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NONADHERENCE TO MEDICATION AMONG PEOPLE LIVING WITH TYPE 2 DIABETES MELLITUS: A STUDY AT SHAI OSU-DOKU DISTRICT HOSPITAL

BY

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DECLARATION

I, Gladys Awo Potakey hereby declare that this thesis is my original work, which I have produced during the conduct of research project. References made from other researchers and writers have been duly acknowledged. None of the materials contained in this thesis have been presented either wholly or partially to any institution for a degree

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ABSTRACT

The purpose of the study was to find out the reasons of non-adherence to medication in people living with type II diabetes mellitus. The study was done at the Shai Osu-Doku District Hospital. An explorative-descriptive design within the qualitative paradigm was used. A semi-structured interview guide was used to collect data from eleven (11) participants diagnosed with type II diabetes mellitus who sought service at the facility and consented to participate, using a purposive sampling. The ages of the respondents were between 23years and 78 years. No form of coercion was used to attract or retain them. The interviews were audiotaped and transcribed verbatim after which thematic content analysis was done to identify themes and categories. Findings of the study showed that the respondents did not have sound knowledge on the way the medication work, and also they had poor knowledge about diabetes itself. Other findings revealed that they did not adhere to the medication because of additional medication as a result of co-morbidity. They reported that, they were tired of taking the medication because of the daily routine. The medication also affected their quality of life and their sexual life. The responses from the respondents in the current study indicate that their perception of wellness is based on their beliefs and what they have heard from the public. Some did not take it also because of their religious beliefs. It is recommended that many of the barriers associated with non-adherence can be addressed with proper counselling and education and regimens should be kept as simple as possible and that they should be integrated into patients' existing habits and lifestyles with as little adjustment as possible to existing patterns in patients' lives.

DEDICATION

I dedicate this thesis to all individuals living with type 2 diabetes mellitus

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Being confident of this very thing, that he which hath begun a good work in 'me' will perform it until the day of Jesus Christ, (Philippians 1:6). To God be the glory. I give thanks to the Almighty God for bringing me this far, for seeing me through this course of study successfully.

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God bless you all.

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LIST OF ABBREVIATIONS

WHO:	World Health Organization
IDF:	International Diabetese Federation
TPB:	Theory of Planned Behaviour
TRA:	Theory of Reasoned Action
TTM:	Transtheoretical Model
HbAIC	Glycated Haemoglobin
SOHD	Shai Osu-Doku District Hospital
HND	Higher National Diploma
USA	United States of America

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Diabetes is a severe, chronic disease that occurs either when the pancreas does not produce sufficient insulin, or when the body cannot adequately make use of the insulin it produces. Diabetes is a significant public health problem, one of four greatest important non-communicable diseases targeted for action by world leaders. Both the number of cases and the prevalence of diabetes have been unwaveringly increasing alarmingly (World Health Organization (WHO), 2016). The risk of type 2 diabetes is decided by a team-work of genetic and metabolic factors. Ethnicity, family history of diabetes, and previous gestational diabetes combine with older age, overweight and obesity, unhealthy diet, physical inactivity and smoking to increase risk (World Health Organization, 2016), The prevalence of type 2 diabetes is at epidemic proportions worldwide, (International Diabetes Federation, 2014) and indeed, the worldwide prevalence of type 2 diabetes is predicted to increase from 382 million individuals (2013) to 417 million individuals by 2035 (International Diabetes Federation (IDF), 2014). Type 2 diabetes is much more common and accounts for around 90% of all diabetes cases worldwide (WHO, 2016). Diabetes Mellitus is answerable for more than 77% of morbidities and 88% of deaths in developing countries (Harries et al., 2013).

No adherences to medications among patients with chronic diseases make up a major barrier to treatment success (Brown et al., 2011). Medication no adherence, defined as a failure to put to use, medication as prescribed is recognized as an important impediment to effective

treatment. Recent studies have established that poor adherence is associated with lower success rates for treatment to target levels, increased adverse clinical outcomes, and overall mortality (Kamyar et al., 2012). Patients with diabetes mellitus often face difficulties in fully adhering to their prescribed medication administrations. This fact has been widely written down in the literature and is noticeable in both type 1 and type 2 diabetes (Capoccia et al., 2016). They reported adherence level within this population ranges from 36% to 93% (Cani et al., 2015; Kirkam et al., 2015). Taking medications properly (at the right time and with the right dose) is strongly associated with improved health outcomes and disease control. Despite this well-known fact, patients with diabetes still fail to fully adhere to their medications (Capoccia et al., 2015).

The reasons behind this failure differ and generally include demographic factors, such as age, gender, income level, and occupation; disease-related factors, such as disease duration, complications, and monitoring; medication-related factors, such as side effects, complexity of regimen, and type of medication (Jaam et al., 2017). Nonadherence was the result of attitudes of the participants that the medications are not effective for managing the conditions (Atinga et al., 2018). Atinga et al. (2018) also said that "patients with these perceptions rejected the medications and turned to herbal medicines and spiritual healing as therapeutic alternatives, because of their easy accessibility, perceived efficacy and affordability". Other factors they identified that impacted greatly on nonadherence included poly-pharmacy practice; tight work schedules; social norms; poor prescription instruction by health providers; and knowledge and experience of medication. In their study to find out factors contributing to noncompliance among diabetics attending primary healthcare centers in the Al Hasa district of Saudi Arabia, Ataur, et al. (2012), reported the "overall prevalence of therapeutic nonadherence of the participants was 67.9% (n = 318, 95% CI 63.59 – 72.02%). The nonadherence of males (69.34%) was higher than

females (65.45%, *P* = .003). The nonadherence among the urban participants was significantly higher than (71.04 vs. 60.15%, *P* = .023) in the rural participants". This difference may be due to various lifestyles. Urban residents tend to be more sedentary with relatively poor dietary habits as compared to the rural population.

