UNIVERSITY OF CAPE COAST

COMPLIANCE WITH PHYSICIAN COMMUNICATION AND

HEALTH RELATED QUALITY OF LIFE OF HYPERTENSIVE

PATIENTS AND DIABETIC PATIENTS IN TAMALE TEACHING

HOSPITAL

PETER MINTIR AMADU

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BY

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Faculty of Educational Foundations, College of Education Studies, University

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Master of Philosophy degree in Clinical Health Psychology.

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DECLARATION

Candidates Declaration

I hereby declare that this thesis is the result of my own original research and that no part of it has been presented for another degree in this University or elsewhere.

Candidate's Signature …………………………………. Date …………………

Name: ………………………………………………………………………....

Supervisors' Declaration

We hereby declare that the preparation and presentation of the thesis were supervised in accordance with the guidelines on supervision of thesis laid down by the University of Cape Coast.

Principal Supervisor's Signature……………………. Date …………………

Name: ………………………………………………………………………....

Co-Supervisor's Signature…………………………. Date …………………

Name: ………………………………………………………………………....

ii

ABSTRACT

The study investigated how compliance mediates physician communication and health related quality of life of patients with hypertension or diabetes in the Tamale Teaching Hospital. A cross sectional design was employed and collected data using structured questionnaire and structured interview guide. Using purposive, quota and convenient sampling methods, 211 patients were sampled out of which 148 and 63 were hypertensive patients and diabetic patients respectively for the study. Descriptive statistics and mediation analysis with regression were employed as the statistical tools for the study. The study revealed that hypertensive patients and diabetic patients have high health related quality of life. Patients mostly complied with physician's communication. The study also found that hypertensive patients and diabetic patients perceived the care physicians gave them was patient centred. Physician communication but not compliance improves health related quality of life of hypertensive patients and among diabetic patients, the improvement in health related quality of life for these patients did not have any relation with physician communication and compliance. The study recommended that physicians should continue employing patient centeredness skills which will improve compliance to treatment advice and health related quality of life of the patients. Hospital administrators should put in measures that will help to enhance better doctor-patient communication as it has been showed to relate positively with patient compliance, perception of patient centeredness care and health related quality of life. Stakeholder's involvement for an improved management system as well as the engagement of more psychologists should be intensified by the ministry.

iii

KEY WORDS

Compliance

Diabetes

Health Related quality of life (HRQOL)

Hypertension

Physician Communication

Tamale Teaching Hospital (TTH)

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DEDICATION

To my beloved wife and children, parents and siblings.

TABLES OF CONTENTS

CHAPTER TWO: LITERATURE REVIEW

LIST OF TABLES

LIST OF FIGURES

LIST OF ACRONYMS

COPD   Chronic Obstructed Pulmonary Disease

DHMT   District Health Management Teams

DM   Diabetes Mellitus

E.g.   For example

g/dl   grams per deciliter

GHS   Ghana Health Service

H_0 Hypothesis

HPT   Hypertension

HRQoL   Health Related Quality of Life

IDF   International Diabetes Federation

M   Mean

mmHg   Milimetre of mercury

NCDs   Non-communicable diseases

QoL   Quality of Life

SD   Standard deviation

SSA   Sub-Saharan Africa

TTH   Tamale Teaching Hospital

W.H.O   World Health Organisation

CHAPTER ONE

INTRODUCTION

Background to the Study

Hypertension and diabetes are among the major non-communicable or chronic diseases (NCDs) in the world (WHO, 2013). They are described as diseases that are not transmissible from one person to another (Gamage & Jayawardana, 2018). The four main types of non-communicable diseases are cardiovascular diseases (like hypertension, heart attacks and stroke), cancers, chronic respiratory diseases (chronic obstructed pulmonary disease (COPD) and asthma) and diabetes (WHO, 2013). Within the main NCDs, the commonly existing NCDs include hypertension, diabetes mellitus, cancers, injuries and chronic respiratory disease (WHO, 2013; Gamage & Jayawardana, 2018). They are mostly termed lifestyle-related diseases in that, the main contributing factors for their occurrence is an increase in old age and unhealthy lifestyle-related behaviors, (WHO, 2005; Siegel, Patel & Ali, 2014). It is against this backdrop that Siegel, Patel and Ali, (2014), argued that a general improvement of socio-economic factors within Sri Lanka and the resulting increase in life expectancy, has contributed to an increase in the prevalence of NCDs like hypertension and diabetes.

Hypertension and diabetes are NCDs that are among the leading cause of death in the world, representing 63% out of 57 million global deaths of all annual death (WHO, 2013). NCDs like hypertension and diabetes kill more than 36 million people each year and 80% of all NCDs deaths occur in low

1

and middle-income countries (Rayner, & Mendis, 2017). Reports from research also indicates that, more than 9 million of all deaths attributed to NCDs occurs before the age of sixty (60) (WHO, 2002; Rayner & Mendis, 2017). NCDs affect women and men almost equally around the world (Boutayeb & Boutayeb, 2005; Rayner, & Mendis, 2017; WHO, 2002). NCDs like hypertension and diabetes are largely preventable through effective interventions that tackle diet, physical inactivity and harmful use of alcohol (Kinsinger, et al., 2009). NCDs (hypertension and diabetes) are not only a health problem but a developmental challenge as well. This stems from the fact that NCDs force many people into, or entrench them into poverty due to catastrophic expenditure for treatment (Addo, et al., 2012) and also have a large impact on undercutting productivity. The WHO (2016) and Hasanović, Bilandžija, and Šatalić (2016), state that 1.5billion adults, 20 years and older were overweight in 2008 and nearly 43 million children under 5 years older were overweight in 2010.

In the context of Sub-Saharan Africa (SSA), there is a disproportionate burden of both infectious diseases like, malaria and HIV Aids and chronic non-communicable diseases including hypertension and diabetes compared to other regions in the world (Nulu, 2017; Holmes, et al., 2010). Holmes et al, (2010) and Abdullah, Mannava and Annear, (2013) argue that current disease estimates for SSA are based on spared data, but projection indicates increases in non-communicable disease (NCDs) caused by demographic and epidemiological transition. According to the WHO (2002) report and Holmes et al, (2010), the causes of death in SSA is estimated at 25% for NCDs. The prevalence of heart diseases from community base studies in SSA put Ghana's

population at risk between 15-64 years Addo, Amoah, and Koram, (2006). De Graft Aikins, Anum, Agyemang, Addo, and Ogedegbe, (2012) also noted that Ghana's population at age 25, who are mostly civil servants, are at risk of cardiovascular diseases as against other countries in the sub-region.

Morbidity and mortality of diseases in Ghana have shifted from the mainstream communicable or infectious diseases to NCDs which now top the ten (10) topmost causes of death including hypertension and diabetes (Addo et al., 2012). Ghana, according to Addo, et al., (2012), had prevalence of 4.5% to 16.2% based on the definition of hypertension with a BP >160/95 mmHg. The prevalence of hypertension ranges from 4.5% to 16.2% whereas using a threshold of BP > 140/90 mmHg, its prevalence ranged from 19.3% to 54.6% (Addo et. al, 2012). Diabetes also shows 3.3% in 2015 among adults population (IDF, 2015). The WHO suggests that, fasting plasma glucose, equal to or more than 7.0mmol/L may indicate diabetes, or a 2-hour plasma glucose (during oral glucose tolerance test), equal to or more than 11.1mmol/L may indicate diabetes (WHO, 2016)

Hypertension (HPT), also known as high or raised blood pressure is a condition in which the blood vessels have persistently raised pressure (Chobanian, 2007). According to the WHO, a systolic blood pressure should be equal or above 140 mmHg and diastolic blood pressure equal or above 90mmHg and should be persistent to be considered as hypertension (WHO, 2013). Hypertension is classified as primary or secondary; primary hypertension which might develop as a result of environmental or genetic causes, or secondary hypertension, which has multiple aetiologies, including renal, vascular, and endocrine causes (Taylor, Irving, & Baliunas, 2009).

Diabetes on the other hand, is a condition in which the body does not properly process food for use as energy (Bray, 2009). It is a chronic disease that occurs either when the pancreas does not produce enough insulin (a hormone that regulates blood sugar, or glucose), or when the body cannot effectively use the insulin it produces (WHO, 2016; Hasanović, Bilandžija, & Šatalić, 2016). The rate for the condition stood at 3.3% in 2015 among adults between the ages of 20-79 (IDF, 2015). How well blood glucose is controlled is measured by the value of the glycated haemoglobin (Hb A1c). It is usually measured quarterly in a year (IDF, 2015). According to WHO (2016), for those patients with diabetes who have attained glycaemic control, two times a year may be recommended. Glycated haemoglobin indicates the average blood glucose level in the blood (WHO, 2002). Glycated haemoglobin should be less than or equal to 6.5% (WHO, 2005). Controlled blood glucose could prevent complications such as blindness, kidney failure, nerve damage, strokes, heart attacks and limb gangrene among diabetes patients.

Hypertension and diabetes together with their risk factors have increased overtime and contributed significantly to Ghana's disease burden. They affect the young and old, men and women, urban and rural and wealthy and poor communities, (Awuah, Anarfi, Agyemang, Ogedegbe & Aikins, 2014; Addo, et al, 2012) and are among the most common NCDs recorded in hospitals (Addo et al., 2012).

Northern Ghana like other parts of the country, has witnessed a shift from predominantly communicable diseases to a combination of communicable and chronic non-communicable disease (NCDs) mainly hypertension and diabetes over the last few decades (Agyei-Mensah., & Aikin,

2010; Yahaya, 2015). Urbanization, changing lifestyle (including poor diets) aging populations, globalization and weak health systems have been implicated in their risk, morbidity and mortality (Adoo et al., 2012; Yahaya, 2015).

When diagnosed with hypertension or diabetes, individuals generally begin to experience decline in their health related quality of life (Harmer, & Fleck, 2014). Hypertension is believed to be related to high depression, more somatic memory problems and less satisfactory sex life, (Amir & Bar-on, 1996; Reddy, 2009). Diabetes is also believed to have negative influence on the physical, psychological and social relationships of sufferers (Redekop et al, 2002; AbdelGadir, 2009).

Quality of life is a multi-dimensional concept that usually includes subjective evaluations of both positive and negative aspects of life (WHOQOL Group 1998; Xu, et at, 2016). The WHO (1995) explains quality of life as an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns. These concepts include the person's physical health, psychological state, level of independence, social relationships, personal beliefs and relationship to salient features of surrounding environment (Azevedo., Silva, Tomasi, & Quevedo., 2013; Harmer, & Fleck, 2014). The aspect of the construct, health related quality of life, is designed in relation to health and disease and focuses on the quality of life consequence of health status. Health-related quality of life (HRQoL) is a multidimensional construct that consists of at least three broad domains−physical, psychological, and social functioning that are affected by one's disease and/or treatment

5

(WHOQOL Group, 1998). HRQOL is an assessment of how the individual's well-being may be affected over time by a disease, disability, or disorder (Ferrans, Zerwic, Wilbur, & Larson, 2005). HRQOL has become an important outcome measure for patients with chronic diseases

(Harmer, & Fleck, 2014). Health associated with quality of life has been widely used to assess efficacy and cost-effectiveness results of new treatment strategies (Testa & Simonson 1996; Azevedo et al., 2013). HRQOL is one of the tenets that is considered as a patient outcome (observable consequence of prior activity occurring after an encounter, or some portion of the encounter, is completed) (Beckman, Kaplan, & Frankel, 1989). Such an outcome has been proven to hinge on certain variables like physician behaviour, which includes communication (Ong, Visser, Lammes, & De Haes, 2000).

Communication is the process of exchanging information between two or more people (Stewart, 1995). Communication is the transmission of information, thoughts, and feelings so that they are satisfactorily received or understood (Arungwa, 2014). In the view of Srivastava (2007) communication is the main tool that healthcare providers use to supply health-care services and that successful communication is a two-way street, and the health-care setting demands considerable communication skills on the part of both the healthcare provider and the client.

Physician behaviour like communication between doctors and patients is believed to create good inter-personal relationship, help exchange information and help make treatment-related decisions, (Ong, De Haes, Hoos, & Lammes, 1995; Ong, Visser, Lammes, & De Haes, 2000). The effectiveness

6

of this tool, physician communication, has the ability to trigger how individuals comply with therapy which could be promotive, preventive or curative and subsequent impact on their health related quality of life. Physician communication can be viewed in a continuum and depending on which side of the continuum they are positioned, has an influence on compliance.

Compliance refers to the degree or extent of conformity to the recommendations about day-to-day treatment by the health provider with respect to the timing, dosage, and frequency (Cramer, et al, 2008). Closely linked to compliance is adherence; the ability and willingness to abide by a prescribed therapeutic regimen (Inkster, Donnan, MacDonald, Sullivan, & Fahey, 2006; Jin, Sklar, Oh, & Li, 2008) and more recently the word concordance is also suggested to be used which makes the patient part of the decision-makers in the process and denotes patients- prescribers' agreement and harmony (Fajolle, Limelette, Oliary, & Leverge, 2004). The shifting demographics of the population and increasing skills in the treatment of hypertension and diabetes have combined to make compliance a topic of greater salience than ever before (Sarafino, & Smith, 2014; Haber, 2013; German, 1988). It is based on this background that the present study explores compliance with physician communication and health related quality of life of hypertensive patients and diabetic patients. Seeking to understand the mediating role of compliance with physician communication and health related quality of life.

7

Statement of the Problem

Issues of hypertension, diabetes and health related quality of life and complications are important health problems in Ghana which is also in line with the global realities (Helamo, Delil & Dileba, 2017; Khan, 2014). Even though blood pressures values under 140/85 mmHg are considered the optimal (Meriranta, Tikkanen, & Kumpusalo, 2004) and sugar control levels of < or = 5g/dl are seen as ideal (WHO, 2016), it has been recently shown that only every fourth hypertensive patient and diabetics patient in primary care reached these optimal goals which have implication on health related quality of life.

Traditionally, medical treatment has held the key role in hypertension and diabetes treatment regardless of patients' concerns and wishes; however, this approach involves the risk of losing the patient's perspective (Roter & Hall, 2006; Feldman, Behnam, Behnam, & Koo, 2005). As long as the focus of treatment is something other than the patient, the patient's perspective tends to get lost during the encounter. The treatment of hypertension and diabetes with adverse drug effects and symptoms may be very troublesome for patients. Some aspects as patients' attitudes and perceived problems related to different aspects of hypertension and diabetes treatment have so far received little attention in research (Gallant, 2003). Patients' compliance issues with hypertension and diabetes medication is gradually becoming a health burden in Ghana. Most studies conducted on non-compliance and compliance to treatment focuses on the medical aspects of the disease rather than looking at it from a social viewpoint, the biopsychosocial approach to health delivery (Kenu,et al., 2014). Meanwhile patients' non-compliance or compliance is a behavioural issue which requires research to generate knowledge that would

8

help the Ministry of Health (MOH) as well as Ghana Health Service (GHS), District Health Management Teams (DHMT) and other implementing agencies in health to design effective approaches to solving the challenge.

Studies that seek to unearth measures to address the menace of non-compliance, concentrated on hypertensive patients and diabetic patients with focus being on specifics such as patient's memory problems, intentional compliance and secondary memory problems (Patel & Taylor 2002; Choo et al., 2001; Svensson, Kjellgren, Ahlner, & Säljö, 2000; Kyngäs and Lahdenperä, 1999) while other studies conducted in the field of non-compliance, geared toward psychiatric patients (Jin, et al., 2008; Roy, Jahan, Kumari & Chakraborty, 2005).

Little has been documented on the issues of compliance in Ghana coupled with the fact that limited studies are released in northern Ghana particularly (Addo et al., 2012; Yahaya, 2015). Based on observations and patients comments in Tamale Teaching Hospital (TTH), there seem to exist issues with physician communication which has the potential to influence compliance and subsequent health related quality of life, but there are no readily available empirical documentations to the issues being raised.

This study therefore, aims to investigate how compliance mediates physician communication and HRQoL of hypertensive patients and diabetic patients in Tamale Teaching Hospital (TTH).

Purpose of the study

The purpose of the study was to investigate how compliance mediates physician communication and health related quality of life of patients with

either hypertension or diabetes in Tamale Teaching Hospital, to inform and guide hypertension and diabetes management.

Purpose of the study

Specifically, this study sought to investigate the following;

1. the level of compliance among hypertensive patients with physician communication.

2. the health related quality of life of hypertensive patients.

3. the health related quality of life of diabetic patients.

4. the level of compliance among diabetic patients with physician communication.

5. hypertensive patients' perception of patient centeredness care and physician communication.

6. diabetic patients' perception of patient centeredness care and physician communication.

7. the mediating relationship between compliance, physician communication and health related quality of life of hypertensive patients.

8. the mediating relationship between compliance, physician communication and health related quality of life of diabetic patients.

Research Questions

The following research questions were formulated to guide the study;

1. What is the level of compliance among hypertensive patients with physician communication?

2. What is the level of health related quality of life of hypertensive patients?

10

3. What is the level of health related quality of life of diabetic patients?

4. What is the level of compliance among diabetic patients with physician communication?

5. What is the hypertensive patient's perception of patient centeredness care and physician communication?

6. What is the diabetes patient's perception of patient centeredness care and physician communication.

Research Hypotheses

The following hypotheses were tested;

1) H_0 Compliance will not significantly mediate the relationship between physician communication and health related quality of life of hypertensive patients.

   H_1 Compliance significantly mediates the relationship between physician communication and health related quality of life of hypertensive patients.

2) H_0 Compliance will not significantly mediate the relationship between physician communication and health related quality of life of diabetic patients.

   H_1 Compliance significantly mediates the relationship between physician communication and health related quality of life of diabetic patients.

Significance of the Study

The study will provide health practitioners with data to sensitize the public about the importance of health related quality of life of these patients considering the lifelong nature of these conditions. It will help in the

11

eradication of the misconception associated with hypertension and diabetes that has the potential of impacting on the emotions and trauma among these patients and to create a positive attitude towards these patients.

The outcome of the study is also to serve as a source of information for hypertensive and diabetic patients' health related quality of life and management at the clinics. Available information is to provide an impetus for policy advocacy in the management of patients with either hypertension or diabetics. The quality of management of patients with hypertension and diabetic may be enhanced, through the inclusion of Clinical Health Psychologist, who will assess compliance behaviours of patients and the useful suggestions to be provided thereof.

The study in part is to increase exiting knowledge and literature in hypertension and diabetes patients' management in Ghana. It is also envisaged that the outcome of the study is to guide hypertension and diabetes health promotion activities in the health facility. The study will further provide health workers with job satisfaction, reduce workload and job related stress when patients begin to comply with physician communication.

Finally the study is to help deepen physicians' understanding and to providing plausible explanations to the possible anxieties that the patients go through. This will ultimately create an opportunity for the health worker to provide a holistic care appropriately.

Delimitations

The study was conducted in the Tamale Teaching Hospital involving hypertensive and diabetic patients. These hypertensive and diabetic patients were diagnosed for at least one month and without severe complications. They

12

were within 18 years and above and attending specialist clinics at the TTH for medications.

Limitations

This research sought to investigate how compliance mediates the relationship between physician communication and health related quality of life of hypertensive patients and diabetic patients, therefore could not establish causal factors in compliance, physician communication and health related quality of life of these patients. The cross-sectional design presented a short time scenario of the relationship between compliance, physician communication and health related quality of life of hypertensive patients and diabetic patients, therefore may not be able to account for how long compliance, physician communication and health related quality of life will persist in persons with hypertension or diabetes. The use of purposive, quota and convenient sampling methods to recruit respondents may limit the generalization of the findings in the study.

Some respondents were not willing to participate as they complained about researchers coming to them to seek information yet they do not get any feedback on the outcome of their study.

Definitions of Terms

Compliance: The degree or extent of conformity to the recommendations about day-to-day treatment by the health provider with respect to the timing, dosage, and frequency.

Physician: Professional who practises medicine, and is concerned with promoting, maintaining, or restoring health through the study,

diagnosis, and treatment of disease, injury and other physical and mental impairments.

Health related quality of life (HRQoL): Assessment of how the individual's well-being may be affected over time by a disease, disability, or disorder.

Non-compliance: Failure or refusal to comply with something (such as a rule or regulation), a state of not being in compliance.

Adherence: The ability and willingness to abide by a prescribed therapeutic regimen.

Concordance: Making the patient part of the decision-makers in the process and denotes patients- prescribers' agreement and harmony.

Quality of life (QOL): The standard of health, comfort, and happiness experienced by an individual or group; the things that are needed for a good quality of life.

Non-communicable diseases (NCDs) Medical conditions or diseases that are not caused by infectious agents (non-infectious or non-transmissible).

Organization of the Study

This study is composed of five chapters. Chapter one (1) provides the background to the study. It covers the statement of the problem, the objectives of the study and research questions/hypotheses which guided the study. It ends with significance, delimitation, limitation, operational definition of terms, organization of the research study and the chapter summary. Chapter two (2) concentrates on theoretical underpinning of the study, empirical review, conceptual framework and conceptual review.

