.46$; $p=0.794$). Patients who indicated that, it took them 30-60 minutes to get to the physiotherapy facility had high default rate (55.3%), as well as low default rate (57.7%) compared to those who indicated other durations. There was a significant association between the patients perception of the time it took them to get to the facility and the rate of default ($\chi^2 = 2.91$; $p=0.406$). Majority of the respondents who agreed that there was enough equipment available at the Physiotherapy Department had high default rate of 45.6%, those who disagreed had high default of 31.1% and those unsure had a

high default of 23.3%. Patients who agreed had low a default rate of 57.7% compared to those who shared other opinions. There was no significant association between availability of enough equipment and rate of default on accessing physiotherapy services ($\chi^2 = 3.80$; $p = 0.151$) as shown in Table 6.

Table 6: Association between health system barriers and default of physiotherapy services

Variable	Default rate		χ^2	p-value
Physiotherapists' attitude:	Low default	High default		
Physiotherapists not friendly			0.108	0.947
Disagree	91 (87.5)	89 (86.4)		
Unsure	5 (4.5)	6 (5.8)		
Agree	8 (7.7)	8 (7.8)		
Therapists not assisting			0.292	0.589
Disagree	97 (93.3)	94 (91.3)		
Agree	7 (6.7)	9 (8.7)		
Waiting Time:				
Wait for too long			2.502	0.114
Disagree	99 (95.2)	92 (89.3)		
Agree	5 (4.8)	11 (10.7)		
Physiotherapy Modality:				
Difficult modalities			3.924	0.270
Exercise therapy	79 (76.0)	70 (68.0)		
Electrotherapy	9 (8.7)	10 (9.7)		
Massage/thermo/cryo	7 (6.7)	5 (4.9)		
None	9 (8.7)	18 (17.5)		
Modalities per session			4.303	0.104
One	23 (22.1)	17 (16.5)		
Two	53 (51.0)	44 (42.7)		
Three or more	28 (38.4)	42 (40.8)		
Physical Barriers:				
Wheelchair/aid friendly			0.4618	0.794
Disagree	11 (10.6)	14 (13.6)		
Unsure	16 (15.4)	16 (15.5)		
Agree	77 (74.0)	73 (70.9)		
My house is far (Distance)				
Disagree	39 (37.5)	24 (23.3)	5.4788	0.065
Unsure	5 (4.8)	9 (8.7)		
Agree	60 (57.7)	70 (68.0)		
Time to facility (Minutes)			2.9055	0.406
<30 minutes	15 (14.4)	9 (8.7)		
30-60 minutes	60 (57.7)	57 (55.3)		
61-120 minutes	20 (19.2)	28 (27.2)		
120 + minutes	9 (8.7)	9 (8.7)		
Material/Equipment:				
Enough equipment			3.7992	0.151
Disagree	29 (27.9)	32 (31.1)		
Unsure	15 (14.4)	24 (23.3)		
Agree	60 (57.7)	47 (45.6)		

4.6 Barriers Influencing Physiotherapy Services

4.6.1 Individual barriers

Table 7 shows the association between some individual barriers and physiotherapy services using logistic regression model. There was significant association between the number of the individual barriers were found; that is; current level of education, employment status, medication barriers and medication adherence level and default. However, when these were adjusted for in the multiple regression models, only employment status and medication adherence level showed statistically significant association. There was no significant association between age groups and default of physiotherapy services as indicated in Table 7.

For that of the current educational level, those with primary education had the odds of about 8 of defaulting on accessing physiotherapy 5 times or more as compared to those with no education (OR 7.5, 95% CI 1.31, 43.03). Respondents with tertiary education also had odds of about 5 times more likely to default 5 times or more. For the employment status on the other hand, the respondents who were employed had an odds of about 3 times more likely to default 5 or more on accessing physiotherapy services (OR 2.35, 95%CI 1.34, 4.11) compared to those unemployed. There was significant difference between employment status and the default rate on accessing physiotherapy services at TGH. On socio-cultural barriers, lack of family support had the odds of about 2 times of defaulting 5 times or more on physiotherapy services as compared to those who had belief on spiritual treatment of stroke. This was however not significant (OR 1.89 95% C I 0.63, 5.65). Comparing default rate of physiotherapy services with the main economic barrier to physiotherapy showed that, affordability of cost of transport had the odds of about 3 times more likely to default 5 times or more as compared to the affordability of physiotherapy services as indicated in Table 7. No significant association

