UNIVERSITY OF GHANA

ASSESSMENT OF FOLLOW-UP APPOINTMENTS AND VISITS SYSTEM AT THE NEUROLOGY CLINIC OF KORLE-BU TEACHING HOSPITAL: CLIENTS AND PROVIDERS PERSPECTIVES

BY

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DECLARATION

I do hereby declare that this work is the result of my own research under the able supervision of Dr. Roger A. Atinga of the Department of Public Administration and Health Services Management of the University of Ghana Business School, University of Ghana and has not been presented by anyone for any academic award in this or any other university. All references used in the work have been fully acknowledged.

I bear sole responsibility for any shortcomings.

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CERTIFICATION

I hereby certify that this thesis was supervised in accordance with the procedures laid down by the University of Ghana.

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DEDICATION

This work is first and foremost dedicated to Almighy God, my beloved daughter Kezia-Jayden Mawuena Adoboli and my Late brother Ibrahim Faidzgbe.

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LIST OF ABBREVIATIONS

AAN	American Academy of Neurology
ABM	Activity-Based Management
ASS	Appointment Scheduling System
CDSS	Electronic Clinical Decision Support System
CNCP	Computerized Nursing Care Plan
DOI	Diffusion of Innovation
FAV	Follow-up Appointment and Visits
GHS	Ghana Health Service
KBTH	Korle-bu Teaching Hospital
MMS	Multimedia Message Service
MOH	Ministry of Health
ND	Neurological Disorder
OPD	Out Patient Department
PAI	Perceived Attributes of the Innovation
RFID	Radio-Frequency Identification
SPSS	Statistical Package for the Social Sciences
WHO	World Health Organisation

ABSTRACT

This research is a cross sectional study which assessed the follow-up appointment and visit system at the neurology clinic of Korle-Bu Teaching Hospital, from patients and health provider's perspective. The specific objectives were; to explore how the perceived attributes of the follow-up appointment system affect clients adherence and use of the system, to determine client knowledge on the follow-up appointment system and how it affects their acceptance of the system and satisfaction with care, and lastly, to examine the enablers and barriers in the implementation of the follow-up appointment system from provider and client perspective. An explanatory sequential mixed method was employed where questionnaires were used to gather quantitative data from patients, after which a semi - structured interview guide was used to gather qualitative data from providers and selected clients. A total of 295 patients were used for the quantitative phase of the study whiles 10 service providers and 21 patients were available to share their views for the qualitative part. Findings of this study revealed that, communicativeness and trialability were influential in client adherence to the follow-up appointments and visits system. It was also observed that, compatibility, communicativeness and trialability of the follow-up appointments and visits system significantly affect the usage of system. Moreover, knowledge on the follow-up appointments and visits contributes to the acceptance and also influences satisfaction of the system. Barriers to the system include; academic engagements, poor adherence to time, distance, poor adherence to appointment schedule and lack of information, interpersonal relationship, security and confidentiality, distance, family Support and long waiting time. The enablers were; trust, persuasion, guidance on procedures, training, better health outcome, as well as patient involvement. The study recommended that innovative ways should be used to improve upon the attributes of the system examined in this study, most especially those that significantly affect adherence and usage. There is the need to improve upon channels of disseminating knowledge on the follow-up appointments and visits to clients. Also, the system should be made to be more user-friendly. Finally, policies should be put in place to provide measures to control the barriers that were identified as they hinder the implementation of the follow-up appointment system. This when done, would encourage patients to honour their follow-up appointments, even though keeping up with appointments are not always easy due to several reasons. The ultimate results would be best health outcome for patients with such specialized conditions.

CHAPTER ONE

1.0 INTRODUCTION

This chapter discusses the background to the study, the underlying problem statement, the purpose of the study, research objectives, research questions, significance of the study and expected limitations of the study.

1.1 Background

Neurological disorders are diseases of the central and peripheral nervous system (WHO, 2015). These disorders account for more than 6% of the global burden of diseases, with a high number of mortality and disability-adjusted life years in developing countries (Lopez, Mathers, Ezzati, Jamison, & Murray, 2006). According to WHO (2015), one out of every four persons in the world will be affected by neurological disorders at some point in their lives. Neurological disorders like stroke and epilepsy are the leading cause of death in the world today. It is estimated that globally, more than 6 million people die because of stroke each year, whiles about 50 million people suffer from epilepsy and 47.5 million people with dementia each year (WHO, 2015).

The situation in Ghana is no different from the global situation; where stroke was identified as one of the top five causes of death in the country (Agyemang, Aikins, Edusei, Nkum, & Ogedegbe, 2012). According to Feigin *et al.*, (2017), unfortunately, the number of patients with neurological care needs will continue to grow in the coming decades. This increasing number of patients threatens to become a major challenge in neurological care, especially with respect to quality follow-up appointments and visits for patients with such conditions. Follow-up appointments and visits system in its self is sometimes challenging, as regards patients compliance. A number factors of have been identified to be associated to resistance to appointment adherence (Kalyango, Hall,

& Karamagi, 2014). These factors include; appointment scheduling procedure, distance, emotional support, forgetfulness, environmental factors, doctor-patient relationship, physician feedback, cost of treatment, medical system, psychological and social factors (Delamater, 2006; Kalyango, Hall, & Karamagi, 2014; Fontana *et al*., 2018). In a related study, some of these factors led to a non-adherence rate of 30.5%, as observed by Fontana and collegues in their study which sought to determine patient's non-adherence to follow-up after a specific surgical procedure is performed (Fontana *et al*., 2018).

Globally, the main factors contributing to the challenge in neurological care incude infrastructural, human resource, financial and technological issues.

First, the scarcity of appropriate infrastructure or resources to manage patients effectively is clearly seen in the field of neuroscience among resource-poor countries such as Ghana (Pandey, 2012). This issue have been considered serious set-backs in healthcare services provided in these resource-poor countries. Ghana is faced with infrastructural deficits, such as inadequate specialized care centres and beds (Adamu, 2018). The country has only two neurological centres – one each in Greater Accra region and Ashanti regions. Such deficits constrain patients to receive neurological care from a few central locations.

As the number of such locations are currently inadequate, and not being augmented to match the growing number of patients, the quality of follow-up appointments may suffer. Patients, for instance, would experience delays resulting from longer queues, which may even be a disincentive for future follow-up visits. A study in Bangladeshi context found that duration of consultation and waiting time strongly predicted patients' satisfaction (Aldana, Piechulek, & Al-Sabir, 2007).

Second, low-income countries like Ghana face human resource challenges emanating from low - health personnel-patient ratios. For instance, available statistics suggest that the doctor-patient

ratio in Ghana is 1: 8,953, and the nurse-patient ratio is 1: 739 (Abdul-Rahaman, 2017; Gutsan, Patton, Willis, & Coustasse, 2018). Birbeck & Munsat, (2002), indicated that there are inadequate neurologists in low- and middle-income countries. For example, the estimated neurologist to population ratio in sub-Saharan African countries is 0.03 per 100,000 population, as compared to that of Americas and Europe which are 0.89 and 4.84, respectively (Birbeck & Munsat, 2002). Ghana, with a population of 25 million, has 6 neurologists that work within the 2 referral hospitals; the Komfo Anokye Teaching Hospital and Korle-Bu Teaching hospital (Sarfo *et al.*, 2016). Due to lack of human resources in these neurological clinics, services at these places are usually on appointment basis. This has led to the overburdening on service providers caring for patients with neurological problems. Unfortunately, the few medical personnel available also sometimes leave the country in search of greener pastures (Ghana News Agency, 2017). The low ratio tends to create urgency in attending to patients, thereby reducing the quality of services provided.

Third, there remains limited technology for the provision of neurological services. Most healthcare facilities in resource-poor countries use paper-based record management systems (Gyamfi, Mensah, Oduro, Donkor, & Mock, 2017). The use of such manual systems makes record storage and retrieval cumbersome and inefficient, thereby creating a bottleneck which hampers quality follow-up of patients.

Fourth, both the intensity and duration of treatment warrant financial affordability, which is another challenge in low- and middle-income countries, with very few or no health insurance coverage. Most healthcare centres do not have adequate drugs and treatment of chronic neurological disorders like Parkinson's disease, and Wilson's disease is very costly (Pandey, 2012). Treatment modalities like intravenous immunoglobulin, plasmapheresis, and epilepsy surgery are rarely used due to the very high cost and poor availability (Pandey, 2012). The foregoing

challenges have an impact on the patient's satisfaction and adherence to neurological care regarding the quality of follow-up appointments and visits.

Therefore, understanding patients satisfaction or adherence with quality of follow-up appointment and visit systems is thus imperative towards a search for better neurological service delivery. Provider satisfaction to care for patients could also be considered a very important factor towards the general quality of health care, which includes follow-up appointments and visits (Mosadeghrad, 2014). Job satisfaction of the service provider is key in bringing services that are of high-quality to patients. The nine (9) organizational factors that healthcare providers believed to influence their motivation and job satisfaction include; working environment, salary, managerial leadership roles, organizational policies, co-workers, recognition, job security, job identity, and opportunities for promotion (Glickman, Baggett, Krubert, Peterson, & Schulman, 2007; Mosadeghrad, 2014). According to Mosadeghrad (2014), patient involvement and cooperation are needed for providers satisfaction to care. Also, the type of patient illness influences personnel job stress, which in turn affects providers satisfaction to care and overall quality of healthcare services (Mosadeghrad, 2014). Meanwhile, from the perspective of patients, Mosadeghrad (2014) identified some factors that can enhance physician-patient relationship and these are providers ability to provide adequate information about a disease, the process of treatment, good interpersonal relations, physician's appearance, word of mouth, good experiences or encounter with doctor, and doctor's demographic variables like age. This study, therefore, seeks to bring to light factors that affect the quality of follow-up appointments and visits systems in Ghana, from the perspective of both patients and providers, using the case of the neurology clinic at Korle-Bu Teaching hospital.

In the context of this study, the term "appointment" refers to the period of time allocated in the schedule to a particular patient while "visits" also refers to the meeting that occurs between doctor and patient to get health advice or in treatment for symptoms. However, Medical appointment and visit is a clinical encounter in which a patient and practitioner meet at a specific time and place planned in advance to receive patient education and counselling, diagnosis, physical examination, and clinical support. Hence, the quality of follow-up appointment and visits examines the extent or the degree to which care service delivery between patients and providers improves the likelihood of desired health outcome during patients appointments and visits. Quality of care is a concern of both patients and providers.

1.2 Problem Statement

Over the past 20 years, neurological disorders accounted for 5–25% of all admissions in hospitals within Sub- Saharan Africa (Mukendi *et al.*, 2017). In Ghana, studies revealed an increase in the proportion of visits at the OPD for neurology services from 2.0% to 4.1% over the period of 2011-2013 (Sarfo *et al.*, 2016). The increase in neurology service account for considerable healthcare, economic, social burdens and substantial effects of neurological illness and perceptible on individual, family and society.

In terms of research, Ghana is actively involved in multidisciplinary research, meanwhile, neuroscience seems neglected in terms of both healthcare and management research (Read & Doku, 2012; Sipsma *et al.*, 2013). An extensive empirical search revealed that data on service quality research of neurological diseases in Ghana is unavailable (Read & Doku, 2012).

Regarding policies, some studies focused on strategies to improve appointments (Thompson *et al.*, 2015), appointment system designs and schedules (Barghash & Saleet, 2018; Klassen & Yoogalingam, 2013). In New York, Santibanez *et al.*, (2015) designed a two-phase quality improvement project, aimed at improving the follow up of patients at the neurology resident's clinic after hospital discharge. After the intervention, a significant increase in the appointment rate was obtained. They concluded that aiding patients in the appointment-making process will increase provider productivity, improve continuity of care and hopefully reduce hospitalization rates. Meanwhile, in Ghana, there seem not to be a well-established policy and strategies towards the improvement of medical follow-up appointments system, especially in the area of neurological care.

With regards to practise, Sarfo *et al.*, (2016) indicated that patients with neurological diseases after enrolling at neurology clinic are usually followed up between one to six monthly appointments. Meanwhile, Free *et al.*, (2013) documented the effect of technology, especially in the aspect of information sharing and communication towards reminder of attendance on doctors and patients appointments. Thus, Greiner & Knebel, (2003) reported on some negative practises that occur within healthcare settings during appointment & visits which include; attitude towards clients, poor design of system, slow adoption of information technology, shortage of professional health personnel, poor working condition, environmental factors among others can negatively have implications on health System, as well as the patients indirectly.

Furthermore, the Ghana Health Service (2016) also identified and presented some issues in the Ghana National Quality Healthcare Strategy (2017-2121). The issues that were revealed and needed to be addressed include; levels of professionalism that are below the standards, which

presents in ways that include health workers' impatience with clients, breaches in privacy and confidentiality, long waiting time, disrespect and inadequate communication and transparency with clients as well as their care-takers. Some of these issues might also manifest in neurological follow-up appointments and visits. Therefore this study seeks to provide empirical evidence on whether such issues exist within medical follow-up appointments and visits at the neurology unit of Korle-Bu Teaching Hospital.

The success of a country's efforts at improvement of different aspects of services especially regarding treatment of neurological disease depends largely on available research information (Saraceno *et al.,* 2007) and this study aims at providing information on the quality of follow-up appointment and visit system at neurology clinic of Korle-Bu Teaching Hospital, from the perspective of both clients and service providers.

1.3 Rationale of the Study

The purpose of the study is to identify and describe the quality of follow-up appointment and visit system at the neurology clinic of Korle-Bu Teaching Hospital, in Ghana. The study also intends to make recommendations for future health policy formulation, implementation, and future research in the area of neurology in Ghana towards improvement in the total health service delivery in the country.

1.4 General Objective

The main objective of this study was to assess the follow-up appointment and visit system at the neurology clinic of Korle-Bu Teaching Hospital, from patients and health provider’s perspective.

1.5 Specific Objectives:

The specific objectives are:

a. To explore how the perceived attributes of the follow-up appointment system affect clients adherence and use of the system.

b. To determine client knowledge on the follow-up appointment system and how it affects their acceptance of the system and satisfaction with care.

c. To examine the enablers and barriers in the implementation of the follow-up appointment system from provider and client perspective.

1.6 Research Questions

a. Does the perceived attributes of the follow-up appointment system affect clients adherence and use of the system?

b. Does client knowledge and acceptance of the follow-up appointment system affect their satisfaction with care?

c. What are the enablers and barriers in the implementation of the follow-up appointment system from provider and client perspective?

1.7 Relevance of the Study

Significance of the study can be viewed from different dimensions, including that of the service provider, policymakers and contribution to knowledge or existing literature. The study will constitute a major attempt to evaluate the quality of follow-up appointments and visits system at neurology clinics in Ghana. To the service providers, knowing the level of quality with regards to

follow-up appointment and visits system at neurology clinics will bring to fore some gaps in the services offered within the context of international and local expectations, thus, indicating areas in which the service providers need to improve.

The study will further engender the need for the authorities and stakeholders in Ghana health service to prioritize the quality of care delivery and promote appropriate appointment system structures at neurology clinics in Ghana. It will also sensitize the few neurology clinics in the country, and the policymakers to act decisively by designing pragmatic policies to improve the quality of neurological services in the country.

Finally, this research as part of the academic requirement, will add knowledge to the researcher and also serve as pertinent literature for other studies. The current research is also relevant on the basis that it will serve as an empirical foundation for further research work into problems of neurology health service delivery and follow-up appointment systems in Ghana.

1.8 Definition of Terms

Quality of healthcare: This refers to the degree to which services provided to a client improves health outcome. The effectiveness and efficiency in healthcare services are appropriately delivered or achieve the desired objective or intended purpose for people with neurological conditions. Thus, in order to achieve appropriate healthcare, a healthy environment must be required, safe, friendly, equitable, people-centred, compatible, and with providers having excellent interpersonal skills for the patient.

Follow-up: This refers to the process of making contact with a client or patients by healthcare professionals request at a specified date, time and place to cross-check on the patients progress of medication, treatment or response to treatment.

Follow-up appointment and visits: This refers to the act where patient is scheduled for a meeting with a particular specialist during a specific date and time convenient for both provider and patients or the means at which patients re-visit health facility on providers request for further investigation and routine medical checks of patients recovery to monitor condition when necessary.

Neurological conditions: This refers to diseases or disorders that affect the vital nervous system, such as epilepsy, stroke, Alzheimer disease, migraine and other headache disorders.

Client satisfaction: This refers to patients or client expectation during delivery of care and seen as an indirect approach that serves as the indicator for measuring the quality of care delivery and performance within healthcare settings by health providers.

Medical Appointment scheduling systems: This refers to a means of Electronic healthcare system designed in order to allow quick booking and the ability to monitor patient's attendance effectively.

1.9 Structure of the Thesis

Chapter 1, Introduction: This will provide definitions of key terms, a detailed discussion of the central research question and outline of the content of each chapter.

Chapter 2, Literature Review: This chapter will review the relevant literature and scholarly debates with specific reference to service quality, follow-up appointments and neurological diseases.

Chapter 3, Methodology: The research method will be plainly outlined in this chapter. The various methods used will be clearly defined and the choice of the research method will eventually be justified here. This chapter will also discuss the study site, study design and techniques. Data validity, ethical considertions, access to data, as well as analysis will also be discussed.

Chapter 4, Presentation and Analysis of Results: Chapter 4 will accomplish the three research objectives, using a questionnaire and interview guide that was conducted in the study area. Descriptive and Inferential statistical analyses performed on the gathered data will be presented under this chapter.

Chapter 5, Discussion: This chapter will discuss the findings of the study. This will be based on previous works as well as implications of what was observed in the study.

Chapter 6, Summary, Recommendations and Conclusion: This chapter will summarize the achievements of the aim and objectives of the work. It will also outline a number of recommendations based on the outcome of the study. Consequently, conclusions drawn from the study will be discussed, and suggestions for further research will be outlined.

1.10 Chapter Summary

This chapter has discussed the background and presented the problem that warranted the need for this work to be carried out. Objectives of this work has also been outlined under this chapter, and these include; exploring how perceived attributes of the follow-up appointment system affect clients adherence and use of the system, determining client knowledge on the follow-up appointment system and how its affects their acceptance of the system and satisfaction with care and examining the enablers and barriers in implementation of follow-up appointment system from provider and client perspective. The study was delimited on the perception of neurological patients who assessed follow-up appointments and visits at the KBTH as well as the provider who takes care of such patients. The significance of this study revolved around three important factors: policy, practice and research, which have clearly been discussed under this chapter.

CHAPTER TWO

2.0 LITERATURE REVEW

2.1 Introduction

The discussion in this chapter is centred on an empirical review of journal articles that are in line with the subject matter under investigation. Issues of quality and the delivery of healthcare services with particular emphasis on neurological conditions shall be discussed. Specifically, areas to be covered shall include definition of quality of neurological healthcare, appointment systems, follow-up appointments and visit, patient's satisfaction with the quality of follow-up appointments and visits, providers and client's adherence and use of follow-up appointment systems, challenges combating neurological diseases in sub-Saharan Africa, among others. The discussion is centred on the objectives of the study and the conceptual framework underpinning the study. In discussing this literature, identification of literature gaps per the study shall be of interest to fill the theoretical and empirical gaps. This shall form the basis of knowledge addition through the setting up of instruments to solicit information lacking in the existing literature. The chapter shall be concluded based on researcher's synthesis of the literature.

2.2 Definition of Concepts

2.2.1 Quality of neurological healthcare

Nylenna, Bjertnaes, Saunes, & Lindahl (2015), define quality of healthcare as the step to which healthcare delivery for patients, (being it a persons or populaces) improves the overall health outcome, that are in accordance with existing healthcare certified practices. The appropriateness in delivering neurological healthcare to clients determines the effectiveness and efficiency of services. Thus, in order to achieve appropriate healthcare, the environment must be safe, friendly,

equitable, people-centred, compatible, and providers must adopt an excellent interpersonal skill for the patient. Therefore, within the domain of this investigation, the quality of health care refers to the degree to which services in the field of neurological care improves health outcome to clients during the visit.

Meanwhile, Healthcare quality and quality indicators are complex topics with a range of different conceptual approaches, operationalization and measurement techniques; and largely depends on the kind of healthcare under investigation (Nylenna *et al.,* 2015; Smith, 2009). The current study is focused on the area of neurological care and thus defined quality neurological care as the type of care which is driven by current medical professional's knowledge, attitude, adequate infrastructure and modern technology which are aimed at meeting the needs of patients with neurological conditions. The American Academy of Neurology (AAN) formed in the year 2013, to review the previously released quality measures and identify new quality measures that will improve the delivery of care and outcomes for patients with neurological conditions such as epilepsy (Fountain, Van Ness, Swain-Eng, Tonn, & Bever, 2011). Ringel & Vickrey, (1997) indicated that to evaluate the quality of neurological care, an extensively acceptable model that is useful should consider the structure, process and outcomes of care.

2.2.2 Follow-up appointment and visits

White, Froehle, & Klassen (2011) defined follow- up appointments as the period of time allocated in the schedule to a particular patient, for cross-examination of his/her health progress by the physician. The authors further commented that the medical visit is the period of time the physician actually spends with the patient. During this meeting, the patient and physician get more health information that warrants health education, diagnosis or treatment for a condition (White *et al.,*

2011). According to Grunfeld *et al.*, (1996), follow-up appointment refers to the actions taken in order to improve health outcome or means of patient revisiting health facility to aid providers to detect recurrence of illness and provide psychosocial support. Follow-up appointments need to be carefully managed to ensure efficient use of available resources (Bromage, Napier-Hemy, Payne, & Pearce, 2006). Likewise, Jackson, Shahsahebi, Wedlake, & Dubard, (2015) opined that follow-up appointment and visit is an act where individual visits the hospital requested by the specialist to review a test or monitor treatment progress in order to improve on patients health.

As far as this study is concerned, follow-up appointment and visits (Medical appointment and visit) is referred to a clinical encounter in which a patient and practitioner meet at a specific time and place planned in advance to receive health education, counselling, diagnosis, treatment and offered clinical support by healthcare providers. Considering various literatures on the phenomenon under study, follow-up appointment and visit refers to the act where a patient is scheduled for a meeting with a particular physician specialist at a specific date and time convenient for both the provider and patient. It is also the means through which patients revisit health facility on providers request for further investigation and routine medical checks of patients recovery and to monitor conditions if treatment is not required.

Follow-up appointment is a key part of continuous patient safety. Wimble & Yeong, (2012), asserted that non-adherence or unqualified specialist input during appointment could lead to a missed interpretation of illness, undiagnosed illness, or un-investigated conditions and that may affect patients not properly cared or cured by providers. Saine & Baker (2003) established that follow-up appointments are crucial and completed when patients are notified of a prescheduled or cancellation of appointments than ordinarily rescheduling patient's appointment after visits or changing of appointment schedules without the patients consent. This necessitates the need for

patient's involvement during the scheduling of appointments. Patients involvement during scheduling of appointments provides flexibility, compliance and satisfaction to patients (Rau, 2011).

In addition, satisfied patients during follow-up appointment can lead to a reduction in non-adherence rates, helping maintain the continuity of care and improvement in health outcome of patients (Bowser, Utz, Glick, & Harmon, 2010; Feldman, Liu, Topaloglu, & Ziya, 2014; Schectman, Schorling, & Voss, 2008). Further studies indicated that delay and missed appointment does not only increase morbidity or disease progression but reduces efficiency in healthcare delivery that increases the social and economic cost (Karter *et al.*, 2004; McQueenie, Ellis, McConnachie, Wilson, & Williamson, 2019). Therefore, an effective appointment system boosts more structured attendance as well as better care for chronic and other health-related diseases (Al-Haqwi & Al-Shehri, 2007). Hence, the quality of follow-up appointment and visits examines the extent or the degree to which healthcare delivery between patients and providers improves the likelihood of desired health outcome during patient's appointments and visits.