14

Chapter three (3) looks at the research methodology that was applied to achieve the study's objectives and analysis of the findings. Chapter four (4) is made up of data presentation, analysis and interpretation and discussion of the main findings. Finally, chapter five (5) provides a summary, conclusion, recommendations, and suggested areas for future research.

Chapter Summary

This section highlighted the background of the study and the existence of a problem that needs to be tackled. In addition, the study's objectives, research questions, hypotheses and significances of the study have been indicated. The other sections in the conduct of this study were delimitation, limitation, operational definition of terms or abbreviations and organization of the research study.

CHAPTER TWO

LITERATURE REVIEW

Introduction

The focus on compliance with physician communication and health related quality of life of hypertensive patients and diabetic patients in Tamale Teaching Hospital represented a response to the need to gather information concerning how these variables relate to each other in the management of hypertensive patients and diabetic patients. Such information could guide management of these conditions in Tamale Teaching Hospital and Ghana in general.

This section involves an objective and critical examination of previous studies and their relationship with the current study. Here, reviews of studies in the past and how they relate to current study are highlighted. The contribution of previous studies toward the theoretical framework and conceptual framework of the current study are highlighted. This section starts with theoretical orientation of the study, followed by empirical studies, conceptual framework and end with conceptual review.

Theoretical Orientation

The theoretical underpinnings of the study are;

1. Uncertainty reduction theory (Berger & Calabrese, 1975)

2. Biospychosocial model (Engel, 1977)

3. Health Related Quality of Life Model (Wilson & Cleary, 1995)

16

Uncertainty Reduction Theory (URT)

Uncertainty reduction theory (URT) was originally propounded by Berger and Calabrese (1975) to explain the communication process that occurs when two strangers interact. Berger and Calabrese (1975) observed that when we interact with strangers, we experience uncertainty because we don't really know what to expect. Berger and Calabrese claim that as the interaction proceeds we gain information that quickly reduces our uncertainties. However, there have probably been times where you didn't really worry about finding out anything about the stranger because you never expected to see the person again or it wasn't someone with whom you wanted to pursue a relationship with. URT provides explanations for these and other behaviours when people interact with someone new. However, the general principles underlying URT apply to most, if not all, human communication (Berger, 1986).

Berger and Calabrese (1975) expanded the concept of uncertainty to fit interpersonal communication by defining uncertainty as the number of alternative ways in which each interactant might behave. They argue that, the greater the level of uncertainty that exists in a situation, the smaller the chance individuals will be able to predict behaviours and occurrences. Uncertainties are on-going in relationships, and thus the process of uncertainty reduction is relevant in developed relationships as well as in initial interactions (West & Turner, 2000).

Over the years, uncertainty reduction theory has evolved to include interactions within established interpersonal relationships that may also experience stressful periods of uncertainty. For example, you might be unsure of your healthcare provider's view about your presentation and complains

during a hospital visit, or be unsure of where his evaluation and conclusion of your presentation or, you might be confused about your own thoughts about the provider. To reduce such uncertainties, we seek information. Have you ever had someone end a conversation with you without really telling you why? If so, you were probably frustrated and even angry over not knowing what happened by the uncertainty. Rather than being faced with such uncertainty, we actually prefer being told the reasons why someone is ending conversation, even when those reasons might hurt (Tolhuizen, 1989).

Therefore, Berger and Bradac (1982) expanded the discussion of uncertainty reduction to include on-going relationships and even relationships that have terminated. Uncertainty is also aroused in our relationships when someone behaves in an unexpected manner that violates our expectation. For example, your healthcare provider, who is always very cheerful begins to withdraw and seems distanced/depressed. This behaviour raises uncertainty because you no longer feel confident in your ability to predict your provider's behaviour. These observations about uncertainty reduction reflect the essence of the theory. Nevertheless, we will discuss a variety of factors that mediate how we actually manage uncertainty, including factors that lead us to sometimes prefer uncertainty to certainty.

Since the mid-twentieth century, the concept of information has been a strong foundation for communication research and the development of communication theories. Information exchange is a basic human function in which individuals request, provide, and exchange information with the goal of reducing uncertainty. Berger and Calabrese (1975), recognize that reducing uncertainty is a central motive of communication. Through the development of

URT, these scholars pioneered the field of interpersonal communication by examining this significant relationship in uncertainty research. The theory has seven axioms and twenty-one theorems which put together help to reduce the level of uncertainty in communication especially that of physician and patients who are of different orientation in terms of the health outcome.

Like many other successful theoretical approaches, Berger and Calabrese's (1975) theory of uncertainty reduction has inspired subsequent research that served both as supporting evidence and in an oppositional role to the theory. Sunnafrank (1986) argued that a motivation to reduce uncertainty is not a primary concern in initial interactions. He contended that the maximization of relational outcomes was of more significant concern in initial encounters. Berger (1986) combated his arguments by acknowledging that outcomes cannot be predicted if there is no previous history of interaction regarding the behaviour of the individuals. Berger claims that Sunnafrank's arguments simply expanded URT that by predicting outcomes using predictive outcome value (POV) individuals are actually reducing their uncertainty (Berger, 1986).

When linked with the present study, the URT will aid in understanding and interpreting how patients' communication and understanding with physicians aid in limiting uncertainties. Improper management of uncertainties in the present study will compromise/worsen ill health conditions that are more likely to affect patient's productivity and make them disable or draw patients closer to death, hence worsening of their health related quality of life.

Biopsychosocial Model of Health

According to Engel (1977), the biomedical model is a reductionist model since it is based on the philosophical principle that complex problems are derived from simple primary principles, according to which the causes of diseases can best be explained at the simplest levels. It is dualistic in terms of separating the mental from somatic processes (Engel (1977). He further states that the biomedical model has become a medical dogma requiring that all diseases, including the mental ones, be conceptualised on primarily physical, chemical and other biological mechanisms. He also asserted that the borderline between disease and health has never been clear and that simple biological determinants of diseases are strongly influenced by cultural, social and psychological conditions and states.

Engel (1977) provides concrete reasons for which he is of the opinion that new approach is needed in modern medicine, like for instance, that patients with the same diagnosis and laboratory tests can present with completely different course of disease for different psychosocial characteristics, that for proper diagnosis it is necessary to extensively interview the patient during which other important, not only biomedical, information can be obtained for correct diagnosis and treatment method. He states that psychosocial factors often determine whether the patient considers her/himself sick or in need for medical assistance (Engel, 1977). Psychosocial factors are interrelated with the biological ones to the extent that they may influence the course and outcome of treatment and that emotional relations between patients and physicians can affect the speed of recovery (Engel, 1977).

20

The proposal to introduce a new wider model of health does not diminish the importance of the biological model in the development and treatment of disease, but widens a too narrow understanding of health and diseases (W. H. O., 2000). Such an interaction takes place within one unique system specific for each individual, a system within which all three major sub-systems communicate by exchanging information, energy and other substances. The centre of interest in biopsychosocial model is not the disease but the sick individual (Engel, 1977). In the diagnosis and treatment, beside medical procedures, the model employs all other methods related to psychological and social aspect, thus, those requiring active participation of psychological, social, economic, anthropological and other professionals whose expertise will only contribute to the increase in health care efficacy, humanisation of relations within health system and significant savings in health expenditure.

Development of the concept of patient-centeredness is intimately linked to perceived limitations in the conventional way of practising medicine, which is embedded in the traditional biomedical model (Siegler & Osmond, 1974). Although inaccurate to view the `biomedical model' as a single, monolithic approach (Friedson, 1970), it is generally associated with a number of broad concepts that determine the way in which medicine is practised (Siegler & Osmond, 1974; Engel, 1977; Roth, Cassell, Wong, Maddux, & Goldfine, 1982; McWhinney, 1989). These concepts exert particular influence on the content and style of the relationship between doctor and patient, where relationship is deemed as an abstraction embodying the activities of two interacting systems (persons) (Szasz & Hollender, 1956). In the biomedical

model, patients' reports of illness are taken to indicate the existence of disease processes. This dictates a clinical method focused on identifying and treating standard disease entities. To this end, the patient's illness is reduced to a set of signs and symptoms which are investigated and interpreted within a positivist biomedical framework (Siegler & Osmond, 1974).

Accurate diagnosis of the pathology, according to Tate, Foulkes, Neighbour, Campion, and Field, (1999), permits selection of appropriate therapy which restores the diseased processes to (or near to) "normal", thus, curing (or improving) the patient's illness. This has been the core justification of the adoption of the Biopsychosocial Model for this study (Engle, 1977).

A combined biological, psychological and social perspective is regarded necessary to account for the full range of problems presented in primary care (Engel, 1977). Though with some historical and practical accounts, the concept of biopsychosocial medical care is further developed by Engel's (Engel, 1977, 1980). His account for disorders are conceptualised as existing at a number of interacting, hierarchical levels (from biological through to psychological and social levels). Broadening the explanatory perspective on illness to include social and psychological factors has expanded the remit of medicine into the realm of ostensibly `healthy' bodies. Again, this has been particularly evident in general practice (Engel, 1977). Stott and Davis, (1979), pointed out that the exceptional potential of the primary care consultation is not confined to managing acute and chronic (physical and psychosocial) disorders, but also includes possibilities for health promotion and the modification of health-seeking behaviour.

Epstein and Borrell-Carrio (2005), argue that the biopsychosocial model is a disingenuous euphemism for psychosomatic illness and that biopsychosocial model is a biomedical model. They further pointed out that biological factors are still superimposed in the psychological and social ones, theoretical basis of the model is not clear enough, model lack a common language/system of concepts (i.e. psychological and medical terminology exist parallel and unconnected), and the complex relations between causes and effects of factors within each subsystem, thus, biological, psychological and social, influencing the state of health and occurrence of disease, are not properly known (Epstein & Borrell-Carrio 2005).

Hamid and Tavakoli, (2009), also argue that the model should be avoided because it unintentionally promotes an artificial distinction between biology and psychology and merely causes confusion in psychiatric assessments and training programs. While McLaren, (1998), argues that even though it is correct to say that sociology, psychology, and biology are factors in mental illness, simply stating that obvious fact does not make it a model in the scientific sense of the word.

This model is, therefore, essential as far as this study is concerned as health care is proposed to be dealt with holistically. Even in the midst of counterarguments, it clearly demonstrates that when the human person is understood holistically, management of any ailment they face can be possible to cure. Having a holistic understanding of human limitation will aid in having a better explanation and to seeking relevant responses for the purpose of managing conditions like, hypertension and diabetes among the general

population. Relevance of the model is ensuring effective doctor- patient relationship which has the potential to influence health positively.

Health Related Quality of Life Model

Wilson and Cleary (1995) developed a model that combines health beliefs from the medical and social sciences and shows how various patient outcomes are related. This model explains an individual's HRQoL in terms of a number of components that are causally linked. The components of the model include: biological and physiological variables, symptom status, functional status, general health perceptions, characteristics of the individual, characteristics of the environment, nonmedical factors, and overall QoL (Wilson & Cleary, 1995).

This theory had a quick follow up by Ferrans et al. (2005) who created a revised version of the Wilson and Cleary (1995) model of HRQoL. Like the Wilson and Cleary (1995), Ferrans et al. (2005) proposed causal paths, however, the components of the model and their relationships are slightly different. In this revised model, the components include biological function, symptoms, functional status, general health perceptions, characteristics of the individual, characteristics of the environment, and overall QoL. In this model, Wilson and Cleary's (1995) "biological and physiological variables" were changed to "biological function" and the component "nonmedical factors" was removed.

According to Ferrans et al. (2005), there was no need to include "non-medical factors" as an independent component because these factors can be attributed to either individual or environmental characteristics. The name of the first component of the model was changed to "biological function"

because "alterations in biological function directly or indirectly affect all components of health, including symptoms, function status, perception of health, and overall quality of life" (Ferrans et al., 2005).

Ferrans et al., (2005) argued that Wilson and Cleary (1995) failed to give examples of characteristics of the environment and individual. Ferrans et al. (2005), on the other hand, added to the Wilson and Cleary (1995) model by including detailed explanations of the environmental and individual constructs and incorporating "nonmedical factors" into these components. Another weakness of the Wilson and Cleary (1995) model is that individual and environmental characteristics do not contribute to "biological and physiological variables," whereas both the revised Wilson and Cleary model by Ferrans et al., (2005) and the World Health Organization's International Classification of Functioning (WHO ICF) models clearly indicate these associations. In the WHO ICF model, environmental and personal factors are linked with body functions and structure (WHO, 2002). It can be inferred from Ferrans et al. (2005) model that the severity of diseases such as hypertension and diabetes are influenced by both individual and environmental characteristics and added paths to indicate these associations.

The relevance of this theory is therefore, seen in the recent attempts by medical institutions to improve the health of clients especially the elderly, which will imply longer living and if care is not taken to improve the quality of life, these individuals could live with chronicity for a very long time. Medical science in a bit to leverage on longevity that humans are experiencing and the management of difficult conditions resulting in improvement in human existence makes this model appropriate to be reviewed.

25

Empirical Review

This section reviews empirical studies that help in explaining the variables considered in the study. It reviews literature on the following areas;

1. level of compliance among hypertensive patients

2. health related quality of life of hypertensive patients

3. health related quality of life of diabetic patients

4. level of compliance among diabetic patients

5. hypertensive patient's perception of patient centeredness care and physician communication

6. diabetic patient's perception of patient centeredness care and physician communication.

7. mediating relationship between physician communication, compliance and health related quality of life of hypertensive patients

8. mediating relationship between physician communication, compliance and health related quality of life of diabetic patients.

Level of Compliance among Hypertensive Patients

Poor compliance to antihypertensive treatment remains a clinical challenge worldwide. Non-compliance to treatment in chronic diseases such as hypertension is a very common phenomenon, owing to its chronic nature, lack of obvious symptoms, affordability, doctor patient relationship, unawareness of complication, and forgetfulness. This non-compliance negatively affects disease course, HRQoL and increases risk of morbidity and mortality (Horne, et al., 2005).

26

Bhusal, Jadhav and Deshmukh, (2016), conducted a study to find out the medication adherence among hypertensive patients using hill-bone compliance to high blood pressure therapy scale (HILL-BONE CHBPTS) and to compare medication adherence in hypertensive patients with controlled and uncontrolled blood pressure. The study employed a cross-sectional, observational study for a period of one year in the outpatient department of Medicine in a tertiary care hospital, Navi Mumbai. A sample size of 129 hypertensive patients who were on at least six months of antihypertensive medications were selected. Blood pressure was measured and details of drug therapy were noted. The study showed that HILL-BONE CHBPTS scores were on the higher side signifying poor medication adherence among hypertensive patients. HILL-BONE CHBPTS score correlated significantly in a positive direction with diastolic blood pressure, duration of treatment and the number of medications.

The study indicated that 58.9% hypertensive patients were having blood pressure under control, whereas 41.1% were having uncontrolled blood pressure. The HILL-BONE CHBPTS scores were significantly higher (reflecting lower adherence) in hypertensive patients with uncontrolled blood pressure than those having optimally controlled blood pressure. The study therefore, concluded that medication adherence was poor in hypertensive patients. Adherence to therapeutic regimens is an important factor in blood pressure control among hypertensive patients and needs priority. Health education related to medication adherence needs to be improved in hypertensive patients.

Nashilongo, et al., (2017), in a study sought to validate the Hill-Bone compliance scale and determine the level and predictors of adherence to antihypertensive treatment in primary health care settings in sub-urban townships of Windhoek, Namibia, the study made use of the 120 patients and out of this number some had near perfect adherence to antihypertensive therapy, and less than half had acceptable levels of adherence ($\geq 80\%$). The mean adherence level was high. Even though three quarters of patients ever missed their scheduled clinic appointment, it was realised that having a family support system and attendance of follow-up visits were significant predictors of adherence. Nashilongo, et al. (2017), concluded that there is sub-optimal adherence to antihypertensive therapy among primary health cares in Namibia. This needs standardized systems to strengthen adherence monitoring as well as investigation of other factors including transport to take full advantage of universal access.

Asiri, et al, (2017), conducted a study with the objective of understanding the status of medication compliance among hypertensive patients, study the factors that affect it, and explore ways to improve compliance among these patients. The researchers' conducted a comprehensive search of MEDLINE, PubMed, and EMBASE, within a period of over one year. They included in their search the following search terms: drug compliance, hypertension medication compliance, antihypertensive drug compliance, factors affecting compliance and medication compliance. The study concluded that there is direct correlation between non-compliance and lack of proper doctor-patient relationship, patient education, and patients' belief about disease and treatment. They further posited that improvement on

28

such factors can benefit the patients in great amount regarding blood pressure control and in preventing morbidity and mortality.

Schoenthaler, et al (2009), undertook a study to investigate how provider communication affects medication adherence in hypertensive patients among African-Americans. Ninety-two (92) low-income patients taking medication for high blood pressure and 27 primary care doctors who were treating them were sampled and the researchers found that 58% of patients had poor adherence to their blood pressure-lowering medications. Patient-centeredness, discussion about patients' home lives and discussion about their blood pressure medication were strongly associated with medication taking. These had the tendency of leading to higher levels of compliance resulting in a better quality of life of the hypertensive. The study noted that the less a provider addressed these topics, the less likely patients were to take their medications as directed. It was noted that better communication appeared to create a positive impression about compliance by hypertensive patients (Schoenthaler, et al., 2009).

From the forgoing discussion and review, we see that almost all the scholars used the Hill-Bone compliance scale and realised also that geographical and ineffective physician communication had some impact on the levels of hypertensive patient's compliance. In the case of Nashilongo, et al., (2017), there is the need to standardize the systems to strengthen adherence monitoring as well as investigation of other factors including transport to take full advantage of universal access. Health education related to medication adherence needs be improved in hypertensive patients. (Bhusal, et al., 2016).

Health Related Quality of Life of Hypertensive Patients

With regard to chronic disease such as hypertension, health related quality of life (HRQoL) is an especially important outcome, given their lifelong nature and the need for daily self-management (Adepu & Madhu, 2011). Inadequate management of this condition leads to several complications and organ damage that can impair the HRQoL in the individuals (Jiang, et al., 2009). A systematic review and meta-analysis of observational studies of HRQoL among hypertensive patients concluded that hypertension patients have a reduced HRQoL and this was secondary to the awareness of hypertension, adverse drug effects, newly diagnosed type 2 diabetes mellitus or obesity (Korhonen, Kivelä, Kautiainen, Järvenpää & Kantola, 2011).

Carvalho, et al., (2012) conducted a study to find out the quality of life of hypertensive patients and to evaluate the compatibility of a specific instrument (MINICHAL) and a generic instrument (SF-36). They considered 100 adult hypertensive under outpatient care. The result of the study indicated a mean HRQoL as measured by MINICHAL was 6.64 in mental status and average of 5.03 in the state of somatic manifestations. The means for the instrument SF-36 were in ranking order, limitation due to physical aspects 47.3, vitality 57.4, and limitation due to emotional aspects 58, functional capacity 58.7, pain 60.4, general health condition 60.7, mental health 66.8 and social aspects 78.

The result showed that the physical aspect was the most affected in this sample, the rest all were above average with social aspect the high performing domain with the SF-36. It can be concluded that the studied population had an

above average in health related quality of life for all the domains except for physical aspect.

In addition, Kaliyaperumal, Hari, Siddela, and Yadala (2016), with the aim of assessing the quality of life in the hypertensive patients in a Tertiary Care Hospital, Erode, used a sample of 300 patients within a period of 6 months. The Short form 36 items (SF-36) health survey questionnaire was used in this study to assess the quality of life in hypertensive patients.

The result of this study showed that the component of concern were, mental health, followed by emotional aspects and vitality. Social aspects, physical aspects and functional capacities appear to be least affected. Pain was moderately affected and physical aspect was least affected by hypertension. The study by Kaliyaperumal et. al (2016), showed that reduced quality of life in hypertensive patients were mainly due to mental, emotional aspects and vitality. They concluded that hypertension markedly impairs quality of life in terms of the areas with below average score.

Furthermore, Katsi, et al., (2017), set out to investigate the effect of awareness of arterial hypertension on quality of life in hypertensive patients in Greece. This was a prospective observational study which included 189 hypertensive patients on treatment with antihypertensive therapy. Patients were ambulatory men or women ≥ 18 years old. The administration and completion of the questionnaires was carried out at the outpatient hypertensive clinic using the SF-36. The analysis was done composite and the mean score for physical component summary (PCS-36) was 48.9 ± 7.6, and the mean score for mental component summary (MCS-36) was 46.0 ± 10.6. The stage of hypertension was not an independent predictor for any of the SF-36

31

dimensions. With further analysis, the scale indicated lower scores on bodily pain, general health perception, physical and mental health domains. It was concluded that half of the domains of the scale used for measurement greatly impacted HRQoL of the respondents used for the study.