was observed (OR 2.86 95% C I 0.93, 8.77). On medication barriers, medication adherence had the odds of about 4 times more likely to default 5 times or more as compared to the medication cost. Medication barriers and default to physiotherapy services showed significant association ($p < 0.001$). Patients with low adherence level to medication had the odds of about 21 and were more likely to default 5 or more as compared to those with medium adherence level as compared to those with medium adherence level. This was statistically significant ($p < 0.001$).

Table 7: Association between individual barriers and default of physiotherapy services.

Variable	Crude		Adjusted	
	OR (95% CI)	P-value	OR (95% CI)	P-value
Age (years):		0.303		
<40	Ref			
40-49	0.94 (0.32; 2.75)			
50 – 59	0.54 (0.19; 1.49)			
60 – 69	0.47 (0.16; 1.32)			
70+	0.47 (0.15; 1.47)			
Sex:		0.433		
Male	Ref			
Female	0.80 (0.46, 1.39)			
Marital status:		0.553		
Married	Ref			
Single	1.04(0.38, 2.84)			
Widowed	0.55(0.23, 1.34)			
Divorced	0.69 (0.23, 2.09)			
Current level of education:		0.014*		0.265
No education	Ref		Ref	
Primary	7.50(1.31, 43.03)		1.64(0.20,13.45)	
Middle/JHS	4.02(1.01, 16.01)		2.34(0.38,14.34)	
Secondary/Vocational	1.82(0.44, 7.46)		1.07 (0.17, 6.84)	
Tertiary	4.52 (1.14,17.97)		3.08 (0.48, 19.90)	
Employment status:		0.002*		0.007*
Not employed	Ref		Ref	
Employed	2.35 (1.34, 4.11)		2.87(1.32, 6.22)	
Main socio-cultural barriers:		0.380		
Beliefs/spiritual treatment	Ref			
Lack of family support	1.89(0.63,5.65)			
Lack of friends' support	0.73(0.20,2.65)			
People seeing me in condition	0.78(0.38,1.63)			
None	0.67(0.33, 1.38)			
Main economic barriers:		0.418		
Affordability of services	Ref			
Affordability of transport	2.12 (0.65, 6.94)			
Financial dependence	2.86 (0.93, 8.77)			
Hiring a caregiver	2.74 (0.64,11.75)			
None	2.40 (0.15,1.18)			
Medication barrier :		<0.001**		0.876
Medication cost	Ref		Ref	
Adherence	3.65 (1.67,7.95)		1.05(0.39, 2.83)	
Side effects	2.25 (1.09,4.66)		0.70(0.25, 1.94)	
None	2.74 (0.32,1.83)		1.01(0.32, 3.17)	
Adherence level:		<0.001**		<0.001**
Medium	Ref		Ref	
Low	20.63(8.96,42.97)		22.07(8.8, 55.37)	

P-value < 0.05* P-value < 0.001**.

4.6.2 Health system barriers

There was no significant association between the various health system barriers and default on accessing physiotherapy services. Those who agreed that the physiotherapists were not assisting them to go through procedures had the odds of 1.50 times more likely of defaulting 5 or more times than those who disagreed (OR 1.50, 95% C I 0.54, 4.08). The association between the default to physiotherapy services and physiotherapists not assisting showed no statistical significance ($p=0.434$). Waiting time ($p=0.109$), and physiotherapists' friendliness ($p=0.379$) were also not found to be significant. On the responses for the difficult modalities, those who had no difficulty with the modalities had the odds of 2.26 more of defaulting 5 times or more as compared to those who opined that exercise therapy was the difficult modality (OR 2.2, 95% CI 0.95, 5.34). The association between the difficult modalities and default of physiotherapy services showed no statistical significance ($p=0.263$). The number of modalities and default also showed no significant association ($p=0.103$). Similarly, there was no significant association between all the other health system barriers and the default; the facility ($p=0.965$), distance ($p=0.221$) time spent to reach physiotherapy department ($p=0.402$) and availability of enough equipment ($p=0.211$) as shown in Table 8.