In the researcher's experience as a practicing nurse for over a decade, I have realized that people living with Type 2 diabetes gradually do not comply with taking their medications as the years go by despite numerous education given to patients. It is worrying as patients with the problem with nonadherence to treatment come in a worse state leading to complications and sometimes premature death. The current study is being undertaken to explore the patient-related factors that contribute to nonadherence to medication of the diabetic patients who visit the Shai-Osu Doku district hospital.

1.2 Statement of the problem

The management of chronic diseases, including diabetes, generally involves the use of medications for a long period of time. Even though studies have shown the beneficial effects of using pharmacotherapy in chronic disease management, its usefulness has not been fully appreciated, given that close to 50% of patients with chronic diseases do not take their prescriptions as recommended by their healthcare practitioners (Brown and Bussell, 2011). Polonsky and Henry (2016) reported that at least 45% of patients with type 2 diabetes fail to achieve adequate glycemic control. They said that, poor medication adherence is one of the factors that contributes to failure to achieve effective glycaemic control.

A number of factors contribute to poor glycemic control, including lack of integrated care in many health care systems, clinical inertia among health care providers, and poor patient

adherence to self-care recommendations. Among them, it is noticeable that poor medication adherence looms large, (Egede, Gebreziabher, Echols, & Lynch, 2014).

A study done in Palestine reported that, poor adherence to therapies is common, especially when comorbidities exist (Karda, 2005). Kassalu et al. (2016) in their study nonadherence and factors affecting adherence of diabetic patients to anti-diabetic medication in Ethiopia also said that participants in their study were moderately adherent to their antidiabetic medications with nonadherence rate of 31.2%. Different factors of medication nonadherence were identified such as side effects and complexity of regimen, failure to remember, and socio-demographic factors such as educational level and monthly income.

A cross-sectional study conducted in Nigeria to determine the prevalence of, and factors contributing to medication nonadherence among patients with diabetes mellitus and hypertension attending some secondary and tertiary health care facility, 32% were compliant with their medications. Most (39%) respondents were nonadherent because of lack of funds and cost of medication, 19% due to forgetfulness, 16% because they felt well, and 15% due to non-availability of drugs at the pharmacy. Other reasons for nonadherence include illnesses (9%), side effects of medications (1%) and misinterpretation of prescription (1%) (Raimi, 2017).

The prevalence of nonadherence to diabetic medication was 47.6% among type 2 diabetes mellitus patients at the Tema General Hospital in Ghana. 52.8% males who were nonadherent were between the ages of 60-69 years, whilst 47.2% were females. The nonadherent rate among the unmarried were 71.4%, whilst the unemployed scored 62.5%, (Aflakpui & Addo-Lartey, 2016). In another study done in Dormaa Hospital in Ghana, 31.5% of participants were nonadherent to diabetes treatment (Prosper & Amaltinga, 2017).

Despite numerous educations on the need for patients taking their medications as advised by health workers, clients diagnosed with Type 2 diabetes mellitus for so many years and know the complications still do not comply in taking their medications. This results in associated complications of type 2 diabetes mellitus such as retinopathy, neuropathy, and nephropathy, and macrovascular complications e.g. ischemic heart disease, cerebrovascular disease, and chronic arterial occlusion, which are serious problems that can heighten the risk of premature mortality. The nonadherence to long-term therapy severely compromises the effectiveness of treatment and adversely affects the patient's condition (Khan, et, al, 2012). Noncompliance to diabetes medication usually causes therapeutic failure leading to poor treatment outcomes and complications such as cardiovascular disease, neuropathy, retinopathy, kidney failure, sexual impotence and diabetic foot gangrene leading to amputation" (Jackson et al., 2015; WHO, 2015). This study therefore explored the reasons for nonadherence to diabetic medication among patients living with type 2 diabetes mellitus at the Shai Osu-Doku District Hospital.

1.3 Purpose of the Study

The purpose of the study was to find out the reasons of nonadherence to medication among people living with type 2 diabetes mellitus. So as to bring about a behavioural change in the study participants

1.4 Objectives of the study

The objective of the study was to:

1. Explore the knowledge of people living with type 2 diabetes mellitus on the disease

2. Identify comorbidities and other factors that lead to medication noncompliance in people living with type 2 diabetes mellitus
3. Describe the quality of life of patients living with type 2 diabetes mellitus
4. Identify the perceptions and beliefs, and the psychological feelings of people living with type 2 diabetes mellitus

1.5 Research questions

This study sought to answer the following research questions:

1. What is the knowledge of people living with type 2 diabetes mellitus on the disease?
2. What are the comorbidities and other factors that lead to medication nonadherence in people living with type 2 diabetes mellitus?
3. What is the quality of life of people living with type 2 diabetes mellitus?
4. What are the perceptions and beliefs, and the psychological feelings of people living with type 2 diabetes mellitus?