During the Patient visit, the interaction between provider and patients may be shorter or longer than the appointment duration depending on patients conditions or state of health (Mardiah & Basri, 2013). Cayirli & Veral, (2003) asserted that appointment scheduling could be put into two large groups: Static and Dynamic. In the static appointment, all decisions are done before the beginning of a clinic session, and this is the most used appointment system in healthcare (Mardiah & Basri, 2013). For dynamic appointment, based on the current state of the system, the schedule of future arrivals are revised continuously.

Other studies revealed constraints that occur during appointment scheduling especially in healthcare settings, which include; the availability, partial order, non-overlap, patients' constraints,

duration and change in time and also the process of diagnosing (Hannebauer & Müller, 2001). Irrespective of these challenges, the components that was identified in medical appointment scheduling include; starting time of appointment, hospital settings, diagnosis units, advance appointment system, patient's records, attitude and participation of health providers (Hannebauer & Müller, 2001). Regardless, some principles of patient-centered care during medical visit also include; safety, accessibility, efficiency, equity, emotional support, physical comfort, respect for patients' preferences and values, access to quality information or communication, continuity and transition of care, among others (Institute of Medicine, 2001; Tomasone *et al*., 2016).

Beyond these challenges, patients usually give various reasons for missing their appointments and these include; misinformations, forgetfulness, improvement in health, difficulties leaving office or school and transportation problem (Deyo & Inui, 1980). Therefore, it is explained that appointment time is focused on new or existing problems. Keeping up with appointments is not always easy due to; time constraints, scheduling snags and transportation, clinic overcrowding, waiting time, availability of professional service providers, financial difficulty and family care issues or support and these can cause missed appointment during visits. Wang & Gupta (2011) specified that patients fulfilment with an appointment is greatly influenced by their ability to book or being scheduled at the right time with the right health service providers.

For this reason, healthcare providers tried using diverse strategies and procedures to increase appointment attendance of clients and to reduce the impact of missed appointments (Norris *et al.*, 2014). Strategy that includes the use of appointment reminders system, which has generally been accepted or preferred by patients is being applied at various health centers, worldwide (Gauthier, Lindwall, Davis, & Quinet, 2012; O'Connor *et al.*, 2009). Traditionally, another means of reminder is known as the one-size-fits-all approach, this is one type of reminder system used in

sending messages at once to all patients scheduled for an appointment (Finkelstein, Liu, Jani, Rosenthal, & Poghosyan, 2013). Further studies, also indicated that patients who usually receive reminders are more likely to adhere to an appointment. These means could be through text messaging, phone calls, emails or WhatsApp messages, and have also been widely accepted as effective means of remindering clients (Guy *et al.*, 2012; Hashim, Franks, & Fiscella, 2001).

2.2.3 Types of Appointment and Visits

Implicitly, there are several types of medical appointment and visits, some of which include urgent and same-day appointments; these are mostly available from Mondays to Fridays and addresses problems that arises suddenly and needs urgent attention (Gupta & Denton, 2008; Richards *et al*., 2002). Pre-booked is usually booked up to six weeks in advance before the actual visit. However, the main domains that constitute medical appointment and visit are; Access to medical care, timing and scheduling, costs of service, medical record, use of information technology, communication, clinical assessment, quality drugs, collaboration of patients- providers, emotional support, patient safety, patients-physician relationship, working environment, patients expectations and quality of care (especially patients feedback).

2.3 Appointment System

Appointment scheduling systems are utilized by both primary and speciality care clinics to manage access to service providers and help hospitals in the processing of schedules for elective surgeries (Gupta & Denton, 2008). The main idea for introducing these systems was to assist physicians minimize patients waiting time. Gupta & Denton, (2008) identified some factors that affect the performance of appointment systems that include, arrival and service time variability, patient and

provider preferences, available information technology and the experience level of the scheduling staff. However, the main idea for introducing an appointment system is to assist physicians minimize patients waiting time. This is because, in recent times, customers use waiting time as a decisive factor in choosing a particular service provider or hospital (Mardiah & Basri, 2013). Therefore, the importance of designing an effective appointment system and efficient patient-physician communication will support patient care and safety.

The appointment system underpins many of the operations in health care organizations, especially in specialized services. Therefore appointment systems need to be well designed and effectively administered in order to support patient care and safety (Al-Hawary, 2012; Cayirli, Veral, & Rosen, 2006). It will also contribute to effective time management and assist in monitoring patient attendance. There are several forms which appointment systems take, which can be through a paper-based or computerized system. Meanwhile, computerized or web-based appointment system are more preferred (Cibulka, Fischer, & Fischer, 2012; Denizard-Thompson, Feiereisel, Stevens, Miller, & Wofford, 2011). Over the years, medical appointments are scheduled through telephone calls or on face-to-face basis. (Grain, 2014; Zhang, Yu, Yan, & Spil, 2015). However, since these traditional methods call for the involvement of schedulers, to be able to get a timely appointment does not only depend on the availability of appointment slots, but also the availability of the scheduler (Jones, Menon-Johansson, Waters, & Sullivan, 2010).

Kerdvibulvech & Win, (2012) proposes an online reservation system and its aim was to save the time and effort of users and place convenient of services. It enables patients to book and check their appointment schedule, confirm or cancel their database online easily. It also enables the administrator to check the patient's requests, manage the appointment schedule, and patient's

information. Meanwhile, appointment scheduling system with surgical sections, which includes that of neurological surgeries are even more complicated (Gupta & Denton, 2008). The process of scheduling varies due to several pre-surgery appointments made for protocols, emergency cases, among others. This often requires some necessary medical examinations and a variety of activities providers need to perform during the scheduling, in order to deliver the desired services to clients. Gupta & Denton (2008), stated that some surgeons characteristically need to attend to all procedures scheduled for a day within an assigned block of operating time. This is because surgeons sometimes prefer to perform some types of procedures on specific days and times of week. Such concerns can lead to additional complication in the scheduling process and may be seen to be complex by other service providers and the patients (Gupta & Denton, 2008).

However, an appropriate appointment system leads to a smooth flow of work, ease over-crowding at the waiting area and allows health organizations to honour clients' and health workers desire(Gupta & Denton, 2008). Most speciality care and hospital services have certain unique features that result in different challenges for managing appointments (Gupta & Denton, 2008). Appointment scheduling systems need to be efficiently done in order to result in patients' timely access to health services. Timely access is essential in health delivery's outcomes (during the stage of knowledge or acceptance of a system). It is, therefore, an essential determinant of patient satisfaction (Gupta & Denton, 2008). In other words, an appointment system can significantly increase patient satisfaction by means of the service delivery such as; registration process, the flexibility of system and procedures to care which eventually will reduces overall waiting time of patients (Cao *et al.*, 2011; Katre, 2014).

2.4 Providers and Clients Adherence and Use of Follow-Up Appointment Systems

Rogers, (2003) suggested that attributes of an innovative system include relative advantage, compatibility, complexity, trialability, observability and reinvention within the adoption process. These attributes have the potential to either enable or constrain the acceptance and use of an innovation (Rogers, 2003; Sahin, 2006). Relative advantage, compatibility, and complexity represent the advantage and disadvantage of innovation, while trialability and observability also represent uncertainty as to the value of the innovation that in turn lowers the perceived threats to adoption (Narayanan, 2001; Tapaninen, Seppanen, & Saku, 2009). In the case of follow-up and appointment systems, providers could exhibit resistance if they perceive such a system to be incompatible with their way of work. Therefore, for patients and providers to adhere and use follow-up appointment system, there is the need to understand why patient or providers resist or accept a particular healthcare setting.

Several studies have demonstrated number of factors that are associated with resistance to appointment adherence and these include; distance, age, psychological and social factors, emotional support, appointment scheduling procedure (time consuming, security, confidentiality and complex nature), forgetfulness, trust, literacy, affordability, health system barriers, doctor-patient relationship, physician feedback and clinical system (Delamater, 2006; Kalyango, Hall, & Karamagi, 2014). All these can, therefore, be considered among the challenges that hinder compliance to care (medical visits). Meanwhile, a study which sought to determine the rate of, and factors associated with patient non-adherence to follow-up after transurethral resection of the prostate, (Fontana *et al.,* 2018) recorded a non-adherence rate of 55 (30.5%) among 180 patients. Further studies also reported that non-adherence status of patients were reported to be 23% and

18.5% (Brooks, Paul, Ghareeb, & Tracy, 2017; Moses, Dagrosa, Hyams, Steinberg, & Pais, 2013). Others studies also indicated that patients with a less complicated disease or those who think their disease is not severe are less adherent to their scheduled appointments (Lee, Sathyan, John, Singh, & Robin, 2008; Thompson *et al.*, 2015). Zhang *et al.*, (2015) further conducted a study on patients' adoption of appointment scheduling service in Australia, and observed that barriers of patients acceptance to appointment scheduling are, patients inadequacy on internet usage, inexperience's of system application, lack of computer skills and inconsistency with online appointment service where clients' prefers face-face or phone call means of appointment.

Clients' acceptance is directly interrelated with the amount to which an intercessions are perceived to support with a particular needs and concerns of patients or the providers (Juhnke & Mühlbacher, 2013). The ease in the use of an innovation, however, have strong impact on the perceived rate of the intercessions (the adoption of an appointment).

This is because health organization are constantly presenting innovating ideas and measures to improve the quality, value, and patients experiences during follow-up appointment and visits (Shih *et al*., 2008). Quality system's attribute of innovation can influence patients and providers adherence and use of appointment system. Thus, Patients have expressed lots of concern in innovative appointment process that could deliver easier access of services and use of the system (Guo, Miao, Wei, Xing, & Zhang, 2012; Yu *et al*., 2013). Such a system includes hospitals ability to provide many numbers of appointment reservations as possible by expanding in the supply and improvement of the appointment registration usage (Yu *et al.*, 2013).

Zhang *et al.*, (2015) commented that some advantage of perceived attributes on innovation includes reduction of waiting time, providers after-hour service (where patients can request for

appointment at anytime, anywhere in their convenience) whiles some disadvantage are the inflexibility of time slot allocation (thus during medical care encounter, time of care is limited, and patients preference could not be met), insufficient options provided by appointment service (online option doesn't give access for cancellation of appointment after patient requests), patience experience, and patients intentions of system use. Wilson & Lankton, (2004) stated that the ability for patients or providers to test an innovation depends on patient and providers behavioural intention to use the follow-up appointment system. The authors proposed that patients' use of appointment system depends on how convinced, prepared, flexible, fulfilling and educated client are towards the application of the system. Meanwhile, the provider use of appointment system depends on the flexibility of the appointment system and providers job satisfaction.

Satisfaction in the delivery of healthcare services is not only limited to the client who is said to be the beneficiary, but also the services provider. Providers of healthcare services to a very large extent are dissatisfied if their clients do not receive the expected service or patients improving upon overall health. Therefore, service satisfaction is associated with two persons; the provider and the beneficiary (Mechanic, 2003). Regarding, providers satisfaction, various authors have investigated into factors that contribute to providers satisfaction in different forms of health care. Evidence suggests that satisfaction with Shard medical appointments (SMAs) is among the highest expectations of patients and providers. Literature indicates that most patients and providers would prefer using SMAs as an alternative form of clinical management (Egger *et al.*, 2015). It is reported that professional health specialist do not only get satisfied with the follow-up appointment and visit with their clients but also the ambience of the healthcare environment contributes to their level of satisfaction and service delivery to clients (Dyrbye *et al.*, 2013). It is also evident that

some of the health professionals are not able to meet the required follow-up appointment and visits with their client because of overburdened medical appointment of working more hours into the night (Dyrbye *et al.*, 2013).

According to Friedberg *et al.*, (2014), factors that affect healthcare provider's satisfaction has an implication on patient care and health systems. Physicians with higher levels of job satisfaction have exhibited superior adherence to medical treatment and management (Williams & Skinner, 2003). Satisfied physicians tend to be more attentive to patients, and this positively triggers higher levels of satisfaction among their patients (Haas *et al.*, 2000). Previous works are done by scholars, identified domains that influence physician satisfaction, which includes income, cordial relationships between patients and physicians, provider-provider relationship and relationship with superior management (Landon, Reschovsky, & Blumenthal, 2003). In the domain of a broader market environment, the availability of medical supplies, and the ease at which medical supplies can be gotten also form the bases of providers satisfaction in care delivering (Landon *et al.*, 2003).

Providers job satisfaction is used to measure how content an employee is with the job, and high job satisfaction can improve the enthusiasm of staff and is beneficial to the success or progress of the healthcare environment. Health providers with very minimum work satisfaction can end up suffering from some level of psychological and emotional tremors, due to the fact that there are unable to fulfil their obligation or desires and in providing the necessary services required (Sundquist & Johansson, 2000). It is also mentioned that several factors are associated with providers satisfaction of care for patients during appointments and visits. This includes the effectiveness of scheduling procedures, adherence of patients, work environment, age and

expertise of providers and patients as well as compliance to drugs administration (Atif, Khan, & Maqbool, 2015; Maissiata, Lautert, Pai, & Tavares, 2015). In China, Lu *et al*., (2016) identified measures that could improve providers job satisfaction which includes the minimizing the amount workload, collaboration of expertise's, increase in welfare (or perceived job rewards), offering trainings, higher incentives and offering education on how they could balance work-family conflict to avoid errors. Obviously, this will increase the level of job satisfaction of providers; thus, healthcare providers are less likely to experience high rates of employee burnout as well as job-related pressure.

2.5 Client Knowledge and Acceptance of Follow-up Appointment Systems

In the context of the innovation-decision process, Castillo, Martínez-García, & Pulido, (2010) identified some attribute like knowledge, persuasion, confirmation, and communicativeness as an essential aspect in dealing with a clinical system. Client knowledge is known to be one of the more complex types of knowledge since client knowledge can be captured from different sources and channels. During patient-provider interaction, client acquires information on experience, observant of systematic processes, values and insight surrounding the health environment (Omotayo, 2015). A worker is termed as a knowledgeable one when he/she applies theoretical and analytical knowledge and experiences acquired during work in order to perform multidisciplinary, complex and unpredictable task within an organization (Drucker, 2000, 2005). In this context, healthcare provider's knowledge also holds a crucial point in the delivery of quality, efficiency and effective care, but providers extensive knowledge base has not yet been clearly articulated and remains undervalued (Goodwin, VanDyne, Lin, & Talbert, 2003). Goodwin *et al.,* (2003) have further defined providers knowledge as expertise memory capacity, the ability to share information,

educate clients, provide curative, creative and innovative interventions to satisfy clients and make the organization have a competitive advantage over others.

Knowledge is a set of understandings whereas behavioural intentions (attitude) is a way of being and can be considered as an intermediate variable between the situation and the response to the situation (Thomas, Snigdhai, Karanath, & Swaroop, 2018). Behaviour is seen as the observable actions of patients response to an innovation (Thomas *et al.,* 2018). In other words, Yu *et al.*, (2013) stated that innovations are wildly accepted by people who are aware of a product, or client with higher educational background are most likely to adopt the use an appointment system. Client and providers knowledge about system use are not related, but providers are more knowledgeable about system use than client (Wilson & Lankton, 2004). This enables providers have privileged in the test for the system, acquire training and obtain updates of the appointment system whiles patient are educated by a health worker or depending on his/her frequency in following up with care, more knowledge is learnt. It has been revealed that, when clients have knowledge about something, they are able to perform effectively as partial employees (Lehtinen, 2007). Such that, in situations where a substantive employee is unavailable, a client with good knowledge about the situation could step in - to lend a temporary helping hand. For instance, a client can book a physician appointment online without necessarily relying on hospital staff to achieve the same appointment (Kerdvibulvech & Win, 2012).

Yu *et al.*, (2013) argued in his study on the utilization of hospital appointment systems in China that most patients do not have knowledge on appointment system use because patients views with regards to diversified appointment systems are ignored, despite efforts on developing innovative appointment systems that are meet to assist patients and increase hospital efficiency. However,

patients who have the feeling that they have relatively little knowledge about an innovation, clinical systems or health status most often tend to reject or resist follow-up appointment, and this usually ends up affecting their overall quality health outcome (Wilson & Lankton, 2004). For example, certain health conditions increase patients need for health care beyond that of the general patient medical visits. Conditions like neurological disease or other chronic diseases such as diabetes necessitate frequent visits to the physician or specialists. It is anticipated that high understanding about adherence, systems and education on health complication can reduce the no-show rate and increase patients tendencies to accept a particular health intervention, such as follow- up appointment system (Thomas *et al.*, 2018; Wilson & Lankton, 2004).

Survey on client knowledge indicated that, information's concerning knowledge depends on the clarity made by healthcare providers about the system that contributions towards patients understanding, acceptance and satisfaction of the service. In this regard, there are two sets of knowledge (that of the client and provider) which are in effect merged; the client's knowledge is incorporated from the doctor's ability to communicate and explain effectively to meet client expectations and needs, that can also contribute to patients satisfaction (Lehtinen, 2007). According to WHO, (2010), the ability of every country in meeting their health goals depends mainly on providers knowledge, skills, motivation and utilization of an innovative system in care delivering.

Providers knowledge, attitude and use of a particular system have vital implication on patients satisfaction, uptake and utilization of appointment systems (Sukums *et al.*, 2014). User's knowledge in general towards the use of an appointment system can affect reports, health status, compliance and the image of organization either positively or negatively. This necessitates the importance of knowledge for both clients and providers acceptance and effective use of the

appointment system. Effective system use can result to higher user satisfaction (Yusof, Kuljis, Papazafeiropoulou, & Stergioulas, 2008). On the contrary, Dugdale, Epstein, & Pantilat, (1999) indicated that physicians' time during face-to-face interaction with patients could enable a provider to gather information, develop a better relationship, deliver appropriate care, and convey the necessary information of a particular system based on client responses. Bodenlos *et al.,* (2007) argued that healthcare providers are not only responsible for providing education, assess disease status, direct medical care, and medications, but also serves a vital instrument in supporting patients adherence and acceptance to a follow-up appointment system.

In contrast, Burch (2008) presented that whenever healthcare provider have low level of knowledge in caring or use of an appointment system that can cause direct physical and mental health consequences for patient and organization. Al-Haqwi & Al-Shehri, (2007) also asserted that providers unawareness of follow-up appointment could increase non-compliance and risk to patient health. Despite these challenges, studies have also shown that due to extensive updates on electronic system, follow-up appointment system and organizational change, providers are struggling to accept or use some clinical system due to factors affecting their job satisfaction and resistance to change (Di Fabio & Gori, 2016). Therefore, it is important for the creation of a flexible appointment system and also properly communicated among users to help increase providers acceptance or adoption of clinical systems (Castillo *et al.,* 2010).

Castillo *et al.*, (2010) further stated that healthcare provider needs technical support from technical staff to enable them be more equipped (knowledgeable) about an appointment system. Thus, a study by Sukums *et al.,* (2014) on electronic clinical decision support system (CDSS) for prenatal

and maternal care services within the healthcare delivery of Burkina Faso, Ghana and Tanzania also supported that, training is one important indicator towards improving healthcare providers knowledge, identifying challenges and creating experience in support of CDSS. However, this indicates that the quality of every medical appointment services highly depends on patients education, awareness and understanding, as well as practitioners' training, skills, competency and technical support eventually increases knowledge to FAV (Mosadeghrad, 2014; Zhang *et al.,* 2015). Hence, in order to achieve patient satisfaction, it is important to identify patient and provider understanding of appointment system during Neurological Visits (NV). The preceding discussions suggest that whenever clients are knowledgeable about an innovation, they can take better decisions about whether or not to accept a system. Similarly, knowledgeable health workers can have better use an innovation leading to adhering of appointment and use the appointment system in order to achieve organizational objectives and improve upon client health and satisfaction.

2.6 Enablers and Barriers to Implementing Follow-Up Appointment Systems

Enablers and barriers are key factors of health service practice and this may facilitate or inhibit progress (Flottorp *et al.,* 2013). Barriers can occur at different levels, therefore the Cochrane effective practice and organization of care group categorize barriers into nine groups; these are information management, clinical uncertainty, administrative constraints, sense of competence, interpersonal communication, perceptions of liability, financial disincentives, standards of practice and patient expectations (Baker *et al*., 2010; Mowatt, Grimshaw, Davis, & Mazmanian, 2001). Further mediation approaches that are chosen to overcome the pre-identified barriers have subsequently improved practice as a result (Michie *et al.,* 2005). Studies argued that advancement to current knowledge and the means to understand the causal ways by which the intervention

worked, and the manner by which the selected intervention enhanced or modified the barriers and enablers that were identified (Grimshaw *et al.*, 2005; Baker *et al.*, 2010).Research in healthcare delivery indicates some barriers that include; health literacy, cultural factors, waiting time (length of stay), lack of familiarity, lack of agreement, lack of outcome expectancy, health insurance, cost of care, quality of drug, shortage of equipment's, behaviors of clinical staff and the effectiveness or efficiency of healthcare providers whereas high intrinsic motivation have been identified among these enablers (EPOC, 2002; Glenton *et al.*, 2013).

These barriers are said to have some form of influence on the success of improvement strategies and implementation process (Baker *et al*., 2010). However, some interventions that were identified to tailor some of these barriers embraces change processes in health practices support, patient information brochures and decision support and reminders based computerised system, increasing awareness by educating patients and the general public, employing more staff, implementing and ensuring the enforceability of health policies (Flottorp & Oxman, 2003). Despite these attributes, the effects of an attempt to transform research outcome into practice and performance improvement or in ensuring enforceability of health policies especially during follow-up appointment systems remain inconsistent (Baker *et al.,* 2010; Gonzales *et al.,* 2013; Peterson *et al.,* 2015).

Nevertheless, barriers of follow-up appointment systems have been demonstrated in clinical uncertainty, information management among others *(*Nelson, Geiger, & Mangione, 2002; Poo*n et al.,* 2004; Tejeda *et al.,* 2013). Tejeda *et al*., (2013) identified some of these barriers among different women and described some factors associated with barriers to follow-up care. They found

that women that are employed were more likely to complain about institutional-level barriers, such as system problems when scheduling for a follow-up appointment (Tejeda *et al.,* 2013). Additionally, non–English-speaking women report difficulties in communicating their needs with front office staff when scheduling follow-up appointments and this affected information management (Tejeda *et al.*, 2013).

In clinical uncertainty and patient perception factors, fear was a significant barrier reported by the women during the follow-up care period (Nelson *et al.,* 2002; Poon *et al*., 2004). Investigation into barriers to care have indicated that patients not understanding the purpose of a follow-up examination is a reason for non-adherence (Ell *et al.,* 2002), leading to an effect on patient expectations and clinical uncertainty. Other studies have report barriers to patients experience of system issues with regard to follow-up care, long clinic waiting time, including scheduling times that are not convenient, and differences in healthcare procedures from clinic to clinic, among others (Battaglia, Roloff, Posner, & Freund, 2007; Percac-Lima, Aldrich, Gamba, Bearse, & Atlas, 2010; Tejeda *et al*., 2013).

2.7 Patient's Satisfaction with Quality of Follow-Up Appointments and Visits

Patients satisfaction has become one essential element of quality in healthcare service delivery (Aduo-Adjei, 2015). Evidence suggests that the excitement and satisfaction of every patients or client at the health facility is linked with patients perception on service quality (Pramanik, 2016). Empirical evidence suggests that Patients perception of particular service quality is difficult to determine because it is subjective (Lei & Jolibert, 2012). Other writers argued that patients' perception of services quality received thou can be challenging, in terms of real identification of

what constitutes quality for client, facial expression and personal demeanour could also be a determinant (RiiskjÆr *et al.*, 2012). In this regard, appointment scheduling systems of a patient with neurological conditions can sometimes be a great determinant for the patient willingness to return to the same provider for care and the knowledge acquired during the process of scheduling (Soleimanpour *et al.*, 2011). It is also established that the amount of time spent waiting to receive care form a provider can sometimes be frustrating and detest the client from coming for care within the same context.