Table 8: Association between health system barriers and default of physiotherapy services

Variable	OR (95% CI)	P-value
Therapists not assisting:		0.434
Disagree	Ref	
Agree	1.50(0.54, 4.08)	
I wait for too long:		0.109
Disagree	Ref	
Agree	2.37(0.79, 7.07)	
Therapist not friendly:		0.947
Disagree	Ref	
Unsure	1.23(0.36, 4.17)	
Agree	1.02(0.38, 2.87)	
Modalities difficult:		
Exercise therapy	Ref	
Electrotherapy	1.25(0.48, 3.26)	
Massage /thermo/cryo	0.80(0.24, 3.65)	0.263
None	2.26(0.95, 5.34)	
Modalities per session:		
One	Ref	0.103
Two	1.12(0.53, 2.36)	
Three or more	2.03(0.92, 4.46)	
Minutes to facility:		0.102
<30 minutes	Ref	
30-60 minutes	1.58(0.64, 3.90)	
61-120 minutes	2.33(0.85, 6.38)	
120+	1.67(0.48, 5.76)	
Enough equipment:		0.211
Disagree	Ref	
Unsure	1.45(0.64, 3.28)	
Agree	0.71(0.38, 1.33)	
My house is far:		0.221
Disagree	Ref	
Unsure	2.93(0.86, 9.77)	
Agree	1.90(1.03, 3.50)	
Facility is wheelchair/ aid friendly:		0.965
Disagree	Ref	
Unsure	0.79(0.27, 2.25)	
Agree	0.74(0.32, 1.75)	

CHAPTER FIVE

DISCUSSION

5.1 Introduction

This chapter discusses the findings of the study. This study shows that health system barriers generally had no influence on the rate of default to physiotherapy for stroke patients. However, the individual barriers to physiotherapy services had a high influence on the rate of default to physiotherapy for stroke patients at TGH.

5.2 Individual barriers

In this study, the respondents were predominantly males, between the ages 50-59, having tertiary education and mostly married. This is consistent with the findings of Sampane-Donkor (2014), who assessed the epidemiology, quality of life and community perceptions of the stroke patients in southern Ghana. Studies by WHO (2014) on Ghana Country Assessment Report on ageing and health also showed similar distribution of age of stroke patients.

It emerged from this study that male patients were more affected than their female counterparts. This can be explained by the fact that males are more prone to the risk factors associated with stroke, especially, those concerned with poor lifestyle such as smoking and drinking compared to females. This can be compared with the study by Urimubenshi and Rhoda (2011) who found that more than half of the respondents affected by stroke were males.

On education, the study found that over 90% of the respondents had at least primary education. This is comparatively higher than the 50% reported by Urimubenshi and Rhoda (2011). This can be explained partly by the fact that the setting for this study is

made up of people predominantly in the upper and middle class and are more likely to have had at least primary education. Interestingly, stroke patients with tertiary education had high default rate. Again, the study showed that those with education had a higher odds of defaulting than those with no education. This could be attributed to the fact that, this group of patients were more likely to be financially sound and hence more likely to try alternative remedies. Additionally, this group may have had knowledge of other alternative treatment available. It could also be explained by the fact that those with the tertiary education (who were capable of going to work) have high tendency of being employed in better jobs which are likely to be time demanding thus limiting the time they might be having for the physiotherapy sessions. This might have resulted in a high default rate. Additionally, the setting where the study took place has a number of alternative treatments available and patients would be more likely to utilise these services for remedy, consequently, leading to their high default of physiotherapy services at TGH.