Similarly, Bhandari, Bhusal, Takma, and Lawot (2016), in a study to describe quality of Life of patients with hypertension in Manmohan, used a descriptive cross sectional survey involving 237 patients with hypertension attending outpatient department of Manmohan, cardiothoracic vascular and transplant centre. Data was collected by interview technique using SF-36 questionnaire. In analysing data, the independent t-test, ANOVA and multiple linear regressions were used. The quality of life was determined by physical component summary (PCS) and mental component summary (MCS). The analysis of data with multivariate analysis produced the result that increasing age, marital status and educational status were strongly associated with PCS score. Whereas, marital status and educational status were predictor of MCS score. The areas of HRQoL affected in this study included, mental health, emotional and vitality in most of the elderly respondents. The researchers concluded that increasing age, non-formal education, being single were associated with lower quality of life.

A critical analysis of works that predominantly used SF-36 as the instrument for data collection in their studies suggest that HRQoL of the hypertensive patients were quite impressive considering the lifelong nature of the condition and other related factors like co-morbidities and other complication. Patients HRQoL range from moderate to better placing them on middle line as regards the various HRQoL instrument used. In almost all the

eight domains that were considered, some of the reviews pointed out varied findings on the domains include, hypertension markedly impairs quality of life in terms of physical, vitality and mental health. (Kaliyaperumal, et al., 2016). The various domains of the HRQoL as was analysed was affected differently considering the different score obtained for the various studies.

Health Related Quality of Life of Diabetic Patients

The difficulties associated with diabetes, such as regimented lifestyle, anxiety and long-term complications have prompted researchers to examine the impact of the disease on the health-related quality of life (HRQoL) of people with the disease (Redekop, et al., 2002). Health outcomes research on chronic illness including diabetes have become increasingly concerned with patients' evaluations of the clinical effectiveness of care and treatment, with quality of life being one of the most important indicators (Cox & Gonder Frederick, 1992). A number of studies have revealed that diabetes has negative influence on the overall HRQoL and its domains of physical, psychological and social relationships and environment (Redekop, et al., 2002; AbdelGadir, et al., 2009).

Kakhki (2013), employed a descriptive study to evaluate HRQoL of diabetic patients referred to diabetes clinics of general hospitals in Tehran. In this study, data was collected using different tools including the short-form of health survey (SF-36) with 140 diabetic patients. Analysed data showed that in all, 140 diabetic patients had a low health functioning capacity. The range of HRQoL scores in different domains varied for general health perceptions to physical functioning. There were significant differences according to age, sex, educational level, type of diabetes, type of treatment, and different HRQoL

33

dimensions. It was therefore, concluded that HRQoL of diabetic patients was lower for the general health perception domains and this could be related to several variables.

To further this discussion, Thommasen, and Zhang, (2006), undertook a study to investigate the relationship between chart-derived clinical information and health-related quality of life scores for diabetics living in an isolated, rural Canadian community. This was a population-based retrospective chart review. Participants were adults with type 2 diabetes living in the Bella Coola Valley who had a chart at the Bella Coola Medical Clinic. All participants completed a detailed health-related quality of life survey using the SF-36-item and items from the behavioral risk factor surveillance system. They found out that the various domains of the SF-36 were impacted negatively as most of the domains (physical, emotional, vitality, pain and mental) recorded lower scores. These lower scores were prevalent for diabetic patients with complications relating to coronary artery disease, retinopathy, cerebrovascular accidents, neuropathy, peripheral vascular disease, and nephropathy.

The study reported that most of the complications were assessed as being minimal to moderate severity. Significant correlations were found between chart-specific information (duration, insulin use, complications) and much different health-related quality of life survey domain items. Improved blood sugar control was paradoxically associated with lower health-related quality of life domain scores. From the data findings, it was concluded that people with diabetes experienced significant impairment in their health-related quality of life, which is associated with a variety of clinical parameters. The

34

presence of diabetic complications significantly affects some health-related quality of life survey domain items (vitality, mental aspect, emotional and social).

In addition, Basit (2014), in studying the quality of life (QOL) in patients with diabetes and to explore the related determinants of quality of life in a facility in Karachi-Pakistan, a cross sectional study was employed with 209 diabetic patients (121 males, 88 females) and collected data with SF-36 questionnaire, it was carried out at a tertiary care diabetes unit in Karachi-Pakistan. Patients with diabetes were recruited from the outpatient department (OPD) and interviewed on one on one basis by the diabetes educators. SF-36 questionnaire was used as a study tool for assessing QOL. The overall mean age and duration of the diabetes was 49.12 ± 12.38 years and 9.49 ± 7.16 years respectively. Among the eight domains of QOL, the domains with better functioning were; physical, Vitality, general health status and bodily pain were observed among the respondents of the study in males, < 40 years of age and participants having 5-10 years duration of diabetes. Vitality was better in males as compared to females and also in non-hypertensive compared to hypertensive subjects. HRQoL was also more stable in males as compared to females. The conclusion arrived at was that QOL in patients with diabetes was significantly positively associated with physical, vitality, general health status and bodily pain, while the remaining domain were impacted negatively. The assessment of quality of life in patients with diabetes could help to improve patient's wellbeing.

Kumar, Koppad, and Chandrashekar, (2016), in a study seeking to measure the quality of life (QOL) of diabetic patients and to study the various

35

factors influencing the QOL of diabetic patients in a hospital based cross sectional study. They made use of the medical outcomes study short form version 2 (MOS SF36 v2) to measure the QOL of diabetic patients aged >20 years. The study considered 100 diabetics, including 55 males and 45 females. 91% of subjects were taking oral hypoglycemic agents (OHA) and 9% of them were taking both OHA and insulin. Treatment for diabetes, compliance with treatment, physical activity and follow up with doctor was found to be significantly associated with various domains of the SF-36 scale. From the findings it was concluded that, with respect to the eight domains, physical functioning (PF), vitality (VT) and overall social functioning, (SF)-36 scores were found to be statistically significant. They also found that in all the domains of the SF 36 scores were lower in females (55.0) than in males (58.47) and this difference was also found to be statistically significant. It was then inferred that based on the scores of the respondents, the HRQoL was above average in all the domains as reported.

Findings from literature suggests that HRQoL of the diabetic patients was average. All studies reviewed reported varied score for all the 8 domains of HRQoL instrument used. The SF-36 used pointed to above average health related quality of life in all the eight domains considered. Some of the reviews pointed out varied findings on the domains and include, diabetes has negative influence on the overall HRQoL and its domains of physical, psychological and social relationships and environment (Redekop, et al., 2002; AbdelGadir, et al., 2009). The difference in the findings could be due to the context under which the research was done, Ghana and the period during which the research was done.

36

Level of Compliance among Diabetic Patients

Diabetes care requires a multipronged approach, wherein the patient has an important role to play. Self-care of diabetes is essential for control of the disease and improvement of quality of patients' life among the patients (Willison, Williams, & Andrews, 2007).

Using a sample of 100 diabetic patients, Raithatha, Shankar, and Dinesh, (2014), conducted a study to explore self-care practices of diabetic patients residing in Anand district of Gujarat. Employing a cross-sectional study, self-care practices in seven domains of physical activity, dietary practices, medication taking, monitoring of glucose, problem solving, foot care, and psychosocial adjustment were assessed using scores assigned to participants' responses. Majority (92%) were Hindus and were consulting private medical practitioners. Medication taking was the domain with the best performance score (88.1%) and problem solving the worst (11.0%). The psychosocial adjustment of the participants was satisfactory (82.5%). Mean performance percentage score was 54.41%. Males had better performance scores as compared to females in the areas of physical activity, dietary practices, and problem solving. Housewives had poorer performance scores. Total mean performance score was similar for patients on treatment from specialists and general practitioners. The study's conclusion was that a self-care education program be designed for the various domains with a special emphasis on females.

In another study, Kushwaha, Kumari, and Kushwaha, (2017) using a descriptive community based cross-sectional approach assessed the self-care practices amongst diabetics and factors influencing self-care practice of

37

patients. It sampled 69 known diabetic patients in the urban setting in Pune using a questionnaire including a revised version of the summary of diabetes self-care activities score (SDSCA). The SDSCA measure is a brief self-report questionnaire of diabetes self-management. The participants were between 32 years and 83 years. The mean weight and BMI of the subjects was 63.02 kg and mean BMI 25.55 kg/m2. Among the co-morbidities, (62.3%) of the patients were hypertension, followed by (36.2%) having heart problems. Most of the people (65.2%) rarely got their blood sugar level tested because most of the subjects (58/69, 86.6%) were not given any advice by their health care staff on the mode and frequency of having their blood sugar checked, while 88.4 % people never had an ECG test and 29% diabetics did not engage in any form of exercise even once a day. The study found that despite good adherence to medicine, the diabetic patients were lagging behind in following other lifestyle modifications like diet, exercise, foot care and regular checking of blood glucose.

Another study by Selvaraj, et al., (2016), aimed at finding the proportion of diabetic patients following the recommended self-care practices in an urban area of Puducherry, the study made use of the SDSCA questionnaire for data collection. Self-care practices were evaluated in domains of diet, physical activity, foot-care, adherence to medications and blood glucose monitoring. All domains were scored from the range of 0 to 7. The results indicated that all the 162 diabetic patients that were interviewed had a mean (SD) age of 57 years. Among all domains, avoidance of selected food items was the highest (99.4%), followed by adherence to medication (95.6 %). Almost 78% of patients had their blood sugar checked at least once

in the last three months. Only half (50.6%) had followed at least 20 minutes of leisure time physical activity. Except washing of foot (83.3%) all other foot care practices were less common (35-57%). The study therefore, concluded that higher level of compliance to self-care practices in terms of taking drugs and diet, but self-care in other domains such as foot care was alarmingly low.

In another study Walker, Smalls, Hernandez-Tejada, Campbell and Egede, (2014), examined the effect of self-efficacy on glycemic control, self-care behaviors, and quality of life in low-income, minority adults with diabetes in a facility, the study sampled 378 participants. They employed a cross sectional study design and used the summary of diabetes self-care activities score (SDSCA) questionnaire as the tool of data collection within the study period. Data was analysed using a multiple linear regression to assess associations between self-efficacy, haemoglobin A1c, medication adherence, diabetes knowledge, self-care behaviors and quality of life. They found out that self-efficacy had modest correlations with glycemic control, medication adherence, diabetes knowledge, blood sugar testing, foot care, and mental health related quality of life. They then concluded that, higher self-efficacy was associated with improved glycemic control, medication adherence, self-care behaviour in the areas of foot care, and exercise and mental health related quality of life. Most of the diabetic patients were not on insulin injection.

On the aspects of compliance with diabetic self-care activities, literature support this variably with varied views of the different articles looked at. These were in the areas of foot care, medication taking and general physical activities to be taken by diabetic patients. Self-care practices in terms of taking drugs and diet were generally good, but self-care in other domains

such as foot care is alarmingly low (Selvaraj, et al., 2016). Further, the diabetic patients were lagging behind in following other lifestyle modifications like diet, exercise, foot care and regular checking of blood glucose (Kushwaha, et al., 2017).

Hypertensive Patient's Perception of Patient Centeredness Care and Physician Communication

Patient-centred care is one of the institute of medicine's objectives for improving health care in the 21st century. Patient interviews conducted by the Picker Institute/Commonwealth Fund in the 1980s resulted in a theoretical model and survey questions with dimensions and attributes patients defined as patient-centered (Rathert, Williams, McCaughey, & Ishqaidef, 2015).

In a research to assess the impact of patient-centered communication (PCC) behaviours on patients' evaluations of physicians and acceptance of clinical recommendations in a hospital setting, Saha, and Beach, (2011), used 248 patients to view video-recorded standardized vignettes, depicting a cardiologist using a high versus low degree of PCC while recommending bypass surgery to a patient with angina and 3-vessel coronary artery disease. This was compared with patients' ratings of the physician and their decision making in response to the physician's recommendation, for high versus low PCC vignettes. The study showed that patients viewing high PCC vignettes rated the video physician more favourably overall, more competent and trustworthy than those viewing the low PCC version. They concluded that patients expressed greater confidence in physicians who used more PCC behaviours, and greater willingness to accept an evidence-based recommendation (Saha, & Beach, 2011).

40

Another study by Rathert, et al., (2015), to empirically assess a conceptual model of patient-centred care using patient perception survey data in a health facility using 142 participants and employing regression as the tool for data analysis found significant support for the theoretical model of patient-centred care. Perceptions of emotional support had the strongest relationship with overall care ratings. Coordination of care, and physical comfort were strongly related as well. The study concluded that understanding how patients experience their care can help improve understanding of what patients believe is patient-centred, and of how care processes relate to important patient outcomes (Rathert, et al., 2015).

Anthony, Valinsky, Gabriel, and Varda (2012), in a study to examine the perceptions of hypertension treatment among patients with and without diabetes revealed that, patient denial and non-adherence to hypertension treatment is a prevalent phenomenon reflecting a conscious choice made by the patient, based on his knowledge and perceptions regarding the medical condition, involvement in terms of the decision taking and its treatment. This study involved 10 focus groups of patients with hypertension in three age ranges, with and without diabetes. They therefore, concluded that there is the need to change the perception of hypertension from a gamble to a disease process that can be managed. In their conclusion, was also the need to make the patient as part of the decision makers, since this has the tendency to enhance compliance and their perception about the physician communication. Finally, they espoused the need to change the message about hypertension from the existing one of "silent killer" to one that depicts hypertension as a manageable disease process which may have the potential to significantly

41

increase adherence rates and patient's perception of patient's centeredness of care (Anthony, et al, 2012).

Račić, et al. (2017), conducted a study on a sample of 8 family physicians and 240 patients with hypertension, to examine the impact of the physician-patient relationship on the treatment outcomes of arterial hypertension patients. The interaction between physician and patient was evaluated using the Bales Interaction Process analysis which is also a patient centred tool. During the period, blood pressure, patient compliance and patient satisfaction were monitored. With the use of appropriate statistical tool for data analysis, the study showed that physician-patient relationship significantly affects treatment outcomes in patients with arterial hypertension. It further notes that communication with patients can be improved by introducing interaction elements that are not exclusively related to the causes and characteristics of diseases, giving the relevant information and increasing intelligibility of this information during the encounter. The result obtained by Račić et al. (2017) in this study suggests that when the patient is involved in the interactive processes, there is a feeling of holistic care which has a greater tendency to impact patient perception positively about physician communication.

Birkhäuer, et al. (2017), in a meta-analysis study on trust in the health care professional and health outcome, using different articles published in relation to whether patients' trust in the health care professional is associated with health outcomes concluded that patients report more beneficial health behaviours, less symptoms and higher quality of life and more satisfied with treatment when they had higher trust in their healthcare provider and

42

experienced involvement in the care process by their health care professional. The study employed the used of various search domains, looking at different search terms to meet their purpose.

Literature review under this concept appears to point positively as regards the hypertensive patient perception of patient centeredness care and physician communication. Notwithstanding some few authors on patient-centeredness care support that discussion about patients' home lives and discussion about their blood pressure medication were strongly associated with patient positive view of the physician and medication taking. They pointed out that involvement of patients in the consultation process had a tendency of leading to a better patient perception of the physician and quality of life of the hypertensive. The less a provider addressed these topics, the less likely patients view about involvement which will also impact their medications taking as directed (Schoenthaler, et al 2009). Anthony, et al, (2012), also concluded that to change perception of hypertension patient and to encourage positive perception about the condition, there is the need to move from describing hypertension as a silent killer to a condition that can be effectively managed with early intervention which may have the potential to significantly impact patients' view of the condition.

Diabetic Patient's Perception of Patient Centeredness Care and Physician Communication

Golin, DiMatteo, and Gelberg (1996), conducted a study involving how patients' treatment of diabetes involves complex changes in basic behaviors and adherence to complicated regimens. This involved different sampled patients in a health centre. With an objective of investigating the need

43

for patient participation in medical decision-making and its effects on adherence to self-care for patients with diabetes. The researchers also sort to understand the factors that enable patients to adhere to diabetes treatment in the first step to designing effective interventions. They introduced a model of the determinants of adherence to diabetes self-care that incorporates the effects of patient participation in medical decision-making. Their study then concluded that distinguishing patient and physician behaviours that contribute to the process of patient participation would provide a means to develop specific behavioural interventions and increase diabetic patients' participation in medical decision-making. The study outcome was that involving patients in the treatment decision improves compliance to treatment (Golin, et al, 1996).

Heisler, et al. (2009), contributed to the debate when they examined whether physicians' diabetes-specific treatment participatory decision-making (PDM) preferences as well as their self-reported practices are associated with the quality of diabetes care patients receive from physicians. The study employed a cross-sectional survey and medical record review of a random sample of 4,198 diabetes patients in ten health plans and 1,217 physicians. The physicians' and diabetes patients treated with PDM preferences and practices were grouped as "no patient involvement," "physician-dominant," "shared," or "patient-dominant". After the analysis of data using multivariate, to examine their effects on, three diabetes care processes (annual hemoglobin A1c test; lipid test; and dilated retinal exam), patients 'satisfaction with physician communication; and whether patients' A1c, systolic blood pressure (SBP), and low-density lipoprotein cholesterol (LDL) were in control. The study found out that most physicians preferred "shared" PDM (58%) rather than "no

patient involvement" (9%), "physician-dominant" (28%) or "patient dominant" PDM (5%). However, most reported practicing "physician-dominant" PDM (43%) with most of their patients, rather than "no patient involvement" (13%), "shared" (37%) or "patient-dominant" PDM (7%). After adjusting for patient and physician-level characteristics and clustering by health plan, patients of physicians who preferred "shared" PDM were more likely to receive appropriate A1c tests than those providers who preferred 'no patient involvement in treatment decision-making. Heisler, et al. (2009), further concluded that patients whose physicians prefer a shared decision-making style are more likely than patients whose physicians prefer more physician-directed styles to receive some recommended risk factor screening tests, an important first step towards improved diabetes outcomes.

Involving patients equally in treatment decision-making alone, however, appears not to be sufficient to improve biomedical outcomes. It is against this background that Kruse, et al, (2013), conducted a study that focuses on communication during patient-provider encounters regarding diabetes self-management. The study employed a cross sectional design involving a total of 385 diabetic patients. Data collected from the respondents were analysed. The conclusion that emerged indicated that to support self-management of patients with diabetes, providers need to link clinical measurements to patients' symptoms and likely outcomes. It is difficult for providers to know what support or assistance their patients need without knowledge of patients' social contexts hence, the emphasis on physician communication involving the patient during physician-patient encounter. Even though acknowledging the importance of physician communication as

paramount in the care of diabetic patients, it is more imperative the patient involvement in the care is considered too. Improvement in diabetes outcomes must focus on both good communication and the direct enhancement of illness self-management behaviours which implies patient's involvement in the care process (Kruse, et al, 2013).

In order to improve doctor-patient communication, Osborne and Ulrich (2008) advised that when a doctor has his or her first initial interview with a new patient, the physician's use of questions can aid in the "free flow of information" from patient to doctor. Osborne and Ulrich (2008) suggest that at the beginning of a new patient interview, the physician could use open-ended questions such as, "Tell me more," or "Then what happened? As the interview progresses, the doctors can transition to close-ended questions. The objective of the close-ended questions is to paraphrase or summarize the client's concerns in such a way that they will recognize that physician empathically understand them. Fry and Mumford (2011), pointed out that questioning is not just summarizing, as a means of showing/checking understanding. The manner in which the patient speaks is also essential and a good doctor should be able to interpret the meanings and feelings behind the words (Fry & Mumford, 2011). Arnold (2003) emphasizes that how the patient non-verbally communicates is just as important as the actual words that are spoken by the patient. Arnold (2003) further describes how the clinical implications of tone, speech rate, pitch, volume, articulation and word choice convey meaning and to states that "controlled" anger is conveyed by a slow speech rate, slow pitch and frequent pausing. Thus, a patient's use of tone and speech rate should give a doctor an idea of what the patient is feeling.

The review show that a positive diabetic patient view of patient centeredness care and physician communication are essential to improving the quality of life of patients, but not all studies supported that position. The two schools of thought as shown in reviews above demonstrate that while some scholars like Heisler, et al. (2009), opine that the involvement of patient in care or treatment decision-making is relevant and crucial, others like Kruse, et al, (2013), also argue that it is vital for the physician to have deep knowledge of patients' social contexts before one can effectively and efficiently involve the patient in the treatment decision making process.

Mediating Relationship between Physician Communication, compliance and Health Related Quality of Life of Hypertensive Patients

Using a sample of 8 family physicians and 240 patients Račić, et al. (2017), in a study to analyze the impact of the physician-patient relationship on the outcomes of hypertension treatment showed that physician-patient relationship significantly affects treatment outcomes in patients with hypertension. The study concluded that an enhanced communication with patients can be improved by introducing interaction elements that are not exclusively related to the causes and characteristics of diseases, giving the relevant information and increasing intelligibility of this information and compliance during the encounter. Račić, et al. (2017) further noted that a positive patient clinician encounter also has the potential of mediating various relationships with the physician communication and other variables to impact health related quality of life of patients with hypertension.