Empirical evidence revealed that quality of follow-up appointment leads to patient satisfaction. Atinga, Abekah-Nkrumah, & Domfeh (2011) indicated that patient satisfaction depends on supporting patients, improving the health facility's environment and reducing waiting time. Similarly, Atinga, Bawole, & Nang-Beifubah (2016) examined the discrepancy in patient-centered care between private and public hospitals and how satisfaction with patient-centered care differs. The author observed that physicians' behaviour is categorizing and less beneficial to clients, signifying unequal entree to patient-centered care for patients especially for those from high and low income countries (Atinga *et al.*, 2016). Patients from all walks of life who seek healthcare needs to be given correct and courteous treatment, adequate information on their health status and safe medical conditions (Abuosi, Domfeh, Abor, & Nketiah-Amponsah, 2016; Robyn, Sauerborn, & Bärnighausen, 2012).

Other research argued that provision of high-quality services could also lead to increased utilization of health services, health financing, compliance with prescription and reduction in the risk of self-medication (Kamuzora & Gilson, 2007; Robyn *et al.*, 2012; Tipke *et al.*, 2008). It is

also mentioned that the lackadaisical attitude of some clients to having appropriate care with the provider is being blamed on the number of professionals within the sector that are available to provide care (Habibi *et al.*, 2018). In the view of RiiskjÆr *et al.*, (2012) the long waiting time of a patient within a facility to receive service increases patient existing physical and emotional pain due to the patient's current condition. Despite these facts, WHO, (2018) stated that health services of high-quality comprise the right care provided at the right time, responding to the clients' desires and preferences, while harm and resource waste are minimized. However, it is clear that quality healthcare strengthens the chances of patients satisfaction, preferred health outcomes, and also in accordance with the seven measurable features of care delivery, which are efficiency, equity, safety, people-centeredness, aptness, value and the combinations of adequacy during patients care delivery. On this note, without quality health services, patients satisfaction researches and universal health coverage remain an empty promise that cannot be achieved (WHO, 2018).

Appointment scheduling system (ASS) is recognized as the first step in every healthcare provision processes especially within outpatient settings. Ttherefore, patient's viewpoint on the kind of services delivered is important (Gupta & Denton, 2008). This, whenever an ASS is designed and implemented based on patient's needs and wishes, it serves as a measure for patients satisfaction (Kamimura, Ashby, Myers, Nourian, & Christensen, 2015; Wang & Gupta, 2011). A study conducted in outpatient clinics with different specialisation in Iran evaluated patient's needs and satisfaction of appointment scheduling systems showed that patient satisfaction of waiting time in receiving treatment and contact time have a greatest influence on overall patient satisfaction (Habibi *et al.*, 2018).

Katre, (2014) assessed the relationship between patient satisfaction and appointment scheduling

process in a pediatric dental clinic, with the main objectives on revealing the in-depth association between the two and also identify how appointment scheduling increases patient satisfaction. It was observed that a significant number of the patients were happy with the existing ASS barring a few exceptions (Katre, 2014). Although, there were few individuals (parents) who were actually not happy with the current means of securing an appointment (Katre, 2014). The author further linked the unhappiness of clients not getting the appointments of their choice to the number of specialist professionals available for the condition and the cost involved in the treatment and management of the condition. This explains why service satisfaction is a difficult thing to address within the scope of human resource capacity.

Furthermore, identifying the core factors that associates with poor satisfaction of service delivery based on distorted appointments scheduling would help improve the systemic lapses for both providers and clients (Nkrumah, Yeboah, & Adiwokor, 2015). Such that the use of online survey, for instance, will help investigate why individuals miss an appointment and contribute to addressing the lapses in appointment scheduling (Crutchfield & Kistler, 2017). A study conducted in United Kingdom (UK) which determined why patients missed appointments and whether patients who miss an appointment later consult their general practitioner, showed that, more than 40% of people who missed an appointment indicated that they did not attend due to forgetfulness and a quarter mentioned that they put in all efforts to cancel the appointment because the timing was not convenient to them (Neal, Hussain-Gambles, Allgar, Lawlor, & Dempsey, 2005).

Similarly, other literature indicates that about 36% of individuals missed one or more appointments within a year are in low and middle-income countries (Neal *et al*., 2005; WHO, 2010). It is, therefore, important for service providers to provide an essential procedure for appointment scheduling. Wang & Gupta, (2011) suggested that patients' satisfaction with appointment

scheduling or system is influenced by a provider's ability to schedule at the right time, with the right specialist of a particular condition. Generally, satisfaction to follow- up appointment and visit system is greatly determined by changing clinical practice at the front line, setting standards, allocating the right resources and technology, engaging and empowering patients, educating health workers as well as enforcing the right policy (Adhikary *et al.*, 2018; WHO, 2018).

Prakash (2010), reveals that clients' satisfaction affects patient loyalty, patient's retention, organizational branding, clinical set-up and medical misconduct claims. The author suggests that sufficient expertise, timeliness, cost of service, health education and quality drugs are crucial to health delivery and satisfaction to care. In contrast, Adhikary *et al.*, (2018) found that factors influencing patients satisfaction can be perceived by various individual at different levels of care in different context. The author observed that in Bangladesh, convenient opening hours, openness in asking questions from providers, cleanliness, confidentiality and privacy settings are associated with some determinants of quality and patients compliance. Patient's compliance to care is another important aspect indicating client's satisfaction, especially during follow- up appointment.

Sarver & Baker, (2000) reported that about 78% of patients had knowledge of follow-up appointment, meanwhile, there existed no link between patient experience and knowledge of follow-up appointments. They observed that the appointment type and awareness of their appointment at the time of follow-up interview were all positively associated with appointment compliance (Sarver & Baker, 2000). Empirical studies revealed that, whenever clients' comply with their appointments, they are most likely to improve on their health status at the long run. Millhiser, Veral, & Benedetto, (2012) suggested that in order for a hospital to increase on its client satisfaction, it is important to encourage a procedure designed to ensure adequate comprehension

of information given to the patient. This results in increasing clients' levels of satisfaction and compliance in general practice, especially in case of the appointment system.

2.8 Theoretical Literature

2.8.1 Diffusion of Innovation Theory for Clinical Care

Diffusion of Innovation (DOI) theory was invented by Everett. M. Rogers in 1962 and recognised as one of the first American sociologist. DOI theory originated from communication theory, which sought to explain how communication could enable effective service delivery and satisfaction between clients and providers (Sanson-Fisher, 2004). Rogers (1995) explained diffusion as the process by which innovation is communicated through certain channels over time among the members of a social system. The end result of this dimension of diffusion in communication is that people as part of a social system adopt a new idea, behaviour, or product.

DOI theory has aided in measuring issues on adoption and quality of services of internet/online banking systems (Al-jabri & Sohail, 2012; Barnes & Corbitt, 2003; Yu *et al.*, 2013). Currently, diffusion of innovation theory has mostly been used in studying individual's adaptation of health information technologies (Cherry, Carter, Owen, & Lockhart, 2008; Chew, Grant, & Tote, 2004; Greenhalgh *et al.*, 2008). To mention a few, Helitzer *et al.,* (2003) used the DOI theory to measure and predict the adaptation of a telehealth program in New Mexico. Chew *et al.,* (2004) also applied DOI theory in studying the usefulness of internet usage within healthcare settings. Whereas, Lee, (2004) also conducted a qualitative study using DOI theory to examine the adoption of a computerized nursing care plan (CNCP) within nurses in Taiwan. Even though, these scholars have confirmed that Rogers's diffusion of innovation theory is useful for conceptualisation of

technological adoption in the context of e-health, it has not been practically tested in follow-up appointments and visits system. Therefore, this study adopted the theory as part of the conceptual framework to investiagate the quality of follow-up appointments and visits system within neurological care.

However, the core tenets of this theory include information diffusion in administrations, information technology, nursing informatics experts, clinical change and change agents (Kaminski, 2011). The main tenets of the theory strive on four key elements; Innovation (idea), Communication channels, Time and The social system (Figure 2.1).

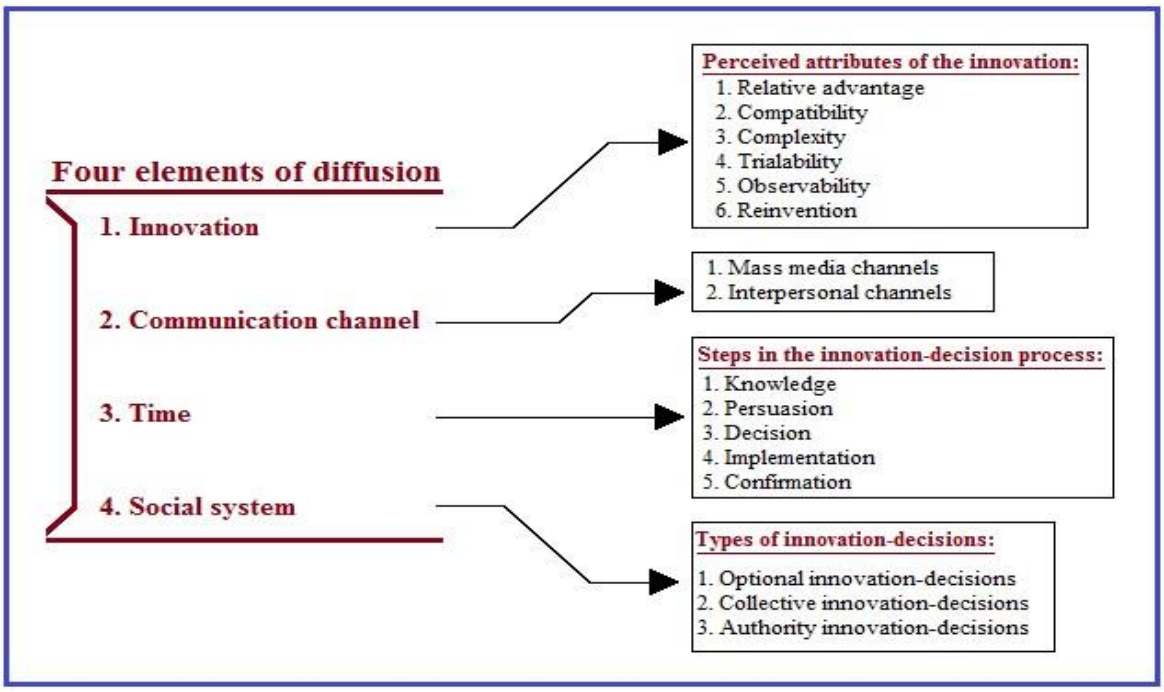

Figure 2.1. The four elements of Diffusion of innovations theory (Adapted from Rogers, 2003)

Adoption of Innovation occurs when an individual does something different than what he/she had previously been doing. The key to adoption is that the person must perceive the idea, behaviour, or product as new or novel. It is through this that diffusion is possible. Evidence suggests that,

though innovation in healthcare delivery is essential, mal-application of innovation ideas, in the long run, affects the desire outcome of such innovation including, health services administration (Sanson-Fisher, 2004).

Sanson-Fisher (2004) asserted that bridging the evidence gap in the application of innovation will not be achieved simply by informing clinicians about the evidence but rather practically demonstrating the application of the innovation. This reason brought about theoretical approaches such as Rogers' diffusion of innovation theory into health care with the aim of helping individuals and health providers to understand how change may be achieved (Rogers, 1995; 2003).

The effectiveness of every healthcare system depends on the quality of service delivery. Several studies including that of Medlin, (2001) have established that effective healthcare system and the theory of innovation by Rogers, (1995; 2003) seeks to explain the key concepts that are necessary for innovation in critical healthcare delivery including Neurological conditions. The theory posits that Innovation, Communication, Time and Social System are very essential for the quality of health service delivery including follow-up appointments and visits system of clients with neurological conditions (Rogers, 1995; 2003). Sanson-Fisher, (2004), in their study indicated that Rogers (1995; 2003) theory of innovation has helped to improve client decision making for regular and effective attendance to care. It is also established that, innovation in healthcare service delivery increases client desire for appropriate care (Zhang *et al.*, (2015).

Conversely, other authors argued that the mere introduction of innovative ideas is not enough to warrant quality, but rather the effectiveness and efficiency of the innovation on a client by the service provider (Mcfadden, 2011). In this regard, issues of the relative advantage of the innovation are to the benefit of both client and provider, the compatibility of the innovation to the client's condition and the existing healthcare system are very essential to producing quality to patients

following-up on appointment (Rogers, 1995; 2003). Although the theory merely mentioned trialability as a concept to enabling quality in medical innovation; extending the explanation of trialability to include testing the innovation on a patient and that of the healthcare system within a particular context is critical (Sanson-Fisher, 2004). Empirical evidence affirms the theory of innovation on the concept of observability and reinvention but argues that the effectiveness of the innovation to the client and the healthcare system cannot be underscored (Berwick, 2003; Carlfjord *et al.*, 2010).

In addition, one important element within innovation theory is interpersonal communication that cannot be overlooked because successful interactions, the ability to patiently communicate effectivetively or deliver a well-communicated information and the attitude of both provider and client during follow-up appointment and visits, as well as the administration of services is key (Kindler, Szirt, Sommer, Häusler, & Langewitz, 2005). Innovation can only be effective when beneficiaries of the innovation perceived some kind of benefits of the innovation as a result of their exposure to the intervention (Rogers, 1995; 2003). Notwithstanding, professional knowledge in persuading client on the quality of the innovation and system would lead to clients decision to the innovation, thus, its potential implementation by proponents of the innovation or service providers (Rogers, 1995; 2003). Evidence suggests that a successful innovation or system is one that is being accepted by clients and endorsed by providers as being useful (Nilsen, 2015). Invariably,, the concept of innovation in clinical care, a professional gap in the area of specialisation and adherences to patients right to care are being underpin by policy issues and sometimes affects the quality that it intends to provide (Mcfadden, 2011; Nilsen, 2015).

2.9 Conceptual Framework

The conceptual framework of this study is based on a synthesis of literature and Rogers, (1995; 2003) theory of innovation which is defined as the process by which an innovation is communicated through certain channels over time among the members of a social system. In the context of this study, diffusion is the process by which innovation (follow-up appointment and visits system) is communicated properly through certain channels over time among the members of a particular health system (the patients, health providers, Insurers and health policy). This theory simply explains how, over time, an idea or product gains momentum and diffuses (or spreads) through a specific population or system. The theory has four elements, each of which has sub-components. These elements are; innovation (idea), communication channels, time and the social system (the organization). However, in this study, perceived attributes of innovation and innovation-decision process (Time) conceptualized within follow-up appointment and visit system in relation to the study objectives. The diagram below presents the pictorial view of the conceptual framework underpinning this study (Figure 2.2).

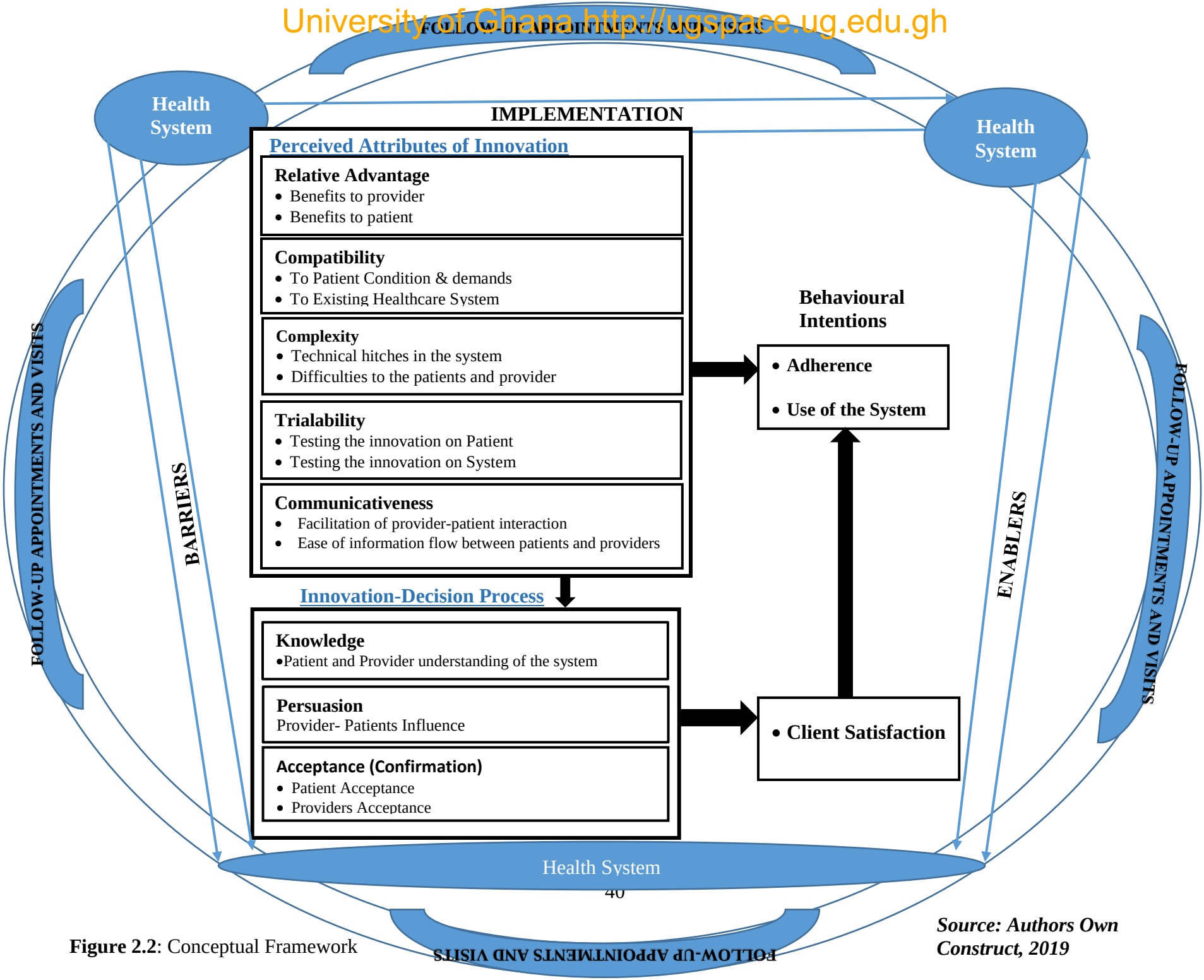

Figure 2.2: Conceptual Framework

Source: Authors Own Construct, 2019

2.10 Empirical Literature

2.10.1 Perceived Attributes of the Innovation (PAI)

As explained by Rogers, innovation is an idea, practice, or project that is perceived as new by an individual or another unit of adoption (Rogers, 2003). An invention may have been in existence for a long time at a different location, but if a different group of individuals at another location perceived it as new, then it may still be an innovation for them. According to Sanson-Fisher (2004), the characteristics of innovation are compatibility, complexity, trialability, observability and relative advantage. In the context of the current study, PAI would seek to examine relative advantage, compatibility, trialability, and communicativeness.

Eriksson, Kerem, & Nilsson, (2008) studies indicated that the adoption of innovations in emerging and newly developed economies is an issue of great importance and not only to developed economies but also the world economy at large. The author commented that the determinants of innovation adoption includes perceived attributes of innovation, and the means by which an innovation reaches the adopter. Furthermore, Chor *et al.*, (2015) examined how perceived attributes of innovation act as predictors of innovativeness and revealed that there are 27 predictors of adoption that consist of four contextual levels — external system, organization, innovation, and individual. The external system include; state policies, regulation, and health system, among others. Moreover, studies shown on predictors of innovativeness are far more successful in predicting customers' satisfaction, responsiveness, health outcome, creativity and innovation rather than other personal characteristics (Aduo-Adjei, 2015; Ostlund, 1974; Patterson & Zibarras, 2017).

Besides, Pankratz, Hallfors, & Cho, (2002) observed that among the characteristics of innovation,

compatibility and relative advantage are the most valuable attributes in measuring the adoption process and has a direct link with adherence and satisfaction.

2.10.1.1 Relative Advantage

From the perspective of Rogers, (2003) "relative advantage" is the degree to which an inovative idea is seen to be better compared to the idea it replaces. Research offers information on the cost-effectiveness and possible benefit to patients for applying a new clinical activity. Since some behaviours increase the status of adopting follow-up appointment and visit system it is encouraged that patients develop such behaviours which encourage patient and provider satisfaction to care, as well as increases organizations profits, brand and the readiness to adopt the innovation.

Various scholars that applied DOI theory established that Relative Advantage is seen to be the most important analysts of innovation adoption usage. Relative Advantage displays the benefit and efforts resulting from the adoption of an innovation (Rogers, 1995). Greenhalgh *et al.,* (2004) commented that Relative Advantage must be beneficial and have defined advantage in terms of efficiency, quality or cost-effectiveness that can easily be accepted and applied by its users. For instance, if potential users see no relative advantage in the innovation, service or a system, they generally will not consider it. Whereas relative advantage alone does not guarantee widespread adoption (Greenhalgh *et al.,* 2004). Further studies also argued that when the users perceive relative advantage or usefulness of new technology over an old one, they tend to adopt it (Rogers, 2003; Zhang *et al.,* 2015). Zhang *et al.,* (2015) findings revealed that relative advantage is the main attribute attracting patients to adopt or adhere to appointments at the clinic.

Rogers, (2003) posit that Relative advantage results in improving efficiency, economic benefits and enhanced prominence. Other studies revealed that relative advantage in innovation is positively related to the rate of adoption, for instance, where it influences the adoption of prescribing practices in pharmacists (Al-Jabri & Sohail, 2012). The author further explained that prescribing practices have increased the sense of professionalism, image of professional healthcare and providers job satisfaction. Pharmacists who had adopted prescribing practices have increased in terms of efficiency, revenue and clients use of their services (Al-Jabri & Sohail, 2012).

In the context of appointment system and services, benefits that are derived include; increases in the rate of adoption, empowerment of users, quality service delivery, minimization of waiting time for providers and clients during visits (Lin, 2011; Zhang *et al.*, 2015). Therefore, it can be predicted that the perceived usefulness of relative advantages during follow-up appointment and visit, can increase clients and providers chances of adopting or use of appointment services at the neurological clinic.

2.10.1.2 Compatibility

Compatibility is a measure of the degree to which an innovation is perceived as being compatible with existing values, belief, needs of potential adopters and past experiences (Rogers, 2003).

Rogers, (2003) stated that compatibility is a key feature of innovation as conformance with user's regime can drive a rapid rate of adoption. Research has proven that compatibility is an important originator in determining clients' approach towards adoption of banking in Malaysia (Karjaluoto, Tapaninen, Seppanen, & Makinen, 2009). Similarly, Vuononvirta *et al.*, (2011) revealed that, compatibility appears to be one outstanding factor of perceived usefulness and successively of

general practitioners' attitude towards tele-medicine. Other studies found that compatibility had significant relationship and impact with adoption and use in clinicians and patients in Saudi Arabia (Al-Gahtani, 2003; Al-Jabri & Sohail, 2012). Patients and providers are more willing to adopt an innovation when they feel that it is so easy to understand and use. Similarly, Van Slyke *et al.,* (2004) also found that perceived compatibility influence the behavioural intention and attitudes across different settings. For instance, with the use of ICT technologies (e-commerce), smart-card merchant systems etc. Nevertheless, little attention has been placed on the role of perceived compatibility in the existence of health system, adherence and adoption especially, for follow-up appointment and visit system.