Also, age of patients was seen to influence the default rate of physiotherapy services among stroke patients. The stroke patients within the age range 50-59 years had a high default rate compared to those in other age ranges. This suggests that stroke patients who were between the ages of 50-59 years were more likely to have a higher default rate as compared to the other age groups. This could be explained by the fact that, generally, people at this age may have resources for alternative treatment (without physiotherapy services) which could affect their adherence to physiotherapy services and consequently, increasing their default rate.

The study also showed that, the employment status of stroke patients affected the rate of default to physiotherapy services. The rate of default among respondents who were employed was comparatively higher (65.2%) than was observed among respondents

who were unemployed. This can partly be explained by the fact that the sample in this study was predominately made up of employed patients (55%). Additionally, employed respondents are generally more likely to have less time at their disposal as compared to the unemployed. This study also showed a significant difference between employment status and default. Respondents who were employed were 2.35 times more likely to default in accessing physiotherapy service than those who were unemployed. This is consistent with the study by Ogwumike et al. (2015) on barriers to treatment adherence among stroke survivors attending outpatient physiotherapy clinics in North-western Nigeria. The authors found employment status of stroke patients to be related to their adherence to physiotherapy services.

On socio-cultural barriers, about one-third of the stroke patients reported having problem with people seeing them in their conditions. Subsequently, this served to be a barrier against their adherence to physiotherapy. This may be suggestive of poor social attitude towards stroke. Similarly, most people were of the belief that stroke has a spiritual cause and hence would require other remedies other than physiotherapy. Consequently, this served to be the main socio-cultural barrier that affected the rate of default to physiotherapy services for stroke patients. Accordingly, Payne (2011) suggested that cultural beliefs should be considered in providing care to people with stroke. However, a substantial amount (30%) of the patients in this study, reported having no challenge with regards to socio-cultural barriers to physiotherapy. This could be explained by the fact that most of the patients in this study had high level of education. Study by Coulter et al., (2008), showed that level of education improves the perception of patients as well as their general beliefs.

This study also showed a significant difference between employment status and default of physiotherapy services. Patients who were employed had the odds of 2.35 higher of

defaulting in accessing physiotherapy services 5 times or more compare to those who were unemployed. This is consistent with the Study by Ogwumike et al. (2015) on barriers to treatment adherence among stroke survivors attending outpatient physiotherapy clinics in North-western Nigeria, found employment status of stroke patients to be related to their adherence to physiotherapy services.

In this study, the main economic barriers to stroke patients who received physiotherapy services at the TGH was identified to be financial dependence. Studies by Snozzi et al. (2014) revealed that stroke is a huge challenge for patients and their families and also a major financial burden for the health-care system. However, contrary to expectations, a relatively small proportion of the patients indicated affordability of physiotherapy services as a barrier. This could be explained by the fact that, national health insurance company pays two-thirds of the cost of physiotherapy services for the stroke patients at TGH. This has been reported by Appleby (2012), who also found that physiotherapy services often brings additional cost that must be financed by health insurance companies or by patients themselves. Most of the stroke patients who visited the TGH had economic barrier to be the main individual barrier. The reason of the economic barriers of the stroke patients could be due to the fact that each individual had his/her different financial commitments of the condition and this can affect their available or disposable income. According to McNamara, Normand and Whelan (2013) the living status of a person affects his/her use of primary care and some hospital services including physiotherapy care.

In this research, medication cost appeared to be the main barrier to medication treatment of stroke patients who visit the TGH. This could have resulted also from the fact that a significant proportion of the patients were unemployed and thus do not have much available or disposable income. This is in line with findings from Stuart and Zacker

(1999) who found drug costs to be a barrier to adherence to drug therapy by stroke patients. Studies by Munger et al., (2007), suggested that duration of treatment with medication influences the rate of non-adherence to medication by stroke patients. The various barriers to medication treatment of the stroke patients were affected by the level of education since education was observed to be significant in the chi-squared test between education level and default.

Most of the stroke patients at the TGH had low adherence level to medication; with the adherence to medication for the stroke patients influenced the rate of default. This could be explained by the fact that the respondents were receiving alternative form of treatment and did not adhere to their medications. This study found the individual barriers such as educational level, employment status, medication barriers and medication adherence levels to be the most contributed to defaulting on accessing physiotherapy services.