Nalotova, Alesinskiy, Berezin, and Nalotov (2016), in a research to evaluate the compliance of patients with hypertension, retirement age and

recommended antihypertensive drug therapy, to develop methods to increase compliance in the outpatient treatment and medical supervision to ensure the effectiveness of treatment among patients, this study used 114 older persons with documented mild-to-moderate hypertension. Morisky medication adherence scales (MMAS)-4 was used as the instrument to take data. The result indicated that most enrolled hypertensive subjects were predominantly female (51.8%) and have exhibited mean age equal 67.3 years. Some of enrolled hypertensive subjects were smokers, and obese. Accordingly, Morisky medication adherence scales showed 51.8% of the entire group patients have exhibited medium adherence to antihypertensive treatment and 48.2% have demonstrated low adherence. After 8 weeks there was a significant improvement in adherence among the patients. There was also statistically significant increase of patient number with medium adherence to antihypertensive treatment and decrease of frequency of low adherence to remedy taking. The study concluded that the assistance of the older patients to measure BP and analyse the BP control state correlated well with patient outcome and might improve sufficiently the adherence of the persons to antihypertensive treatment strategy.

Employing a community based cross sectional study in urban and rural areas Aligarh et al (2017), assessed the level of compliance of hypertensive patients against their anti-hypertensive medications and to determine the socio-demographic correlates of compliance in a hospital setting. The research involved a sample size of 350 hypertensive patients. A pretested semi-structured questionnaire was used. Compliance was measured by Morisky 8-item medication adherence scale. Analysis was done using proportions and

48

chi-square test. The result of the study showed that the overall compliance of study population was 23.7%. It was found to be significantly associated with gender, education, social class and co-morbidities. Patient education, family counselling and social support networks need to be strengthened in health promotion programs as its relationship with different patient's outcome match favourably. These variables have the potential to enhance compliance of hypertensive patients with the therapeutic regimen and to improve their quality of life.

There appeared to be a positive relationship between physician-patient communication and the expected health outcome of hypertensive patients from the data gathered. Most of the scholars emphasise the need to improve patients' education as a way of improving compliance. The mediating role of these constructs, were established even though there was scanty literature. Patient education, family counselling and social support networks should be strengthened in health promotion programs as they proved to be appropriate mediators of health constructs. As a way of enhancing the role of compliance, hypertensive patients need to understand the therapeutic regimen as a way to improving their quality of life and establishing a positive relationship with physicians (Khwaja, Ansari, & Mehhnez, (2017).

Mediating Relationship between Physician Communication, Compliance and Health Related Quality of Life of Diabetic Patients

For the mediation role of compliance between physician communication and quality of life of diabetic patients there exist related works to this effort and review will look at available literature. Despite the various used of different search engines for this, other works have tried to identify

49

how either compliance mediates between physician communication and other constructs or how compliance mediates between other constructs and quality of life.

In their work, Lee, Noh, Kang and Hong (2017), sought to examine whether patient–physician communication (information and interpersonal treatment) affects patients' medication experience directly or indirectly through changing medication adherence for each of the two communication domains. In a cross-sectional design, this study sampled 300 respondents from seven community centers in the United States. Physician communication was assessed using two sub-scales of the primary care assessment survey. Medication adherence and experience were measured using the Morisky medication adherence scale and a five-point Likert scale, respectively. Baron and Kenny's (1986) approach was used to determine whether three linear regression models were fit with the Sobel (1982) test used to test for mediatory effects. In reporting their results, Lee et al., (2017) indicated that when tested directly, physician communication showed a direct relationship with both medication adherence and medication experience when assessed independently. Final Sobel test also revealed that medication adherence mediated the effect of patient–physician communication on patient medication experience.

Another research by Cheng, Tseng and Cheng (2013), has also empahsised on the mediation role of medication adherence on final health outcome. This study examined the relationship between Continuity of Care (COC) and medication adherence, as well as to investigate the mediating effect of medication adherence on the association between COC and final

50

health care outcome, in patients with newly diagnosed type 2 diabetes. In a longitudinal study spanning 2002 to 2008, respondents in Taiwan were assessed. The diagnosis criteria based on the American Diabetes Association Clinical Practice. Recommendations were used to sample respondents from National Health Insurance claims data set. Continuity of Care was focused on outpatient setting only. Medication adherence was measured by medication possession ration, while health outcome was measured by whether patients were hospitalized or had an Emergency Department visit. Possible co-variates were controlled in regression models with fit random intercepts models used to litigate the effect of time-irrelevant characteristics. Mediation analysis was conducted using the approach by Judd, and Kenny, (1981) and Baron and Kenny (1986) in which it was reported that COC both showed direct relationship with adherence and health outcome when tested independently. But then, the relationship between COC and health care outcomes was partly mediated by better medication adherence in patients with newly diagnosed type 2 diabetes.

Aikens, Bingham, and Piette, (2005), conducted a research with a sample of 752 patients with type 2 diabetes recruited from 3 different health systems. The study set out to determine whether diabetes self-care behaviours mediate the association between Patient-Provider communication (PPC) and diabetes outcomes. The conclusion from the study indicates that even though self-care and PPC are both important determinants of diabetes patients' health status, their effects are independent of each other. Thus, attempts to improve diabetes outcomes must focus on both good communication and the direct enhancement of illness self-management behaviours.

In a study, Epstein, et al. (2005), employing an observational study on "are patients' ratings of their physicians related to health outcomes", sampled 4,700 patients to complete a survey instrument that included reported health status changes during the previous year, perceptions of their physician and socio demographic and clinical co-variants. Using multi-level analyses, they explored differences among physicians in patient perceptions of their physicians and whether these differences were explained by the relationship between patient perceptions and reported health status changes. The study found that a relationship between patient perceptions of their physicians reports in health status were declining.

The studies reviewed, critically examined close health constructs which had a mediating role in health related quality of life of diabetic patients. The review employed varied statistical tools, but it is worth noting that the mediating role of most of the health related concepts are emphasised even though with different constructs. Self-care of individuals can vary greatly based on culture and geographical interplays depending on the mediation construct that is employed.

Conceptual Framework
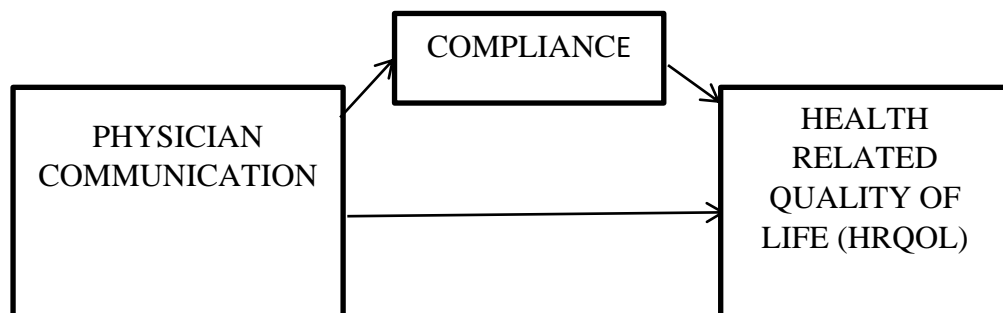
Figure 1: Mediation pathway
Source: Fieldwork, (2018)

52

Figure 1 illustrates the mediation pathway of the mediation relationship of compliance on the relationship between physician communication and health related quality of life of hypertensive patients and diabetic patients in the Tamale Teaching Hospital. It shows that there is a direct relationship between physician communication and health related quality of life of hypertensive patients and diabetic patients. Also, figure 1 points out that there is a direct relationship between physician communication and compliance and finally it shows the existence of a direct relationship between compliance and health related quality of life of hypertensive and diabetic patients.

Despite the direct relationship, figure 1 also further points to the existence of an indirect relationship between physician communication and health related quality of life of hypertensive patients and diabetic patients mediated by compliance.

Conceptual Review

The conceptual review for this study was looked under the following headings; hypertension, diabetes, physician communication, compliance, physician communication and compliance, health related quality of life, compliance and health related quality of life and physician communication and health related quality of life.

Hypertension

Hypertension is a term used to describe high blood pressure. Flow of blood is based on the rate at which the heart pumps blood (Chobanian, 2007). The pressure of the heart does not stay at the same level at all times. It varies based on activities at a particular point in time. Hypertension occurs as a result

53

of long duration of abnormal pressure of the main arteries (Cunha, & Marks, 2011). This literally means overflow of blood and it is the commonly known and used term for high blood pressure. Hypertension is grouped into two main categories, primary and secondary hypertension. Primary hypertension is also known as essential hypertension and it affects ninety-five percent of persons suffering from the condition (Maddigan, Majumdar, & Johnson, 2005). High blood pressure occurring as a result of a consequence of another disorder or a side effect of medication is referred to as secondary high blood pressure. Such disorders may include renal failure or neurovascular disease. This type of high +blood pressure is evident in about 5% to 10% of cases (Cunha, & Marks, 2011).

There are yet no known causes of hypertension, however, factors such as age, high salt intake, low potassium diet, sedentary lifestyle, stress as well as genes have been found as contributing to hypertension (Cingolani, Yang, Cavasin, & Carretero, 2003). Thus, hypertension is influenced by both, function and structure of blood vessels. As a consequence of elevated blood pressure, arterial elasticity is reduced and wall damage which leads to cholesterol and fat deposition on these lesions and eventually to obstruction of the vessels (Addo, Amoah & Koram, 2006). These are the basis of most of the target organ damages induced by hypertension. Another consequence can be an increase in vascular resistance which forces the pumping activity of the heart to maintain nutrients and oxygen distribution. This work overload for the heart may induce the development of cardiac hypertrophy, an increase in cardiac mass and thickness (Addo, et al., 2006).

Diabetes

Diabetes, often referred to as diabetes mellitus, describes a group of metabolic diseases in which the person has high blood glucose (blood sugar), either because insulin production is inadequate, or because the body's cells do not respond properly to insulin, or both (Mealey & Oates, 2006). Patients with high blood sugar will typically experience polyuria (frequent urination), they will become increasingly thirsty (polydipsia) and hungry (polyphagia).

Several pathogenetic processes are involved in the development of diabetes. These include destruction of the beta cells of the pancreas with consequent insulin deficiency and others that result in resistance to insulin action (Rubino, Moo, Rosen, Dakin, & Pomp, 2009). The abnormalities of carbohydrate, fat and protein metabolism are due to deficient action of insulin on target tissues resulting from insensitivity or lack of insulin. Complications due to diabetes are a major cause of disability, reduced quality of life, and death. Diabetes complications can affect various parts of the body manifesting in different ways for different people (Mealey & Oates, 2006).

The dominant types of diabetes are Type 1, Type 2 and Gestational Diabetes (Paterson, Rutledge, Cleary, Lachin, & Crow, 2007). With type 1 diabetes, the body does not produce insulin. The immune system attacks and destroys the cells in the pancreas that produce insulin (Paterson, et al., 2007). Type 1 diabetes is usually diagnosed in children and young adults, although it can appear at any age. People with type 1 diabetes need to take insulin every day to sustain life as well as its quality (Mealey & Oates, 2006). This shows in the inability of the body to metabolise carbohydrates resulting in absence of glucose for the body's activities. In the case of type 2 diabetes, the body does

55

not make use of insulin produced. Type 2 diabetes can develop at any age, even during childhood (Paterson et al., 2007). However, this type of diabetes occurs most often in middle-aged and older people. Type 2 is the most common type of diabetes (Paterson, et al 2007; Mealey & Oates, 2006). The last but not the least is gestational diabetes which develops in some women when they are pregnant. Most of the time, this type of diabetes goes away after the baby is born (Paterson, et al 2007). However, someone who had gestational diabetes, has a greater chance of developing type 2 diabetes later in life (Mealey & Oates, 2006).

Physician Communication

Ishikawa, Hashimoto and Kuichi (2013) established that, in explaining physician communication, there has not been an overall consensus on the operational definition. However, Street, Makoul, Arora and Epstein (2009) explained its core functions to incoporate the exchange of information, supporting patients' self-management, the management of uncertainty and emotions, decision making and enhancing the physician-patient relationship. Van Zanten, Boulet, McKinley, DeChamplain and Jobe (2007) and Brédart, Bouleuc and Dolbeault (2005) further expanded the phenomenon to include doctor's ability to gather information in order to facilitate accurate diagnosis, counsel appropriately, give therapeutic instructions, and establish caring relationships with patients.

Physician communication can be viewed in a continuum (Wilkins, 2014). The forms of communication may involve the physician centred (Biomedical or paternalistic) and the Bio-psychosocial (patient centred or partnership) (Wilkins, 2014). At one end of the continuum is the physician

56

centred (Biomedical or paternalistic) Style which is directed by the physician in the consultation process and involves two sub types; non-directive and directive forms of communication (Dyche & Swiderski, 2005). Nondirective communication, gathers additional information regarding symptoms and acts as a transition to directive comments and uses open-ended questions about specific symptoms to facilitate information gathering whilst directive communication, probes for specific medical information and uses close-ended questions (Dyche & Swiderski, 2005).

At the other end of the communication continuum is the Bio-psychosocial (patient centred or partnership). The Patient-centered approach is the type where physicians ascertain and incorporate patients' expectations, feelings, and illness beliefs (Platt et al., 2001). There is an associations between patient-centered communication and patient satisfaction, treatment adherence, medical outcomes, and decreased rates of malpractice claims (Cooper-Patrick, et al 1999). Clinician failure to elicit and discuss patient expectations in the medical visit predicts dissatisfaction with the visit and persistence of symptoms. However, evidence for the impact of patient-centered communication on medical outcomes is mixed (Krupat et al.,2000).

In promoting effective communication, Zolnierek and DiMatteo, (2009), advised using approaches that encouraged mutual understanding, uses adequate repetition and feedback that allay the patients' concern. Physician are therefore encouraged to carefully examine communication methods that fulfil five functions; ensures interaction, not just transmission, reduces unnecessary uncertainty, requires planning, thinking in terms of outcomes, demonstrates

dynamism and follows a helical rather than a linear model (Zolnierek & DiMatteo, 2009).

Content of this physician communication could include promotive activities like, child and family nutrition, breastfeeding, smoke cessation and reduction of salt intake among others. Preventive activities like, screening for diseases (hypertension and diabetes), discussing alcohol use and safe drinking, and encouraging a healthy lifestyle (healthy eating and exercise) and curative activities like, chemotherapy, radiation therapy and surgery.

Compliance

Compliance refers to the degree or extent of conformity to the recommendations about day-to-day treatment by the provider with respect to the timing, dosage, and frequency (Cramer, et al., 2008). Adherence is often used interchangeably with compliance and is also defined as the ability and willingness to abide by a prescribed therapeutic regimen (Inkster, & Frier, 2013). Recently concordance is also suggested to be used, where the term concordance makes the patient part of the decision-makers in the process and denotes patients- prescriber's agreement and harmony (Vermeire, Hearnshaw, Van Royen, & Denekens, 2001).

According to Bourbeau, and Bartlett, (2008) and Catz, Kelly, Bogart, Benotsch, and McAuliffe, (2000), compliance holds a greater part of the success to physician communication. There are varying degrees of compliance, partial compliance, where patients take some medication from time to time but not consistently as prescribed is the most common. Complete/full compliance where patient follow their physician direction as regards their condition. Non-compliance can be grouped into intentional and

unintentional non-compliance. Intentional non-compliance is a situation where the patient makes a deliberate decision not to take the medicine according to the prescription. The patient usually finds the disadvantages of medicating greater than the advantages. This could be due to poor understanding of the illness or the experience of side-effects. On the other hand, unintentional non-compliance refers to an inability to follow the prescription, for example due to cognitive deficits, unclear instructions, cost of medication or difficulty in collecting the medicine at the pharmacy (Bourbeau, & Bartlett, 2008).

Physician Communication and Compliance

Osterberg and Blaschke (2005) noted that communication in medical care is highly correlated with better patient compliance, and training physicians to communicate better enhances their patients' adherence. Communication is thus an important factor over which physicians have some control in helping their patients to adhere.

Provider-patient relationship has been established as one of the factors that affect compliance (Sabate, 2003). Patient compliance and physician-patient communication has been observed extensively in theoretical and review literatures which argue that physician-patient communication can enhance compliance through various mechanisms like communication that contributes to patients' understanding of the illness and the risks and benefits of treatment, support, empathy, and understanding, collaborative partnerships, and patient-centered interviewing which all require effective communication to enhance compliance (DiMatteo, 2004).

Health Related Quality of Life

Quality of life is a broad multi-dimensional concept that usually includes subjective evaluations of both positive and negative aspects of life (WHOQOL Group 1998). In health care, HRQoL is an assessment of how the individual's well-being may be affected over time by a disease, disability, or disorder. (Ferrans, et al., 2005). Health related quality of life is a concept within the quality of life domains which emphasis on the holistic nature of the care given to patient (Azevedo et al., 2013). Health associated with quality of life has been widely used to assess efficacy and cost-effectiveness results of new treatment strategies and advances in medical sciences (Testa & Simonson 1996, Azevedo et al., 2013).

Lee, Song, Noh, Choi, and Jo, (2012) argue that with improvement in socioeconomic conditions and quality of medical care, patients around the world are becoming more concerned about the impact of disease on their daily life and social interactions. It is particularly important for chronic diseases like diabetes and hypertension, which impact is not only judged by its mortality but also by its social impact and disability. Unfortunately, physicians are often being too concerned about the disease and treatment tend to overlook patients' perception about their illness and their threshold for tolerance of discomfort (Fletcher et al., 1995).

Health related quality of life (HRQoL) is gaining worldwide acceptance as patient centric approach of any healthcare intervention. HRQoL could be defined as physical, psychological and social dimensions of health that are influenced by a person's experiences, beliefs, expectations and perceptions (Testa & Simonson, 1996). The idea of HRQL measurement is to

60

convert the subjective feeling of physical and mental health of an individual into an objective numerical score by using properly structured questionnaires. Physical function, emotional status, pain, social function and general perception about health are some of the important components of HRQL measurements (Testa & Simonson, 1996).

Testa and Simonson (1996), argue that patients are the best evaluators for estimating their own HRQoL. Perspective of close family members such as a spouse/parents may be considered in some cases. The growing importance of HRQoL estimation is recognized by clinicians, healthcare policymakers, drug regulatory agencies and pharmaceutical companies all over the world in choosing optimum treatment choice for patients, policy framing, new drug approval and deciding pharmaceutical marketing policies. Physicians are increasingly using HRQOoL to measure the effects of chronic illness in their patients to understand how an illness interferes with a person's day-to-day life (Testa & Simonson, 1996).

HRQoL is influenced by a person's expectations, beliefs, perceptions and experiences. Working alliance between physician and patient, characterized by agreement communication on goals and tasks of treatment, along with trust and patient liking of his/her doctor, predicts patient adherence, satisfaction, compliance, and health related quality of life (Bennett, Fuertes, Keitel, and Phillips, 2011).

Compliance and Health Related Quality of Life

Leonetti, Comerio, and Cuspidi (1994) and Alhaddad, Hamoui, Hammouded and Mallat, (2016), pointed out that medication compliance and health-related quality of life (HRQoL) are two different outcome measures,

but it is believed that compliance to medication leads to an improvement in overall HRQoL. Hypertension and diabetes are chronic diseases that require lifelong treatment. The success of therapy is thereby affected by the impact of the drug regime on the patient's well-being (Bonomi, Patrick, Bushnell & Martin, 2000).

In the work of Holt, Muntner, Cara, Webber, and Krousel-Wood, (2010), low HRQoL may be an important barrier to achieving high medication adherence. To improve health outcome like HRQoL in patients, early detection of patients with poor compliance to medication and lifestyle modification and motivational education programs to improve compliance are important task for all health workers (Pedersen, Martens, Denollet, & Appels, 2007). Following physical activity guidelines may be associated with better concomitant HRQoL and following dietary guidelines with better future physical HRQoL. Finally, following physician instructions has the potential of enhancing patient understanding, impacting on quality of care and ensures patient of better physician communication (Germain, et al, 2013).

Physician Communication and Health Related Quality of Life

Clinician–patient communication can predict health outcomes weeks and months after the consultation, even though the mechanisms accounting for these findings are poorly understood (Street Jr, et al 2009; Stewart, 1995**).** It is against this background that Street Jr, et al (2009) noted that talk itself can be therapeutic as it has the ability to, lessening the patient's anxiety and providing comfort. More often clinician–patient communication influences health outcomes via a more indirect route, but proximal outcomes of the interaction include patient understanding, trust, and clinician–patient agreement. These

affect intermediate outcomes like, increased compliance and better self-care skills which, in turn, affect health and well-being of the patient (Street Jr, et al, 2009). There are seven pathways through which communication can lead to better health; increased access to care, greater patient knowledge and shared understanding, higher quality medical decisions, enhanced therapeutic alliances, increased social support, patient agency and empowerment, and better management of emotions (Street Jr, et al., 2009).