2.10.1.3 Complexity

Complexity is the degree to which an innovation is perceived to be difficult to understand, implemented or used (Rogers, 2003). Owolabi Yusuf & Mat Derus, (2013) defined Complexity as 'the ease of learning, understanding and use of an innovation'. On the contrary, Tucker (2009) described Complexity as the difficulties towards end user in adapting a particular innovation. Usually, the users' perception on the complexity of innovation is seen as a serious stage, because the complexity is assumed to be negatively related to innovation adoption process and its implementation. For instance, whenever the innovation is seen difficult or complicated to the user, then the rate of acceptance (adoption) will be reduced, all other things being equal (Tucker, 2009). Understanding this interconnectedness and complexity is the essence of systems and taking into account individuals' behaviour that influences resistance or acceptance of appointment systems rather than the simplicity of the system (Atun, 2012; Senge, 1990). Zhang *et al.,* (2015) further

stated that, whenever innovation is seen less complex, the more likely it will be accepted by end-users. Therefore, Innovations that are simpler to understand, straightforward, easy to use and user-friendly encourages the adoption of clients, providers or end-users to adhere and use the service rather than innovation that requires the adopter to develop new skills or seen as complicated. Cheung, Chang, & Lai (2000) found that complexity negatively influences the adoption of internet usage. On the contrary Lin, (2011) also revealed that Complexity in system use is a major factor in adoption within organizations (for instance, mobile banking services) and concluded that complexity is seen to be user friendly such that it enhances positive attitudes towards end users (Al-Jabri & Sohail, 2012; Lin, 2011).

On the contrary, extensive literature specified that ease of system use and the perceived ease of the usefulness of innovation have extensively been researched rather than its complexity (Atun, 2012; Dooley, 1999; Lyytinen & Damsgaard, 2001). Venkatesh & Bala, (2008) added that perception of ease of system use would positively influence individual behavioural intentions, values and readiness to accept the service, system or innovativeness. Al-Jabri & Sohail, (2012) also indicate some barriers in complexity adoption, relating to technical complexity such as designs of technology, time, compact environment, information asymmetry among others affect clients' adoption rate. Innovative complexity occurs within organizational systems, process, new technology, power or guidelines, etc (Fløysand & Jakobsen, 2011; Gallivan, 2001). In healthcare settings, the complexity of guidelines have been linked to the degree of accessibility, information, system use, as well as appropriate guidelines that are associated with utilization of services by patients and health care practitioners (Spallek *et al.*, 2010). Moreover, whenever guidelines of a system are seen as complex, it affects adherence, especially in the context of follow-up

appointment and visit system in healthcare delivery. Complexity have a negative effect or positive impact, depending on the system and providers support (Spallek et al., 2010). Therefore, the process of perceived complexity deters adoption, but its flexibility motivates adherence and use of follow-up appointment and visits system.

2.10.1.4 Trialability

Rogers defines trialability as the degree to which an innovation may be tried and modified. The ability to test a probable medical intervention on a limited basis permits clinicians to explore the application of the procedure, how acceptable it is to patients, and the possible outcomes (Rogers, 2003).

Karahanna *et al*., (1999) indicated in their study that trialability seems to have less significant influence on individuals' adoption, such that the adopter can easily or subsequently reject the innovation instantly. Further studies argued that potential adopters who are allowed to experiment an innovation often feel more comfortable with it and are more likely to adopt it (Rogers, 2003; Zhang *et al.*, 2015). However, Zhang *et al.*, (2015) studies indicated that 45% of patients automatically stop using online scheduling after trying because clients do not necessarily need to see the doctor again after their appointment and sometimes they straight-ahead schedule for their appointment after meeting with their general practitioner at the hospital, thus implies that the patients do not need the online appointment system. Lee, (2004) also commented that the more innovative nurses become in caregiving, education and empowering clients by offering clients the privilege to test a system before its implementation on e-health, the more they will encourage its usage and adherence for clinical visits.

Yusuf & Derus, (2013) further emphasized that an innovation that gives its user the opportunity for test-run on experimental bases before the adoption is likely to be adopted faster than the one that does not provide such opportunity. As such, researchers have found a direct relationship between trialability, use and adoption of an innovation. On this basis, trialability will be investigated on its positive or negative impact on adherence and use during the follow-up appointment and visit system at the neurological unit.

2.10.1.5 Communicativeness

Communicativeness is the extent to which clients'are willing and capable of communicating effectively about the use of innovation on the appointment system (Razmak & Bélanger, 2018). However, Rogers (1995) defined communication as a process in which participants create and share information with one another to reach a mutual understanding. Channels on how communication is used in transferring information about hospital practices, which comprises of the mass media channel, interpersonal communication, community meetings, word of mouth or adherence during visits. Research also revealed that the best and appropriate strategy of communication is face-to-face or direct means of conversation (Sanson-Fisher, 2004).

Health care providers and patients are often flooded with information overload from different sources (media, pharmacist, laboratory, research etc.), where clients are often persuaded before they try using a product or procedure (Davies, 2007; Gates, 1997). This necessitates the need for appropriate communication leading to the reduction of information asymmetry and to improve health education. Therefore, communicativeness in this context seeks to understand and unveil how the system of follow-up appointment and visit system is easily and properly communicated

among providers and patients. During the process of follow-up visit, innovation process encompasses doctors' communication skills by means of gathering evidence from clients in order to aid treatment, counselling, guidelines and establish caring interactions with clients (Brédart *et al.*, 2005; Duffy *et al.*, 2004; Rogers, 2003). These are basically the main skills in medicine and the ultimate goal in achieving best health outcome and patient satisfaction (Brinkman *et al*., 2007; Pereira, Murphy, & Herndon, 2004). Whenever communication skills are properly translated into appointments and visits system, it contributes to the effective delivery of health care (Brinkman *et al.*, 2007; Herndon & Pollick, 2002).

Barriers to communication regarding patient-doctor relationship include; patients anxiety and fear, doctors' over-burden (workload), fear of litigation, fear of physical or verbal abuse, and unrealistic patient expectations (Sabherwal *et al*., 2015). Besides, emotional and physical brutality of medical training, particularly during internship and residency, suppresses empathy, substitutes techniques and processes of communicating, which might sometimes result in disrespect of clients (DiMatteo, 1998). The doctor-patient communication is one difficult state, and serious misinformation would-be a pitfall to the organisation, especially towards clients' understanding of diagnosis, care, adherence or use of systems (DiMatteo, 1998; Handayani, 2015). These important factors may affect the choices patients make regarding their treatment or following–up on their appointments, which have significant impact on health especially in the case of neurological disorder.

Doctor-patient communication regarding use of systems is necessary, especially during the process of appointment scheduling (Suarez-Almazor, 2004). The process of appointment scheduling also includes some form of privacy, contributions and rights of patients. Therefore, doctors are in a unique position to respect patients' rights of autonomy. According to Prakash (2010) patients most

often expect health providers to communicate clearly and in a friendly manner regarding system use, laboratory, test results, diagnoses, prescriptions, health regimens, and remind them during an appointment. Similarly, providers are expected to understand patient problems and needs, health records or information's accurately from patients or their test record (E.g. Patients Labs, Scan or X-ray, etc.). It is proposed that, the better the quality of communication perceived by the patient, the higher patients will follow-up on their appointments, which will increase their level of satisfaction (Prakash, 2010). Also, studies indicated that effective doctor-patient interaction and interpersonal skills can aid early detection of diseases and prevention towards further crises and complications (Ha Fong & Longnecker, 2015). This may enhance the use of an appointment system, resulting in better satisfaction and quality health outcomes.

2.10.2 Innovation-Decision Process (Time)

According to Rogers (2003), innovation-decision process is a means through which an individual passes, from knowledge of innovation, to forming an attitude toward the innovation by either adopting or rejecting it. In Diffusion of Innovations Theory, the innovation-decision process consists of five stages; knowledge, persuasion, decision, implementation, and confirmation (Rogers, 2003). However, in the context of this study innovation-decision process have been conceptualized into three processes, which include; knowledge, persuasion, and acceptance (confirmation). The first stage begins with information gathering about the innovation (knowledge), followed by the process which the individuals develop attitude towards the innovation (persuasion), and then confirm or accept the decision.

Drawing from various literature, knowledge is vital during the innovation decision process (Nicolas, 2004; Rogers, 2003). This is because effective communication enhances the awareness and knowledge of the individual in the decision-making process. Kohles, Bligh, & Carsten (2013) asserted that awareness and persuasion influences individual to know about innovation and ultimately decide whether or not they will use it. When the client uses it, it reveals the adequacy of the system and leads to satisfaction as well as improvement in clients' health outcome. The DOI Theory can be used as a framework to further investigate non-compliance and use of appointments and visits. Thus, the purpose of this study is to assess follow-up appointment and visit system adoption scale based on Rogers' Diffusion of Innovations Theory.

2.10.2.1 Knowledge

The innovation-decision process begins with the knowledge stage. In this stage, a person learns about an existing innovation and seeks more information about the innovation. "What?", "how?" and "why?" are the key questions in the knowledge stage. During this stage, the individual attempts to determine "what the innovation is and how and why it works" (Rogers, 2003). According to Rogers, these questions make up three types of knowledge: awareness-knowledge, how-to-knowledge, and principles-knowledge. To create new knowledge, technology education and practice in enhancing know -why experience and not only a how-to experience (Seemann, 2003). The awareness-knowledge signifies knowledge of an innovation's existence and lack of awareness-knowledge can affect the adoption of the innovation irrespective of how beneficial it will be to the users (Rogers, 2003). This is the means where knowledge can influence persons or clients' to acquire or enquire further about the invention, leading to its adoption and client satisfaction.

Secondly, the stage of how-to-knowledge, consists of information about how to use an innovation properly. An instance where faculty or groups who have technical backgrounds may not use a particular technology properly or do not have adequate knowledge on the system use, this may negatively affect the outcome (Du Plessis, 2007; Rogers, 2003). Rogers (1995), view knowledge as an essential variable in the innovation-decision process and argued further that individuals must know something in order to assess its attractiveness. Therefore, to increase the adoption chance of innovation, an individual or client must have a sufficient level of how-to-knowledge prior to the trial of this innovation.

Thirdly is the Principles-knowledge which is the last knowledge type within the process of diffusion. This knowledge comprises the operational values describing how and why an innovation works effectively. Innovation can be accepted without this principles-knowledge, but misusing of an innovation may cause discontinuance (Rogers, 1995; 2003).

Knowledge, proficiency and demeanor of health care providers can offer a sense of reassurance that they have clients' interest at heart and towards delivering of services with integrity, patience, fairness and beneficence (Morrison, 2009). For a service that is largely credible based, clients are unable to evaluate the quality of the services after being tested or used, as well as clients sense of assurance that is engendered can greatly influence patient satisfaction (Morrison, 2009; Pramanik, 2016). In the healthcare organization, assurance is connected to health workers who properly deduce the importance of system users', diagnose diseases, deliver suitable descriptions to inquiries, and make a sense of security (Andaleeb, Siddiqui, & Khandakar, 2007). Hence, quality of every healthcare especially during follow-up appointment and visit system, largely depends the on doctors' awareness and practical skills: "the most important factors influencing the quality of

care in healthcare settings include knowledge, expertise, commitment, systems and examining the patient properly" (Mosadeghrad, 2014).

Keshvari, Yusefi, Homauni, Omidifar, & Nobakht, (2018) also identified a few challenges relating to the use of a hospital system which includes knowledge factors, hardware factors and organizational factors. These factors affects the success of the quality of follow-up appointment systems. Some examples of the organizational factor are; waiting time, access to service delivery, untested or trailed system, lack of flexibility among others (Keshvari *et al.*, 2018). Whiles challenges within the use of knowledge on systems includes lack of responsiveness and lack of understanding with appointment systems. Fischer, Lange, Klose, Greiner, & Kraemer, (2016) indicated some attributes that affect physician knowledge which include; lack of self-efficacy (training), lack of skills, lack of motivation among others. Nevertheless, providers knowledge is key during healthcare delivery and appointment system.

However, knowledge is seen as the awareness of an innovation's existence obtained, as well as the understanding of what innovation does and how it works on individuals, thus contributng to individual needs and satisfaction with care (Rogers, 2003). Further studies revealed that higher levels of knowledge are associated with a more positive perception of the innovation characteristics (Kohles *et al.*, 2013). Having knowledge of an innovation has resulted to the use of service, adoption of electronic record management, technological adoption, improved quality and increased productivity in healthcare as well as influence the level of patients satisfaction (Coye *et al.*, 2009; Nambisan *et al.*, 2013). Notwithstanding, studies on knowledge acceptance conclude that knowledge of an innovation fosters customers' satisfaction due to the fact that individual have

clear understanding of system, trial and the application of self-service (online booking) (Liaw, Hatala, & Huang, 2010). Further research also mentioned that patient knowledge such as, the understanding of treatment regimen, nurturance of trust, appointment structures between health providers and patients influence patients' compliance to appointment that can significantly improve health status of patient and satisfaction (Albuquerque, Cunha, Martins, & Sa, 2014; Phillips, 2008).

2.10.2.2 Persuasion

Persuasion is explained as "individual's interest in the innovation and actively seeks related information about the innovation" or individual being convinced on adopting an innovation (Rogers, 1995). In the decision-making process of clinical care, Sanson-Fisher (2004) asserted that persuasion occurs when an individual clinician is persuaded about the advantages of the innovation. Persuasion often occurs when an individual forms a favourable or unfavourable attitude toward the innovation but "the realization of a favourable or unfavourable attitude toward an innovation does not always lead directly or indirectly to the adoption of clinical services (Rogers, 2003).

During the stage, the individual figures out his or her attitude towards the innovation, this solely depends on the knowledge acquired about the innovativeness of the product, service or system (Rogers, 2003). Hence, a change agent (providers & technical expertise) can be introduced within this practice. A change agent is a person who inspires the possible adoptions of the use of an innovation (Rogers, 2003; Tucker, 2009). These individual will often use their influence to help in the decision-making process and also have potentials or influence in convincing the clients to adopt

the service (Tucker, 2009). These individuals can use their power to support the managerial methods or procedures and also convince the adopter to adopt the new innovation or idea or slow the process of acceptance and sometimes prevent the adoption from taking place within healthcare environment (Rogers, 2003; Weigel *et al*., 2012). For instance, in persuading a client to honour an appointment and visit, the provider needs to inform the client about the benefits and how important adherence can enhance or speed up their recovery (Elison, Ward, Davies, & Moody, 2014).

Rogers (2003) states that while the knowledge stage is more perceptive, the persuasion stage is more effective centered. Thus, the individual is involved more sensitively with the innovation at the persuasion stage. Persuasion, training and direct-use experience are the best procedures in conveying information to the users about the norm and the means to which knowledge is developed. The individual then begins to form a belief or hesitation towards the adoption of the innovation (Xia & Lee, 2000). Meanwhile, information concerning innovation are sometimes accessible from professionals and technical assessments, or teachers whose subjective opinions of new innovation and they are mostly evidence based and on how innovation positively impact on patients satisfaction (Prakash, 2010; Rogers, 2003; Sherry, 1997). Orji *et al*., (2012) also showed that persuasiveness serves an important tool that enables patients to adopt a positive behaviour to care resulting in quality health outcome and contributes to client satisfaction.

Studies found that persuasion is seen as an important aspect of service delivery. Regardless of how, when or wherever service is been delivered, health providers often than not persuade their clients to consume more of a product for better health outcome. This also depends on how well providers can effectively use some principles of persuasion like authority, commitment, consistency, reliability, social proof, reciprocity, and quality service delivery to influence the

adoption of an innovation (Gandolf & Hirsch, 2009; Owusu-Frimpong, Nwankwo, & Dason, 2010). Persuasion research further documented that the frequency in advising patients of a need or care are more likely to lead to behavioural change, behavioural persistence, or use of an appointment system (Cameron, 2009). Therefore, during follow-up appointment and visit system, ‘‘persuasion comprises a conscious effort at influencing the thoughts or actions of a receiver (client)" in terms of clients response, reinforcement, and change towards negative perception (Cameron, 2009).

2.10.2.3 Acceptance (Confirmation):

Confirmation is the final decision process of the individual. At the Confirmation stage, innovation-decision is put into practice where sometimes individual seeks support for his or her decision. According to Rogers, (2003) this decision can be reversed if the individual is "exposed to conflicting messages about the innovation". However, the individual tends to stay away from this innovation and seeks better innovations or prefers its existing process. Thus, attitudes and decision making become more crucial at this stage. Depending on the support of adoption, the innovation and attitude of the individual, the adoption or discontinuance on use of the innovation happens during this stage (Rogers, 2003). Finally during this period, the innovation result systems will terminate, whenever the innovation loses its distinctive quality as the separate identity of the new idea or acceptance (Rogers, 2003). Within clinical settings, acceptance occurs when the decision-maker seeks reinforcement of an innovation-decision made, or reverses a previous decision to adopt or reject the innovation if exposed to the users and well understood (Sanson-Fisher, 2004). According to Dyer, Owens, & Robinson, (2016) Acceptability is in line with genuine wishes, needs

and opportunities for health users. It is measured from reactions of clients' on their satisfaction level and the extent of their understandability on curative processes or systems that are offered within clinical care (Donabedian, 2002; Dyer *et al*., 2016). Or *et al.,* (2011) also acknowledged the growing need of innovation and concluded that some level of understanding in innovation process influences acceptance, satisfaction and use of innovations. Cassidy-Smith *et al.,* (2007) indicated that patients acceptance during care especially within appointment influence satisfaction and motivates clients to continue using a service. Thus, acceptance of innovation tends to influence perceived usefulness and end-user satisfaction which feeds back to the decision making process of innovation theory (Or *et al.,* 2011; Sanson-Fisher, 2004; Wixom & Todd, 2005). Daragahi, (2017) emphasized that acceptance of innovation among clients highly depends on the process, brand, advantage and quality of the service that can also influence satisfaction to care. Furthermore, other studies argued that the fear of patient acceptance are evaluated on the basis of the quality of care, efficiency, appointment system and not specifically on patient satisfaction (Nuti *et al*., 2012; Rhee & Dermyer, 1995). This is because the client can accept a service not because of its quality, service or system input but due to the influence and persistence on service providers.

2.10.3 The Health System

A health system also referred to as healthcare system, is the organization of people, institutions, resources, and actions focused on providing adequate health care services to meet the health desires of a particular people or promote health to the entire populations (Piña *et al.,* 2015). Healthcare system structure depends on several components. Among them are robust financing mechanisms, well-trained workforce, quality services delivery, adequately paid workers, reliable information

for decision making and policy formulation, properly organised facilities, technologies and logistics to deliver medicines and technologies (WHO, 2019).

However, Frenk, (2010) argues that health system is not only a component of technologies, financing mechanisms, human resources, but most importantly their interrelations. Healthcare system has a hierarchical model, with separate organizational structures for each professional group. It is without doubt that healthcare systems are challenging in health settings. Rogers, (2003) observed a that healthcare organization is often rigid, with established guidelines that delays' rapid change whereas Frenk, (2010) also argued that populations are often not an external beneficiary of health system but essential part.

In this study barrier and enablers of the follow-up appointments system as well as stakeholders and policymakers will be considered. The effectiveness of healthcare system will be examined from the perspective of patients and providers. Patients healthcare experience is very important in healthcare system. However, patient experience of a healthcare system is less considered because health systems see patient experience as less regulatory requirement that should be met but rather as prime indicator that focuses on overall patients health outcome (Wolf, 2017). Enhancing patients experience often than not will positively impact healthcare settings in various ways. It improves organizations reputation, enhances organization's revenue and increases patient engagement with the health workers (WHO, 2013). Patients experiences are enhanced not only based on patient-clinician interaction, but also serves as a contribution for quality improvement for everyone within a health system (WHO, 2013). Health systems are tenaciously pursuing patient experience improvements, eager for more information about patient satisfaction and how experience fits into the bigger healthcare picture (Luxford & Sutton, 2014).

Therefore, health provider's assessment of healthcare system responsibility in providing quality healthcare to patients is vital. Also, patients adherence to care is a critical quality domain that helps in evaluating hospital performance (Bickmore, Trinh, Asadi, & Olafsson, 2018; Shaw, 2003). Healthcare service providers have validated a reliable survey instruments and innovative curative procedures that advocate for healthcare systems improvement, health educations or promotions, health environment innovativeness and leadership training (Gupta, Boland Jr, & Aron, 2017; Luxford & Sutton, 2014). These survey instruments and procedures have assisted healthcare organizations to improve patient satisfaction, patient adherence and encouraging patients participation in decision-making process (Stiggelbout *et al.*, 2012), advance in the use of technology (Lattanzio *et al.*, 2014) and also monitor hospital performance based on their clients' experience and satisfaction.

2.11 Overview of the Health Care System in Ghana

The Health Sector in Ghana is organized into three main levels: national, regional and district; with a sub-district level within the district and including a community health delivery system (GHS, 2017a). In order to improve access to health care, two governmental bodies have been tasked with oversight of health care infrastructure and delivery in Ghana – the Ministry of Health (MOH) and Ghana Health Services (GHS). The health system mostly revolves around the Ministry of Health (GHS, 2017b). Administratively, it has a hierarchical managerial structure from the central headquarters in Accra to the regions, districts, and sub-districts. Within this structure, services are provided through a network of facilities, with polyclinics, and district hospitals

providing primary health services, whiles the regional hospitals provide secondary healthcare, and the three main teaching hospitals at the climax delivering the required tertiary services (Aseweh Abor, Abekah-Nkrumah, & Abor, 2008; GHS, 2017a).

The GHS service established an Act of service governing Ghana health service and teaching hospital Act-1996 (Act 525) that guides the body, councils, members and function of the service within all sectors. The three teaching hospitals also play a key role in teaching and research, offering facilities for the training of physicians and other health professionals, in addition to medical and public health research (Aseweh Abor *et al.*, 2008; Govindaraj, Obuobi, Enyimayew, Antwi, & Ofosu-Amaah, 1996). They are Korle-Bu Teaching Hospital (located in Accra), Tamale Teaching Hospital (located in Tamale) and Okomfo Anokye Teaching Hospitals (located in Kumasi), forming the current tertiary care facilities in Ghana. Patients usually need to book an appointment for subsequent care for their health needs and also follow-up on their health when requested by the health professionals because neurological conditions often cannot receive one-time treatment. The second governmental body that works with health care in Ghana is the Ghana Health Service (GHS) (GHS, 2017c). This organization is considered the service provision arm of the Ghanaian health care system, working to implement policies for national health care, provide health care services and manage resources for health care delivery (Aseweh Abor *et al.*, 2008; Pehr, 2010).

2.12 Overview of Neurological Diseases

Neurological disorders (ND) are responsible for over 20% of the world's burden of disease while neurological and psychiatric disorders are responsible for up to 28% of all years of life lived with

disability (Bower *et al.*, 2007). Furthermore, neurological disorders account for ninety-two (92) million Disability-Adjusted Life-Years (DALY) in 2005, leading to an estimation of One hundred and three (103) million by 2030 (Bower *et al.*, 2007; Tegueu *et al.*, 2013). The burden of these neurological diseases is higher in developing countries (Bower *et al.*, 2007; Tegueu *et al.*, 2013). The specific cause of neurological problems includes genetic disorders, congenital abnormalities or disorders, infection, lifestyle or environmental problems including injury to the brain, spinal cord injury or nerve injury (WHO, 2015; 2016). Similarly, the symptoms may occur from one part of the body system that has connection with the nervous system. An instance, cerebrovascular disorders involves brain injury due to difficulties with the blood flow vessels, circulating into the brain and autoimmune syndromes involve damage affected by the body's own immune system (WHO, 2015). Neurological disorders can be categorized within nerve disorders, spinal cord injuries, brain damage or injury among others, and in accordance to the primary location affected within individual with the disorder, the primary type of dysfunction involved, or the primary type of cause (Kulkarni & Dhir, 2010; WHO, 2000).

2.13 Challenges in Combating Neurological Diseases in Sub-Saharan Africa

Virtually, the increasing rate of morbidity and mortality that occurs due to neurological disorders in Sub-Saharan Africa are attributed to the poor resource curse of the continent (WHO, 2006). Besides, materials and inadequate financial resources have plagued the continent with numerous consequences to care especially to people living with a neurological condition, for instance, human resource personnel who provides services to the clients are short in supply (Ahmad *et al.*, 2010; Sarfo *et al.*, 2016). Most Sub-Saharan African countries have insufficient qualified staff practicing clinical neurosciences. These include neurologists, neurosurgeons and psychiatrists. Apart from

South Africa, the mean ratios for countries that have these medical specialists are 1 neurologist for 1 million to 2.8 million people (versus 4 per 100,000 in Europe); 1 psychiatrist for 900,000 people (versus 9 per 100,000 in Europe); and 1 neurosurgeon for 2 million to 6 million people (versus 1 per 100,000 in Europe) (Silberberg & Katabira, 2006). In these Sub-Saharan Africa countries, clinical neuroscience services are mostly found only in the capital cities. This implies that neurology patients usually have to travel longer distances to access neurological care (Birbeck & Munsat, 2002).