5.3 Health system barriers

Most of the stroke patients in this study indicated that the attitude of physiotherapists did not serve as a barrier to default on accessing physiotherapy services. As such, physiotherapists were generally considered to be friendly and supportive to stroke patients during physiotherapy procedures. The warm reception and responsiveness exhibited towards stroke patients by physiotherapists could have encouraged many patients to patronise physiotherapy services.

The majority of stroke patients attested receiving various assistance from physiotherapists during therapy sessions. The supports could have been in the form of assisting or supporting patients during exercise therapy and other activities of daily living. This is consistent with findings of Jack et al., (2010) who reported that physiotherapists' attitude if poor can be a barrier. The receptive attitude of the staff

towards the patients can be as a result of the fact that they have adequate skills. This is in line with Langhorne et al., (2012), who suggested that an adequate number of skilled staff is an essential requirement of stroke-unit care. Thus, various skills will be needed for delivery of adequate care. This is however in contrast with studies by Lacy et al., (2014) who reported on issues of respect by the health personnel and health care staff did not respect patients, their opinions and emotions.

On waiting time before receiving therapy, over ninety percentage of stroke patients disagreed on waiting too long to receive therapy. The opinion of the time spent at the physiotherapy department did affect the patients' rate of default on accessing physiotherapy services, as there was no significant difference was observed in the chi-square test between the waiting time and rate of default. Most people agreed that they 30-60 minutes to get to the facility from their various home, however, the patients' ability to recall may not be entirely adequate. Similarly, the time to the facility by the patients did not contribute to the default on accessing physiotherapy services.

The exercise therapy was found to be the most difficult modality among the physiotherapy modalities they received, over 70% of the stroke patients agreed to this assertion. This is a similar finding by Jack et al., (2010), who also found adherence of exercise therapy as a difficult modality and becomes a barrier for stroke patients during physiotherapy. A study by Mayo et al. (2013) also highlighted the difficulty in engaging people with stroke in exercise. The difficulty of exercise modality however did not affect the rate of default in this study. A study by Anderson (2003) on adherence to exercise showed that lack of time and low motivation were the main reasons for quitting physiotherapy exercise.

On the number of modalities, about 80% of the patients received more than one modality per session; this can be explained by the fact that all those interventions were essential in rehabilitating the patients' conditions. These modalities were prescribed and carried out because the physiotherapists knew it would yield positive results in their conditions. Similar to the study by Clark and Lephart (2015) who suggested that modalities should be goal-directed to enhance the functional ability of patients in physiotherapy interventions. With regards to physical barriers, most of the stroke patients agreed that the facility was wheelchair/walking aid friendly. This is however contrary to the findings of Urimubenshi and Rhoda (2011) who reported that most of the participants had challenges with regards to accessibility to physiotherapy facility in the Musanze district of Rwanda. Studies by Mazie`res et al. (2008) showed that factors associated with adherence to physiotherapy are easy access to a facility where one performed exercises. In general, this study revealed that health system barriers did not contribute to the default on accessing physiotherapy services for stroke patients.

CHAPTER SIX

CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

The study sought to assess the barriers to physiotherapy services for stroke patients at Tema General Hospital. The researcher asked questions that helped in answering the research questions and hence aided to achieving the objectives from the responses given. Also, the study looked at individual and health system barriers to physiotherapy services at Tema General Hospital.

The study found individual barriers such as employment status, current educational level, medication barriers and medication adherence level to be significant barriers that contributed to defaulting on accessing physiotherapy services for stroke patients. However, none of the health system barriers contributed significantly to defaulting on accessing physiotherapy services for stroke patients at Tema General Hospital.

6.2 Recommendations

Policy

The findings of this study suggests that there is the need to educate all stroke patients, their relatives, stakeholders and the general public to understand that stroke is a condition that could be managed through physiotherapy and medication. Education for the stroke patients to understand that consistency with recommended number of physiotherapy sessions for effective rehabilitation is very essential.

Sick Leave

Employers should also grant stroke patients sick leave to encourage them to turn up for physiotherapy sessions. This would enable the stroke employees to complete the recommended number of physiotherapy sessions.