1.6 The significance of the study

There have been some studies on the nonadherence to treatment of patients on anti-diabetic drugs. Over the years new drugs with less side effects have been introduced but the problem to non-adherence still persist. The results of the study could assist health professionals to identify the problems patients face and develop strategies to help patients take their medications to limit complications and increase their lifespan. Identified factors can also guide medical professionals in their attempts to increase the likelihood of patient adherence to drug treatment regimens. The findings of the study when disseminated will inform the Ministry of

Health as the conservancy body responsible for the health of people to initiate policies and take actions that would contribute to the promotion of adherence to medications among people living with type 2 diabetes mellitus. The policies may include improving the provider–patient relationship and building a trust relation; and making the treatments accessible at the time of use. Moreover, the results of the study will help the Ministry of Health provide a diabetes education service to raise patients' awareness of diabetes mellitus and enhance health belief perception toward the benefit of treatments, severity, and susceptibility of nonadherence in the occurrence of complications. The ministry can use both nurses and the media to create this awareness.

1.7 Operational definitions

Nonadherence: Failure to consume prescribed diabetic medications unintentionally or intentionally.

Medication: Drugs prescribed for people diagnosed with type 2 diabetes mellitus.

Type 2 diabetes Mellitus: Type 2 diabetes (formerly named non-insulin-dependent) which results from the body's inability to respond properly to the action of insulin produced by the pancreas.

People living with diabetes mellitus: Male or Female living client living with type 2 diabetes mellitus

CHAPTER TWO

CONCEPTUAL FRAMEWORK/LITERATURE REVIEW

2.1 Introduction

This chapter consists of the conceptual framework, Medication Adherence Conceptual Framework Model (Jaam , Awaisu, Izham, & Ibrahim, 2017) and the literature reviewed that was used to guide the researcher. The researcher when deciding on which model can best suit this study also considered few other models, the theory of planned behavior (Ajzen 1991,) and Transtheoretical Model/Stages Change (Prochaska and DiClemente, 1982). Of these, it was only the Medication Adherence Conceptual Framework Model (Jaam et al., 2017), that was identified to best fit the current study. It clearly presented the constructs patient-related factor which includes specific demographics, knowledge, comorbidity, psychological feelings, quality of life, beliefs and perceptions, which this study seeks to examine. Although, other related theoretical frameworks that identified were found to be informative, they were not applicable to this study. The theory of planned behavior (Ajzen, 1991, p 43) indicates that "people act in accordance with their intentions and perceptions of control over the behavior, while intentions in turn are influenced by attitudes toward the behavior, subjective norms, and perceptions of behavioral control". Adhering to prescribed medications or management plans involves planned or intended behaviors.

Theory of Planned Behaviour (TPB) is an offshoot of the theory of reasoned action (TRA; Ajzen & Fishbein, 1980). TPB is a complete behavioral theory because it provides a basis for predicting behavior and adjustments (Casper, 2007). It is assumed in the formulation of TPB

that people are sensible beings who are capable of making logical judgments. TPB is not applicable to motives that are unconscious. Theory of Reasoned Action holds that the intention to exhibit a particular behavior or perform an action can be predicted by subjective norms and attitudes. TRA "is associated with voluntary behavior; it is related to causal experience of intentions to execute behaviors over which individuals have sufficient control" (Ajzen, 2005, p. 117). It was assumed in the development of TRA that individuals have volitional control over all of the behavior that they want to perform—that is, individuals are able to perform specific behaviors if they want to. However, problems crop up with TRA whenever the theory is applied to behaviors that are not completely under volitional control (Ajzen, 1991).

In 1985, Ajzen included a third construct or component of perceived behavior to TRA, at which point he renamed the theory as the theory of planned behavior (Ajzen, 1991, 2005). This third component was added because Ajzen (1991) noted that the majority of behaviors humans engage in are not under volitional control. Perceived behavioral control refers to a person's perceptions of his or her ability to execute behavior of interest. The inclusion of the component of perceived behavioral control made it possible for TPB to explain the likelihood of partial control of volition (Ajzen, 1991, 2005). The three components that make up TPB—attitude, perceived behavior, and subjective norms—are categorized as higher level theoretical constructs by scientists and this theory is designed to help predict and give explanations to human behavior under certain circumstances. Behavior is a "function of salient information, or beliefs, relevant to the behavior" (Ajzen, 1991, p. 189). Behavior can be planned or deliberate.

2.2 Transtheoretical Model/Stages of Change

(Prochaska & DiClemente, 1982). Long-term changes in health behavior involve multiple actions and adaptations over time. Some people may not be ready to attempt changes, while others may have already begun implementing changes in their smoking, diet, activity levels, and so on. The construct of "stage of change" is a key element of The Transtheoretical Model (TTM) of behavior change, and proposes that people are at different stages of readiness to adopt healthful behaviors. The notion of readiness to change, or stage of change, has been examined in health behavior research and found useful in explaining and predicting changes for a variety of behaviors including smoking, physical activity, and eating habits. The TTM has also been applied in many settings. The stages of change model can be used both to help understand why people at high-risk for diabetes might not be ready to attempt behavioral change, and to improve the fruition of health counseling (Prochaska & Diclemente, 1982).