Osuntokun (1975) indicated that due to the massive shortage of "Western-trained" health personnel, some patients mostly resort to traditional native medicine and native herbalists (a practice common in most countries in Sub-Saharan Africa). Meanwhile, these doctors are good psychotherapists and uphold good relationships with their patients (Kvist, Voutilainen, Mäntynen, & Vehviläinen-Julkunen, 2014). Some traditional healers are able to recognize several classical neurological diseases, including cerebrovascular disease, migraine, epilepsy, and ataxic neuropathies (Jamison, 2006; Osuntokun, 1975).

However, the scientific bases of their pharmacotherapeutics are currently unknown. Their practice is based on herbal medicines in Africa that have yet to be explored and understood scientifically (Birbeck & Munsat, 2002; Osuntokun, 1975). The duty of the traditional healer is often challenging because patients that visit the local health care centre sometimes suffer from other complications like severe cough, fever, or burn and may seek for alternative care (Fahrenkopf *et al.*, 2008). For instance, epilepsy through their local healer for years, without explaining the leading cause of ill health to the healthcare worker and thus leads to patients not receiving appropriate treatment (Bhattacharya & Singh, 2018; Offiong, 1999; Osuntokun, 1975). The intervention of the traditional

healers is attributed to the inadequate number of qualified health professional to handle routine care for people living with neurological conditions (Osuntokun, 1975; Sarfo *et al*., 2016).

2.14 Chapter Summary

The literature so far, established the general benefits of appropriate appointment systems to include reduction in non-adherence of appointments, reduction in cancellations of appointment, improvement the monitoring of patient conditions, and health outcome. Appropriate appointment system allows for active interaction between provider and client and the administration of neurological healthcare services delivery. Therefore, having an appropriate system with flexible management, providers will make sure that the whole working day are scheduled in such a way that they make the most of their time and reduce wasting time. This is a very good system for the time management within the healthcare settings. Therefore, investigating service quality of appointments and visits system in the neurological unit from the perspective of both providers and clients is needed in this study. It is believed that, any existing gap with relation to service quality at the study location will be unearthed. This would inform the implementation of steps that would lead to improvement of appointment systems and care delivery in neurological care.

CHAPTER THREE

3.0 METHODOLOGY

3.1 Introduction

This chapter discusses the general strategy that was used to conduct the current study. It showes the systematic plan that helped answer the research questions and ultimately address the study objectives. Areas discussed under this chapter include the research design which looked at the general approach and methodology, the study site and target population, a detailed description on how the data were collected and analyzed, the ethical issuesthat were considered, among others.

3.2 Research Design

A cross-sectional study was carried out. The choice of a cross-sectional study was because it allows the researcher to investigate the state of affairs or issues in a population at a specific point in time and how one's identity guides behaviour change in situations (DeLamater & Ward, 2006; Mingying, 2015). This therefore assisted in identify how perceived attributes of the follow-up appointment system affect clients' adherence and use of the system. It also helped to determine how client knowledge of the follow-up appointment system affects their acceptance and satisfaction with the system. Finally, the study was designed to help examine the enablers and barriers in the implementation of follow-up appointment system from both provider and client perspective. An explanatory sequential mixed method was used, which is a two-phase design process. During its initail stage, quantitative data was first collected then followed up by qualitative data collection. In this study, designed questionnaires (Appendix I) were used to gather quantitative data from patients (first phase), after which a semi-structured interview guide (Appendix II) was developed based on findings from the quantitative data, to gather qualitative

data from both providers and clients (second phase). After which data from the two phases were then integrated in order to achieve the objectives of the study.

3.3 Study Area

The study was conducted at the Korle-Bu Teaching Hospital (KBTH). The KBTH is a tertiary referral hospital located in the Western part of Accra. The hospital is the oldest and largest in Ghana and has grown from an original 200-bed capacity to more than 2,000, and it is presently considered the third-largest hospital in Africa and the principal national referral center in Ghana (Appiah, Appiah-konadu, Forson, & Frimpong, 2016). The hospital has 17 clinical and diagnostic departments/units, of which the Neurology clinic is one. The Neurology clinic is supported by the Korle-Bu Neuroscience Foundation (KBNF) which is a project to aid the Korle-Bu Teaching Hospital. It was founded by Majorie Ratel, a nurse of neuroscience in Vancouver, British Columbia, Canada. The neurology clinic has two main units. The surgical unit which takes care of all neuro-surgery issues such as Hydrocephalus, Brain tumour, Head injury, lumber central stenosis, among others and the medical unit, which also takes care of all neurological conditions which do not require surgery, such as stroke, epilepsy, spondylosis and myasthenia gravis. Unpublished data from the surgical unit, estimated about 1348 cases were reported for children whiles 5641 cases were reported for adults in the year 2017. For the medical unit, about 2242 cases were recorded for the year 2017. Monthly cases that reported at the medical units also estimated between 200 – 250 cases whiles weekly cases were 60 - 70 cases. Meanwhile, the surgical unit also takes care of about 30-40 cases or more on a weekly base (personal communication). The clinic day for the medical unit is Mondays, whereas that of the surgical department are Thursdays for adults and Tuesdays for children. Their various OPD services receive all cases and allocate

them to the right units. The clinic operates only on referral bases; thus, when patients report with a referral letter, he or she is assessed to determine whether the condition requires medical or surgical attention. Surgical patients are scheduled for surgery after which patients follow up on regular appointments to examine the response of health whiles medical patients are also booked for appointment to meet a doctor after which their curing process will be followed up on appointment bases.

3.4 Study Population

The study was conducted among patients with neurological diseases who have utilized follow-up appointments health services at the neurology clinic of Korle-Bu Teaching hospital. Variety of clients are referred from all over the country and neighbouring countries to the KBTH. Service providers at the clinic were also included. This included; nurses, neurologist and other staff involved in service delivery during patients appointments and visits at the neurology clinic.

As of the year 2017, there are 4 neurologist surgeons, and 18 nurses at the surgical unit while the medical unit has 4 nurses, 6 doctors (general practitioners) and 5 main neurologists specialist for both units.

Table 3.1 Staff strenght at the Neurology Department

Staff Ranks	**Surgical unit**	**Medical unit**	**Total**
Neurologist surgeons	4	0	4
Nurses	18	4	22
Doctors (General practitioners)	0	6	6
Neurologists specialist	2	3	5
Total	24	13	37

Source: Field data (2019)

3.5 Inclusion Criteria

Both surgical and medical patients attending follow-up appointments (Review).

3.6 Exclusion Criteria

Patients below the age of 18 years were excluded. Also, patients with neurological conditions resulting from genetic disorder (such as Down syndrome) which will distort their ability to think were excluded. In addition, since the focus of the study is on follow-up appointments, all individuals who are new referral cases were also excluded from this study.

3.7 Sampling Strategy

All individuals who utilized follow-up appointment service at the neurology clinic of the hospital within the study period of four weeks were considered as the targeted population and were invited to participate in the study. This category of people represented an informed and educated source and in this way will fit in giving the right responses. Upon arrival for their neurological appointment, eligible subjects were introduced to the study and only those who gave consent were enrolled. The responses were collected only after the clients have received the services during their follow-up appointment and were ready to leave the facility.

For the service providers and the clients for the qualitative phase of the work, convenient sampling technique was employed to select the participants. The participants were recruited until saturation was reached. Convenient sampling techniques was employed in terms of easy accessibility of participants, who were available and willing to participate at the time of data collection until saturation was reached

3.8 Sample Size

Sample size, according to Kothari (2004), refers to a subset of the total population from which the researcher collects and analyze data for efficiency, reliability and representative of an entire population at study. Therefore, the sample size expected to be recruited for the study is 196 respondents. The sample size determination was based on Cochran, (1963). Published data from Sarfo *et al.*, (2016) studies identified that the recent patterns and predictors of neurological mortality among hospitalized patients in Central Ghana showed a 15.0% adult medical admissions with neurological disorders. Thus, this assumed prevalence (15.0%) was used.

The Minimum sample size was calculated using the formula below:

$$n = \frac{Z^2\ p\ q}{d^2}$$

Where z is the Confidence limits

p is the assumed prevalence of the dependent variable
q is given by 1-p and d is the acceptable deviation from the true value.

For this study:
z= 1.96 for CI at 95% and p= 15.0% = 0.15 from Sarfo *et al.*, (2016).
q= (1-0.15) = 0.85 and d=5%= 0.05

$$n = \frac{1.96^2\ x\ 0.15\ x\ 0.85}{0.05^2}$$

$$n = \frac{0.4896}{0.0025}$$

n= 195.84 (Therefore, approximately 196 clients would be used)

Also, service providers at the study location were recruited. A minimum of 37 workers was expected to be present at the study site during the period of the study. This was based on the staff strength of the neurology clinic of KBTH for the year 2017. A calculated sample size of 196 was expected for this study. Meanwhile, a total of 300 respondents were recruited for the study in order

to increase the representativeness of the outcome of the study. From the 300 respondents sampled, 245 belonged to the neuro-medical section, whiles 55 belonged to the neuro-surgical section. Questionnaires were received from all the respondents, but 5 did not qualify to be used for analyses. Among the five, 4 belonged to the medical sections whiles, 1 belonged to the surgical unit. The questionnaire which was not completely filled and those with some pages missing (torn out) were disqualified. Therefore, total respondents were 295 patients who qualified for the analyses. This study achieved response rates of 98.3% (295/300). Finally, through indepth interviews, ten (10) service providers and Twenty-one (21) patients were available to share their views on enablers and barriers of the follow-up appointment system, in order to triangulate and provide further understanding to the results obtained in the quantitative study. They were 4 females and 6 males for the provider's and 12 females and 9 males for the clients.

3.9 Data Collection Instrument

For the purpose of this study, a structured questionnaire was used to collect quantitative data from patients after which a semi-structured interview guide was developed based on the findings from the quantitative data and used to conduct in-depth interviews to collect qualitative data from the service providers as well as some of the clients (Appendices I, II & III). This instrument of data collection enabled the researcher to collect factual information from respondents with respect to service quality and system use. The questionnaire for patients was designed to collect demographic and socioeconomic data, as well as data on how perceived attributes of the follow-up appointment system affect their adherence and use of the system. It also sought to gather information on how client knowledge and acceptance of the follow-up appointment system affected their satisfaction with the system. Finally, it sought to identify enablers and barriers in the implementation of the

follow-up appointment system from client and providers perspective. Both open and closed-ended questions were employed in the questionnaire, which was administered to the respondents (Appendix II & III). The questionnaire contained questions which required a "YES" or "NO" answer as well as rating using a 5-point Likert scale; from 1 = Strongly Agree to 5 = Strongly Disagree (Appendix II & III). With regards to the interview guide for conducting in-depth interviews for the providers and selected clients, apart from collecting demographic and socioeconomic data, provider's thoughts on ways perceived attributes of the follow-up appointment system affect adherence and use of the system as well as to their perspective on enablers and barriers in the implementation of follow-up appointment system were sought. Data were collected in the English language and translated into the local dialects for respondents who were not conversant with the English language.

3.10 Procedure for data collection

The questionnaire data collection process and interviews were conducted face to face with both the clients and service providers. This ensured that challenges that resulted from the data collection process were addressed. Items which were not understood by the respondents were clearly explained to them to clear any form of ambiguity in the discussions. Also, it enabled checking for completeness of questionnaires on daily basis before they were accepted for entry to ensure that all the response needed for data analyses were obtained.

3.11 Data Handling and Confidentiality

Soft copies of data were stored onto a computer protected with password whiles hard copies are stored in a file under lock and key. Access to stored data was only be granted to the student and her supervisor. Data was kept confidential.

3.12 Validity and Reliability

Validity is defined as the degree to which an instrument measures what it intends to measure (Kimberlin & Winterstein, 2008). The validity of an instrument can be assessed in many ways; however, this study assessed the validity of the quantitative data instruments by ensuring the face validity, content validity and also construct validity. One of the main requirements of any research process is the reliability of the scale used in gathering data.

Therefore, the reliability of a scale helps the researcher to know the degree to which a test is consistent and reliable in measuring the factor the same way each time it is used under the same condition with the same subjects (Kimberlin & Winterstein, 2008). The coefficient of internal consistency gives an estimate of the reliability of measurement, and it is grounded on the assumption that items measuring the same construct should correlate. Moreover, Cronbach's alpha is the most widely used method for estimating internal consistency reliability.

In this study, analysis of the measuring scales was done by checking the Cronbach alpha values, which studies show must be above 0.70 rule of thumb to be deemed acceptable (George & Mallery, 2003; Kimberlin & Winterstein, 2008; Sekaran, 2003).

Table 3.2: **Reliability Analysis for the study**

Variables	Original Value	Study	Number of Items
Relative Advantage	0.91	0.97	4
Compatibility	0.85	0.98	5
Complexity	0.86	0.98	6
Trialability	0.75	0.79	6
Communicativeness	0.83	0.91	4
Knowledge	0.79	0.82	4
Persuasion	0.73	0.76	4
Acceptance (Confirmation)	0.84	0.89	5

Source: Field data (2019)

The responses provided were analysed with the aid of the Statistical Package for Social Sciences (SPSS version 21) using the Cronbach's Alpha method. Cronbach's alpha for Relative Advantage was reported to be 0.97, Compatibility was 0.98, Complexity was 0.98, Trialability was 0.79, Communicativeness was 0.91, Knowledge was 0.82, Persuasion was 0.76 and Acceptance (Confirmation) was 0.89. As displayed in table 3.1, the value of Cronbach's alpha is more significant than 0.7 for all items; thus the scales used in the measurement were reliable.

3.13 Quality Control Measures

The whole process of data collection was standardized to obtain a uniform data of high quality. The research assistants who assisted in data collection were trained thoroughly for two days and made sure they were conversant with the objectives and methodology of the study. They were trained to use consistent and correct techniques through demonstration and role playing. The researcher, whiles collecting data, also supervised the data collection sessions by the research

assistants to ensure that data was collected from the participants. Challenges that resulted from the data collection process were addressed by the researcher. Questionnaires were checked for completeness on a daily basis before they were accepted and numbered during data entry to ensure that the questionnaires are not entered twice. Data were entered by the researcher and another data entry person separately, to make sure data is correctly entered.

Pre - testing of the questionnaire was carried out at the medical unit of the neurology clinic of KBTH before main data collection. This enabled clarification of the adequacy of the questions, helped in estimating the approximate time for each questionnaire, as well as making the necessary corrections which made the questions easy to be responded to during the actual data collection process.

3.14 Data Analysis

Considering the opinion of many authors, Wisdom & Creswell (2013) asserted that qualitative data collection and analysis often go alongside in order to form a rational interpretation of the data. For the qualitative data analysis, recorded interviews and transcribed data was repeatedly listened to and transcribed data was read through simultaneously with the purpose of making sure there were no apparent errors (Braun & Clarke, 2006; Gibbs, 2007). Some of the interviewees were sent a copy of their interviews, to enable them to check the appropriateness of the transcribed data (Gibbs, 2007). Transcribed data were fed into NVIVO (qualitative data organizing tool), which will help the researcher to generate codes. For the quantitative data analysis, SPSS and Excel were used. Descriptive statistics as well as graphical presentations were employed in the quantitative analysis.

3.14.1 Descriptive Statistics for Quantitative data

Descriptive statistics are important since they make it very easy to picture and describe extreme extensive raw data. With this study, descriptive statistics were emloyed to visualize the dataset before subsequent analysis was carried out. Percentages and frequancies were used to check the magnitude of responses obtained from the questionnaire, whereas the means as well as standard deviations were used to assess deviations in the responses.

3.14.2 Inferential Analysis of Quantitative data

Exploratory factor analysis and multiple linear regression were the statistical methods used to find out the impact of follow-up appointments and visits ystems on client adherence and system usage.

In exploring the constructs of the follow-up appointments and visits system attributes, the principal component method was implemented in the exploratory factor analysis. The statistical techniques included the correlation matrix among the attributes, communalities, construct loadings and the Kaiser-Meyer-Olkin (KMO) measure of sample adequacy.

This study used multiple linear regression in order to examine the effect of the follow-up appointment and visits on client adherence. The dependent variable was the client adherence to the follow-up appointments and visits system, and the independent variables were relative advantage, compatibility, complexity, trialability and communicativeness.

The study adopted multiple linear regression in order to investigate the effect of follow-up appointment and visits on system usage. The dependent variable was the system usage by clients,

and the independent variables were relative advantage, compatibility, complexity, trialability and communicativeness.

The study employed simple linear regression in order to determine the effect of knowledge on the follow-up appointment and visits system on clients' acceptance of the system. The dependent variable was the client acceptance to the follow-up appointment and visits system, and the independent variable was the knowledge concerning the follow-up appointments and visits system.

3.14.3 Thematic Analysis of Qualitative data

Qualitative data were categorized into themes and sub-themes.

3.15 Ethical Issues

Ethical issues are essential where research involves human participants (Kapp, 2006). Therefore ethical issues were strictly adhered to in conducting this research. Neither the method used in collecting the data nor the questions posed to participants were sensitive. An introductory letter was given to respondent ahead of time to guarantee that the research is for scholastic purpose (Appendix IV). Data obtained was kept confidential, and the right to withdraw from the study at any time was assured. Anonymity was assured as names were not be used in the study. The respondent were given the assurance that data gathered will only be shared between the researcher and the supervisor. Ethical approval was also sought from Korle-Bu Teaching Hospital (Appendix IV).

3.16 Chapter Summary

This chapter presents the methodological design used in the study. It presents the study area, which was the neurology unit of the Korle-Bu Teaching Hospital, followed by the design of the study. Simply an explanatory sequential mixed method led by the quantitative approach was used. The chapter also presented information on how data collected were managed and analyzed. Areas of ethical considerations were also discussed in this section. This section showed that the methodology was well designed and relevant to the aim and specific objectives of the study.

CHAPTER FOUR

4.0 DATA PRESENTATION AND ANALYSIS

4.1 Introduction

This chapter presents information on the analysed data. The data collected was geared toward achieving three main objectives. These aims were; exploring how perceived attributes of the follow-up appointment system affect clients adherence and use of the system, determining how client knowledge and acceptance of the follow-up appointment system affect their satisfaction to care and examining the enablers and barriers in the implementation of the follow-up appointment system from provider and client perspectives. This chapter presents demographic characteristics of the participant followed by data on information, communication and timing of the follow-up appointment system. Results from statistical techniques such as correlation matrix among the attributes, communalities, construct loadings and the Kaiser-Meyer-Olkin (KMO) measure of sample adequacy was used to present information on the impact of follow-up appointments and visits systems on client adherence and system usage. Also, this chapter provids results on the impact of client knowledge of follow-up appointment and visit systems on acceptance of the system and satisfaction with care. Finally, this chapter presents participants (both providers and clients) views shared on enablers and barriers of the follow-up appointment system during the qualitative phase of the study.

4.2 Demographic Characteristics of the Study Participants

Below are demographic information based on gender, age, residence, education, employment status and marital status.

The minimum age of the respondents was 19 years, whereas the maximum age was 90 years. The

mean age of respondents was 50.92 years with a standard deviation of 16.52. Table 4.1 presents the age distribution.

Table 4.1. **Age distribution of study participants**

Age	Range	Mean	Median	Std Dev	Std Error	95% CL
Total	19 - 90	50.92	52.00	16.52	0.9619	1.8931

Source: Field Survey, 2019

Table 4.2 summarizes the distribution of participants in terms of gender. Findings showed that 34.9% of respondents were males, whereas 65.1% of respondents were females. It appears that overall, there are more females with neurological conditions visiting the neurology clinic at the KBTH than males. Furthermore, patients recruited for the study were in residence within the catchment area of the hospital and also outside the catchment area; across different regions in the country. The majority (84.1%) of the participants were within the Greater Accra region, followed by the Volta region with 6.1%. Also, about 2% were from outside of Ghana, such as Togo and Cotonou. Majority of the patients were married (45.1%) and educated to at least secondary/senior high or tertiary level, with a combined percentage of 54.2% (Table 4.2). For the employment status of the study participants, it was observed that, 165 (55.9%) of them were employed, with 15.3% retired (Table 4.2).

Table 4.2: **Demographic Characteristics of Respondents**

Variable	Frequency (n)	Per cent (%)
Gender		
Male	103	34.9%
Female	192	65.1%
Level of Education		
None	82	27.80
Primary	52	17.63
Secondary	90	30.51
Tertiary	71	24.07
Employment status		
Employed	165	55.93
Unemployed	85	28.81
Retired	45	15.25
Marital Status		
Married	133	45.08
Single	59	20.00
Separated	41	13.90
Widowed	62	21.02
Residence		
Greater Accra	251	84.08
Volta Region	18	6.10
Central Region	10	3.39
Northern Region	9	3.05
Others (such as Togo & Cotonou)	7	2.37

Source: Field Survey, 2019

4.3 Clinical Characteristics of respondents

Table 4.3 presents data on various conditions that brought participants to the clinic, the number of times they have visited, and whether their conditions improved since visiting the facility. Spine problems were the most frequent, representing 25.4% of the conditions, followed by neck problems with 22.7%. In terms of the number of visits to the hospital, patients visits ranged from 2 to 12, with a mean of 4.13 (SD=1.21). Most (66.8%) of the patients indicated that their conditions

have improved since they started visiting the clinic.

Table 4.3 **Clinical Characteristics of respondents**

Characteristics					
Conditions	**Frequency (n)**	**Percentage (%)**			
Neck surgery	13	4.41			
Neuro-surgery	23	7.8			
Parkinson disease	21	7.12			
Spinal surgery	27	9.15			
Spine problem	75	25.42			
Swelling at his neck side	29	9.83			
Neck problem	67	22.71			
Throat pain	2	0.68			
Transverse myelitis	5	1.69			
Waist pain	10	3.39			
Swollen neck	23	7.8			
Condition improved					
Yes	197	66.78			
No	98	33.22			
Number of visits					
Range	**Mean**	**Median**	**Std Dev**	**Std Error**	**95% CL**
2 – 12	4.13	4.48	1.21	0.0926	0.0113

Source: Authors field survey (2019)

4.4 Information, Communication and Timing of the System

The majority (64.6%) of the respondents do not quickly get the information they need (Table 4.4). The findings also indicated that, the facility performed poorly with regards to reminding patients about their appointments, with 71.4% of the patients not reminded for their appointments. For those reminded, the clinic reminded them via phone calls. Most (72.9%) of the respondent indicated that, at some point in time, they had to cancel an appointment. The majority (96.9%) of

these people mentioned that, they did not give notice of their appointment cancellation. The responses from the participants with regards to the information mentioned above were statistically significant (p <0.001).

Meanwhile, 67.8% of the respondents indicated that they were not satisfied with the process of reminding patients. This study observed the overall satisfaction with the system to be 59.0% (Table 4.4).

Table 4.4. **Responses to issues about information and communication**

Variables on information	**Yes, n(%)**	**No, n(%)**	**P-value**
Easy to get information when needed	104 (35.37)	191 (64.63)	< 0.001
Facility remind you of appointments	84 (28.75)	211 (71.42)	
Ever cancelled an appointment	212 (72.86)	82 (27.14)	
Gave facility prior notice of cancellation	9 (3.05)	286 (96.95)	
Form of appointment reminder (N=84)	**Frequency (n)**	**Percentage (%)**	
Call	80	95.24	
Text message	4	4.76	
Satisfaction with the process of reminding patients			
Somewhat satisfied	95	32.12	
Not satisfied	200	67.78	
Form of cancellation notice (N=9)			
Call	9	100	

Source: Field Survey, 2019

With regards to timing, the majority (89.8%) of the respondents indicated that they come for their appointments on time (Table 4.5). All the respondents indicated that they were not happy with the waiting time (Appendix III), whiles 72.89% indicated that they were not happy with the contact time, and this was statistically significant (p < 0.001).