The quality of communication between physician and patient both in the history-taking segment of the visit and during discussion of the management plan has being found to influence patient health outcomes greatly (Stewart, 1995). The outcomes that are affected most in the physician-patient encounter may include, emotional health, symptom resolution, function, physiologic measures, like blood pressure and blood sugar level and pain control (Stewart, 1995).

Even though effective physician-patient communication has the potential to improved patient health outcomes before, during, and after an encounter, this communication must be individualised and customised to yield the desired outcome for the individual patient.

Chapter Summary

This section presented the thematic areas of the study, in line with the literature review. Literature reviewed was looked at in line with compliance with physician communication and health related quality of life of hypertensive patients and diabetes patients. The relationship between compliance, physician communication and its link on HRQoL, was explored. This section also reviewed literature on some empirical studies which showed

that there were relationships between physician communication and health related quality of life with hypertensive patients and diabetic patients even though there were variations in the figures involved. There were relationships between physician communication and medication taking, checking of blood glucose level, exercise, recommended diet and feet care.

There were studies that confirmed the relationship between physician communication and recommended activities, but from different perspectives. There was also an empirical review of studies on the mediating role of compliance with physician communication and HRQoL of patients with either hypertension or diabetes, this was followed by conceptual framework and conceptual review.

CHAPTER THREE

RESEARCH METHODS

Introduction

This section focused on how the study was conducted. Here, the research design, study area, the population are presented. Further, the data collection instruments, data collection procedure, data processing and analysis and pilot study together with chapter summary are presented.

Research Design

The research design refers to the overall strategy that is chosen to integrate the different components of the study in a coherent and logical way, thereby, ensuring the research problem was effectively addressed in the study. It constituted the blueprint for the collection, measurement, and analysis of data (McNiff, 2016).

This is a survey research that employed a cross-sectional survey design. Cross-sectional surveys are a very traditional way of conducting research. This involved carrying out the survey at one point in time. Cross-sectional survey provides a snapshot of what is happening in a group at that particular time. They are particularly useful for non-experimental descriptive designs that seek to describe reality. For instance, a cross-sectional survey approach may be used to establish the prevalence or incidence of a particular condition. Likewise, the cross-sectional survey approach is frequently used to collect information on attitudes and behaviour (Fox, Hunn, & Mathers, 2007). These notwithstanding cross-sectional survey is not the best design for studies which seek to achieve the following; analyze behavior over a period to time,

determine cause and effect and seek to have a guaranteed representative of sample (McNiff, 2016).

Study Area

The study was conducted at the Tamale Teaching Hospital (TTH). It is the only Teaching hospital in northern Ghana located in Tamale, the Northern regional capital. It serves as the principal referral hospital for the Northern, Upper East and Upper West regions (Ministry of Health, 2016). It is the third teaching hospital in Ghana after the Korle Bu Teaching Hospital and the Komfo Anokye Teaching Hospital. The TTH was established in 1974 and was formerly known as the Tamale Regional Hospital and converted to a Teaching hospital status in 2008 (Ministry of Health, 2016). It was mandated to provide various health care services to the people of the three regions of the North of Ghana namely, the Northern, Upper East and Upper West regions. The mandate of the hospital is set by Act 525 of the Ghana Health Service and Teaching Hospitals Act of 1996. This mandate empowers the hospital to function within three critical areas namely, the provision of advanced clinical health services, supporting the training of undergraduates and postgraduates in medical sciences and finally, undertaking research into health issues for the purpose of improving health care (Ministry of Health, 2016).

As the only tertiary institution in the northern part of Ghana, Tamale Teaching Hospital, owned by the State has the highest patients' attendance in the region. Medical, surgical, obstetric, laboratory, radiology, mental health, psychotherapy and physiotherapy services among others are offered in the different departments of the hospital. Hypertension and diabetes clinics are run twice in a week (wednesdays and thursdays for Hypertensive clinic and

66

tuesdays and fridays for diabetic clinic) for patients by medical doctors and other specialists in the department of internal medicine from 7:30am to 6:00pm each consulting day.

According to GSS, (2012) report, the population of Tamale Metropolis, according to the 2010 population and housing census, was 233,252 representing 9.4 percent of the region's population of 2.5 million which constitutes 10.1% of the national population. Males constitute 49.7 percent and females represent 50.3 percent. Within the population 60.1 percent are people who are 11 years and above are literates and 39.9 percent are non-literates. The proportion of literate males (69.2%) is higher than that of females (30.80%). About 63.3 percent of the population aged 15 years and older in the metropolis are economically active and 36.7 percent are economically not active. Employed population in the Tamale Metropolis, was found to be (33.0%) engaged as service and sales workers, craft and related trade. Workers constitute 21.5 percent of the employed population, skilled agricultural, forestry and fishery workers represent 17.6 percent of the employed population and those employed as professionals constitute only 8.1 percent.

Higher proportions of females (70.5%) are self- employed compared to 51.3 percent for males. The proportion of females who are employees (11.3%) is however smaller than that of male employees (28.2%). The private informal sector is the largest employer in the metropolis, employing 83.2 percent of the population. The public sector is the next highest employer, engaging 11.3 percent of the employed population. Only small proportions (26.1%) of households in the metropolis are engaged in agriculture (GSS, 2012).

Population

According to Millstein (2006), a research population is also known as a well-defined collection of individuals or objects known to have similar characteristics. All individuals or objects within a certain population usually have a common, binding characteristic or trait.

In view of this, the population for the study were people who are diagnosed hypertension or diabetes and seeking health care in specialist clinics at Tamale teaching Hospital. The total population for the hypertension and diabetes conditions were 3,177 patients (TTH Records, 2018). This number comprised 2256 hypertensive patients representing 71% and 921 diabetic patients representing 29%. The accessible population for the study was 315 registered patients who were seen on a monthly basis. This was made of 240 hypertensive patients and 75 diabetic patients respectively.

Sample and Sampling Procedure

Sampling is a process or technique of choosing a sub-group from a population to participate in the study. It is the process of selecting a number of individuals for a study in such a way that the individuals selected to represent the large group from which they were selected (Ogula, 2005). Purposive, quota and convenient sampling procedures were adopted for the study.

The purposive sampling is a non-probability sampling technique used in selecting participants for a study (Ogula, 2005). Purposeful sampling procedure was adopted, to avoid infiltration of patients with other conditions and severe complications into the sample. Ascertaining the type of conditions (hypertension and diabetes) required an examination of their folders with the help of the Nurses and Doctors. In addition, purposeful sampling was needed

68

to identify patients who met the inclusion criteria before they are selected to respond to the questionnaires.

Quota sampling is a non-probability sampling technique wherein the assembled sample has the same proportions of individuals as the entire population with respect to known characteristics, traits or focused phenomenon (Davies, & Hughes, 2014). Also quota sampling is a sampling method of gathering representative data from a group (Fox, Hunn, & Mathers, 2007). It is required that representative individuals are chosen of a specific subgroup, in this case hypertensive and diabetic patients. The sample size of each group is a quota of the accessible population. This means that each group has the same sampling fraction as in the population.

Finally Convenience sampling was used to select respondents to the questionnaire of the study. Convenient sampling is a type of nonprobability or non-random sampling where members of the target population that meet certain practical criteria, such as easy accessibility, geographical proximity, availability at a given time, or the willingness to participate are included in a study (Dörnyei, 2007).

Table 1-Summary of Sampling Methods

Stage	Sampling methods	Purpose
1	Purposive	Purposive sampling is viable sampling technique in obtaining information from a very specific group of people (hypertensive and diabetic patients).
2	Quota	To also ensure that each condition has a sampling fraction as it's representation in the accessible population.
3	Convenient	Used to select respondents for the study instrument. This was used for the purpose of accessibility, geographical proximity, and availability at the time of data collection and willingness to participate in the study.

Source: Fieldwork, (2018)

Table 2-Sample Size Determination

Patients	Target Population	Accessible Population	Sample
Hypertensive	2256	240	148
Diabetic	921	75	63
Total	**3177**	**315**	**211**

Source: Fieldwork, (2018)

Registered patients' list is kept at the hypertensive and diabetic clinics. On the day of the clinic patients get their folders from the records section. The list was then used to identify patients who met the inclusion criteria during the visit to the clinic. Patients whose folders met the inclusion criteria were

70

marked. A sample size of 211 was selected using a standardised formulation table (Krejcie & Morgan, 1970). This consisted of 148 hypertensive patients and 63 diabetic patients as the quotas of the conditions in the study based on their representation in the accessible population as shown in table 2.

Inclusion Criteria

The inclusion criteria consisted of respondents, who were 18 years old and above and diagnosed with hypertension or diabetes and accessing health care from the Tamale Teaching Hospital. Such patients should have been diagnosed for the past one month and currently receiving medication.

Exclusion Criteria

Non-hypertensive or non-diabetic patients who access health care from Tamale teaching hospital were excluded from the study. Patients with hypertension or diabetes diagnosed less than a month were also excluded from the sample. Patients with both hypertension and diabetes as well as complications were also excluded from the sample.

Data Collection Instruments

According to Bush (2007), instruments are the tools for data collection. They include questionnaire, interview, observation and reading. Essentially the researcher must ensure that the instrument chosen is valid and reliable. The validity and reliability of any research project depends to a large extent on the appropriateness of the instruments. The main instrument for this study was a questionnaire and later used as a structured interview guide for those who could not speak and understand English.

A questionnaire is a data collection instrument consisting of a series of questions and other prompts for the purpose of gathering information from

71

respondents (Karim, 2013; Huang, Ng, Cheung, Ng, & Ching, 2001; Mays, & Pope 2000). According to Carter, and Williamson, (1996), Gilbert, (2008) and Kwiatkowski, (2000) a questionnaire has various uses ranging from being standardised to collecting a large volume of data within a shorter period of time.

Structured interview guide is a standardised way of interviewing respondents based on some specific needs. Respondents are asked the same questions in the same order (Mays, & Pope 2000). The structured interview guide ensured respondents had equal opportunities to provide information and was assessed accurately and consistently. Structured interview guide has questions that are fixed and asked in a specific order. With the use of a structured interview guide all respondents are asked the same questions in the same order and evaluated using a common rating scale.

The components of the questionnaire consisted of the demographics data, and adopted instruments such as medical outcome survey-short form (SF-36), patient perception of patient's centeredness care (PPPC), Hill-Bone high blood pressure therapy scale and the summary of diabetes self-care activities measure (SDSCA).

Section I: Demographic data

A structured questionnaire which was developed by the researcher and composed of socio-demographic characteristics of the participants consisted of (10 items) including age, sex, ethnicity, religion, marital status, occupation, educational level, income, residence, and family number

Section II: Medical Outcome Study Short Form -SF-36 (Ware & Sherbourne, 1992)

Health related quality of life was measured with the medical outcomes study (MOS) short-form, SF-36 developed by (Ware & Sherborne, 1992). It consists of 36-items in total, which are categorized into eight domains. The Physical functioning (health functional capacity) component has 10 items a scale rating between 1-3, with 3 being the highest functioning of health status and 1 as the lowest functioning. The next domain is role limitations due to physical health (physical aspects), which has 4 items, with 1 as the lower functioning status and 2 as the highest functioning status on the scale. Pain as a domain has 2 items and measured with five and six-point scale with highest point indicating higher functioning health status. General health (overall health status) has 6 items, measured with five-point scale, with 5 as the highest functioning status and 1 as the lowest functioning status. Two domains, Energy/ fatigue (vitality) and role limitations due to emotional problems (emotional aspects) with 4 and 3 items each, were measured with six-point scale with 6 as the highest functioning and 1 as the lowest functioning status. Social functioning (social aspects) with 2 items was measured with a five-point scale. Finally, the emotional wellbeing with 5 items measured with a scale of 1-6, with 1 as the lowest health functioning and 6 as the highest health functioning.

All responses are scored on a scale from 0 to 100, with 100 representing the highest level of functioning possible and 50 as the average score for all the domains measured. Aggregate scores are compiled as a percentage of the total points possible. The scores from those questions that

73

address each specific area of functional health status are then averaged together, for a final score within each of the 8 dimensions measured. (eg pain, physical functioning etc.).

The scale has a reliability of .80. Data was collected using SF-36 questionnaire due to the fact that it provides multivariate dimensions of examining the HRQoL (cf: Bhandari, et. al., 2016; Katsi, et al., 2017; Kaliyaperumal, et. al., 2016).

Section III: Patient perception of patient's centeredness (PPPC) - Stewart, Brown, Donner, McWhinney, Oates, Weston, & Jordan, (2000)

This was developed by Stewart, et al., (2000) in London, Ontario, Canada. This was to find out how Patient-centered communication influences patients' health through perceptions that their visit was patient-centered, and especially through perceptions that common ground was achieved with the physician. Patient-centered practice improved health status and increased the efficiency of care by reducing diagnostic tests and referrals.

To measure physician communication and patient perception of patient's centeredness, PPPC was used. The PPPC is a self-report questionnaire that asks patients to evaluate their perceptions of patient Centeredness. The PPPC consists of 14-items in total, 13 of which are categorized into two sub-scales. The described subscales within the PPPC do not have any given names. Subscale 1 consisted of Items 1-4 which related to how patient illness experiences have been explored. Subscale 2 consisted of items 5-13 related to how well clinicians and patients were able to find common ground. The final item of the PPPC, item 14, related to patient

perceptions of how the clinician attempted to understand the patient as a whole person. Scores for all sub-scales are totalled during analysis.

For the purposes of this study and based on the aforementioned subscale categorizations as proposed, Subscale 1 was referred as communication and Subscale 2 was referred as partnership. Patients were asked to rate their responses to PPPC items on a four-point ordinal scale with response options varying from: "completely", "mostly", "a little", or "not at all." These options reflect the degree of patient-centeredness that have been experienced and was assigned numerical codes for the purposes of analysis. Ratings with lower numerical values (1-2) were coded as negative patient perception, and positive perceptions of patient-centeredness were coded with higher numerical values (3-4). The PPPC has been proven to be a reliable and valid measurement tool for the evaluation of patient perceptions of their care with a Cronbach alpha of 0.86 (Stewart, et al., 2000). The PPPC has been shown to detect differences in patient-centeredness of care in populations with one or more recurring health issues, such as hypertension and diabetes, and in those seeking care from family physicians (Golin, DiMatteo, & Gelberg 1996; Heisler, et al., 2009; Fry & Mumford, 2011 & Arnold 2003).

The scale was from 1 to 4, with score lower than <or = 2 indicated negative patient perception of patient centeredness care and physician communication. Score >2 indicated positive patient perception of patient centeredness care and physician communication.

Section IV: Hill-Bone Compliance to High Blood Pressure Therapy Scale. (Hill-Bone, 2000)

Hill-Bone compliance to high blood pressure therapy scale was developed by (Kim, Hill Bone, & Levine, 2000). This tool was later used by Lambert, et al., (2006) to assess the compliance of hypertensive patients in South Africa. This scale assesses patient behaviors for three important behavioral domains of high blood pressure treatment; reduced sodium intake, appointment keeping and medication taking. This scale comprised 14 items with four-point response format. The scoring for the responses were, all the time 4, most of time 3, sometimes-2 and never 1. The tool demonstrated criterion validity of standardized Cronbach alpha of 0.74–0.84. (Lambert, 2006). Since the introduction of this tool, different scholars have made use of it as their main data collection instrument (Bhusal, Jadhav, & Deshmukh, 2016; Nashilongo, et al., 2017). All the values were expressed in percentage. High compliance scale scores are significantly associated with blood pressure control. With higher values indicating better compliance, lower values poor compliance levels and an average compliance of 50%.

Section V: The Summary of Diabetes Self-Care Activities Measure (Toobert, Hampson, & Glasgow, 2000)

The diabetes self-care activities questionnaire measures treatment adherence among patients with diabetes, developed by (Toobert, Hampson, & Glasgow, 2000) in the United Kingdom (UK). It consistes of 38 items and the categories of the questionnaire are on; diet, exercise, blood test, blood glucose test, foot care, and recommendations for self-care. The questionnaire's reliability was satisfactory with Cronbach's alpha of 0.83 (Toobert, Hampson,

& Glasgow, 2000; Intas et. al., 2012). The scale of measurement is the number of days of the week the patient is able to follow up with medication taking or recommendation. In the works of the many scholars this tool is effective as a data gathering instrument (Kushwaha, Kumari, & Kushwaha, 2017; Selvaraj, et al. 2016; Walker, et al., 2014).

The scale of measurement were per the number of days in the week ranging from 0 to 7 days, with zero indicating non-performance or no compliance of the activities and 7 as a mark of full compliance with 3.5 days as the average compliance of the schedule activities.

Data Collection Procedures

Data collection is the process of gathering and measuring information on targeted variables in an established systematic fashion, which then enables one to answer relevant questions and evaluate outcomes (Rossi, Lipsey, & Freeman, 2003).

After receiving approval to conduct the research, the ethical clearance letter was sent to the hypertensive and diabetic clinics to inform them about the data collection. Dates were fixed for data collection. Five research assistants who are holders of a Diploma in a health related disciplines, as well as been familiar with the customs and local languages of the area were recruited for data collection. They were given two days training on research ethics, proper handling and distribution of questionnaires, orientation to the operations of the clinics and clinic days prior to the field work.

This was to ensure that the research assistants were fully abreast with the data collection instruments as well as collection procedure, handling of data and other ethical considerations. The research assistants were tasked to

77

explain the questionnaires to participants in participants own languages and /or dialects to ensure data accuracy, quality and validity. The principal investigated and pre-trained research assistants collected the data by first providing privacy and obtaining consent. The objective of the research was explained to the participants before administration of the questionnaires to them.

Data was collected on an out-patient department (OPD) basis. On the actual day of data collection, the researcher and the assistants were introduced to the patients by the Nurse in-charge for the morning shift, as they were waiting for their blood pressure and blood glucose levels to be checked. After checking of blood pressure and blood glucose, patients who were identified, as qualified, prior to their visit were contacted and their consent sought and also assured of the confidentiality of the data that was to be collected. After the patient had given consent, the questionnaires were administered. Some patients who were not able to read and understand the questionnaires, had the questionnaires used as a structured interview guide to collect data. Patients who responded to the questionnaires had their folders marked twice, to avoid administering the questionnaires to them again.

Data collection lasted from the 09/04/2018 to 19/ 05/2018. Participants' safety was ensured by making sure that the data collection processes followed their daily routines when they visited the hospital specialist clinics.

Data Processing and Analysis

Analysis is the process of breaking a whole into its separate components for individual examination. Data analysis is a process for

obtaining raw data and converting it into information useful for decision-making by users. Data is collected and analysed to answer questions, test hypotheses or disprove theories (Miles & Huberman, 1994).

Data was analysed using the statistical package for social sciences (SPSS) version 20.01. Descriptive statistics approaches such as measures of central tendency and measures of dispersion namely mean and standard deviation (SD) were employed to analyse research questions 1, 2 3, 4, 5 and 6. Regression was used to analyse hypotheses 1 and 2 employing for the mediation analysis. A p-value of 0.05 or 0.01 or less was considered statistically significant.

Ethical Consideration

Ethical clearance for research and research integrity embodies a range of good research practice and conduct which can include intellectual honesty, accuracy, fairness, intellectual property, and protection of human and animal subjects involved in the conduct of research (Shamoo & Resnik 2009).

To be in line with international best practice, ethical clearance letters were obtained from the Faculty of Educational Foundations Ethical Review Board (ERB), University of Cape Coast, Research units of Tamale Teaching Hospital and Northern Regional Health Directorate. Prior to this, an introductory letter from the Department of Education and Psychology for permission to conduct the study was taken by the researcher to facilitate these processes. Participants were informed that the research was for academic purposes and participation was voluntary. They could choose to partake or withdraw from the study at any time with no restriction. Participants' safety was ensured by making sure that the data collection processes followed their

daily routines when they visited the hospital specialist clinics. These processes were to ensure that information obtained was maintained confidentially. Anonymity of respondents was also ensured through the handling of data collected.

Pilot Study

A pilot study or pilot experiment is a small scale preliminary study conducted in order to evaluate feasibility, time, cost, adverse events, and improve upon the study design prior to performance of a full-scale research project (Eldridge, et al., 2016).

The piloting of the instrument to validate it for the actual study was done with forty (40) volunteers in Tamale Central Hospital. Hill (1998) suggested 10 to 30 participants as appropriate samples for a pilot testing in cross-sectional survey research. The researcher used forty (40) participants to make the sample more representative and to enhance the validity and reliability of the instrument. The quota for the conditions were 28 hypertensive patients and 12 diabetic patients from the pilot site clinic based on their representation on the actually study population.