2.3 Medication Adherence Conceptual Framework Model

A framework is defined as abstract logical structure of meaning, which guides the development of a study and it enables the researcher to link the findings to the body of knowledge that constitute nursing and health science (Burns & Groove, 2005). The theoretical support of the study is Medication Adherence Conceptual Framework Model (Jaam et al., 2017). The components of the model include healthcare provider, medication, societal, healthcare system, diabetes, and patient-related factors that lead to nonadherence. Each of these themes was further classified into different sub-categories. It was noted that most interactions were identified to be within the patient-related factors, which not only connect with other themes but also within the same theme. Client's demographics as well as cultural beliefs were the most conspicuous

factors in terms of connections with other categories and themes. They concluded that intricate network and interactions of factors identified between different themes and within individual themes indicate the complexity of the problem of adherence. This framework has potentially enhanced the understanding of the complex relation between different barriers for medication adherence in diabetes and would aid the design of more adequate interventions. Because of the huge nature of the model, the researcher has limited herself to research into the patient-related factor which includes specific demographics, knowledge, comorbidity, psychological feelings, quality of life, beliefs and perceptions, and other factors. Each of these themes were further classified into different sub-categories. It was noted that most interactions were identified to be within the patient-related factors.

Critique of the framework

The framework above, "The Medication Adherence Conceptual Framework Model was created in May 2017 by Myriam Jaam, Ahmed Awiasu, Mohammmed Izharm Ibrahim and Nadir Kheir. They developed the framework to address the complx network of barriers to medication adherence in patients with diabetes.

Until the development of this framework, the literature said there was not an established clear and comprehensive disease specific conceptual framework model that captures all possible factors. On the negative side, the constructs of the framework is bulky and is cumbersome to use. On the other hand this is good because answers the problems of non-adherence in people living with diabetes.

This framework has potentially enhanced the understanding of the complex relation between different barriers for medication adherence in diabetes and would aid the design of more adequate interventions.

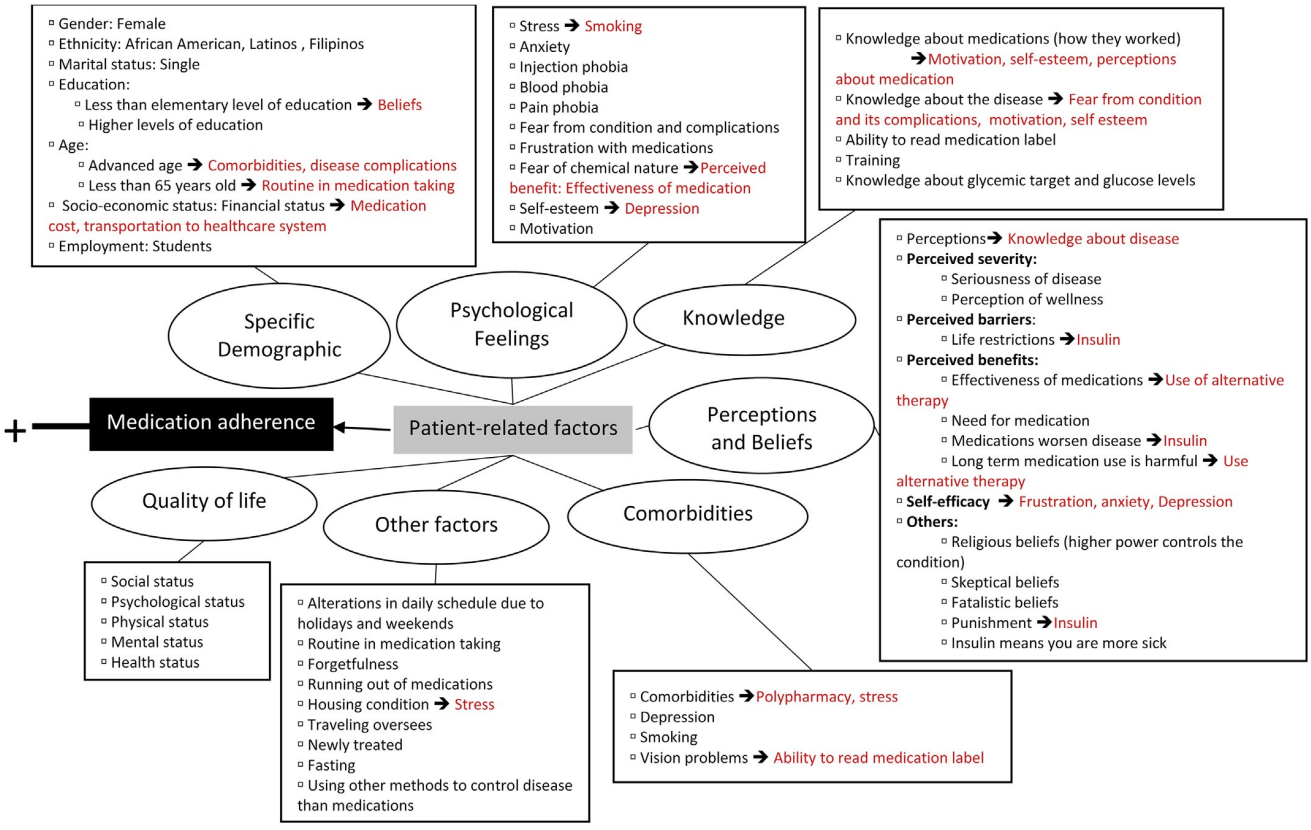

Figure 1: A Core conceptual framework on factors associated with medication adherence in diabetes{ Patient related factors.(Source Jaam, et al., 2017)}

Most of the studies they reviewed investigated patient-related factors, particularly the association of patients' demographics and medication adherence. They noted that most interactions were observed within this category as well as between the sub-categories-notably, demographics, perceptions and beliefs, and knowledge are associated with many other factors. For instance, studies indicated that education below elementary level was associated with patients' beliefs, while advanced age was related to comorbidities as well as diabetes complications. Lack of knowledge about the disease and its medications was linked with poor motivation, perception, as well as self-esteem. All of these factors are in turn linked with medication adherence.