About 71% indicated that, they had to wait more than 60 minutes before being attended to, with

86.8% saying that they are not satisfied with the waiting time. The contact time with doctors was less than 30 minutes for most of the patients (Table 4.5).

Table 4.5**. Responses to issues about timing**

Variables on timing	**Yes, n(%)**	**No, n(%)**	**P-value**
Come for your appointment on time	265 (89.83)	30 (10.17)	<0.001
Happy with waiting time	0 (0.00)	295 (100.0)	
Happy with contact time	80 (27.11)	215 (72.89)	
Waiting time before seeing the doctor	**Frequency (n)**	**Percentage (%)**	
Less than 60 minutes	84	28.75	
More than 60 minutes	210	71.42	
Satisfaction with waiting time			
Somewhat satisfied	39	13.22	
Not satisfied	256	86.78	
Contact time			
More than 30 minutes	80	28.75	
Less than 30 minutes	215	71.42	
Overall satisfaction with the system			
Yes	121	41.02	
No	174	58.98	

Source: Field Survey, 2019

4.5 The Impact of Follow-up Appointments and Visits Systems on Client Adherence and System Usage

This section presents the research findings for the first research objective. Exploratory factor analysis and multiple linear regression were the statistical methods used to achieve this objective. These include exploration of the follow-up appointments and visits attributes in the Korle-Bu Teaching Hospital (KBTH) and the influence of the follow-up appointment and visits system on client adherence and usage of the system. The follow-up appointments and visits constructs are

relative advantage (RAX), compatibility (CPX), complexity (CMX), trialability (TRX) and communicativeness (COX).

4.5.1 Exploration of the Follow-up Appointments and Visits System Attributes

In exploring the constructs of the follow-up appointments and visits system, the principal component method was implemented in the exploratory factor analysis. The statistical techniques included the correlation matrix among the attributes, communalities, construct loadings and the Kaiser-Meyer-Olkin (KMO) measure of sample adequacy.

The correlation coefficients among the constructs of the appointments and visits system were less than 0.900. There was no problem of singularity among the attributes. Thus, all the attributes are not similar. Hence, relative advantage, compatibility, complexity, trialability and communicativeness can be used to measure the follow-up appointments and visits systems in hospitals. Table 4.6 indicates the correlation matrix among the follow-up appointments and visits construct.

Table 4.6: **Follow-up appointments and visits system constructs a correlation matrix**

	RAX	CPX	CMX	TRX	COX
RAX	-				
CPX	0.615	-			
CMX	0.454	0.445	-		
TRX	0.226	0.128	0.295	-	
COX	0.662	0.496	0.537	0.406	-

Source: Field survey (2019)

Kaiser-Meyer-Olkin (KMO) measure of sample adequacy value of 0.766 indicates the sample size of two hundred and ninety-five (295) is enough for the study and that there are good patterns of correlations among the attributes of the appointment and visits system. Therefore, relative advantage, compatibility, complexity, trialability and communicativeness are decisive factors to measure the appointment and visits systems in hospitals. Table 4.7 shows the sample adequacy of the study.

The communality value of 0.734 shows that 73.4% of the variance associated with communicativeness is common among relative advantage, compatibility, complexity and trialability of the appointment and visits system. Indicating that, 73.4% of the variations in communicativeness is revealed and shared by relative advantage, compatibility, complexity and trialability. Therefore, communicativeness is a constant factor to consider when measuring the follow-up appointments and visits system of hospitals. This is followed by relative advantage (69.3%), compatibility (56.3%), complexity (55.5%), and Trialability (23.1%). Again, the construct loadings confirm that communicativeness is the main factor for measuring follow-up appointment and visit systems of hospitals. Table 4.7 indicates the communalities and the construct loadings of follow-up appointments and visits system from the client's perspective.

Table 4.7: **Communalities, construct loadings and KMO of follow-up appointments and visits system attributes at the Korle-Bu Teaching Hospital**

Construct	Communalities	Construct loadings	KMO
RAX	0.693	0.832	
CPX	0.563	0.751	
CMX	0.550	0.742	0.766
TRX	0.231	0.480	
COX	0.734	0.857	

Source: Field Survey, 2019

4.5.2 The Influence of Appointment System on Client Adherence to Follow-Up Visits

This study used multiple linear regression in order to examine the effect of the follow-up appointment and visits on client adherence. The dependent variable was the client adherence (Y) to the follow-up appointments and visits system, and the independent variables were relative advantage, compatibility, complexity, trialability and communicativeness.

The findings revealed the entire model to be statistically significant. Meaning that relative advantage, compatibility, complexity, trialability and communicativeness together contribute to client adherence to the follow-up appointments and visits system with a p-value of 0.014. Moreover, only 3.1% of the total variance in client's adherence explains the follow-up appointments and visits system attributes, with a standard deviation of 0.20724. Table 4.8 indicates the variations in client's adherence as explained by relative advantage, compatibility, complexity, trialability and communicativeness of the system. Table 4.9 reveals the statistical significance of the entire model.

Table 4.8**: Variations in client's adherence explained by follow-up appointments and visits systems.**

Model	R	R Square	Adjust R Square	Standard Error of the Estimate
	0.218	0.048	0.031	0.20724

Source: Field survey (2019)

Table 4.9: **ANOVA for follow-up appointments and visit system on client adherence**

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	0.621	5	0.124	2.894	0.014
Residual	12.412	289	0.043		
Total	13.034	295			

Source: Field survey (2019)

However, the entire model looks very weak because of the less percentage of variations in clients adherence explained by the follow-up appointments and visits system attributes at the KBTH.

The model can be fitted as:

$$Y= 1.423 + 0.019\ RAX + 0.008\ CPX + 0.012\ CMX + 0.058\ TRX - 0.049\ COX$$

The p-values of the communicativeness (0.005) and trialability (0.002) show they are statistically significant. They contribute to the client adherence to the follow-ups appointments and visits system at the KBTH neurology unit. Thus, an increase in the value of communicativeness of the follow-up appointments and visits system, decrease clients adherence by 0.049 when all the attributes are held constant. Interestingly, the more communication of the follow-ups appointments

and visits system to the clients, the more the clients lose adherence to the system. This could be due to other inhibiting factors in the communicativeness of the follow-up appointments and visits system to the clients. Table 4.9 shows the contribution of communicativeness and trialability on clients' adherence to the follow-up appointment and visits system.

Table 4.10: **Follow-up appointments and visits system on client adherence**

Model	**Unstandardized Coefficients**		**Standardized Coefficients**		
	B	**Std. Error**	**Beta**	**t**	**Sig.**
Constant	1.423	0.067		21.225	0.000
RAX	0.019	0.016	0.104	1.221	0.223
CPX	0.008	0.018	0.032	0.429	0.668
CMX	0.012	0.017	0.052	0.730	0.466
TRX	0.058	0.018	0.201	3.159	0.002
COX	-0.049	0.017	-0.246	-2.854	0.005

Source: Field survey (2019)

In contrast, relative advantage (0.223), compatibility (0.668) and complexity (0.466) have their p-values being more than 0.05. These indicate that, relative advantage, compatibility and complexity are not statistically significant to the client adherence to the follow-up appointments and visits system. Hence, these attributes can never let the clients obey the follow-up appointments and visits processes. Table 4.10 displays analysis of the coefficients of the follow-up appointments and visits on client's adherence.

4.5.3 The Effect of Follow-up Appointments and Visits System on the System Usage

The study adopted multiple linear regression in order to investigate the effect of follow-up appointment and visits on system usage. The dependent variable was the system usage by clients (Z), and the independent variables were relative advantage, compatibility, complexity, trialability and communicativeness.

The outcome of findings discovered the entire model to be statically significant. Thus, relative advantage, compatibility, complexity, trialability and communicativeness together affect the follow-up appointments and visits system usage by the clients with a significance value of 0.000. Besides, 29.2 % of the total variance in system usage by the clients are explained with a standard deviation of 0.2654. Table 4.11 indicates the variation in client's adherence as explained by relative advantage, compatibility, complexity, trialability and communicativeness of the system. Table 4.12 reveals the statistical significance of the whole model.

Table 4.11: **Variations in system usage explained by follow-up appointments and visits systems**

Model	R	R Square	Adjust R Square	Standard Error of the Estimate
1	0.551	0.304	0.292	0.26549

Source: Field survey (2019)

Table 4.12: **ANOVA for follow-up appointments and visit system on system usage levels**

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	8.880	5	1.776	25.196	0.000
Residual	20.370	289	0.070		
Total	29.249	294			

Source: Field survey (2019)

The entire model is strongly significant and can be fitted as:

$$Z= 1.463 + 0.033\ RAX + 0.085\ CPX + 0.000\ CMX + 0.080\ TRX - 0.099\ COX$$

The *p* values of the compatibility (<0.001), communicativeness (<0.001) and trialability (0.001) show they are statistically significant. They affect the usage of the follow-up appointments and visits system by the client. A unit increase in the value of compatibility of the follow-up appointments and visits system increases clients' usage of the system by 0.085 when all the attributes are held constant. A unit increment in the value of communicativeness of the follow-up appointments and visits system increases clients usage of the system by 0.099 when all the constructs are held constant On the other hand, a unit increment in the value of trialability of the follow-up appointments and visits system decreases clients usage of the system by -0.080.

Remarkably, the more trialability of the follow-ups appointments and visits system to the clients, the more the clients go away from the system without using it. Table 4.12 shows the contribution of compatibility, communicativeness and trialability on client's usage levels of the follow-up appointments and visits system.

Relative advantage (p = 0.106) and complexity (p = 0.993) have significant values being more than 0.05. These indicate that relative advantage and complexity are not statistically significant to the follow-up appointments and visits system usage by the clients. Therefore, these factors do not have any effects on measuring follow-up appointments and visits system usage levels by clients. Table 4.13 displays the analysis on coefficients of the follow-up appointments and visits system on client's usage levels of the system.

Table 4.13: **Follow-up appointments and visits system on system usage levels by clients**

Model	**Unstandardized Coefficients**		**Standardized Coefficients**		
	B	**Std. Error**	**Beta**	**t**	**Sig**
Constant	1.463	0.086		17.037	0.000
RAX	0.033	0.020	0.119	1.623	0.106
CPX	0.085	0.023	0.234	3.618	0.000
CMX	0.000	0.022	-0.001	-0.009	0.993
TRX	-0.080	0.024	-0.183	-3.370	0.001
COX	0.099	0.022	0.330	4.479	0.000

Source: Field survey (2019)

4.6 The Impact of Client Knowledge of the Follow-Up Appointments and Visits Systems on Acceptance of the System and Satisfaction with Care

This section offers research findings on the second research objectives of the study. It details the influence of the follow-up appointment and visits system knowledge (KNW) on client system acceptance (ACP) and satisfaction concerning the usage of the system (STF).

4.6.1 The Association between Knowledge of Appointment System and Client Acceptance of Follow-up Visits

The study employed simple linear regression in order to determine the effect of knowledge on the follow-up appointment and visits system on clients' acceptance of the system. The dependent

variable was the client acceptance to the follow-up appointment and visits system, and the independent variable was the knowledge concerning the follow-up appointments and visits system.

The entire model was statically significant with a p-value of 0.000. The study showed that client knowledge on follow-up appointments and visit system affect the acceptance of the system. Further, knowledge acquired from the system explains 20.3% of the total variance in the acceptance of systems with a standard deviation of 0.83279. Table 4.14 displays the variation in the acceptance of the system related to its knowledge to the clients. Table 4.15 details the statistical significance of the entire model.

Table 4.14: **Variations in the system's acceptance related to its knowledge**

Model	**R**	**R Square**	**Adjust R Square**	**Standard Error of the Estimate**
1	0.450	0.203	0.200	0.83279

Source: Field survey (2019)

Table 4.15: **ANOVA for follow-up appointments and visit system knowledge on client acceptance**

Model	**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
Regression	51.629	1	51.629	74.442	0.000
Residual	203.209	293	0.694		
Total	254.838	294			

Source: Field survey (2019)

The simple linear regression model can be fitted as:

$$ACP = 2.005 + 0.445KNW$$

The p-values of the knowledge on follow-up appointment and visits system were < 0.001. The study indicates that knowledge on the follow-up appointments and visits system contributes to the acceptance of the system. An increment in the value of knowledge (KNW) on follow-up appointments and visits system increase the acceptance of the system by 0.445 when all the variables are held constant. Table 4.16 designate the analysis of the coefficients of knowledge on the follow-up appointments and visits system on clients' acceptance of the system.

Table 4.16: **Knowledge Follow-up appointments and visits system on client acceptance**

Model	**Unstandardized Coefficients**		**Standardized Coefficients**		
	B	**Std. Error**	**Beta**	**T**	**Sig.**
Constant	2.005	0.149		13.461	0.000
Knowledge	0.445	0.052	0.450	8.628	0.000

Source: Field Survey (2019)

4.6.2 The Association between Knowledge of Appointments Systems on Client Satisfaction to the System

In determining the association between knowledge of appointments systems on client satisfaction to the system, the dependent variable was the client satisfaction with the follow-up appointment and visit system and the independent variable was the knowledge concerning the follow-up appointments and visits system.

The model was statically significant with a p-value of 0.000. The findings revealed that client knowledge on the follow-up appointment and visit system affect the satisfaction of the system. Indicating that, about 6.4% of the total variance on the satisfaction of systems have in-depth

knowledge acquired from the system with a standard deviation of 0.50. Table 4.17 displays the variation in the system's satisfaction relating to its knowledge by clients. Table 4.18 depicts the statistical significance of the simple linear regression model obtained.

Table 4.17: **Variations in the system's satisfaction related to knowledge**

Model	R	R Square	Adjust R Square	Standard Error of the Estimate
1	0.259	0.067	0.064	0.50521

Source: Field survey (2019)

Table 4.18: **ANOVA for Follow-up Appointments and Visit System on Client Adherence**

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	5.363	1	5.363	21.012	0.000
Residual	74.785	293	0.255		
Total	80.148	294			

Source: Field survey (2019)

The simple linear regression model can be fitted as: STF= 1.824 + 0.143KNW

The p-values of the knowledge on the follow-up appointment and visits system were less than 0.001. This value implies that knowledge on the follow-up appointment and visit system influences the satisfaction of the system at the hospital. Indicating that, a unit increment in the value of knowledge (KNW) on the follow-up appointments and visits system increase the satisfaction of the system by 0.143 when all the variables are held constant. Table 4.19 explains the analysis of the coefficients of knowledge on the follow-up appointments and visits system on client's satisfaction of the system.

Table 4.19: **Knowledge of Follow-up Appointments and Visits System on client satisfaction**

Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	T	Sig.
Constant	1.824	0.090		20.187	0.000
Knowledge	0.143	0.031	0.259	4.584	0.000

Source: Field survey (2019)

4.7 Qualitative Study Results

4.7.1 Enablers and Barrier of the Follow-Up Appointment System

Table 4.20 and 4.21 presents the demographic characteristics of providers and clients who participated in the qualitative phase of the study. In this section, interviewees were denoted by P1 to P10 for providers numbered 1 to 10 and C1 to C21 for clients, numbered from 1 to 21 (Table 4.20 and 4.21).

Table 4.20: **Demographic characteristics of the service providers**

No.	Sex	Age	Marital status	Profession	Years of experience
P1	Male	54	Married	Nurse	9 years
P2	Male	32	Married	Records Personel	10 years
P3	Female	38	Single	Technical Officer	6 years
P4	Male	46	Married	Neurologist	5 years
P5	Female	52	Married	Intern Medicine service	2 years
P6	Male	46	Single	Nurse	12 years
P7	Female	36	Single	Nurse	8 years
P8	Male	24	Married	Records Personel	3 years
P9	Female	41	Married	Medical officer	8 years
P10	Male	35	Married	Intern Medicine service	7 years

Field Interviews (2019)

Table 4.21: **Demographic characteristics of the clients**

No.	Sex	Age	Marital status	Residence (Region)	Education	Employment
C1	Female	67	Married	Greater Accra	Secondary	Retired
C2	Female	42	Married	Greater Accra	None	Employed
C3	Female	40	Single	Greater Accra	Secondary	Employed
C4	Male	46	Married	Northern Region	Tertiary	Employed
C5	Female	62	Married	Greater Accra	Primary	Retired
C6	Male	46	Single	Greater Accra	Primary	Unemployed
C7	Male	36	Single	Volta Region	Secondary	Unemployed
C8	Female	54	Married	Greater Accra	Tertiary	Unemployed
C9	Female	43	Married	Northern Region	None	Unemployed
C10	Male	35	Married	Togo	None	Unemployed
C11	Female	54	Married	Greater Accra	Secondary	Unemployed
C12	Male	32	Married	Volta Region	Tertiary	Unemployed
C13	Female	38	Single	Central Region	Primary	Unemployed
C14	Male	46	Married	Northern Region	Primary	Unemployed
C15	Female	52	Married	Cotonou	Secondary	Unemployed
C16	Male	46	Single	Greater Accra	Tertiary	Unemployed
C17	Female	36	Single	Volta Region	None	Unemployed
C18	Male	39	Married	Central Region	Primary	Unemployed
C19	Female	44	Married	Northern Region	Secondary	Unemployed
C20	Female	56	Married	Greater Accra	Tertiary	Unemployed
C21	Male	58	Married	Greater Accra	Primary	Unemployed

Field Interviews (2019)

With the aid of thematic analysis, the study generated themes and sub-themes, which buttressed with relevant quotes expressed by the respondents. Based on the research objective formulated for the qualitative study, themes which emerged from the study for both the service providers and clients were enablers and barriers of the system usage. Additionally, seven sub-themes were generated from the main themes for the service providers. These included training and better health outcome for the enablers, whiles academic engagement, lack of information, distance, poor adherence and timing for the barriers.

Meanwhile, a total of 9 sub-themes emerged for the clients, comprising of 4 for enablers and 5 for

barriers. A summary of the main themes and sub-themes, as well as specific comments which emanated from the qualitative study, are indicated in tables 4.22 and 4.23.

4.7.1.1 Barriers of the Appointment and Visit System

The study observed that among the critical barrier for the providers were poor adherence to time, academic engagements and lack of information.

For example, concerning Poor Adherence to time, the below was echoed by a female nurse:

> *"... Doctors do not come on time; therefore, it does not help with appropriate time management"* (*Female, P7).*

About Academic Engagements, the observation made was that, since the facility is a teaching hospital, some of the service providers especially the doctors have additional teaching engagements, thus this causes delays and become a barrier in the implementation of the system. This situation was described by a female medical officer as follows:

> "*Patients are delayed due to the low population of doctors and some doctors using most of their time on students, that is by lecturing other medical students. Leading to postponing of appointments"* (*Female, P9).*

Lack of information was highlighted by a nurse who indicated that they have to wait for long hours without any information or update on how soon care delivery will begin (Table 4.22).

With regards to barriers as revealed by the patients.

The comments showed in Table 4.22 relates to how the interpersonal relationship between the providers and clients proved to be a barrier to using of follow-up appointment system

For instance, a male patient recounted his experience as follows:

> " *One of the nurses virtually insulted me, just because I did not hear her when she mentioned my name" (male, C6).*

Distance was another notable sub-theme with regards to the barrier that emerged during the interviews with the patients. Findings revealed that the clients do not only reside in the Greater-Accra region, but some of the patients also came from other regions of Ghana and even outside the country. Therefore, most of the patients complained about distance and the comments below represent a couple of such complains:

> "*….imagine coming from Akatsi in the Volta Region, all in the name of cure and how unfavourable this distance can be for me sometimes. Then lodge at a hotel a day before the appointment date, only upon arrival to the clinic, you are told that doctors are working on emergency cases or have cancelled all appointments for the day. It discourages us from adhering on further appointments irrespective of how worst the situation is …*" *(male, C7).*

Another patient added:

> "*… It is practically a travel for me to come all the way from the Northern region to Korle-Bu to attend my follow-ups at this place. I wished we had a place like this at where I am coming from…*" (*Female, C19*)

The other sub-themes regarding the barriers are; family support, security and confidentiality which are presented in Table 4.22 with some specific comments from the patients.

Table 4.22: **Themes, sub-themes and selected quotes on barriers**

Barriers in usage	**Poor adherence to time**	..... Doctors do not come on time and so when we the nurses have finished our part, sometimes the patients have to keep waiting for the doctors and it frustrates them. Meanwhile, it is not our fault…..”*(Female, P7).*
	Distance	..... Distance is a major factor which leads to patients not sticking to their appointments *(Male, P8).*
	Poor adherence to appointment schedule	…Sometimes some of the doctors do not show up at all. I think they might be handling other things. This puts the burden on the few that will be available to attend to the patients who have come for follow-up appointments.... *(Female, P3).*
	Interpersonal relationship	…. Providers attitude during appointment scheduling or cancellation can put the client off or discourage us from adhering to an appointment. They are sometimes rude towards us *(Female, C8).*
	Security and confidentiality	…My folder was given to me to send home and I think it is not safe because in case of misplacement, it will result to loss of information and the folder can end up in wrong hands….. *(Female, C19).*
	Family Support	….sometimes I struggle to get family or friends support on my appointment days and there is no way I could come on my own since I can’t walk very well. This makes me feel pity for myself…*(Female, C11).*”
	Long Waiting time	…Any time I have to come here, I am discouraged because I know I am coming to wait for a very long time before they will attend to me. I have to forgo any other thing I will do in the day *(male, C21).*

Field Interviews (2019)

4.7.1.2 Enablers of the Appointment and Visit System

With regards to enablers, better health outcome and training emerged as the key sub-themes for providers (Table 4.23).

Concerning how better health outcome of the patients serves as an enabler for the usage of the system, a nurse mentioned that

> "…..*When we see them (Patients) getting better, we are happy and we know the system is working effectively and both parties (Patients & Providers) will want to use it more*…."*(male, P6).*

Patients also commented on the enablers to the appointment system (Table 4.23). Throwing light on how trust is an enabler, the patients felt that attending a follow-up appointment and visit at Korle-Bu is encouraging enough to make them want to honour their appointment. This feeling was echoed as below:

> "……*Knowing that my care delivery is Korle-Bu, I will surely come and that fact only encourages me to come for my appointments. Because I know there are best doctors here and I call this place the last stop". (Female, C8).*

Persuasion was another factor that enabled the usage of the appointment. One female patient indicated the following:

"…*Whenever I complained to the doctor, he listens attentively and encourages me to continue using the system. He further explains to me how good the system is and that people who are not following it are those not making it work. He said if we all follow the system accordingly, it will work better for our benefit" (Male, C6).*

Table 4.23: **Themes, sub-themes and selected quotes on Enablers for the Patients**

Enablers in usage	**Patient Involvement**	"… I think we the patient are always involve during decision making or policies regarding appointment scheduling and effective care delivery process. This will make us more satisfied because we will be in the best position to also suggest what will benefit us" (*Female, C9).*
	Persuasion	*"*....There is this nurse who always encourages me to come on time and follow the system. The helps me a lot" *(Female, C17).*
	Guidance on procedure	*"*... On some of the days a nurse comes and talk to us about guidelines in the clinic and tells us what to do when we come. It is very good" *(male, C12).*
	Training	"…Both patients and we the providers have accepted the system for different reasons. I mean for the providers we have had enough training on the system and wants to make it work…." *(male, P4).*

Field Interviews (2019)

CHAPTER FIVE

5.0 DISCUSSION OF FINDINGS

5.1 Introduction

This chapter discusses the findings of the study. The study was conducted to achieve three objectives: (1) to explore how attributes of the follow-up appointment system affect clients adherence and use of the system, (2) to determine client knowledge and acceptance of the follow-up appointment system and its effect on satisfaction with care, and (3) to examine the enablers and barriers in implementation of follow-up appointment system from provider and client perspectives. This section compared and contrasted the outcome of the study with pertinent literature. Areas discussed include attributes of the follow-up appointment system and their effect on adherence and usage, the effect of follow-up appointments and visits system on the system usage, the impact of client knowledge of the follow-up appointments and visits systems on acceptance of the system and satisfaction with care. Finally, sub-themes that emerged from participants' views on enablers and barriers of the follow-up appointment system are also discussed.