Preceding the pilot study, an introductory letter was sent to the Tamale Central Hospital through the Regional Health Directorate and permission obtained for the piloting. Within 27/2/18 to 02/03/18 data collection was done with the administration of the questionnaire with the aid of two research assistants.

The reliability scores for the various instruments used during the piloting were; medical outcome survey short form (SF-36) .76, patient perception of patient centeredness care (PPPC) .78, Hill Born high blood

pressure compliance scale .80 and summary of diabetes self-care activities measure (SDSCA) .88.

After the piloting and based on comments from participants of the pilot study, some typographical errors were effected. Those typographical errors comprised typographical errors in some of the questions for clarity and easy comprehension, example, "In general how will you say health is", instead of "In general, would you say your health is", "To which extent was your main problem talked" instead of "To what extent was your main problem(s) discussed today?", "How often have you been taking salt" instead of "How often do you decide not to take your HBP medicine?", "How many day in a week have you decided to test sugar" instead of "On how many of the last seven days did you test your blood sugar?", and arrangement of the instrument.

Chapter Summary

Cross-sectional survey design was adopted for the study involving patients with hypertension or diabetes in Tamale Teaching Hospital. Pilot study of the research instruments was done at Tamale Central Hospital and some modifications made to ensure the instrument appropriateness for the actual data collection process. Using purposive, quota and convenient sampling procedures, data collection was done at the hypertensive and diabetic clinics of the Tamale Teaching Hospital. Questionnaires were collected and analysed.

CHAPTER FOUR

RESULTS AND DISCUSSION

Introduction

The aim of the study was to investigate how compliance mediates the relationship between physician communication and health related quality of life of hypertensive patients and diabetic patients in the Tamale Teaching Hospital. This chapter further discussed the results obtained from the study under the following headings;

1. What is the level of compliance of hypertensive patients with physician communication?

2. What is the level of health related quality of life of hypertensive patients?

3. What is the level of health related quality of life of diabetic patients?

4. What is the level of compliance of diabetic patients with physician communication?

5. What is the hypertensive patient's perception of patient centeredness care and physician communication?

6. What is the diabetes patient's perception of patient centeredness care and physician communication?

The chapter also reports on the two hypotheses that were tested;

1. Compliance significantly mediates the relationship between physician communication and health related quality of life of hypertensive patients.

2. Compliance significantly mediates the relationship between physician communication and health related quality of life of diabetic patients.

Research questions

Descriptive statistics were used to analysis research questions 1-6 of the study. Descriptive statistics are used to describe the basic features of the data in a study. They provide simple summaries about the sample and the measures. Together with simple graphics analysis, they form the basis of virtually every quantitative analysis

Research question 1: What is the level of compliance of hypertensive patients with physician communication?

The third research question of the study was to determine the level of compliance of hypertensive patients with physician communication. All the values are expressed in percentages. With higher values indicating better compliance, lower values poor compliance levels and an average compliance of 50%. Generally, responses none of the time (72.50%) or some of the time (61.70%) took up decisions that were in favour of their physician communication (see Table 3). That is, on the average, hypertensive patients do comply with what their physicians have communicated to them. That is, though some hypertensive patients at times decide to go contrally to the items in the Hill-Bone high blood pressure therapy scale, these were done in compliance with physicians' advice. Table 3 is a representation of the responses from the patients.

83

Table 3-Level of Compliance of Hypertensive Patients with Physician Communication

Level of noncompliance of hypertensive patients with physician communication	None of the time (%)	Some of the time (%)	Most of the time (%)	All the time (%)
How often do you forget to take your high blood pressure (HBP) medicine?	72.50	24.80	2.00	0.70
How often do you decide not to take your HBP medicine?	57.00	35.60	7.40	0.00
How often do you eat salty food?	28.20	56.40	13.40	2.00
How often do you shake salt, fondor, or aromat on your food before you eat it?	37.60	49.00	13.40	0.00
How often do you eat fast food? (Indomine and other fatty foods or KFC, fat cook, fish and chips)	34.90	52.30	10.70	2.00
How often do you get the next appointment before you leave the clinic?	34.90	16.10	14.10	34.90
How often do you miss scheduled appointments?	34.90	53.70	8.70	2.70
How often do you leave the dispensary without obtaining your prescribed pills? (due to long line, closure of the clinic, forgot)	19.50	58.40	20.80	1.30
How often do you run out of HBP pills?	27.50	61.70	10.70	0.00
How often do you skip your HBP medicine 1–3 days before you go to the clinic?	25.50	61.70	12.10	0.70
How often do you miss taking your HBP pills when you feel better?	45.00	50.30	4.00	0.70
How often do you miss taking your HBP pills when you feel sick?	49.70	43.00	5.40	2.00
How often do you take someone else's HBP pills?	69.80	21.50	8.10	0.70
How often do you miss taking your HBP pills when you care less?	44.30	51.00	4.00	0.70
Total	41.52	45.39	9.63	3.46

N= 148

Source: Fieldwork, (2018)

Going into the specifics as depicted on Table 3, it is observed that 72.50% percent of the hypertensive patients never forget to take their high blood pressure medicine. A less significant number of them (24.80%) however, decide not to take their medicine some of the time. It was reported that most of the respondents none of the time or some of the time eat salty food. That is, given that salt intake is a risk factor for hypertension, the sample most of the time do not eat food that is salty to help control their blood pressure level. They however, some of the time eat salty food. They some of the time also shake salt, fondor or aromat on their food before eating. Also, hypertension patients in the Tamale Teaching Hospital some of the time eta fast food (Indomine and other fatty foods).

The respondents (69.80%) however, never take someone else's high blood pressure pills. Respondent indicated that they sometimes (61.70%) run out of HBP pills and also skip taking of their pills some days before going back for a refill. After prescriptions have been given to hypertensive patients in the Tamale Teaching Hospital, most of the respondents (58.40%) of the patients, some of the times, leave the dispensary without obtaining their prescribed pills. A number of respondents (20.80%) however reported leaving the dispensary without obtaining their prescribed pills most of the time which could their affect compliance level. Hypertensive patients also miss to take their high blood pressure pills when they either feel better or sick none or some of the time.

It was also observed from the data that while over half of the hypertensive patients do decide not to take their HBP pills none of the time (57.00) the remaining half try sometimes, most of the times and all the times

do decide not to take their HBP pills. Sometimes (51.00%), hypertensive patients care less and thus miss taking their high blood pressure pills.

The varying results could be due; knowledge level of respondents, physician's ability to communicate effectively, the period of the study, the validity and reliability of the research method, the knowledge level of the researcher and the context under which the study was done, Ghana.

In a nutshell, the third research question of the study was to assess patient behaviors for three important behavioural domains of high blood pressure treatment; reduced sodium intake, appointment keeping and medication taking. From the results of the study, it is evident that the respondents, most of the time, exhibited positive behaviors in all the three domains. They, however some of the times, take in sodium, fail to keep scheduled appointments with physicians and take their medication. This confirms Vita, et al.'s (2012) assertion that there are varying degrees of compliance. Compliance is thus, usually dichotomized for research purposes with non-compliance defined as missing > or = 20 percent of prescribed medication (Remington, et al., 2007; Karve, et al., 2009; Velligan, et al., 2010). Also Asiri, et al, (2017), concluded that there is direct correlation between non-compliance and lack of proper doctor-patient relationship, patient education and patient's belief about disease and treatment. In their study, Schoenthaler, et al. (2009), were in the middle ground with their finding which noted that the less a provider addressed patient concerns, the less likely patients were to take their medications as directed. It was noted that better communication results in higher likelihood of medication being taken as directed. Contrary to this study findings Bhusal et al, (2016) and Nashilongo et

al, (2017), reported in their studies that there were low compliance levels for hypertensive patients on antihypertensive medications.

Research Question 2: What is the level of Health-Related Quality of Life of Hypertensive patients?

The first research question of the study sought to determine what is the level of health related quality of life of hypertensive patients. To answer this question, health related quality of life scores was generated for each respondent based on their responses on medical outcome study short form SF-36 (see table 4). The health related quality of life for respondents were examined across the eight domains mentioned in table 3. All responses on each of the domains were scored on a scale of 0 to 100, with 100 representing the highest level of functioning possible, 50 as the average functioning and 0 as the lowest functioning possible. Table 4 presents the results for the various domains estimated from the SF-36.

Table 4-Health-Related Quality of Life of Hypertensive patients

	Mean	Std. Deviation
Health functional capacity	77.00	17.67
Physical aspects	80.00	23.00
Bodily pain	60.36	25.63
Overall health status	65.88	10.35
Vitality	72.83	19.33
Social aspects	61.20	25.00
Emotional aspects	79.50	23.00
Mental health	62.20	20.40

N= 148
Composite – 69.87
Source: Fieldwork, (2018)

In Table 4, each of the domains presented as rows on Table 4 had different scales of measurement. To measure health related quality of life in physical aspects, hypertensive patients were asked to indicate whether or not their condition had made them caught down the amount of time they spent on work or other activities, accomplish less than they would like, limited in the kind of work or other activities they do, had difficulty performing their work or other activities. A score of 80.00 shows that hypertensive patients had little limitation due to their ailment.

Also, an above average score of 79.50 imply that the emotional problems of hypertensive patients moderately interfered with their normal social activities with family, friends, neighbours, or groups. To self-assess their quality of life with respect to their emotional health, hypertensive patients were asked to indicate whether in the past 4 weeks, they have had some problems with their work or other regular daily activities as a result of any emotional problems (such as feeling depressed or anxious).

To measure health functional capacity, ten (10) item questions were used. The 10 items were about activities the hypertensive patient might do during a typical day. They looked at whether a patient's health limited him/her from performing certain health related acts. Those who responded 'Yes', were asked to indicate the degree to which performance in those activities were affected. An above average score of 77.00 as indicated on Table 4 shows that the hypertension condition limited hypertensive patients moderately in the Tamale Teaching Hospital from doing certain health related activities they would have done on typical day. That is due to the hypertension, patients, on the average, were moderately limited to doing vigorous activities, such as

88

running, lifting heavy objects, participating in strenuous sports. They were however engaged in moderate activities, such as moving a table, pushing a mopping and playing games; lift or carry light objects; and climbing of staircases.

Respondents were also asked to indicate how they feel and how things have been with them during the past four (4) weeks. This was intended to assess their vitality. The results showed an average score of 72.83 which indicates that respondents who were hypertensive patients scored above average indicating they most of the time feel well.

Despite the higher level of health functioning records scored by the hypertensive patient, some hypertensive patients also complained of body pain. This was evident by an average score of 60.36 under that domain, which was the worse score in all the domains measured. In assessing their overall health status relative to others, hypertensive patients in the Tamale Teaching Hospital mentioned that it was mostly false that they had a worse overall health status than an average person (i.e. mean=65.88). This shows that, while hypertensive patients report of going through pain and limited in doing other things they would have done if they were not ill, they still feel they are not worse off than an average Ghanaian. This was supported by the fact that most of the domains were above average in the measurement of health related quality of life of the respondents.

From the findings, health related quality of life among hypertensive patients in Tamale Teaching Hospital is generally high given the above average scores that were obtained in all the domains and composite score. The domains of physical aspects, emotional aspects, health functional capacity and

vitality scored the highest functioning possible. These results are similar to what Kaliyaperumal, et al, (2016) found in their study which showed that reduced quality of life in hypertensive patients were mainly due to mental and bodily pain. Despite the conformity in findings, the current study rather has physical health as its highest functioning domain. The study also aligns well with the finding of Carvalho, et al. (2012), which showed all the domains of HRQoL were all above average. This current study also aligns with the findings of Hammoudeh and Mallat, (2016) who found that efforts should be exerted on all levels in order to increase the adherence to antihypertensive treatment through the implementation of educational campaigns as it had the implication of improving the quality of life of these patients. The current findings are however, contradicts the findings of Korhonen, et al, (2011) and Katsi, et al. (2017), where respondents scored low indicating low health functioning of respondents which has an implication on health related quality of life.

The difference in the result could be due to; the period of the study, the validity and reliability of the research method, the knowledge level of the researcher and the context under which the study was done, Ghana.

Research question 3: what is the Level of Health-Related Quality of Life of Diabetic patients?

The second research question of the study was to determine what is the health related quality of life of diabetic patients. Health related quality of life scores were generated for each respondent based on their responses on medical outcome study short form SF-36 (see table 5). The health related quality of life for respondents were examined across the eight domains

mentioned in table 5. All responses on each of the domains were scored on a scale of 0 to 100, with 100 representing the highest level of functioning possible, 50 as the average functioning and 0 as the lowest functioning possible. Table 5 presents the data for the various domains estimated from the SF-36.

Table 5-Level of Health Related Quality of Life of Diabetic Patients

	Mean	Std. Deviation
Health functional capacity	73.33	22.67
Physical aspects	80.00	22.50
Bodily pain	63.45	24.00
Overall health status	66.82	11.76
Vitality	64.50	18.83
Social aspects	66.00	26.60
Emotional aspects	79.00	23.00
Mental health	65.80	18.00

N= 63
Composite- 69.86
Source: Fieldwork, (2018)

In table 5, each of the domains presented as rows had different scales of measurement. To measure health related quality of life in physical aspects, diabetic patients were asked to indicate whether or not their condition has made them reduce the amount of time they spent on work or other activities, accomplish less than they would like to, limited in the kind of work or other activities they do and had difficulty performing their work or other activities. A score of 80.00 showed that diabetic patients had little limitations in their daily functioning due to their condition.

91

Also, an above average score of 79.00 imply that the emotional problems of diabetic patients moderately interfered with their normal social activities with family, friends, neighbours, or groups. To self-assess their health related quality of life and health functioning level with respect to their emotional health, diabetic patients were asked to indicate whether in the past 4 weeks, they have had some problems with their work or other regular daily activities as a result of any emotional problems (such as feeling depressed or anxious).

To measure health functional capacity, ten (10) items questions were used. The 10 items were about activities the diabetic patient might do during a typical day. They look at whether a patient's health limited him/her in performing certain health related acts. Those who responded 'Yes', were asked to indicate the degree to which performance in those activities were affected. An above average score of 73.33 as in Table 5 indicate that the diabetic patients were moderately limited in their engagement in healthy related activities they would have done on a typical day. That is, due to the diabetes ailment, patients are, on the average, a little limited in doing vigorous activities, such as running, lifting heavy objects, participating in strenuous sports. They were however functional in moderate activities, such as moving a table, lift or carry light objects; and climbing flight of stairs.

Even though diabetic patient score high indicating better health functioning in the entire domain measured, some diabetic patients however complained of body pain. This is evident by an average score of 63.45 under that domain which was the least score for the domains measured. In assessing their overall health status relative to others, diabetic patients in the Tamale

92

Teaching Hospital mentioned it was mostly false that they have a worse overall health status than an average person (i.e. mean=66.82). This shows that, while diabetic patients report of going through pain and moderately limited in doing other things they would have done if they were not ill, they still feel they are not worse off in health functioning wise than the average Ghanaian.

Respondents were also asked to indicate how they feel and how things have been with them during the past four (4) weeks. This was intended to assess their vitality. An above average score of 64.50 which was realized shows that respondents who were diabetic some of the time feel well. Also, above average scores imply that the physical health or emotional problems of diabetes patients moderately interfered with their normal social activities with family, friends, neighbours, or groups. The difference in the scores could be due; the period of the study, the validity and reliability of the research method, the knowledge level of the researcher and the context under which the study was done, Ghana.

Relating this current study with reviewed literature, Basit, (2014) and Kumar, et al. (2016), found that health related quality of life of diabetic patients were generally high as most of the domains assessed scored above average. This aligns much with these current study findings which also indicated a relative high health related quality of life domains among diabetes patients. Also, contrary to findings of this current study is the findings of Lu, et al., (2017), which reported that the overall health-related quality of life of the population in East China is moderate, however diabetes patients had a low score of health-related quality of life and health functioning levels.

93

Furthermore, Thommasen and Zhang (2006), also concluded that people with diabetes experience significant impairment in their health-related quality of life, which is associated with a variety of clinical parameters since the presence of diabetic complications was found to significantly affect some health functioning of the patient and health-related quality of life.

Research question 4: What is the level of compliance of diabetic patients with physician communication?

The fourth research question of the study was, the level of compliance of diabetes patients with physician communication. To help answer this question, it was inquired from 63 diabetic patients in the Tamale Teaching Hospital the number of days in a week they follow certain healthy practices. This was measured per the number of days in the week ranging from 0 to 7 days, with zero indicating non-performance or no compliance of the activities and 7 as mark of full compliance with 3.5 days as the average compliance of the schedule activities. It was noted that diabetic patients take up healthy lifestyles that help control their sugar level in approximately five (5) out of the seven (7) days a week. Results on the number of days diabetic patients comply with taking up positive health related behaviours in a week are presented in Table 6.

Table 6-Level of Compliance of Diabetic Patients with Physician Communication

Variable	Mean	Std. Dev.
How many of the last seven days have you followed a healthful eating plan?	6.00	1.80
On average, over the past month, how many days per week have you followed you're eating plan?	6.20	1.49
On how many of the last seven days did you eat five or more servings of fruits and vegetables?	4.89	2.40
On how many of the last seven days did you eat high fat foods such as red meat or full-fat dairy products?	4.93	2.52
On how many of the last seven days did you participate in at least 30 minutes of physical activity? (Total minutes of continuous activity, including walking).	5.02	2.20
On how many of the last seven days did you participate in a specific exercise session (such as swimming, walking, biking) other than what you do around the house or as part of your work?	4.82	2.50
On how many of the last seven days did you test your blood sugar?	2.02	2.65
On how many of the last seven days did you test your blood sugar the number of times recommended by your health care provider?	2.03	2.54
On how many of the last seven days did you check your feet?	3.69	2.69
On how many of the last seven days did you inspect the inside of your shoes?	3.80	2.61
On how many of the last seven days did you space carbohydrates evenly through the day?	5.11	1.97
On how many of the last seven days, did you take your recommended diabetes medications?	6.54	1.25
On how many of the last seven days did you take your recommended insulin injections?	1.75	2.98
On how many of the last seven days did you take your recommended number of diabetes pills?	6.25	1.99
On how many of the last seven days did you wash your feet?	5.46	2.05
On how many of the last seven days did you soak your feet?	4.97	2.16
Total	**4.92**	**1.27**

N= 63

Source: Fieldwork, (2018)

From table 6, it was recorded that diabetic patient had a near full compliance of 6.54 day in the taking of their recommended number of diabetes pills. It was also observed that the respondents followed a healthful eating plan and took their recommended number of diabetes pills in six (6) days in a week. They also eat five or more servings of fruits and vegetables, participate in at least 30 minutes of physical activity, space carbohydrates evenly, and soak and wash their feet in water five (5) days in a week. In a week, diabetes patients spend four (4) days to check their feet and inspect the inside of their shoes while they test their blood sugar the number of times recommended by their health care providers. Diabetic patients had their recommended insulin injections and eat low fat foods in two (2) days in a week. The least score of two days on the management of diabetes patient on the use of insulin, was due to the fact that most of the patients who responded to the research instrument were mostly not on insulin injection.

This study finding conforms to the findings of Kushwaha, et al, (2017), who found out that despite good adherence to medicine, the diabetics were lagging behind in following other lifestyle modifications like diet, exercise, foot care and regular checking of blood glucose. Selvaraj, et al. (2016), also found that in all the respondents, avoidance of selected food items was the highest (99.4%), followed by adherence to medication (95.6 %), 78% of patients had their blood sugar checked at least once in the last three months and only half (50.6%) had followed at least 20 minutes of leisure time physical activity. On the aspect of foot care except washing of foot (83.3%) all other foot care practices were less commonly (35-57%). Linking this current study finding of above average number of days of compliance to that of Hojat et al.

(2011), it can be inferred that there is a positive relationship between physician's communication and patient's compliance for clinical outcomes. Hojat et al (2011), reported that how physicians relates with their patients is an important factor associated with compliance, clinical competence and patient outcomes.

Contrary to the findings of Selvaraj, et al. (2016), it was observed that diabetic patients wash or soak their feet in most (4.97) of the days in a week, higher level of compliance to self-care practices in terms of taking drugs and diet but self-care in other domains such as foot care is alarmingly low. This was not the case in this current study, as these domains obtained above average number of days. Greatly affected in this study was, taking of insulin injection (1.75) days, this could be due to the fact that most of the respondents were on oral antidiabetic medications. The other affected area was blood sugar checking (2.03) as a way of improving diabetic self-care.

The discussion so far shows that responses to the survey were conditioned to diabetic patients' compliance to physicians' communication on diet, exercise, blood test, blood glucose test, foot care and other recommendations for self-care. It is evident that there is treatment compliance among patients with diabetes. In other words, patients with diabetes largely complied with their physicians' advice on lifestyle behaviors that will help regulate or control their sugar levels.

Research question 5: What is the hypertensive patient's perception of patient centeredness care and physician communication?