2.4 Literature Review

A literature review provides a background of current knowledge on a topic and highlights the necessity for new studies (Polit & Beck, 2010). This chapter looked at the literature on the Nonadherence to treatment of people living with Type 2 diabetes mellitus .Literature was accessed through the following search engines , Google, Science Direct , Google Scholar, Hinari, Medline and PubMed to obtain information on various literature related to this research.

To obtain a comprehensive body of the existing literature, a number of different search terms were used and this included key words like ‘diabetes mellitus type 2, ‘medication non-adherence’, ‘anti-diabetic medication’, ‘patient factors’, and appropriate combinations thereof to facilitate a rich harvest of existing data. This section was sequentially guided by the objectives of

the study, and the constructs of the conceptual framework on the patient-related factors associated with medication adherence in diabetes.

2.5 Socio-demographic factors

Poor medication adherence is linked to key client demographic factors (eg, young age, low education level, and low income level) (Polonsky, Fisher, Hessler, Brohn and Best, 2011). Low income and low educational level were importantly linked with the level of adherence to the treatment regimen (Kassahun, Gashe, Mulisa &Rike, 2016). Consequently, poor economic base and illiteracy can result in the poor outcome of diabetes due to poor accessibility to healthcare services and self-care of diabetes. More educated patients were more adherent to therapy. Being less educated makes learning more difficult; as diabetes drug therapy gets more complicated, patients are expected to have more complicated cognitive skills to be able to understand the prescribed drug therapy and to adhere to treatment for good glucose control (Gimenes, Zanetti & Haas, 2009). According to Polonsky and Henry (2016), higher educational levels of patients were found to be significantly associated with a higher compliance rate of the patients. Several studies have found the same results (Ghods and Nasrollahzadeh, 2002) while some studies have found no such association (Spikmans, Brug, Doven, Kruizenga, Hofsteenge & van Bokhorst-vander Schueren, 2003). A study conducted in the UK has shown that patients with a lower level of education have better adherence. It may be presumed that patients with a lower educational level may have more trust in the physician's advice. However, these results show that education may not be a good prognosticator of therapeutic adherence. Kassahun, Gashe, Mulisa and Rike (2016), also reported that low economic income and low educational level affected the level of adherence to treatment regimen.

2.6 Knowledge on the disease condition

Jaam et al. (2017) noted that lack of knowledge about the disease and its medications was linked with poor impetus, perception, as well as self-esteem. A study by Jing, Sklar, Min Sen Oh and Chuen (2008), noted the patient-centered factors can be demographic (age, gender, educational level, and marital status) and psychological (patients' beliefs and motivation towards the therapy, negative attitude, patient-prescriber relationship, understanding of health issues, and patient's knowledge). Kalyango, Owino, and Nambuya, (2008) also noted that nonadherence, poverty, lack of knowledge and poor follow-ups are the main factors observed in poor glycemic control. Those that have higher level of education were expected to have a better understanding of the nature and chronicity of the disease and therefore to adhere to medication, than those of lower level of education. Significantly, most studies did not however reveal positive association between level of education and adherence, (Awodele & Osuolale, 2015). Feleke, Alemayewu and Adanu, (2013) noted in their study that diabetes being a chronic illness have need of sound knowledge of self-care by patients so that they can contribute meaningfully in the management of their lives. The study by Feleke et al. (2013), also reported limited knowledge on diabetes mellitus complications. However, they also said that, this level of inadequate knowledge regarding risk factor and complication may lead to decrease precaution of client for complication and these are high economic burden for the country in the management of complication which comes due to in adequate precaution for the complication. Based on the above they concluded that there is the need for emphasizing diabetic's complications during diabetes education. Findings from diabetes mellitus population have shown that good medication adherence has been associated with lower glycated haemoglobin (HbA1C) levels (Egede, 2015). Complications of type 2 can be diabetic ketoacidosis, retinopathy, infection, nephropathy, diabetic foot ulcer (Holt,

2004). Challenges in education and the knowledge regarding diabetes might affect the diabetic patient's adherence to their medication regimen (Al-Qazaz et al., 2011).Abebaw, Messele, Hailu, and Zewdu (2016), reported in their study adherence and associated factors towards anti-diabetic medication among type 2 diabetic patients on follow-up at the University of Gonder Hospital, North West Ethiopia that patients knowledge on diabetes affects non-adherence. In a study by Kayyali et al a response rate of 23.7% ($n = 399/1683$) for the English questionnaire was achieved. Overall, 59.4% ($n = 237/399$) of the cohort were able to identify a minimum of three T2DM symptoms and thus, were considered to have adequate or good awareness. Whereas, 60.6% ($n = 242/399$) were able to identify a minimum of six T2DM risk factors and were considered to have adequate or good awareness. More participants could correctly identify that obesity was a risk factor of T2DM when they were asked the question in their spoken language, rather than English ($p < 0.01$). When participants were asked about their current lifestyle choices, there were high levels of inactivity, smoking and alcohol consumption reported.

2.7 Perceptions and Beliefs

According to Polonsky and Henry (2016), many clients hold considerably negative or highly doubtful beliefs about their prescribed medications, often fearing that the long-term risks outweigh any likely benefits. Numerous studies have examined the impact of this "necessity-concerns framework"; although – as noted above – while believing that one's medications are necessary is associated with adherence, there is a consistent finding across the studies to date that patients' concerns about their medications are more strongly linked to adherence than their beliefs in the necessity of those same medications.