Research

It is recommended from this research that further research be conducted using a qualitative approach to explore the barriers to physiotherapy services for stroke patients. This will help to gain in- depth understanding of the barriers to physiotherapy services for stroke patients in Ghana.

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APPENDICES

Appendix A

Informed Consent for participation

Research Title: Assessment of Barriers to Physiotherapy Services for Stroke Patients at Tema General Hospital.

Introduction

My name is Mercy Nketia-Kyere, MPH student from the School of Public Health, College of Health Sciences, University of Ghana, Legon. I am carrying out a study on Assessment of Barriers to Physiotherapy Services for Stroke Patients at Tema General Hospital. The main objective of this study is to assess the barriers to physiotherapy services for stroke patients at Tema General Hospital.

Procedures

The study will involve answering questions from a close-ended questionnaire about the barriers to physiotherapy services for stroke patients receiving physiotherapy services. Participation in the study is absolutely voluntary and no coercion to obtain responses from participants. It will be much appreciated if you could participate in this study. The study is purely academic and forms part of the requirements for the award of a Master degree in Public Health.

Risks and Benefits

This research poses no potential risk to either the study population or the society. There is no direct benefit to you for participation or monetary gain. However, the study is envisaged to be beneficial to both the study population and the society in many ways. For example, the study will provide the study population and society knowledge about the physiotherapy services for stroke patients. It can also be used to provide information to hospital management about the barriers associated with physiotherapy services for stroke patients.

Voluntary Participation

Participation in this study is voluntary and you can choose not to answer any individual question or all the questions. You are free to withdraw from the study at any time. However, you are kindly requested to fully participate in the study since your answers are important to help to determine barriers of physiotherapy services for stroke patients.

Anonymity and Confidentiality

You are assured that all information provided will be kept confidential, privacy and would not be shared with anybody who is not part of the study team.

Dissemination of Results

The findings of the study will be disseminated to the management of Tema General Hospital. A copy of the study will be kept in the hospital as reference.

Before taking Consent

Do you have any questions you wish to ask about the study? Yes () No ()

(If yes, please, indicate the questions below)

.....

In case you have any questions later please, do not hesitate to contact Mercy Nketia-Kyere (Tel: 0243153305) and Ms. Hannah Frimpong (Tel: 0243235225/ 0507041223).

Voluntary Consent

I have read the information provided above, or the information above has been read to me and I understand. I have been given the opportunity to ask questions regarding this study; questions have been answered to my satisfaction. I now voluntarily agree to participate in this study knowing that I have the right to opt out and also withdraw my relative from this study at any time without affecting future health care services.

.....			
Name of Participant	Signature	Thumbprint	Date

.....			
Name of witness	Signature	Thumbprint	Date

.....			
Name of interviewer	Signature	Thumbprint	Date

Interviewer's Statement

I, the undersigned, have explained this consent to the subject in English language/Ga/Twi, Ewe, and that she/he understands the purpose of the study, procedures to be followed, as well as the risks and benefits of the study.

The participant has fully agreed to participate in the study.

Signature of

Interviewer.....

Date

Address.....

.....

Appendix B
ASSESSMENT OF BARRIERS TO PHYSIOTHERAPY SERVICES FOR
STROKE PATIENTS AT TEMA GENERAL HOSPITAL.

Questionnaire

Date: _____

Dear Respondent,

This is a research carried out on assessment of barriers to physiotherapy services for stroke patients in Tema General Hospital. I will therefore like you to take a little time with you to answer these questions. You are assured that the answers you will give will be strictly confidential and would not be held against you.

SECTION A: STRUCTURED QUESTIONNAIRE.