5.2 Attributes of the Follow-Up Appointment System and their effect on Adherence and Usage

This study found that relative advantage, compatibility, complexity, trialability and communicativeness can be used to measure follow-up appointments and visits systems in a hospital setting. Many prior studies have applied these attributes to investigate the adoption or acceptance of systems. For instance, Agarwal & Prasad, (1997) found that relative advantage and result demonstrability were positively associated with acceptance. Similarly, Van Slyke, Lou, & Day, (2002) also showed that relative advantage, complexity, compatibility, and result

demonstrability significantly influenced intentions to adopt service. However, Teo & Pok, (2003) also found that perceptions of relative advantage play an important role in shaping adoption intentions. Furthermore, some factors that were identified as influencing adoption included relative advantage, compatibility, and result demonstrability (Hsu, Lu, & Hsu, 2007; Zhang *et al.*, 2015). Brown *et al.*, (2003) also identified relative advantage and trialability as the key determinants of adoption of a system.

In terms of the characteristics of the system, "communicativeness" and "trialability" were key influential for client adherence to the follow-up appointments and visits system at KBTH, which is in agreement with the results of other studies (Castillo *et al.*, 2010; Clingan, 2011; Rogers, 2003; Sanson-Fisher, 2004). Interestingly, it was observed that more communication of the follow-up appointments and visits system rather decreases clients' adherence. This could be due to negative feedback or bad responses the client receives, or that the type of information the clients needed during the communication process were not the ones provided. This was supported by the revelation with regards to data on information and communication of the system, where it was found that majority of the respondents do not easily get the information they need. It was also shown that the facility performed poorly with regards to reminding patients about their appointments, with 71.4% indicating that they were not reminded. Even with those that were reminded, 67.8% of them indicated that they were not satisfied with the process for the reminder. Other inhibiting factors in the communicativeness of the follow-up appointments and visits system to the clients could also possibly account for this observation. These factors could include the channel of communication and the manner in which the patients were talked to (Rogers, 1995).

This observation has implications for how communication could be organized in the appointment system of KBTH neurology unit.

One key part of communication in the appointment system is "reminders", which affirms with other studies (Brown *et al.,* 2003; D. Gupta & Denton, 2008; Wang & Gupta, 2011). It has been found that all types of reminder systems are effective at improving appointment attendance across a range of health care settings and patient populations (McLean *et al.*, 2016). In addition, effective and efficient communication is crucial in healthcare (Vermeir *et al.,* 2015). How hospital workers and other clinicians communicate with patients impacts a patient's overall experience and satisfaction. Studies have shown that good communication between doctors and patients and among all caregivers who interface with patients directly results in better clinical outcomes, reduces cost, increases patient satisfaction, and lowers rates of physician burnout (Boissy *et al.*, 2016; Weng *et al.,* 2011). This influence can also be pivotal in such areas as patient health, education, adherence and satisfaction with care (Simkin-Silverman *et al.*, 2005). Patients' perceptions of the quality of healthcare they receive are highly dependent on the quality of patient-provider interactions and all healthcare team (Wanzer, Booth-Butterfield, & Gruber, 2004).

Trialability is a degree to which an innovation may be tried out on a limited-time basis. Rogers, (1983;1995) suggested that potential adopters of innovation when allowed to experiment with the innovation, would make users feel more comfortable with the innovation and hence would be more likely to adopt it. The opportunity given to consumers to experiment a system would reduce their uncertainty of it before accepting to use it. According to Tan & Teo, (2000) chances to try an innovative system will minimize consumers' unknown fears. In this study, most of the patients were visiting the clinic for the fourth time, thus they have earlier experience with the system and

therefore means of the trail might have affected their indication of trialability of the system as an attribute that affects adherence and usage of the system.

In this study relative advantage, compatibility and complexity were not statistically significant to the client adherence to the follow-up appointments and visits system in KBTH. Hence, these attributes can never let the clients adhere to the follow-up appointments and visits processes. On the contrary, in a review of 75 articles concerned with innovation characteristics and their relationship to innovation adoption and implementation, Tornatzky & Klein, (1982) found that three innovation characteristics; relative advantage, compatibility and complexity, had the most consistent significant relationships to innovation adoption. They found that compatibility and relative advantage were both positively related to adoption while complexity was negatively related to adoption. The difference in the settings of these studies and the current study could account for the difference in the outcomes and also time passage since a lot might have chnaged between 1982 and 2019; thirty-seven years down the line. Interestingly, none of the 75 studies that were reviewed was in the health sector. Therefore the findings of this study could be very critical when considering the characteristics of an appointment system that needs to be improved in order to increase clients adherence to the system. This is very important because getting patients to adhere to a particular system in the health setting has a direct implication for the total health outcome of the individual. When the patient adheres to the system, it gives the provider the opportunity to be able to care for the patient as he or she intends to. In this regard, improving "communicativeness" and "trialability" in the follow-up appointment system of the clinic would increase patients adherence as well as the opportunity for patients to be properly taken care of by the providers.

5.3 The Effect of Follow-up Appointments and Visits System on the System Usage

The findings of the study revealed that compatibility, communicativeness and trialability of the system significantly affect the usage of follow-up appointments and visits system by the client at the neurology unit of KBTH. This study, therefore, is in conformity with other studies that attest that compatibility, trialability and communicativeness constitute a vital feature of innovation and propels the rapid rate of adoption or system usage by end-users (Castillo *et al.*, 2010; Karahanna, Straub, & Chervany, 1999; Rogers, 2003). In another study, Zhang *et al.*, (2015) also indicated that relative advantage, complexity and compatibility are main attributes that attract patients' adherence and use of an appointment in the clinic settings. On the contrary, this study did not find relative advantage and complexity to significantly affect clients' usage of follow-up appointments and visits system.

The observation that compatibility affects the usage of the follow-up appointments and visits system could be because individuals are more likely to use a product they view to be compatible with their preference. Agarwal & Karahanna, (1998) indicated that systems perceived to be compatible with various aspects of an individual's experiences (compatibility with prior experience) and work styles (compatibility with existing work practices and compatibility with preferred work style) are likely to induce feelings of familiarity and positively affect usage. Ainin *et al.,* (2015) also observed that factors such as compatibility, cost-effectiveness and interactivity influences usage among users of a service. Compatibility has been considered as an essential factor for innovation adoption (Cooper & Zmud, 1990; Wang & Gupta, 2011). For instance, when technology is recognized as compatible with work application systems, firms are likely to consider

the adoption of new technology (E-Health). Many researchers have investigated the influence of compatibility on technology adoption and found both positive and negative results. For instance, Brown & Russell, (2007) highlighted the effect of compatibility on the adoption of technology in the South African retail sector and argued that for the radio-frequency identification (RFID) adoption and implementation to be successful, it is necessary that an organization develops a flexible IT infrastructure that will be able to accommodate RFID systems. Furthermore, Hsu *et al.*, (2007) found the significant effect of compatibility in Multimedia Messaging Service (MMS) adoption in the groups of potential MMS users and indicated that they will adopt MMS if they feel that using MMS is not compatible with their values and beliefs. Wang *et al.*, (2011), studied the influence of compatibility and found that it is a significant factor for the usage of a system. Dwivedi *et al.*, (2009) in their study, found that compatibility is an insignificant factor in the adoption of systems. Similarly, another study that investigated the adoption of cloud computing (Low, Chen, & Wu, 2011) found that compatibility was to have an insignificant impact. Embedding social media in businesses would be a best-fit concept because it helps to niche the target customers effectively and businesses would be able to share the content of their products and services almost instantly (Derham, Cragg, & Morrish, 2011). Therefore, it is not surprising that in this study a positive change in the value of compatibility of the follow-up appointments and visits system could lead to an increase in clients' usage or adherence of the system.

With regards to how communicativeness contributes to follow-up appointments and visits system, and how this influences system usage, O'Hagan *et al*., (2014) indicated that communication goes beyond patient-providers interaction. It encompasses different aspects of interaction, which include eliciting and offering information, achieving clinical goals, and eliciting non-verbal

communication such as engaging with the patient directly through eye contact (O'Hagan *et al.,* 2014). This form of "communicativeness" aspect of the system will be helpful in the achievement of the patients clinical goal and also most likely that the patient will be willing to use the system always.

Therefore, processes and behaviours including information exchange, listening, demonstrations of empathy, interviewing techniques and therapeutic interactions could be considered contributory factors in why patients would want to use the system (Chant, Jenkinson, Randle, & Russell, 2002; Fleischer, Berg, Zimmermann, Wüste, & Behrens, 2009). Thus, the study observed that an increment in the worth of communicativeness during follow-up appointments and visits system increases clients' usage of the system. This implies that, the more the clinic puts in efforts to improve upon the aforementioned processes and behaviours with regards to communication, the more patients would want to use the follow-up appointments and visits system.

Meanwhile, Tan & Teo (2000) observed that "trialability" of the system, minimizes consumers' unknown fears of a product or service. On the contrary, this study revealed that increment in trialability on follow-up appointments and visits system decreases client's usage of the system at KBTH. Strangely, the more clients tried the follow-up appointment and visit system, they rather end up not wanting to use the system. This could be due to the reason that the clients do not have enough time for trying the system. Also, the more these clients try the system, the more they are exposed to the challenges which eventually could discourage them from using the system.

Similarly, Karahanna *et al*., (1999) indicated in their study that trialability seems to have less significant influence on individuals' adoption, such that the adopter can easily or subsequently reject the innovation instantly. A study by Zhang *et al.,* (2015) also indicated that 45% of patients

automatically stop using online scheduling after trying because clients do not necessarily need to see the doctor again after their appointment and sometimes they straight-ahead schedule for their appointment after meeting with their general practitioner at the hospital. This could also be a reason for the outcome on triability in the current study.

5.4 The Impact of Client Knowledge of the Follow-up Appointments and Visits Systems on Acceptance of the system and Satisfaction with Care

After testing the association between knowledge of appointment system and client acceptance of follow-up visits as well as the association between knowledge of appointments systems and client satisfaction to the system, it was observed that knowledge on the follow-up appointments and visits contributes to acceptance of the system and also influences the satisfaction of the system at KBTH neurology unit. The underlying assumption is that knowledge is directly and positively associated with various participatory activities, and this assumptions has been supported by numerous studies (Delli Carpini & Keeter, 1996; Verba, Burns, & Schlozman, 1997). This association between knowledge of a system and acceptance has been highlighted in a study which investigated the effects of Internet (Wei & Zhang, 2008) and the adoption of electronic record management on individuals' intention to accept usage which influences clients satisfaction (Coye *et al.,* 2009; Nambisan *et al.,* 2013).

Also, Zhu, Wang, & Li, (2019) examined public knowledge and general attitudes towards acceptance in Jinan, Weifang, and Yantai. This study was carried out within three cities in Northern China that experience serious challenges in services delivery and observed that having adequate knowledge of services could positively affect how people accepted the usage and increase their

satisfaction (Zhu, Wang, & Li, 2019). In the health sector lack of knowledge is often cited as a key variable in determining acceptance and use (Casterline & Sinding, 2000; Korra, 2002; Biney, 2011). For instance, some researchers have explained that knowledge about contraceptives and their side effects may affect their actual use also indirectly, through its effect on the attitudes people have regarding contraceptive use (Chipeta *et al.*, 2010; Fikree *et al.*, 2001; Smith *et al.*, 2002), and this can be translated into how knowledge would affect acceptance of the follow-up system used at the KBTH neurology clinic. Since Knowledge on the follow-up appointments and visits system increases the acceptance of the system, it is encouraged that measures are put in place to improve upon ways of disseminating knowledge of the system to patients in order to increase their acceptance and use of the system.

Regarding knowledge and patient satisfaction, findings from earlier research support the observation from this study that, knowledge of the system affected patient satisfaction with care (Al-Hadrawi, 2018; Andersson *et al.*, 2016; Liaw *et al.*, 2010). Since in the current study, it was observed that better knowledge on the follow-up appointments and visits system by clients can increase their satisfaction of the system, it is recommended that the neurology clinic of KBTH adopts appropriate management mechanisms for knowledge in order to enhance satisfaction with care.

5.5 Enablers and Barrier of the Follow-Up Appointment System

5.5.1 Barriers of the Appointment System

Barriers can exist at multiple levels. However, barriers in health and organisational systems include; information management, clinical uncertainty, waiting time , administrative constraints,

sense of competence, perceptions of liability, lack of outcome expectancy, behaviors of clinical staff and others (Baker *et al.*, 2010; EPOC, 2002; Glenton *et al.*, 2013; Tejeda *et al.*, 2013). Similar challenges were found at the facility studied. The study observed at the neurology unit of the KBTH that, among the barriers for the providers were academic engagements, poor adherence to time, distance, poor adherence to appointment schedule and lack of information.

Regarding academic engagement, it was observed that patients are delayed due to the low population of doctors and some doctors using most of their time on students, for example lecturing students. This observation is not surprising since the KBTH is a teaching hospital which provides clinical training for students of the University of Ghana School of Medicine and Dentistry, Ghana College of Physicians and Surgeons as well as the West Africa College of Physicians and Surgeons. This engagement reduces the time they have to spend with patients.

The next barrier identified was on the issue of poor adherence to time. It was established that some of the doctors do not come on time and thus the patients will have to wait for a long period. It is not surprising that timing was among the barriers indicated in this section. Dugdale *et al.,* (1999) indicated that there has been a relatively little study of physician time and efficiency as a resource, yet both as a contribution to health care costs and as a key element in patient-doctor relationships, there is a reason to believe that it deserves more attention. Robbins *et al.*, (1993) studied patient satisfaction in an academic family medicine practice and found that time the physician spent in health education and the effects of treatment had an important bearing on patient satisfaction. Time management is very important in health care as emphasized by the service providers.

Therefore, long waiting time may be associated with decreased overall satisfaction with treatment (Feddock *et al.*, 2005), though other research has found that patient perceptions of time are often inaccurate, with over- more than under-estimations of waiting or time spent to see a particular physicians (Thompson, Yarnold, Williams, & Adams, 1996). Indeed, perceptions rather than actual wait times may predict patient satisfaction (Thompson *et al.*, 1996). Meanwhile, sometimes these doctors have to attend to genuine emergency situations and thus, they do not sometimes share the same opinion with the patient on issues of delaying or waiting time. But becoming patients, these doctors begin to realize, as not before, how their perspectives, definitions, and experiences concerning time are not different from that of the patients. Providers therefore need to understand that increased discomfort from anxiety, pain, uncertainty or reduced social status due to illness can decrease the quality and increase the length of the experience of time. Emotional stress due to illness can thus mediate experiences of time. A perceived or possible decreased supply of time can increase the value of individual time periods (Klitzman, 2007).

According to Wimble & Yeong, (2012), non-adherence of specialist care input during appointment could lead to an undiagnosed illness, missed interpretation of illness, and un-investigated conditions that may not be properly cared or cured by providers and further lead to other health challenges. Poor adherence to appointment schedules was strongly highlighted among the barriers by the service providers. One of the technical officers indicated that the doctors do not show up at all, sometimes and this puts the burden on the few that will be available to attend to the patients who have come for follow-up appointments. Most often than not, this can result in discouraging patients to honour their appointments, coming late and sometimes “no shows”. This is because they might have experienced a situation where some clients had to come a long way (long-distance)

for caregiving only to find out that the doctor did not show up.

Appointment no-show is a cause of significant concern for healthcare providers. Patients don't attend appointments for several reasons including; logistics such as transport difficulties or the lack of a suitable family or friends support to assist them. There are also appointment-related reasons including; scheduling, communication, and timeliness of the appointment (Mohamed, Mustafa, Tahtamouni, Taha, & Hassan, 2016). Meanwhile, it is possible to reduce the no-show rate by implementing changes to the appointment system and patient communication strategies (Mohamed *et al.*, 2016). This therefore confirms that, increasing the number of neurologists and ensuring that they are present to attend to appointments can help improve adherence to appointment schedule for both providers and patients (Birbeck & Munsat, 2002), as well as increase overall health outcome and reduce no show within healthcare settings.

The extent and the cost of no-shows are widely studied (Clark, 2006; Xakellis & Bennett, 2001; Moore, Wilson-Witherspoon, & Probst, 2001). In a community hospital setting, (Clark, 2006) reported an average no-show rate of 62 appointments per day and an estimated annual cost of $3 million. In a training hospital setting, (Xakellis & Bennett, 2001) reported a 25% no-show rate and a 31% late arrival to appointments. Moore, Wilson-Witherspoon, & Probst, (2001) found that no-shows, non-adherence and cancellations represented 31.1% of overall scheduled appointments among approximately 45,000 patients per year at a large family practice centre with an estimated total annual revenue shortfall of 3% to 14%. Further, studies also found that non-adherence rates by doctors are as low as 3% and as high as 80% (Bennett & Baxley, 2009; Ferguson & Kokesh, 2005; Johnson, Mold, & Pontious, 2007). Providers use different methods to reduce the patient no-

show, including reminder procedures, penalization and overbooking. The success of the methods is not clearly determined. Some researchers have indicated that reminders contribute in reducing no shows (Nuti *et al.,* 2012) and will significantly reduce the number of poor adherence to appointment schedule (Satiani, Miller, & Patel, 2009). Meanwhile, the reminder system and appointment scheduling process as observed in this study was not satisfactory and thus the clinic needs to put in measures to improve upon the system.

Finally, numerous studies affirm to the lack of information as one main barrier of appointment systems (Baker *et al.*, 2010; Glenton *et al.*, 2013; Mowatt *et al.*, 2001). This is supported by the findings of this study which indicates that lack of information affects patients ability to use the system especially in honouring their follow-up appointment and visits. As commented by one nurse, most of the patients talk about the system in a bad light due to the time they have to wait without any information or update on how soon they will be attended to. This experience affects their drive to adhere to subsequent appointment schedules.

Regarding Patients' perspectives on barriers, interpersonal relationship was very key. One patient indicated that, providers' attitude during appointment scheduling or cancellation can put the client off or discourage them from adhering to an appointment. This occurrence is very common in the Ghanaian health care system where the provider's attitude has mostly not been satisfactory (Badu, Opoku, & Appiah, 2016). However, there are several reasons for this occurrence. For instance, doctors, in particular, seem to have limited time to attend to patients (Jones, McLafferty, Walley, Toland, & Melson, 2008). This is most likely to happen in developing countries where there seems to be limited doctors attending to a large number of patients. Research has found that attitudes of health professionals are affected by low motivation and increased workload (Witter, Kusi, &

Aikins, 2007).

Distance was another barrier which was highlighted, as some of the patients came from other regions and others also from other neighbouring countries. One patient from the Volta region of Ghana commented that, she sometimes have to lodge in a hotel a day before her appointment date, only upon arrival at the clinic to find out that doctors are at the emergency or not around or have cancelled their appointment. This she said discourages her from adhering to her follow-up appointments, irrespective of how ill she is. This feeling would obviously be detrimental to the health outcome of the patient. This finding supports the observation by Awoyemi, Obayelu, & Opaluwa, (2011) that distance generally affects the utilization of health care. Tseng *et al.,* (2008) also established that there exists a strong relationship between home-to-hospital distance and hospital usage.

These barriers and others such as family support, security and confidentiality, long waiting time, among others affected clients adherence to the system especially at KBTH during follow-up appointment and visits. Family support is critical in health care as emphasized by (Davidson *et al*., 2017). Nissen *et al.*, (2016) indicated that patient confidentiality significantly affects patients satisfaction. Thus, it is encouraged that patients' rights to privacy and confidentiality of their health information should be respected in all settings. The issues of long waiting time have long been emphasized by a number of studies conducted in areas such as Vietnam, Nigeria and China (Duong, Binns, & Lee, 2004; Lomoro, 2004; Nwaeze, Enabor, Oluwasola, & Aimakhu, 2013; Oladapo & Osiberu, 2008).

5.5.2 Enablers of the Appointment System

Regarding enablers, it was observed that providers are encouraged to use the system because they have been trained. This was indicated by one of the providers who emphatically mentioned that they have had enough training on the system and wants to make it work.

Also, when patients honour their appointments, it encourages the providers to want to use the system more. Training as indicated in this study is very important since other researchers have highlighted the benefits of training health care providers in patient-provider communication (Burns *et al*., 2012; Sukums *et al.*, 2014) and health information technology (Bredfeldt, Awad, Joseph, & Snyder, 2013).

Also, better health outcome was a notable enabler of the follow-up appointment and visits system in this study. Other related studies documented that better health outcome is important within clinical systems and seen as a successful predictor of customers' satisfaction (Aduo-Adjei, 2015; Orji *et al.*, 2012; Wolf, 2017). This study therefore supports the earlier findings. This is because adhering to appointments will improve upon patients overall health. For instance; whenever a doctor constantly monitors patients health status, it often gives a sign of reassurance. With this, the doctors are able to monitor or confirm the progress of the patients through patients medical history or lab results, drug intake, signs and symptoms as well as recovery process especially in the cases of neurological disorders. Thus, in terms of positive health outcome, can influence both providers and patients satisfaction to care and encourage others to use the appointment system. A discussant, for instance, said that When patients follow and obey instructions given to them and when they see them getting better, the providers are fulfilled and wants to use the system more.

In relations to enablers for the patients, some clients mentioned patient involvement, trust, Guidance on procedure and persuasion. Patient involvement is gradually noticed as a key element in the reshape of the processes of health care and is encouraged as a means of improving patient safety (Longtin *et al.,* 2010). It has been observed that a number of factors impact the desire of patients to take part in decision making (Little *et al.*, 2001; Mansell, Poses, Kazis, & Duefield, 2000). Health care workers' beliefs, attitudes, and behavior can have a major effect on patient involvement in decision making (Longtin *et al.*, 2010; Bettes *et al.*, 2007; Kravitz *et al.*, 2003).

In an obstetrics study, it was noticed that, women who do not have right to request a cesarean section delivery if not medically required display the edge to be very much involved in the procedure and considers that as a source of satisfaction (Bettes *et al.*, 2007). Therefore with this study in mind, providers at the neurology clinic need to involve patients since they are the major drive in the usage of the appointment system. Just as suggested by a client who resides in the Northern Region, that; their involvement will make them more satisfied, because they will be in the best position to also suggest what will benefit them. Furthermore, the ability to trust was among the enablers identified by clients during the process of follow-up appointments and visits system. For instance, a client mentioned that knowing that his care delivery is KBTH, encourages him to come for his appointment. This client further declared his trust about KBTH having the best doctors and called the hospital “the last stop”.

This fact shows how convinced clients are about the quality of the service at the neurology unit and could eventually lead to satisfaction. Therefore, being able to trust each other in healthcare is a requirement for a beneficial and long-lasting partnership. This point is exceptionally important in the health sector, where life or death is a major constant concern. Patient-physician relationship

(PPR) is a prime example of bonding where serious concerns need to be prioritised. The term medical trust used in this article integrates the concept of collaborative trust. This can be seen as a form of faith which was birthed due to a partnership between patient and physician, where goals are shared, personal contributions to the relationship, as well as mutual respect, are emphasised (Bova, Fennie, Watrous, Dieckhaus, & Williams, 2006; Murray & McCrone, 2015).