Studies by Mandewo et al., (2014) showed that some patients do not take their medication because they believe that God can cure them from diabetes without taking their medication. Other patients claimed that there were no religious or cultural convictions on their adherence behavior. However, some said that their culture prevented them from adhering to treatment recommendations particularly to drugs. They also admitted to have consulted apostolic faith healers to deliver them from diabetes. Again, some also admitted to have consulted traditional healers for treatment of the diabetes. The patients perception was that, the medications were not effective in managing the diabetic condition and that is the reason why they did not adhere to the medication. Patients with these perceptions, therefore stopped taking the medication and resorted to herbal medicines and spiritual healing as therapeutic alternatives, because of their easy accessibility, perceived efficacy and affordability (Atinga, Yarney & Gavu, 2018). In the Mandewo et al., (2014) study, assessing nonadherence to treatment among diabetic patients, they observed that there was no statistically convincing association between waiting time and nonadherence to medication regimen. Although they noted that patients who bought their medication from private pharmacies, than spending long waiting time at health facility were not encouraged to adhere to their medication regimen. In Shaw-Perry (2006) study, perception and beliefs about type 2 diabetes among non-diabetic black women, the problem of health disparities extends beyond perceptions and beliefs of health consumers. She said that, health beliefs and behaviors are the result of how people receive, process, and decide to act on information, resulting from the complex interaction of perceptions, enablers, and nurturers that signal the need for behavior changes within a family and communal structure.

2.8 Comorbidities and Poly-pharmacy

Another study done in Saudi Arabia found an overall 65.8% nonadherence in patients suffering from hypertension (Khan, et al. (2012) Kardas (2005) noted that poor adherence to therapies is common, especially when comorbidities exist. Olunfunsho and Jemmela (2015) also reported in their study medication adherence in type 2 diabetes patients in Alimosho General Hospital, in Nigeria that comorbidities are some of the factors that affect medication nonadherence. The implication to the above is that when the diabetic patient presents with another ailment like hypertension, antihypertensive medications are prescribed for him and this adds to the already existing diabetic medication that she is already taking, and this adds to the existing burden and this may be the reason why some of the them will not adhere to the medication, because they may think that the medication is too much. Jelinek et al. (2017) in their study clinical profiles, comorbidities and complications of type 2 diabetes mellitus in patients from United Arab Emirates, said that hypertension, obesity and dyslipidemia were common type 2 diabetes comorbidities

2.9 Quality of life of participants living with type 2 diabetes mellitus

Raimi (2017) noted in his study, factors influencing medication adherence among patients with diabetes mellitus and hypertension in Nigeria that, to ensure adequate blood pressure and glucose control, patients need to adhere to their antihypertensive and anti-diabetics. He said that, this will in turn improve their quality of life and prevent complications and hospitalization. Karter, Subramanian and Saha, (2010) noted that many patients hold convincingly negative or highly doubtful beliefs about their prescribed medications, often fearing that the long-term risks outweigh any likely benefits which invariably affects their quality of life.

Side effects such as gastrointestinal disorders (nausea, vomiting, and diarrhea), following medication has been shown to be convincingly linked to nonadherence (Fischer et al. 2010). Patients who experience adverse reaction from medication are more likely to discontinue with the medication than those who do not.

In their study Erectile dysfunction and low sex drive in men with type 2 diabetese mellitus: The Potential Role of Diabetic Pharmacotherapy, (Al-Kuraishy & Al-Gareeb, 2016,), said "Metformin in type 2 diabetes mellitus leads to significant reduction in testosterone levels, sex drive and induction of low testosterone-induced erectile dysfunction, whereas; sulfonylurea in type 2 diabetes mellitus leads to significant rise in testosterone levels, sex drive and erectile function" Corona, Rastreli, Morgentaler, Sforza, Mannucci, and Maggi, (2017) also reported in their study, meta-analysis of results of testosterone therapy on sexual function based on international index of erectile function, that testosterone replacement therapy improves erectile dysfunction in diabetes mellitus. Thapa et al. (2019) in their study revealed various dimension of quality of life of the diabetic patient that is affected. Highest score of quality of life was found in social burden dimension. They indicated that diabetic patients are getting good support in the society. Domain energy and mobility with least score was also found to be affected. It shows that respondents were feeling less energy affecting their daily life. Because of diabetes they were getting problem in walking and fulfilling their daily requirements.

2.10 Other factors why participants living with type 2 diabetes mellitus medications

Jaam et al. (2017), noted that patients using metformin and short acting insulin had poorer adherence than those using sulfonylureas and long-acting insulin, respectively. Lifestyle-

related changes included changes in medication dose based on diet and discontinuation of medicines when exercising, all of which in turn affected medication adherence.

Raimi (2017), reported in his study on factors affecting medication adherence among clients with diabetes mellitus and hypertension that 19% of the respondents said that they were not adherent because of forgetfulness. It should be noted that many additional factors have been described in the contemporary literature such as depression, forgetfulness, and limited diabetes knowledge (Polonsky & Henry, 2016). Again forgetfulness is one of the factors that causes nonadherence (Albuquerque, Correia, & Ferreira, 2015) Nonadherence to medication could result when some patients believe herbal medications are more effective in controlling diabetes so little or no attention is paid to the orthodox medications and rather focus on taking herbal medication for the management of their diabetes until they start developing complications (King, 2008).