Number	Question	Response.
	Respondents ID	
	Demographic Information	
1	Sex 1. Male 2. Female	
2	Age	
3	What is your current level of education? 1. No education. 2. Primary 3. Middle/JHS 4. Secondary/Vocational. 5. Tertiary	
4.	What is your marital status? 1. Married 2. Not married 3. Widowed	

	4. Divorced	
5	Employment status 1. Unemployed 2. Employed	
A	HEALTH SYSTEM BARRIERS	
(i)	Physiotherapists' Attitude	
6.	Some physiotherapists are not friendly. 1. Strongly disagree 2. Disagree 3. Unsure 4. Agree 5. Strongly agree	
7	The therapist doesn't assist me to go through procedures. 1. Strongly disagree 2. Disagree 3. Unsure. 4. Agree 5. Strongly agree	
(ii)	Waiting Time	
8	I wait for too long before I receive therapy. 1. Strongly disagree 2. Disagree 3. Unsure. 4. Agree 5. Strongly agree	
(iii)	Physiotherapy Modality	
9.	Which of the following modalities is very difficult for you to undertake? 1. Exercise therapy 2. Electrotherapy 3. Massage therapy 4. Thermo/heat therapy 5. Cryotherapy 6. Other (Specify)	

10.	How many modalities do you go through per therapy session? 1. One 2. Two 3. Three 4. Four	
iv)	Physical Barriers	
-11	The physiotherapy facility is wheelchair/ walking aid friendly. 1. Strongly disagree 2. Disagree 3. Unsure. 4. Agree 5. Strongly agree	
	Distance to Physiotherapy Centre	
12.	My house is far from the physiotherapy department. 1. Strongly disagree 2. Disagree 3. Unsure. 4. Agree 5. Strongly agree	
13.	How many minutes does it take you to come to the physiotherapy department?	_____ Minutes
(vi)	Material/Equipment	
14.	There is enough equipment available to use for my therapy at the physiotherapy department? 1. Strongly disagree 2. Disagree 3. Unsure. 4. Agree 5. Strongly agree	
B	PERSONAL/INDIVIDUAL BARRIERS	
i	Socio-cultural barriers	
15.	What is your main socio-cultural barrier to physiotherapy services 1. Belief/spiritual treatment for stroke 2. Lack of family support 3. Lack of support from friends. 4. People seeing me in this condition	

	5. None 6. Other(Specify)_____	
ii	Economic barriers	
16.	What is your main economic barrier to physiotherapy services? 1. Affordability of physiotherapy Service 2. –Affordability of transport 3. Financial dependence/ not working 4. Payment/Hiring a caregiver 5. None 6. Other (Specify)_____	
iii	Medication Barriers	
17.	What is your medication barrier to physiotherapy services? 1. Medication cost 2. Adherence 3. Side effects 4. Other (Specify)_____	
18.	Of all these individual barriers to physiotherapy services, which one is the main barrier to you? 1. Socio-cultural barriers 2. Economic barriers 3. Medication barriers.	

SECTION B. MORISKY 8 ITEM MEDICATION ADHERENCE QUESTIONNAIRE

Patients answer Yes (Y) = 1; No (N) = 0

Number	Morisky Medication Adherence Scale-8(MMAS-8). Question.	Response	Codes
19	Do you sometimes forget to take your medicine?	0. No 1. Yes	
20	People sometimes miss taking their medicines for reasons other than forgetting. Thinking over the past 2 weeks, were there any days when you did not take your medicine?	0 .No 1. Yes	
21	Have you ever cut back or stopped taking your medicine without telling your doctor because you felt worse when you took it?	0 .No 1. Yes	
22	When you travel or leave home, do you sometimes forget to bring along your medicine?	0 .No 1. Yes	
23	Did you take all your medicines yesterday?	0 .No 1. Yes	
24	When you feel like your symptoms are under control, do you sometimes stop taking your medicine?	0 .No 1. Yes	
25	Taking medicine every day is a real inconvenience for some people. Do you ever feel hassled about sticking to your treatment plan?	0 .No 1. Yes	
26	How often do you have difficulty remembering to take all your medicine? A. Never/rarely B. Once in a while C. Sometimes D. Usually E. All the time		A. = 0 B-E =1
		Total score	
Adherence Levels 1.Low adherence (>2) 2.Medium adherence (1 or2) 3.High adherence(0)			
Physiotherapy Services			
27. How many times have you defaulted on accessing physiotherapy services? Specify_____			

Thank you for your time.