Indeed the essential role that trust plays in effective doctor-patient relationships has been long recognized (Brennan *et al.*, 2013; Kramer & Cook, 2004). Trust has been shown to be a critical factor influencing a variety of important therapeutic processes including patient acceptance of therapeutic recommendations, adherence to recommendations, satisfaction with recommendations, satisfaction with medical care, symptom improvement and patient dis-enrollment (Kramer & Cook, 2004). Trust, as this evidence suggests, is important for patients and may be used as a quality indicator or at least a potential 'marker' for how patients evaluate the quality of health care (Calnan & Rowe, 2008). Interest in trust in a clinical relationship is growing steadily around the globe as well as Involvement of patient is vital and noteworthy in the curing process. With regards to guidance, it has been mentioned that many patients have difficulties in knowing what to do and where to go in the hospital setting (Kim, Levine, & Allen, 2017). Therefore, it is not surprising that guidance was a key enabler for patients in this study. Similarly, persuasion which was observed among the enablers for clients is expected because, Van Gemert-Pijnen *et al.*, (2018) indicated that as a result of patient's experiences, they need to be persuaded sometimes to continue to access health care in the hospital. This was backed by further literature by Kim *et al.*, (2017), from their pilot experiment with 15 outpatients.

5.6 Conclusion

This chapter presented the discussion of findings from the study. This was done by comparing and contrasting the outcome of the current study with other studies in the area of innovation, follow-up appointment and visits as well as hospital utilization. The discussion was grouped under broader headings in relation to the objectives of the study. Key areas that were discussed include attributes of the follow-up appointment system and their effect on adherence and usage, the impact of client knowledge of the follow-up appointments and visits systems on acceptance of the system and satisfaction with care, as well as barriers and enablers of the appointment system.

CHAPTER SIX

6.0 SUMMARY, RECOMMENDATION AND CONCLUSION

6.1 Introduction

This section presents the key findings that were observed in this study. Conclusions that were derived from these findings are also summarized here, based on which recommendations were made. Practical and theoretical implications of this study are also presented in this section. Finally, this section discusses the limitations of the study.

6.2 Summary

With regards to attributes of the follow-up appointment system and their effect on adherence and usage, this study found that relative advantage, compatibility, complexity, trialability and communicativeness can be used to measure the follow-up appointments and visits systems in the hospitals. In terms of the characteristics of the system, “communicativeness” and “trialability” were influential in client adherence to the follow-up appointments and visits system in KBTH which is in agreement with other studies. These attributes contribute to the client adherence to the follow-ups appointments and visits system at the KBTH neurology unit.

The findings of this study also revealed that, compatibility, communicativeness and trialability of the system significantly affect the usage of the follow-up appointments and visits system by the client at the KBTH. On the contrary, relative advantage and complexity were not statistically significant to the follow-up appointments and visits system usage by the clients in KBTH.

With respect to the association between knowledge of appointment system and client acceptance

of follow-up visits as well as the association between knowledge of appointments systems and client satisfaction to the system, it was observed that knowledge on the follow-up appointments and visits contributes to the acceptance of the system and also influences the satisfaction of the system at KBTH neurology unit.

Concerning enablers and barriers, from the perspective of service providers barriers include; academic engagements, poor adherence to time, distance, poor adherence to appointment schedule and lack of information whiles the enablers were training, and better health outcome. Meanwhile, the patients indicated barriers from their viewpoint to include interpersonal relationship, security and confidentiality, distance, family Support and long waiting time. The enablers from their perspective were; trust, persuasion, guidance on procedures, as well as patient involvement.

6.3 Contributions of the study

This study has contributed in various areas including knowledge, policy and practice, as indicated below:

6.3.1 Knowledge

This study has contributed to knowledge of follow-up appointment system, especially in relation to neurological care in Ghana.

6.3.2 Policy

This study has identified areas where policies can be formulated to help in controlling the barriers that were identified as hindrance to the operationalization of the follow-up appointment

system in neurological care in Ghana.

6.3.3 Practice

This study has contributed to practice by pointing out to providers, ways by which they can improve upon their channels of disseminating knowledge on the follow-up appointments clients. It has also showed the importance of making the system more user-friendly.

6.4 Recommendations

In view of the findings, discussions and conclusion of the study, the following recommendations which are relevant to practice, policy and theory research, have been proposed.

6.4.1 Practice

1. Providers should improve upon their channels of disseminating knowledge on the follow-up appointments and visits to clients. For instance, a television (TV) system in the waiting area could feature pre-recorded programs that would share knowledge on the appointment system. Also, in addition to a phone call, the establishment should find other means of reminding the patients of their appointment dates and time.
2. Since compatibility of the system significantly affects its usage, it is recommended that the system should be made in such a way that it would suit all age groups, most importantly the aged as well as the physically challenged. The system should be made to be more user-friendly.

6.4.2 Policy

1. Policies should be put in place to provide measures to control the barriers that were identified as hindrances to the implementation of the follow-up appointment system.

2. These policies should be made in such a way that, they can be applied to other health facilities in the country.

6.4.3 Theory

1. Theoretically, this study has established that attributes of the diffusion of innovation theory can be adapted to asses the follow-up appointment system in the health sector. Therefore, it is recommended that stakeholders such as hospital management and the ministry of health should continue to search for practical innovative ways of improving the Ghanaian health system, specifically in the areas of appointments and visits.

2. Communicativeness which was not included as a primary attribute of the earlier proposed diffusion of innovation theory was successfully integrated into this study. Therefore, this attribute can also be considered when using the theory to test adoption of an innovative idea or system.

6.5 Limitations and Recommendations for future research

Emanating from the outcome of the study, the following limitations and recommendations have been made by the researcher:

1. This study was limited to only patients with neurological conditions, therefore it is recommended that future studies should look at other diseases conditions that require follow-up appointment and visits. Patients suffering from diabetes and hypertension as well as accident patients or dialysis patients that have been discharged who needs follow-up appointments and

visits are among those that can be considered in future research.

2. This study focused on patients who are currently using the system. Views of new patients or first time visitors, who are trying the system were not assessed. Therefore, future studies can consider examining the views of these individuals in order to ascertain how long it would take for someone to accept the system after trying it.

3. "Communicativeness", which was integrated as a new attribute to the original DOI theory, needs to be put to rigorous testing in the field, for it to be considered an addition to the original theory. Therefore this testing by other researchers is recommended.

6.6 Conclusion

In conclusion, this study established that "communicativeness" and "trialability" were influential in client adherence to the follow-up appointments and visits system in the neurology unit of KBTH. Also, compatibility, communicativeness and trialability of the system significantly affect the usage by clients. Additionally, knowledge on the follow-up appointments and visits contributes to the acceptance of the system and also influences the satisfaction of the system at the KBTH neurology unit. Finally, barriers in the implementation of follow-up appointment system from the perspective of service providers and clients were; academic engagements, poor adherence to time, distance, poor adherence to appointment scheduling, lack of information, interpersonal relationship, security and confidentiality, distance, family support and long waiting time. Enablers were training, better health outcome, trust, persuasion, guidance on procedures, as well as patient involvement.

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APPENDICES

APPENDIX I: QUESTIONNAIRE FOR CLIENTS

TOPIC: ASSESSMENT OF FOLLOW-UP APPOINTMENTS AND VISITS AT THE NEUROLOGY CLINIC OF KORLE-BU TEACHING HOSPITAL (KBTH): CLIENTS AND PROVIDERS PERSPECTIVES.

Introduction: Follow-up appointment and visits are very important in the provision of the best health outcome for patients with specialized conditions such as neurological disorders. Meanwhile, keeping up with appointment are not always easy due to; time constraints, scheduling snags and transportation, clinic overcrowding, waiting time, availability of professional service providers, financial difficulty and family care issues or support and these can cause missed appointment during visits. Stakeholders in healthcare have therefore advocated for different innovative ways of increasing appointment attendance and mitigating the impact of missed appointments.

Objective: This study seeks to assess follow-up appointments and visits at the neurology clinic of KBTH, from patients and health provider's perspective.

Risks and benefits: There are minimum or no risks if you take part in this study. There are also no incentives but the information you provide will help improve follow-up appointment system in the hospital.

Right to refuse and withdrawal: Your consent to participate in this study is voluntary and you can withdraw from this study at any time. This questionnaire is meant to data for the research which is purely for academic purpose The researcher undertakes to respect the privacy and anonymity of respondents and use the information obtained purely for the academic purpose intended and that no part of such information shall be divulged or made available to any other persons or purpose other than for academic purpose.

Date: …… Questionnaire Number: ……..

PART 1 - DEMOGRAPHIC AND OTHER CHARACTERISTICS

1. How old are you ……..
2. Gender [ ] Male [ ] Female
3. Area of residence …….
4. Attained Educational level [ ] None [ ] Primary [ ] Secondary / Technical [ ] Tertiary

5. Employment status [ ] Employed [ ] Unemployed [ ] Retired

6. Marital Status [ ] Single [ ] Married [ ] Widowed [ ] Divorced [ ] Separated

7. Religion [ ] Christian [ ] Muslim [ ] Other (Specify) ……

Clinical condition

8. What condition brought you here? ……

9. How many times have you visited this facility? …….

10. Has your condition improved since you started coming here? [ ] Yes [ ] No

11. If YES, within what frame of time did you begin seeing improvement since coming here?

[ ] Within 1 week [ ] Within 1 month [ ] more than 1 month

PART 2 – ELEMENTS OF DIFFUSION OF INOVATION

For the following questions, please thick the column that best describes your opinion, on a scale of 1 to 5, Please tick [√] the one that best suits your response to each question. They are rated from strongly disagree to strongly agree. 1 = Strongly Disagree **(SD), 2 =** Disagree **(D), 3 =** Neutral **(N), 4 =** Agree **(A)** and 5 = Strongly Agree **(SA)**

		SD	D	N	A	SA
ATTRIBUTES OF THE FOLLOW- UP APPOINTMENT & VISIT SYSTEM						
	Relative Advantage					
12	The system makes me spend less money when assessing care					
13	The system is very effective compared to the system where visits are not scheduled					
14	The system encourages me to access care					
15	The system reminds me on what to do to become healthy					
	Compatibility					
16	The system allows for elderly ones to be attended first					
17	The appointments system meets my expectations					
18	The appointments system allow me to easily see the doctor of my choice					
19	The appointments system enable respect for patients					
20	I am able to receive notification (Reminder) about my appointment					
	Complexity					
21	The appointments system is easy to use					
22	The appointments system is easy to learn about					

23	The appointments system is clear and easy to understand					
24	The appointments system is not difficult for first time users					
25	The appointments system does not put undue stress on patients					
26	The system is flexible					
Trialability:						
27	I have experienced a system similar to this at another hospital					
28	I believe this system can be applied at other hospitals					
29	This system has been in operation for more than a year now					
30	I have experienced this same system during my previous visits					
31	I feel the system needs to be revised for improvement					
32	The system is dependable					
Communicativeness						
33	There is ease of communication in the system					
34	The system facilitates provider-patient interaction					
35	The system has numerous channels for communication					
36	The system maintains confidentiality during consultation					
INNOVATION-DECISION PROCESS OF THE APPOINTMENT & VISIT SYSTEM						
	Knowledge					
37	I have received education about how the system work					
38	I have good knowledge of how the system works					
39	I think others patients have good knowledge of how the system works					
40	Overall I can say that I know so much about the system					
Persuasion						
41	Providers are able to convince me to use the system					
42	Other patients are able to convince me to use the system					
43	The system itself is convincing					
44	I am more convinced about the system					
Acceptance (Confirmation)						
45	I accept the system as an effective one					
46	I do not have a preference between current and innovative appointment system					
47	I am very satisfied with the system					
48	I will adhere to and use the system					
49	I will recommend my friends and family to use clinic appointment system					

PART 3 A: INFORMATION AND COMMUNICATION

50. Is it easy to get information when needed? [ ] Yes [ ] No

51. Does the facility remind you of appointments? [ ] Yes [ ] No

52. If yes, what form does it take? [ ] Call [ ] Text message [ ] E mail [ ] Other

53. How satisfied are you with the process of reminding patients at the facility?

[ ] Very satisfied [ ] Satisfied [ ] somewhat satisfied [ ] Not satisfied

54. Have you ever cancelled an appointment? [ ] Yes [ ] No

55. If yes to Question 54, Explain.....

56. Did you give the facility a prior notice of your cancellation? [ ] Yes [ ] No

57. If yes to Question 56, how? Call [ ] Text message [ ] E mail [ ] Other

58. Does the doctor listen to your concerns on the appointment system? [ ] Yes [ ] No

59. Do you feel rushed during scheduling and care delivery by health professionals
[ ] Yes [ ] No

60. Overall, my experience in using the current appointment system was satisfactory
[ ] Yes [ ] No

PART 3 B: TIMING

61. Do you come for your appointment on time? [ ] Yes [ ] No

62. If NO what caused the delay? ……....

63. How long in terms of minutes or hours do you usually wait before seeing the doctor? ……..

64. Are you happy with the time spent before seeing the doctor [ ] Yes [ ] No

65. How many minutes or hours will you prefer to wait before seeing the doctor? ……

66. How satisfied are you with the waiting time?

[ ] Very satisfied [ ] Satisfied [ ] Somewhat satisfied [ ] Not satisfied

67. How much time do you usually spend with the doctor ……

68. How satisfied are you with the contact time?

[ ] Very satisfied [ ] Satisfied [ ] Somewhat satisfied [ ] Not satisfied

69. Within the past 3years, how many times have you visited the hospital? ……..

APPENDIX II: INTERVIEW GUIDE FOR PROVIDERS

TOPIC: ASSESSMENT OF FOLLOW-UP APPOINTMENTS AND VISITS SYSTEM AT THE NEUROLOGY CLINIC OF KORLE-BU TEACHING HOSPITAL (KBTH): CLIENTS AND PROVIDERS PERSPECTIVES.

Introduction: Follow-up appointment and visits are very important in the provision of the best health outcome for patients with specialized conditions such as neurological disorders. Meanwhile, keeping up with appointment are not always easy due to; time constraints, scheduling snags and transportation, clinic overcrowding, waiting time, availability of professional service providers, financial difficulty and family care issues or support and these can cause missed appointment during visits. Stakeholders in healthcare have therefore advocated for different innovative ways of increasing appointment attendance and mitigating the impact of missed appointments.

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Right to refuse and withdrawal: Your consent to participate in this study is voluntary and you can withdraw from this study at any time. This interview is meant to data for the research which is purely for academic purpose The researcher undertakes to respect the privacy and anonymity of respondents and use the information obtained purely for the academic purpose intended and that no part of such information shall be divulged or made available to any other persons or purpose other than for academic purpose.

DEMOGRAPHIC AND OTHER CHARACTERISTICS

Date: …… Interviewee Number: ……..

1. How old are you?
2. What is your Educational level?
3. What is your position in this hospital?
4. Are you a full time or part-time employee?
5. How long have you been working here?
6. What condition usually brings patients here?

ATTRIBUTES OF THE FOLLOW- UP APPOINTMENT & VISIT SYSTEM

Relative Advantage

7. What advantages has the follow-up appointment system you use here has in terms of

a. Financing

b. Effectiveness

c. Reminders

Compatibility

8. How does the system enhance taking care of elderly ones?
9. What makes the system to or not to meet expectation of your patients?

Complexity

10. How flexible and easy to use is the system?
11. Did it take you lot of time to get used to the system and in educating or guiding patients? Explain

Trialability

12. Would you describe the system as tried and tested? Explain
13. Do you feel the system needs revision? Explain

Communicativeness

14. How does the system help you to maintain patient confidentiality?
15. How does the system enhance employee patient communication?

VIEWS ON INNOVATION-DECISION PROCESS

16. Do you think the patients have adequate knowledge of the system? Explain

17. Do you think the patients have accepted the system?

18. What are the patient's attitude towards honoring their appointments?

19. Does the current system enable you to make enough time with the patient?

20. What are the reason for long waiting hours for patients and how has the system helped in reducing patient waiting time?

ENABLERS AND BARRIERS

21. What are some barriers of appointment scheduling, especially relating to patients adherence, patients and doctors time, availability of doctors among others?

22 What are some in- house policies put in place that enables you to honor patient's appointment?

23. What guidelines are put in place for patient on appointment especially during first timers and follow-up appointment cases (Review)?

24. Do patient honor they appointment and how does patient cancel or reschedule an appointment?

25. Would you say the process of care and treatment, in terms of drugs, insurance and service delivery are adequate and leads to quality health outcome or improve patient health?

26. Do you give room for patient's choices to see a preferred doctor on his/her follow-up appointment?

APPENDIX III: INTERVIEW GUIDE FOR CLIENTS

TOPIC: ASSESSMENT OF FOLLOW-UP APPOINTMENTS AND VISITS SYSTEM AT THE NEUROLOGY CLINIC OF KORLE-BU TEACHING HOSPITAL (KBTH): CLIENTS AND PROVIDERS PERSPECTIVES.

Introduction: Follow-up appointment and visits are very important in the provision of the best health outcome for patients with specialized conditions such as neurological disorders. Meanwhile, keeping up with appointment are not always easy due to; time constraints, scheduling snags and transportation, clinic overcrowding, waiting time, availability of professional service providers, financial difficulty and family care issues or support and these can cause missed appointment during visits. Stakeholders in healthcare have therefore advocated for different innovative ways of increasing appointment attendance and mitigating the impact of missed appointments.

Objective: This study seeks to assess follow-up appointments and visits system at the neurology clinic of KBTH, from patients and health provider's perspective.

Risks and benefits: There are minimum or no risks if you take part in this study. There are also no incentives but the information you provide will help improve follow-up appointment system in the hospital.

Right to refuse and withdrawal: Your consent to participate in this study is voluntary and you can withdraw from this study at any time. This interview is meant to data for the research which is purely for academic purpose The researcher undertakes to respect the privacy and anonymity of respondents and use the information obtained purely for the academic purpose intended and that no part of such information shall be divulged or made available to any other persons or purpose other than for academic purpose.

DEMOGRAPHIC AND OTHER CHARACTERISTICS

Date: …… Interviewee Number: ……..

1. How old are you?
2. Area of residence?
3. Marital Status?
4. What condition brought you here?

ATTRIBUTES OF THE FOLLOW- UP APPOINTMENT & VISIT SYSTEM

Relative Advantage

5. What advantages has the follow-up appointment system had on you, in terms of cost and reminder system?

Compatibility

6. Do you see the current system as user friendly and does it meets your expectation?

Complexity

7. How flexible and easy is the use of the system?

Trialability

8. In the process of continuous care or during your first visit, where you educated or guided on the procedures of appointment scheduling and cancellation? Explain
9. Do you feel the system needs revision? Explain

Communicativeness

10. Do you think the system facilitates adequate provider-patient interaction?

VIEWS ON INNOVATION-DECISION PROCESS

11. Do you think providers provides you with adequate information of how the system works
12. Do you think providers are able to convince you probably on the use of the system and will that influence you to accept the system?

ENABLERS AND BARRIERS

13. What are some barriers or challenges you encounter during appointment scheduling and care delivery?

14. Does health workers seek your consent on appointment scheduling?

15. Does health workers give you the room to choice your preferred doctor during follow-up appointment?

16. Does health providers seek your views regarding policies or guidelines for appointment scheduling, systems and the implementation process?

17. What are your preferred means of appointment scheduling or systems during visits?

18. What are some attributes or factors that encourages you to adhere during follow-up appointment (Enablers)?

19. Would you say the process of care and treatment, in terms of drugs, insurance and service delivery are adequate and improves your overall health outcome?

20. In general, what do you think should be improve or can be done to facilitate follow-up appointment scheduling system during visit?

APPENDIX IV: ETHICAL CLEARANCE

In case of reply the number
And the date of this
Letter should be quoted
My Ref. No. KBTH/MS/98/19
Your Ref. No.....

KORLE BU TEACHING HOSPITAL
P. O. BOX KB 77,
KORLE BU, ACCRA.

Tel: +233 302 667759/673034-6
Fax: +233 302 667759
Email: Info@kbth.gov.gh
pr@kbth.gov.gh
Website: www.kbth.gov.gh

8th April, 2019

GIFTY AKOSEN
UGBS
UNIVERSITY OF GHANA
LEGON

SCIENTIFIC AND TECHNICAL COMMITTEE APPROVAL
PROTOCOL IDENTIFICATION NUMBER: KBTH-STC 00044/2019

The Korle Bu Teaching Hospital Scientific and Technical Committee (KBTH-STC), on 8th April, 2019 approved your submitted study protocol.

TITLE OF PROTOCOL: "Assessment of follow-up appointments and visits the Neurology clinic of Korle Bu Teaching Hospital: Clients and provider perspectives"

PRINCIPAL INVESTIGATOR: Gifty Akosen

This approval requires that you **forward your approved document to Korle Bu Teaching Hospital – Institutional Review Board (KBTH-IRB) for the ethical aspect of the proposal to be assessed before the project can be initiated.**

This STC approval is valid till 30th August, 2019
You may, however, request extension of the approval period, or renewal as the case may be, should the study extend beyond the stated period.

Upon completion, you are required to submit a final report on the study to the STC. This is to enable the STC ensure among others that, the project has been implemented as per the approved protocol. You are also required to inform the KBTH-STC and Research Directorate of any publications that may emanate from the research findings.

Kindly note that, should the need arise, the KBTH-STC or IRB may institute appropriate measures to satisfy itself that study is being conducted according to the highest scientific and ethical standards.

Please note that any modification to the study protocol without Scientific Technical Committee (STC) approval renders this approval invalid.

Sincere regards,

Prof. G. Obeng Adjei
Chairman, KBTH-STC

Cc: The Chairman, KBTH-IRB

In case of reply the number
And the date of this
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Website: www.kbth.gov.gh

18th April, 2019

GIFTY AKOSEN
P. O. BOX CE 11211
TEMA

INSTITUTIONAL APPROVAL: KORLE BU TEACHING HOSPITAL-SCIENTIFIC AND TECHNICAL COMMITTEE/INSTITUTIONAL REVIEW BOARD (KBTH-STC/IRB/00044/2019

Following approval of your study entitled "Assessment of follow-up appointments and visits at the neurology clinic of Korle Bu Teaching Hospital: Clients and providers perspectives" by the Korle Bu Teaching Hospital-Scientific and Technical Committee/Institutional Review Board.

I am pleased to inform you that institutional approval has been granted for the conduct of your study in Korle Bu Teaching Hospital.

Please contact the Head of Department to discuss the commencement date of the study.

Please note that, this institutional approval is rendered invalid if the terms of the Institutional Reviewed Board/Scientific and Technical Committee approval are violated.

Sincere regards,

Dr. Ali Samba
Director of Medical Affairs
For: Chief Executive Officer

Cc: The Chief Executive
Korle Bu

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18th April, 2019

GIFTY AKOSEN
P. O. BOX CE 11211
TEMA

ASSESSMENT OF FOLLOW-UP APPOINTMENTS AND VISITS AT THE NEUROLOGY CLINIC OF KORLE BU TEACHING HOSPITAL: CLIENTS AND PROVIDERS PERSPECTIVES

KBTH-IRB /00044/2019

Investigator: Gifty Akosen

The Korle Bu Teaching Hospital Institutional Review Board (KBTH IRB) reviewed and granted approval to the study entitled "Assessment of follow-up appointments and visits at the neurology clinic of Korle Bu Teaching Hospital: Clients and providers perspectives"

Please note that the Board requires you to submit a final review report on completion of this study to the KBTH-IRB.

Kindly, note that, any modification/amendment to the approved study protocol without approval from KBTH-IRB renders this certificate invalid.

Please report all serious adverse events related to this study to KBTH-IRB within seven days verbally and fourteen days in writing.

This IRB approval is valid till 30th March, 2020. You are to submit annual report for continuing review.

Sincere regards,

DR DANIEL ANKRAH
VICE CHAIR (KBTH-IRB)
FOR: CHAIR (KBTH-IRB)

Cc: The Chief Executive Officer
Korle Bu Teaching Hospital

APPENDIX V: PHOTOGRAPHS OF HEALTCARE FACILITIES VISITED IN THIS STUDY

Main waiting area for Surgical Department on Neurological clinic days.

Waiting Area for Neuro- Medical Unit (Left) and The **Information Desk** of the Neuro-Unit, whiles record personnel booking clients for follow-up appointment (Right).