2.11 Summary of the literature review

The literature reviewed, broadly showed that many people living with type 2 diabetes mellitus did not adhere to medication that were prescribed to them. Reasons of nonadherence have been highlighted in the extant literature. Most of these studies were from the western world and other African countries with a few from Ghana. Majority of the studies were quantitative, with a few qualitative studies. This current study explored the reasons why people living with type 2 diabetes mellitus did not adhere to the diabetic medication in the Ghanaian perspective. The next section looks at the methods used in this study.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

Qualitative research method was used to describe the patient-related factors of nonadherence to medication in diabetics at the Shai-Osu-Doku District Hospital (SODH), Ghana. This chapter focuses on the research design, setting of the study, target population, sampling size and sampling technique, data collection tool, data collection procedure, data analysis, methodological rigour and ethical issues observed.

3.2 Research Design

The research approach used was an exploratory-descriptive design within the qualitative paradigm using semi structured interview guide to elicit subjective responses from patients from the Shai Osu-Doku District Hospital. This type of design was used because the researcher's interest was not to quantify the phenomenon studied but rather to have an in-depth understanding of non-adherence of medication as was presented by the patients. Lobiondo-Wood and Haber (2013), explained that qualitative research is a systemic, interactive, and subjective research method used to describe and give meaning to human experiences. Meanwhile, Halloway and Galvin (2016) opined that it is developmental and not static but dynamic and Mayan (2016) explained it as a method for investigating phenomena that are explored in their natural environment. This method helped the researcher understood the phenomenon of medication nonadherence in the perspective of the diabetic patients.

3.3 Research Setting.

MAP OF SHAI OSUDOKU DISTRICT

The study was conducted at the Shai Osu-Doku District Hospital. Shai Osu-Doku District Hospital was established in 1970 as a health post and handed over to the Ministry of Health. The facility advanced to a Health center in 1985 and finally to a District Hospital in mid-2009. The hospital is situated in Dodowa, the capital of the Shai Osu -Doku District. The hospital is the only major government health institution in the Shai Osu-Doku District. It is a 125 bed capacity institution with six (6) wards and two (2) operating theatres.

The main occupation of the inhabitants of this district, where the hospital is located is farming, particularly mango. Other food crops such as rice and watermelon are common. Fish farming is also gaining widespread popularity among the inhabitants. The general population of Shai Osu-Doku District is 70,252 people.

Shai Osu-Doku District Hospital has always been chosen as a trial center for major National health policies (National Health Insurance, National Malaria Treatment Policy). The vision of the hospital is to become the best district hospital for the best quality of patient care, teaching and research in Africa. Their mission is to provide quality healthcare services responsive to the needs of all manner of people living in the district and its environs. Also to

implement approved health sector policies and prudently manage all resources available for the provision of services and finally to provide a conducive environment for all categories of staff to offer best to clients.

The core values of Shai Osu-Doku District Hospital are people centered, to be professional, work hard, to be team players, decisions are evidenced based, they are disciplined, have integrity and strive for innovation and excellence. Their primary clinical areas are hypertension clinics, diabetes clinic, ultrasound care, dental clinic, antiretroviral clinic, family planning, community psychiatry, eye clinic, theatres, maternity and antenatal clinics. The activities they undertake include home visits, hospital visits, review cases, mental health talks to school, organizations, churches and communities. Their collaborators include Word of Faith Mission, Village of God Children, Noguchi Memorial Institute for Medical Research, University of Ghana and Shai Osu-Doku District Assembly.

3.4 Target Population

According to Lobiondo-Wood and Haber (2013, p 261), target population is "the entire set of cases about which the researcher would like to make a generalization". For this study the target population were all people living with diabetes that visited the Shai Osu-Doku District Hospital.

3.5 Inclusion Criteria

Any male or female older than 20 years and is diagnosed with type 2 diabetes mellitus by a doctor and is comes for review at the Shai-Osu Doku district Hospital. The patient should be older than 20 years because the researcher was avoiding minors so as not to go for parental consent that will make the work tedious, because the work was also already time bound

3.6 Exclusion Criteria

The researcher is excluding all type 1 diabetes mellitus and anybody with gestational diabetes and also type 2 diabetics who are mentally derailed. Also patients who are newly diagnosed patients up to six months

3.7 Sampling Technique

Purposive sampling technique was used to select participants at the Shai Osu-Doku Hospital. According to Ritchie, Lewis and Elam (2013), purposive sampling is a non-probability method of sampling in which the researcher recruited the study participants on the basis of personal judgment using the inclusion criteria. The nurses selected the participants for the researcher after she had spoken to the nurses on the project and explained the inclusion and exclusion criteria to them extensively. The participants were not coerced to take part in the study. Participation was purely on voluntary basis. They were told that participating in the study does not attract any remunerations and that it is entirely free of charge to be part of the study.

3.8 Sampling Size

According to Lobiondo-Wood and Haber (2013, p578),” saturation is the repetition of information until no further useful data are forthcoming”. The researcher interviewed 11 participants and this was determined by saturation when no more useful data was forthcoming, (Creswell, 2013).

3.9 Data Gathering Tool

A semi-structured interview guide (Apendix E) was used to collect data from the participants. This was done in order to elicit in-depth responses from the participants. The interviews were conducted in English. Audio recorder was used to capture the data during interviewing with the consent from the participants and transcribed verbatim. Field notes were also kept during the interview

3.10 Data Collection Procedure

Permission (Appendix D) was sought from the authorities of the Shai Osu-Doku District Hospital where the study was done with ethical clearance (Appendix A) that was given by the Ethical Review Board of the Noguchi Memorial Institute for Medical Research, University of Ghana, Legon and an introductory letter (Appendix D) from the School of Nursing and Midwifery. The nurses selected the participants to the researcher after she had spoken to the nurses on the project and explained the inclusion and exclusion criteria to them extensively.