The study had its fifth research question as what is the hypertensive patient's perception of patient centeredness care and physician

97

communication. The study therefore, sought responses on patient's perceptions on how physicians explored patient illness, how well clinicians and patients were able to find common ground during visits to the hospital and how the clinicians attempted to understand them as a whole. The scale was 1 to 4, with score lower than <or = 2 indicating negative patient perception of patient centeredness care and physician communication. Score above indicating positive patient perception of patient centeredness care and physician communication. The study result found that hypertensive patients had a positive perception about their encounter with physicians. That is during consultations, discussions were mostly centred on them (Mean=2.69). That is, for the greater part of their communications with physicians, they do mostly see themselves as the centre of the discussion. Physicians are thus, mostly concerned of their experiences. This therefore, enhances the quality of time one gets if he/she visits the facility. Specifics on hypertensive patient's perception of patient centeredness care and physician communication are presented in Table 7.

Table 7-Hypertensive Patient's Perception of Patient Centeredness Care

Patient's Perception of Patient Centeredness care	Mean	Std. Dev.
To what extent was your main problem(s) discussed today?	2.84	0.91
Would you say that your doctor knows that this was one of your reasons for coming in today?	2.83	0.94
To what extent did the doctor understand the importance of your reason for coming in today?	2.83	0.93
How well do you think your doctor understood you today?	2.78	0.93
How satisfied were you with the discussion of your problem?	2.73	0.91
To what extent did the doctor explain this problem to you?	2.58	0.88
To what extent did you agree with the doctor's opinion about the problem?	2.52	0.84
How much opportunity did you have to ask your questions?	2.60	0.82
To what extent did the doctor ask about your goals for treatment?	2.68	0.80
To what extent did the doctor explain treatment?	2.63	0.79
To what extent did the doctor explore how manageable this (treatment) would be for you?	2.57	0.77
To what extent did you and the doctor discuss your respective roles? (Who is responsible for making decisions and who is responsible for what aspects of your care?)	2.56	0.77
To what extent did the doctor encourage you to take the role you wanted in your own care?	2.58	0.65
How much would you say that this doctor cares about you as a person?	2.54	0.74
Total	**2.69**	**0.69**

N= 148
Source: Fieldwork, (2018)
Key
Not at all: 1-1.49   Mostly: 2.5 3.49
A little: 1.50-2.49   Completely: 3.5-4.0

It can be observed in Table 7 that there is a positive perception of hypertensive patients with patient centeredness care at the Tamale Teaching hospital which occurs most of the time. Specifically, physicians spend most of the time (mean=2.84) to discuss the main problem for which the patient visited

99

the facility, know all the reasons (mean=2.83) for which they visited the hospital, and understand the importance of their visit to the hospital (mean=2.83).

On patients' perception on how well clinicians and patients were able to find common ground with them, it was also perceived that physicians most of the time satisfied them with the discussion of their problems (mean=2.73), explain their problems to them, ask about their goals for treatment, explain treatment and explore how manageable treatment would be for them. The discussion on their respective roles, and encouraged them to take the role they wanted in their care all indicated a positive perception. Patients were also mostly given the opportunity to ask questions during visits to the hospital (mean=2.60). They therefore generalised that their doctors care about them as persons most of the time with a mean score of 2.54.

The fact that patients in this current study had a positive perception about physicians as they paid much attention to details during communications is very good and thus has a lot of positive impacts on patients. This aligns very much with the findings of (Birkhäuer, et al., 2017; Saha, and Beach, 2011 ; Rathert, et al., 2015 & Anthony, et al, 2012), who examine patient-centred care and different perceptual issues with physician communication reported varied conclusions all pointed to high positive perception and physician communication as they were involved in the care process. The results rated high the use of patient centred care by physicians and also found that patients get more beneficial health behaviours, less symptoms and higher health related quality of life and more satisfied with treatment when they experienced patient centred care from their health care professional (Anthony, et al, 2012).

Research question 6: What is the diabetic patient's perception of patient

centeredness care and physician communication?

Research question six in this study was on what is the diabetic patient's perception of patient centeredness care and physician communication. The study sought responses on patients' perceptions on how patient illness physicians explored their experience, how well clinicians and patients were able to find common ground during visits to the hospital and how the clinicians attempted to understand them as a whole. The scale was 1 to 4, with score lower than $<$or $= 2$ indicating negative patient perception of patient centeredness care and physician communication. Score >2 indicating positive patient perception of patient centeredness care and physician communication. The study found that diabetes patients perceived that during consultations, discussions were mostly centred on them (Mean=2.79). For the greater part of their communications with physicians, they mostly see themselves as the centre of the discussion. Specifics on diabetes patient's perception of patient centeredness care and physician communication are presented in Table 8.

Table 8-Diabetic Patient's Perception of Patient Centeredness Care

Patient's Perception of Patient Centeredness care	Mean	Std. Dev.
To what extent was your main problem(s) discussed today?	2.82	0.99
Would you say that your doctor knows that this was one of your reasons for coming in today?	2.98	0.99
To what extent did the doctor understand the importance of your reason for coming in today?	3.05	0.94
How well do you think your doctor understood you today?	3.02	0.99
How satisfied were you with the discussion of your problem?	3.13	0.92
To what extent did the doctor explain this problem to you?	2.87	0.78
To what extent did you agree with the doctor's opinion about the problem?	2.87	0.85
How much opportunity did you have to ask your questions?	2.38	1.02
To what extent did the doctor ask about your goals for treatment?	2.64	0.82
To what extent did the doctor explain treatment?	2.74	0.91
To what extent did the doctor explore how manageable this (treatment) would be for you?	2.75	0.70
To what extent did you and the doctor discuss your respective roles? (Who is responsible for making decisions and who is responsible for what aspects of your care?)	2.67	0.77
To what extent did the doctor encourage you to take the role you wanted in your own care?	2.79	0.78
How much would you say that this doctor cares about you as a person?	2.97	0.84
Total	**2.79**	**0.76**

N= 63
Source: Fieldwork, (2018)
Key
Not at all: 1-1.49   *Mostly: 2.50-3.49*
A little: 1.50-2.49   *Completely: 3.5-4.0*

Observations among this sub-sample in table 8 indicate most of the patients experience positive patient centeredness care from their attending physician. On patients' perception of how well clinicians and patients were able to find common ground with them, it was also perceived that physicians

102

mostly (mean=3.13) satisfied them with the discussion of their problems, explain their problems to them (2.87), ask about their goals for treatment, explain treatment, explore how manageable treatment would be for them, discuss their respective roles, and encouraged them to take the role they wanted in their care. However, diabetic patients were just a little of the time given the opportunity to ask questions during visits to the hospital. But they generalised that their physicians cares about them as persons most of the time.

Specifically, on communication, understanding the importance of their visit to the hospital scored a mean value of 3.05. This was followed by the physician wanting to know all the reasons for which the patient visited the hospital, with a mean score of 2.98 and finally the physicians also spent most of the time discussing the main problem for which the patient visited the facility with a mean of 2.82.

The current study found a positive impression of diabetic patients about patient's centred care with their physician, as the study reported an overall mean of 2.79 for all the respondents. These findings are in tandem with the studies of Heisler, et al. (2009), who reported that patients whose physicians prefer a shared decision-making style are more likely than patients whose physicians prefer more physician-directed styles to receive some recommended risk factor screening tests, an important first step toward improved diabetic patients outcomes. Kruse, et al. (2013), indicated an improvement in diabetes outcomes must focus on both good communication and the direct enhancement of illness self-management behaviors which implies patient's involvement in the care process. Studies that also reported

favourably with patient centred care and physician communication included (Osborne &Ulrich, 2008; Fry &Mumford 2011; Arnold 2003).

Research Hypotheses

Hypothesis 1:

H₁ Compliance significantly mediates the relationship between physician communication and health related quality of life of hypertensive patients.

The hypothesis sought to determine whether compliance would mediate the relationship between physician communication and health related quality of life of hypertensive patients. Thus, the hypothesis sought to examine the influence of physician communication on health-related quality of life of hypertensive patients, through compliance. This hypothesis was tested using the simple mediation analysis model by Hayes (2018). Specifically, 1000 bootstrap samples, with percentile confidence intervals were used to perform the analysis. The predictor variable was physician communication, the criterion variable was health-related quality of life, and the mediator variable was compliance. Tables 9 and 10 present the results.

Table 9- Regression Coefficients for Compliance, Physician Communication, and Health-related Quality of Life (Hypertensive)

Model	Variable	B	BSE	$BLLCI$	$BULCI$	Model Summary				
						R^2	F	df1	df2	p
1	Constant	32.94	2.04	28.85	36.70	.13	21.42	1	146	<.001
	Physician Communication	-.23*	.05	-.33	-.12					
2	Constant	84.28	13.90	57.40	113.35	.10	8.70	2	145	<.001
	Physician Communication	.83*	.25	.29	1.31					
	Compliance	-.36	.42	-1.18	.48					

Criterion: Model 1- Compliance; Model 2- Health-related Quality of Life

*Significant, $p < .05$

As presented in Table 9, the model containing physician communication and compliance was statistically significant, $F(1, 146) = 21.42$, $p < .001$, $R^2 = .13$. From the Model 1, physician communication explained 13% of the variance in compliance. In Model 2, physician communication and compliance jointly explained 10% of the variations in health-related quality of life, and this was statistically significant, $F(2, 145) = 8.70$, $p < .001$, $R^2 = .10$. Table 10 presents the results on the mediation analysis.

Table 10- Compliance Mediating the Relationship between Physician Communication and Health-related Quality of Life of Hypertensive Patients

	Effect(B)	BSE	CR	Confidence Interval Lower Limit	Upper Limit
Total effect of X on Y	.91*	.22	4.06	.47	1.36
Direct effect of X on Y	.83*	.24	3.46	.36	1.31
Indirect effect of X on Y	Effect(B)	*BSE*	*BootLLCI*	*BootULCI*	
Compliance (M)	.08	.10	-.11	.33	

X- Physician Communication; Y- Health-related Quality of Life
*Significant, $p < .05$

From Table 10, the direct effect of physician communication on health-related quality of life was statistically significant, B = .83, *Boot95%CI* (.36, 1.31). This implies that a unit increase in physician communication would lead to .83 corresponding increase in health-related quality of life among hypertensive patients. The result indicates a positive relationship between physician communication and health-related quality of life of hypertensive patients. Thus, the more physicians communicate with

106

hypertensive patients, the better their quality of life. The result further showed that when compliance was introduced to the equation, the relationship (indirect effect) was however not statistically significant, B = .08, *Boot95%CI* (-.11, .33). This, therefore, suggests that compliance does not mediate the relationship between physician communication and health-related quality of life. The implication of this is that, with physician communication, hypertensive patients do not necessarily have to comply with medication in order to improve their quality of life. In other words, it can be said that, among hypertensive patients, compliance is not a mandatory requirement to better health-related quality of life. This result underscores the importance of physician communication as far as the health related quality of life of hypertensive patients is concerned. Based on the result, the null hypothesis would not be rejected, since evidence from the study suggested its acceptance.

This finding of this current study confirms that of Račić, et al. (2017), whose study showed that though physician-patient relationship significantly affects treatment outcomes in patients with hypertension, communication with patients can be improved by introducing interaction elements that are not exclusively related to the causes and characteristics of the diseases, giving the relevant information and increasing intelligibility of this information and compliance during the encounter. In line with this current study conclusion, is the report of Nalotova, et al. (2016), which concluded that the assistance of the older patients to measure blood pressure (BP) and analyses of the BP control correlated well with patient outcome. Finally, Khwaja et al (2017), concluded that patient education, family counselling and social support networks should

be strengthened in health promotion programs as it form part of physician communication and relate well with different patients outcome favourably.

The result indicates a positive relationship between physician communication and health-related quality of life of hypertensive patients. Thus, the more physicians communicate with hypertensive patients, the better their quality of life. Centrally to review literature, compliance does not mediate the relationship between physician communication and health-related quality of life. The implication of this is that, with physician communication, hypertensive patients do not necessarily have to comply with medication in order to improve their quality of life. In other words, it can be said that, among hypertensive patients, compliance is not a mandatory requirement to better health-related quality of life.

Hypothesis 2:

H$_1$ Compliance significantly mediates the relationship between physician communication and health related quality of life of diabetic patients.

This hypothesis aimed at determining whether physician communication would indirectly influence health-related quality of life of diabetic patients, through another variable – compliance. The predictor variable was physician communication, the criterion variable was health-related quality of life, and the mediator variable was compliance. This hypothesis was tested using the simple mediation analysis model, with 1000 bootstrap samples for percentile confidence intervals. The results are presented in Tables 11 and 12.

Table 11- Regression Coefficients for Compliance, Physician Communication, and Health-related Quality of Life (Diabetic)

Model	Variable	B	BSE	BLLCI	BULCI	Model Summary				
						R^2	F	df1	df2	p
1	Constant	102.37	13.27	71.46	123.06	.05	3.13	1	61	.081
	Physician Communication	-.52	.31	-1.00	.19					
2	Constant	97.99	17.58	62.63	132.30	.16	5.65	2	60	.001
	Physician Communication	-.50	.30	-1.07	.07					
	Compliance	.29*	.13	.04	.57					

Criterion: Model 1- Compliance; Model 2- Health-related Quality of Life
*Significant, $p < .05$

From Table 11, Model 1 containing physician communication and compliance was not statistically significant, $F(1, 61) = 3.13$, $p = .081$, $R^2 = .05$. Physician communication explained 5% of the variance in compliance. In Model 2, physician communication and compliance simultaneously explained 16% of the variations in health-related quality of life among diabetic patients, and this was statistically significant, $F(2, 60) = 8.70$, $p = .001$, $R^2 = .16$. The mediation analysis are presented in Table 12.

Table 12- Compliance Mediating the Relationship between Physician Communication and Health-related Quality of Life of Diabetic Patients

				Confidence Interval	
				Lower	Upper
	Effect(B)	BSE	CR	Limit	Limit
Total effect of X on Y	-.65*	.29		-1.23	-.07
Direct effect of X on Y	-.50	.28		-1.07	.07
Indirect effect of X on Y	Effect(B)	*BSE*	*BootLLCI*	*BootULCI*	
Compliance (M)	-.15	.13	-.44	.06	

X- Physician Communication; Y- Health-related Quality of Life
*Significant, $p < .05$

As indicated in Table 12, among the diabetic patients, physician communication did not significantly influence health-related quality of life, B = -.50, *Boot95%CI* (-1.07, .07). This result implies that physician communication does not predict the quality of life of diabetic patients. Compliance was further fitted in the model to determine its effect in the relationship, but the result revealed no significant effect (mediation), B = -.15, *Boot95%CI* (-.44, .06). This simply means that physician communication does not exert its influence on health-related quality of life, through compliance.

This result implies that the relationship between physician communication and health-related quality of life was not mediated by compliance. Following this result, the study therefore, failed to reject the null hypothesis that "Compliance will not significantly mediates the relationship between physician communication and health related quality of life of diabetic patients". This result implies that health-related quality of life diabetic patients is influenced by other factors other than physician communication and compliance.

Among the diabetic patients, physician communication did not significantly influence health-related quality of life. This result implies that physician communication does not predict the quality of life of diabetic patients. This simply means that physician communication does not exert its influence on health-related quality of life, through compliance. This result implies that the relationship between physician communication and health-related quality of life was not mediated by compliance. This result implies that health-related quality of life diabetic patients is influenced by other factors other than physician communication and compliance.

In line with the mediation role of compliance with physician communication and health related quality of life of diabetic patients, this study reported favourably for the various concepts employed. Lee, Noh, Kang and Hong (2017) who conducted similar study indicated that physician communication did not showed a direct relationship with both medication adherence and medication experience when assessed independently and medication adherence did not mediated the effect of patient–physician communication on patient medication experience. Another research by Cheng, Tseng and Cheng (203), found out that COC both showed did not show direct

relationship with adherence and health outcome when tested independently. But then also, the relationship between COC and health care outcomes was partly mediated by better medication adherence in patients with newly diagnosed type 2 diabetes.

Chapter Summary

The outcome of the study indicated both hypertensive and diabetic patients experienced a high functioning capacity resulting into a better health related quality of life as the various domain measured indicated. The patients mostly comply with their physician communication. It further showed that hypertensive and diabetic patients who were the subjects of this study had a positive perception about patient centered care and physician communication. On compliance related activities, hypertensive patient were most of the time in compliance with their physician communication and diabetic patients had an impressive compliance rate with physician communication as the average compliance rate was above half of the rating scale that was used in the study.

The study also reported the more physicians communicate with hypertensive patients, the better their quality of life, but compliance does not mediate the relationship between physician communication and health-related quality of life of hypertensive patients. Among the diabetic patients, physician communication and compliance did not significantly influence health-related quality of life. This result implies that physician communication and compliance do not predict the quality of life of diabetic patients and physician communication does not exert its influence on health-related quality of life, through compliance.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Introduction

The study sought to investigate how compliance mediates physician communication and health related quality of life of patients with either hypertension or diabetes. Specifically, the study was guided by six research questions and two hypotheses. This chapter captures the summary of findings that were made from the study. It goes on to provide conclusions made from the study and thereafter, gives recommendations to various stakeholders in society based on the findings. The chapter ends by giving suggestions for further research.

Summary

This study investigated compliance with physician communication and health related quality of life of hypertensive patients and diabetic patients in Tamale Teaching Hospital.

The main aims of the study was to investigate how compliance mediates physician communication and HRQoL of hypertensive patients and diabetic patients in Tamale Teaching Hospital (TTH). A descriptive cross-sectional survey design was adopted for the study. The population for the study were people who were diagnosed hypertension or diabetes and seeking health care in specialist clinics at Tamale teaching Hospital. A sample size of 148 hypertensive patients and 63 diabetic patients respectively was selected from 3177 patients using the quota sampling technique. Four instruments; Medical Outcome survey, short form (SF-36), Hill-Bone blood pressure

113

compliance scale, diabetic self-care activity measure and patient perception of patients' centeredness care were used to collect data on health related quality of life, compliance and physician communication. Data was analysed using mean, standard deviation and Regression tools employed in this study. The study was guided by six research questions and two hypotheses;

Research questions

1. What is the level of compliance among hypertensive patients with physician communication

2. what is the level of the health related quality of life of hypertensive patients

3. what is the level of the health related quality of life of diabetic patients

4. What is the level of compliance among diabetic patients with physician communication

5. What is the hypertensive patients' perception of patient centeredness care and physician communication

6. What is the diabetic patients' perception of patient centeredness care and physician communication

Research Hypotheses;

1. Compliance significantly mediates the relationship between physician communication and health related quality of life of hypertensive patients.

2. Compliance significantly mediates the relationship between physician communication and health related quality of life of diabetic patients.

Key Findings

The study found that both hypertensive patients and diabetic's patients have relatively high functioning capacity implying high health related quality of life. Explicitly, the above average health related quality of life scores of respondents for each of the eight domains measuring health related quality of life indicated a better health functioning. It was also found that both hypertensive patients and diabetic patients most of the time complied with physician instructions. That is, compliance to physicians' communication by patients was on the whole impressive.

Hypertensive patients and diabetes patients had a positive perception of patient centeredness care with their physician communication. Their physicians in the hospital most of the time provided them with patient centeredness care. They paid attention to details when communicating to patients and care more about their problems and experiences.

Finally, and more importantly, it was found that physician communication but not compliance improves health related quality of life of hypertensive patients and among diabetic patients, the improvement in health related quality of life for these patients did not have any relation with physician communication and compliance. Implying among the diabetic patients, physician communication and compliance did not significantly influence health-related quality of life,

Conclusions

Throughout the previous chapters, the study has been looking at the compliance with physician communication and health related quality of life of hypertensive patients and diabetic patients. The study has also been assessing

115

how these concepts; compliance, physician communication and health related quality of life are influencing patients to experience health related quality of life using hypertension and diabetes patients from Tamale Teaching Hospital. The entire research centred on eight objectives: the level of compliance among hypertensive patients with physician communication, the health related quality of life of hypertensive patients, the health related quality of life of diabetic patients, the level of compliance among diabetic patients with physician communication, hypertensive patients' perception of patient centeredness care and physician communication, diabetic patients' perception of patient centeredness care and physician communication, the mediating relationship between compliance, physician communication and health related quality of life of hypertensive patients and the mediating relationship between compliance, physician communication and health related quality of life of diabetic patients.

In fulfilling the objectives, a number of literatures related to the concepts were reviewed. A total of 211 patients made of 148 hypertensive and 63 diabetic participants took part in the study. Questionnaires were answered by respondents. In analysing the data, research questions 1-6 were analysed using descriptive statistics and hypotheses 1 and 2 analysed using mediation employing regression.

The results of the study showed that on health related quality of life, hypertensive patients and diabetes patients in the Tamale Teaching Hospital showed a higher health related quality of life, patients mostly complied with physician's communication, hypertensive patients and diabetic's patients perceived positively the care provided by physicians in the hospital,

Furthermore the study showed that physician communication and compliance improves HRQOL in their rights, but physician communication and but not compliance in the case of the hypertensive patients was significantly a predicted of HRQoL, while among diabetic patient both constructs did not influence HRQoL in any way, meaning physician communication does not exert its influence on health-related quality of life, through compliance.

In conclusion, the findings of this study indicate the necessity for health professionals to pay more attention to patients' health related quality of life and helping the patients to comply with physician communication. This can be achieved by finding medical and social alternatives that have a favorable influence on health related quality of life as a whole, stimulating a better doctor/patient relationship and Finally the study has established a relationship between how patients view their physician communication and how they comply with the communication and its final impact on their health related quality of life. It has brought to bare that, a positive view of physician communication is related to better compliance and subsequent improved health related quality of life.

Recommendations

Based on the findings of this study and the conclusions drawn, the following recommendations are made for improving HRQoL, compliance and physician communication among hypertensive and diabetic patients:

1. Physicians should use more of patient centeredness skills in their consultation with hypertensive patients and diabetes patients. This will lead to creation of positive perceptions and ultimately help improve compliance to treatment advice and

health related quality of life of the hypertensive and diabetic patients.

2. Hypertensive and diabetic patients should be educated by health workers on the importance of absolutely compliance with physician communication and adopting positive health related behaviors which can impact on their health related quality of life.

3. Hospital administrators should put in measures that will continue to improve better doctor-patient communication.

4. It is also recommended, that in the management of hypertensive and diabetic patients, healthcare professionals should be guided by the role of compliance in the relationship between physician communication and health related quality of life, such that the peculiar needs of patients could be addressed.

5. It is recommended that all patients with hypertension and diabetes should be assessed for HRQOL and compliance with physician communication by health workers at the beginning and in the course of management to inform healthcare professionals about the progress of management.

6. Building better compliance requires behavioral interventions and therefore Clinical Health Psychologist required in this instance. The study therefore recommends the inclusion of such professionals in the management of hypertension and diabetes patients in Tamale Teaching Hospital and Ghana in general.

Suggestions for Further Research

To explore further on the topic, future research should look, into more details on the following;

1. How to maintain health related quality of life of hypertensive patients and diabetic patients.

2. Ways of enhancing communication between physicians and hypertensive and diabetic patients.

3. Finally, future research, should look into the role of demographic variables in the relationship between compliance with physician communication and HRQOL of hypertensive patients and diabetic patients.

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APPENDICES

APPENDIX A

RESEARCH INSTRUMENT

UNIVERSITY OF CAPE COAST, GHANA

COLLEGE OF EDUCATION

FACULTY OF EDUCATIONAL FOUNDATIONS

DEPARTMENT OF EDUCATION AND PSYCHOLOGY

VOLUNTARY CONSENT AND QUESTIONNAIRE

I am Peter Mintir Amadu, a student of University of Cape Coast on the Master of Philosophy Clinical Health Psychology Programme. I am carrying out research on the topic: ***Compliance with Physician communication and health related quality of life of hypertensive patients and diabetic patients in Tamale Teaching Hospital.*** Hence, if you are willing to participate I would like to know what your experiences are with physician communication, compliance and health related quality of life. Information obtained from you shall be handled with utmost confidentiality. You are not required to mention your name and the information you provide will not be linked with you in any way or at any stage of this study. You have the right to participate in or opt out from the study based on your discretion.

Thank you.

VOLUNTEER AGREEMENT

The document describing the benefits, risks and procedures for the research titled *(Compliance with Physician communication and health related quality of life of hypertensive patients and diabetic patients in Tamale Teaching Hospital.)* has been read and explained to me. I have been given an

opportunity to ask any questions about the research and answered to my

satisfaction. I hereby agree to participate as a volunteer.

Sign. of Respondent……………………………………………………………

SECTION I: Socio-Demographic Characteristics.

Please tick/ write the responses that is most descriptive of you

1. Age: ………………………………………………..

2. Ethnicity   ………………………………………………..

3. Sex   Male [   ]   Female [   ]

4. Religion

    a) Muslim   [   ]

    b) Christian   [   ]

    c) Traditionalist   [   ]

    d) Others specify ……………………………………………

 5. Marital Status

    a. Married   [   ]

    b. Single   [   ]

    c. Widowhood   [   ]

    d. Separated   [   ]

    e. Cohabitation   [   ]

 6. Educational Level Completed

    a. No formal education   **[   ]**

    b. **Primary**   **[   ]**

    c. Middle Level Certificate   **[   ]**

    d. **SHS**   **[   ]**

7. Income level Per month

    a. Low GH¢ 400.00   **[ ]**

    b. Middle GH¢ 400 – 1500   **[ ]**

    c. High > GH¢ 1500   **[ ]**

8. Occupation

    a. Student   [ ]

    b. Apprentice   [ ]

    c. Unemployed   [ ]

    d. Farmer   [ ]

    e. Trader   [ ]

    f. Self employed   [ ]

    g. Government Employee   [ ]

    h. Others specify ……………………………………….

9. Family Number: ………………………………………..

10. Residency

    a) Self – owned   **[ ]**

    b) Employer owned   [ ]

    c) Rented   [ ]

SECTION II: MEDICAL OUTCOME STUDY SHORT FORM – SF 36

Choose one option for each questionnaire item from the following

Excellent = 1 , Very Good = 2, Good = 3, Fair = 4 and Poor = 5

	1	2	3	4	5
11. In general, would you say your health is:					

Much better = 1, Somewhat better = 2, About the same = 3, somewhat worse = 4, much worse = 5

	1	2	3	4	5
12. Compared to one year ago, how would you rate your health in general now?					

Yes, limited a lot = 1, yes, limited a little = 2, no, no limited at all = 3. The following are about activities you might do during a typical day. Does your health now limit you in these activities? If so, how much?

	1	2	3
13. Vigorous activities, such as running, lifting heavy objects, participating in strenuous sports			
14. Moderate activities, such as moving a table, pushing a vacuum cleaner, bowling, or playing sports			
15. Lifting or carrying groceries (light objects)			
16. Climbing several flights of stairs			
17. Climbing one flight of stairs			
18. Bending, kneeling, or stooping			
19. Walking more than a mile			
20. Walking several blocks			

148

21. Bathing or dressing yourself			
22. Walking one block			

YES – 1 AND NO – 2

During the past weeks, have you had any of the following problems with your

worker or other regular daily activities as a result of your physical health?

	1	2
23. Cut down the amount of time you spent one work or other activities		
24. Accomplished less than you would like		
25. Were limited in the kid of work or other activities		
26. He difficulty performing the work or other activities (for example, it took extra effort)		
During the past 4 weeks, to what extent has your physical health or emotional problems interfered with your normal social activities with family, friends, neighbours, or groups?		
27. Cut down the amount of time you spent on work or other activities		
28. Accomplished less than you would like		
29. Didn't do work or other activities as carefully as usual		

Not at all-1, Slightly-2, Moderately-3, Quite a bit-4, Extremely-5

	1	2	3	4	5
30. During the past 4 weeks, to what extent has your physical health or emotional problems interfered with your normal social activities with family, friends, neighbours, or groups?					

149

None-1, Very mild-2, Mild-3, Moderate-4, Severe-5, Very severe-6

	1	2	3	4	5	6
31. How much bodily pain have you had during the past 4 weeks?						

Not at all-1, A little bit-2, Moderately-3, Quite a bit-4, Extremely-5

	1	2	3	4	5
32. During the past 4 weeks, how much did pain interfere with your normal work (including both work outside the home and housework)?					

All of the time-1, Most of the time-2, A good bit of the time-3, Some of the time-4, little of the time-5, None of the time-6?

These questions are about how you feel and how things have been with you during the past 4 weeks. For each question, please give the one answer that comes closest to the way you have been feeling. How much of the time during the past 4 weeks….

	1	2	3	4	5	6
33. Did you feel full of pep (energetic)?						
34. Have you been a very nervous person?						
35. Have you felt so down in the dumps that nothing could cheer you up?						
36. Have you felt calm and peaceful?						
37. Did you have a lot of energy?						
38. Have you felt downhearted and blue (sad)?						
39. Did you feel worn out?						

150

40. Have you been a happy person?					
41. Did you feel tired?					

All of the time-1, Most of the time-2, Some of the time-3, A little of the time-4

	1	2	3	4
42. During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting with friends, relatives, etc.)?				

Definitely true-1, Mostly true-2, Don't know-3, Mostly false-4, Definitely false-5

	1	2	3	4	5
43. I seem to get sick a little easier than other people					
44. I am as healthy as anybody I know					
45. I expect my health to get worse					
46. **My health is excellent**					

SECTION III: Patient's Perception of Patient Centeredness care (PPPC).

Tick the option appropriately closer to your experience with the physician

Completely-1, Mostly-2, A little-3, Not at all-4

PPPC Item (Stewart et al., 2003)	1	2	3	4
47. To what extent was your main problem(s) discussed today?				
48. Would you say that your doctor knows that this was one of your reasons for coming in today?				
49. To what extent did the doctor understand the importance of your reason for coming in today?				
50. How well do you think your doctor understood you today?				
51. How satisfied were you with the discussion of your problem?				
52. To what extent did the doctor explain this problem to you?				
53. To what extent did you agree with the doctor's opinion about the problem?				
54. How much opportunity did you have to ask your questions?				
55. To what extent did the doctor ask about your goals for treatment?				
56. To what extent did the doctor explain treatment?				
57. To what extent did the doctor explore how manageable this (treatment) would be for you?				
58. To what extent did you and the doctor discuss your respective roles? (Who is responsible for making decisions				

152

and who is responsible for what aspects of your care?)				
59. To what extent did the doctor encourage you to take the role you wanted in your own care?				
60. How much would you say that this doctor cares about you as a person?				
Total PPPC Score				

SECTION IV: Hill Born high blood pressure compliance scale.

None of the time-1, Some of the time-2, Most of the time-3, All the time-4,

Key (HBP – High Blood Pressure)	1	2	3	4
61. Howten do you forget to take your high blood pressure (HBP) medicine?				
62. How often do you decide not to take your HBP medicine?				
63. How often do you eat salty food?				
64. How often do you shake salt, fondor, or aromat on your food before you eat it?				
65. How often do you eat fast food? (Indomine and other fatty foods) or (KFC, McDonalds, fat cook, fish and chips)				
66. How often do you get the next appointment before you leave the clinic?				
67. How often do you miss scheduled appointments?				
68. How often do you leave the dispensary without obtaining your prescribed pills? (due to long line, closure of the clinic, forgot)				

69. How often do you run out of HBP pills?					
70. How often do you skip your HBP medicine 1–3 days before you go to the clinic?					
71. How often do you miss taking your HBP pills when you feel better?					
72. How often do you miss taking your HBP pills when you feel sick?					
73. How often do you take someone else's HBP pills?					
74. How often do you miss taking your HBP pills when you care less?					

V.   The Summary of Diabetes Self-Care Activities Measure (SDSCA).

The questions below ask you about your diabetes self-care activities during the past 7 days. If you were sick during the past 7 days, please think back to the last 7 days that you were not sick.

Activity		Rate							
Diet	**0**	**1**		**2**	**3**	**4**	**5**	**6**	**7**
75, How many of the last seven days have you followed a healthful eating plan?									
76. On average, over the past month, how many days per week have you followed your eating plan?									
77. On how many of the last seven days did you eat five or more servings of fruits									

154

	0	1	2	3	4	5	6	7
and vegetables?								
78. On how many of the last seven days did you eat high fat foods such as red meat or full-fat dairy products?								
Exercise	0	1	2	3	4	5	6	7
79. On how many of the last seven days did you participate in at least 30 minutes of physical activity? (Total minutes of continuous activity, including walking).								
80. On how many of the last seven days did you participate in a specific exercise session (such as swimming, walking, biking) other than what you do around the house or as part of your work?								
Blood Sugar Testing	0	1	2	3	4	5	6	7
81. On how many of the last seven days did you test your blood sugar?								
82. On how many of the last seven days did you test your blood sugar the number of times recommended by your health care provider?								
Foot Care	0	1	2	3	4	5	6	7
83. On how many of the last seven days did you check your feet?								

84. On how many of the last seven days did you inspect the inside of your shoes?									
Smoking	No	Yes							
85. a Have you smoked a cigarette - even one puff - during the past seven days?	No	Yes							
85. b. If yes, how many cigarettes did you smoke on an average day? Number of cigarettes: ……...………………….									
Diet	0	1	2	3	4	5	6	7	
86. On how many of the last seven days did you space carbohydrates evenly through the day?									
87. On how many of the last seven days, did you take your recommended diabetes medications?									
Medications	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	
88. On how many of the last seven days did you take your recommended insulin injections?									
89. On how many of the last seven days did you take your recommended number of diabetes pills?									
Foot Care									
90. On how many of the last seven days did you wash your feet?									

91. On how many of the last seven days did you soak your feet?									
92. On how many of the last seven days did you dry between your toes after washing?									

93. Which of the following has your health care team (doctor, nurse, dietician, or diabetes educators) advised you to do? Please check all that apply

		No	**Yes**
1	Follow a low – fat eating plan		
2	Follow a complex carbohydrates diet		
3	Reduce the number of calories you eat to lose weight		
4	Eat lots of food high in dietary fiber		
5	Eats lots (at least 5 servings per day) of fruits and vegetables		
6	Eat very few sweets (for example: deserts, no – diet sodas, candy bars		
7	Other (specify)		
8	I have not been given any advice about my diet by any health care team		

94. Which of the following has your health care team (doctor, nurse, dietician, or diabetes educator) advised you to do? Please check all that apply

		No	Yes
1	Get low level exercise (such as walking) on a daily basis		
2	Exercise continuously for at least 20 minutes at least 3 minutes a week		
3	Fit exercise into your daily routine (for example, take stairs instead of elevators, park a block away and walk etc		
4	Engage in specific amount, type, duration and level of exercise		
5	Other (specify)		
6	I have not been given any advice about my diet by any health care team		

95. Which of the following has your health care team (doctor, nurse, dietician, or diabetes educator) advised you to do? Please check all that apply

		No	Yes
1	Test your blood sugar using a drop of blood from your finger and a colour chart		
2	Test your blood sugar using a machine to read the results		
3	Test your urine for sugar		
4	Other (specify) _____		
5	I have not been given any advice about my diet by any health care team		

96. Which of the following medications for your diabetes has your doctor prescribed? Please check all that apply

		No	Yes
1	An insulin shot 1 or 2 times a day		
2	An insulin shot 3 or more times a day		
3	Diabetes pills to control my blood sugar level		
4	Other (specify) _____		
5	I have not been prescribed either insulin or pills for my diabetes		

		No	Yes	Do not smoke
97	At your last doctor's visit, did any one ask about your smoking status?			

		No	Yes
98	If you smoke, at your last doctor's visit, did anyone counsel you about stopping or offer to refer you to a stop – smoking program?		

99. When did you last smoke a cigarette?

		1	2	3	4	5	6
1	More than two years ago or never smoked						
2	One to two years ago						
3	Four to twelve months ago						
4	One to three months ago						
5	Within the last month						
6	Today						

THANK YOU

159

APPENDIX B

UNIVERSITY OF CAPE COAST ETHICAL REVIEW BOARD

LETTER

UNIVERSITY OF CAPE COAST
COLLEGE OF EDUCATION STUDIES
ETHICAL REVIEW BOARD

UNIVERSITY POST OFFICE
CAPE COAST, GHANA

Our Ref: *CES-ERB/ucc.edu/18-14*

Your Ref: ....

Date: *Jan. 21, 2018*

Dear Sir/Madam,

ETHICAL REQUIREMENTS CLEARANCE FOR RESEARCH STUDY

Chairman, CES-ERB
Prof. J. A. Omotosho
jomotosho@ucc.edu.gh
0243784739

Vice-Chairman, CES-ERB
Prof. K. Edjah
kedjah@ucc.edu.gh
0244742357

Secretary, CES-ERB
Prof. Linda Dzama Forde
lforde@ucc.edu.gh
0244786680

The bearer, *Peter Mintir Amod,* Reg. No. *ED/CHP/16/ 0003* is an
M.Phil. / ~~Ph.D~~. student in the Department of *Education and*
Psychology .... in the College of Education Studies,
University of Cape Coast, Cape Coast, Ghana. He / ~~She~~ wishes to
undertake a research study on the topic:

Compliance with physician communication
and health-related quality of life of patients
with hypertension and diabetes

The Ethical Review Board (ERB) of the College of Education Studies
(CES) has assessed his/~~her~~ proposal and confirm that the proposal
satisfies the College's ethical requirements for the conduct of the
study.

In view of the above, the researcher has been cleared and given approval
to commence his/~~her~~ study. The ERB would be grateful if you would
give him/her the necessary assistance to facilitate the conduct of the said
research.

Thank you.
Yours faithfully,

Prof. Linda Dzama Forde
(Secretary, CES-ERB)

160

APPENDIX C

INTRODUCTORY LETTER FROM HEAD OF DEPARTMENT

UNIVERSITY OF CAPE COAST
COLLEGE OF EDUCATION STUDIES
FACULTY OF EDUCATIONAL FOUNDATIONS
DEPARTMENT OF EDUCATION AND PSYCHOLOGY

Telephone: 233-3321-32440/4 & 32480/3
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UNIVERSITY POST OFFICE
CAPE COAST, GHANA

Our Ref:

Your Ref:

TO WHOM IT MAY CONCERN

Dear Sir/Madam,

THESIS WORK
LETTER OF INTRODUCTION: MR. PETER MINTIR AMADU

We introduce to you Mr. Amadu, a student from the University of Cape Coast, Department of Education and Psychology. He is pursuing Master of Philosophy degree in Clinical Health Psychology and is currently at the thesis stage.

Mr. Amadu is researching on the topic:

> *"Compliance with Physician Communication and Health Related Quality of life of patients with Hypertension and Diabetes in Tamale Teaching Hospital".*

We would be grateful if he is given all the needed assistance toward this necessary academic exercise. Please, any information provided will be treated as strictly confidential.

Thank you.

Yours faithfully,

Theophilus Amuzu Fiadzomor
Senior Administrative Assistant
For: HEAD

COLLEGE OF EDUCATION STUDIES
DEPT OF EDUCATION & PSYCHOLOGY
UNIVERSITY OF CAPE COAST
APE COAST GHANA

161

APPENDIX D

GHANA HEALTH SERVICE PERMISSION LETTER

GHANA HEALTH SERVICE

OUR CORE VALUES:
1. People-Centered
2. Professionalism
3. Team work
4. Innovation
5. Discipline
6. Integrity

Regional Health Directorate
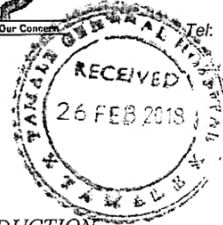Ghana Health Service
P.O. BOX 99
Tamale

Thursday, 22 February 2018

My Ref No: GHS/NR/ ʌ8- c/527

Your Ref No: ....

Tel: (233) (03720) 22912, 22710, 22146
Fax: (233) (03720) 22941
Email: rdhs.nr@ghsmail.org

RECEIVED
26 FEB 2018

THE MEDICAL SUPERINTENDENT
TAMALE CENTRAL HOSPITAL
TAMALE

<u>*LETTER OF INTRODUCTION*</u>
<u>*MR. MINTIR AMADU*</u>

The above named is an MPhil student of University of Cape Coast.

He is researching on the topic : *Compliance with Physician Communication and Health related Quality of Life of patients with Hypertension and Diabetes in Tamale Central Hospital"*

The data so collected will be treated as confidential and it is only for research purpose.

Thank you.

Dr.Braimah Baba Abubakari
Dep.Director – Clinical Care
For: Reg.Director of Health Services
Northern Region

Copies to the
Consulting rooms

26/02/12

162

APPENDIX E

AUTHORIZATION CERTIFICATE FROM TAMALE TEACHING

HOSPITAL

Department of Research &Development
Tamale Teaching Hospital

TTH/R&D/SR/06
16/01/2018

TO WHOM IT MAY CONCERN

CERTIFICATE OF AUTHORIZATION TO CONDUCT RESEARCH IN TAMALE TEACHING HOSPITAL

I hereby introduce to you **Mr. Peter Mintir Amadu** a final year Master of Philosophy Clinical Health Psychology student of the Department of Education and Psychology, University of Cape Coast. He has been duly authorized to conduct a study on **"Compliance with Physician Communication and Health Related Quality of life of Hypertensive and Diabetics patients in Tamale Teaching Hospital"**.

Please accord him the necessary assistance to enable him complete the study. If in doubt, kindly contact the Research Unit on the second floor of the administration block or on Telephone 0209281020. In addition, kindly report any misconduct of the Researcher to the Research Unit for necessary action.

Please note that this approval is given for a period of six months, beginning from 15th of January, 2018 to 14th of June, 2018.

Thank You.

ALHASSAN MOHAMMED SHAMUDEEN
(HEAD, RESEARCH & DEVELOPMENT)

163