Individual interviews were done for each participant using a semi-structured interview guide. Individual participants were briefed on the purpose of the study and the information sheet was presented to them for clarification. The researcher again confirmed the inclusion and exclusion criteria before interviews were done. The researcher first established rapport and booked appointments with each participants at their preferred time and setting to make sure that they cooperate fully and also to ensure minimal distractions during the data collection process. Before the data collection, the participants were taken through the study protocol explaining to them the potential benefits and risk of the research and obtaining of their signatures on the consent form authorizing consent to be part of the study. Permission and approval was also sought to audio-

record the data collection process. The researcher made sure that the audio recorder was functioning well and had a back-up in case the audio recorder developed a problem. Data was collected using a semi-structured interview guide during which individual participants were encouraged to relax, feel free, and express their thoughts and feelings. The researcher used probing questions to help the participants contribute meaningfully to the discussions. The researcher labelled each interview conducted at the end of each individual interview, and listened to the interview severally. Read and re-read the field diary and tried to align the notes written with each interview. The researcher then transcribed the interviews verbatim. The transcribed data was read and re-read looking for phrases, key words and statements. Saturation was reached in the data collection process with the eleventh participant as no new information concerning the topic under study was forth coming. All appropriate documents such as the signed consent forms, demographic data, transcribed interviews, and field notes were filed. The audio recordings have also been saved electronically on hard drives and external drives for safe keeping.

3.11 Field Notes

A special note book was kept for recording detailed field notes about the non-verbal responses. The incidences that were heard, seen, experienced and thought about during the process of data collection were recorded by writing in order to comprehend and interpret the content of the interviews better, (Bogdan & Bicklen, 2003). Stern (1985) noted that field notes assist in developing subsequent interview questions, deciding future settings for the study and making theoretical sampling decision. Field notes also guides the researcher to ask relevant questions and particularly assist to validate the information being gathered to make it credible and trustworthy.

3.12 Piloting of the Interview Guide

Piloting of the interview guide was carried on two type 2 diabetic clients at the University of Ghana Hospital, Legon. This facility has similarities with the Shai Osu-Doku District Hospital in terms of patient care and hospital administration. The participants involved in the piloting study were not added to the participants recruited at the Shai Osu-Doku District Hospital. The piloting conducted by the researcher helped her to find out if the interview guide was able to collect data that would answer the research questions as well as identify the pitfalls in terms of ambiguity of questions, leading to double barrel questioning and the duration of the interview questions sessions. This helps to make the necessary adjustments to the data collection tool if needed before it is used for the original study. The piloting also allowed the researcher to develop better interviewing skills needed to elicit rich information from the participants on the topic of non-adherence to medication among people living with type 2 diabetes mellitus.

3.13 Method for Data Analysis

Thematic content analysis was used to analyze all aspects of the data that was collected including field notes and the interviews. Lobiondo-Wood and Haber (2013, p334), stated that "the process of recognizing and recovering the emergent themes which is an important aspect of organizing data" is thematic analysis. Thematic content analysis improves the representation of verbal expressions in a contextual form, whereas maintaining the main ideas regardless of the capacity of the data involved. It also involves the process of identifying coding and categorizing primary patterns that was found in the data collected. The interview questions were extensively discussed with my supervisor. All the interviews were conducted in English and audio recorded and this was transcribed verbatim with accuracy. The researcher then read the transcriptions over

and over and treated each interview's transcript as a whole document. Unit of analysis of data was carried out by examining line upon line of each sentence of all the data set to inductively generate codes that captured meaning and content of each sentence. Emerging codes were then identified from the sentences and then compared with the original text to see whether the codes reflect or are congruent with the text. The identified codes were then analyzed to find out how different codes could combine to form an overarching theme. This the researcher did by considering the relationship between codes, their similarities and differences to form sub-themes. The themes and sub-themes were then correlated with the entire data set. The themes and sub-themes and all extracts of the data were coded with pseudonyms of study participants. The researcher after developing the themes and sub-themes of the study reflected on the commonalities and differences of the identified themes and sub-themes, their collated data extracts in relation to the content of the data sets and analyzed how they conformed to the research topic, questions and the purpose of the study. Finally, a detailed report of the results of the study was written, highlighting study findings and supporting them with verbatim quotations from study participants.

3.14 Methodological Rigour

The trustworthiness criteria recommended by Lincoln and Guba (1985) was employed in this study to ensure methodological rigour. According to Lincoln and Guba (1985), trustworthiness is ensured by establishing, credibility, transferability, dependability, and confirmability in qualitative research.

Credibility refers to the confidence one has in the truthfulness of the research findings. Credibility was ensured in this research by spending enough time with participants during the

interaction process. This enabled the researcher to establish proper rapport and build trust. Member checking was also done by making follow up interviews for participants to validate the accuracy of the transcribed data and the themes that emerged. Also a colleague experienced in qualitative analysis was made to code three of the transcripts after which comparisons were made to ensure objectivity in the coding process and to eliminate bias. This is consistent with verification by peer debriefing.

Transferability refers to the ability of the study findings to be applied in similar settings (Lincoln & Guba, 1985). This was ensured by creating narration of the research process (Streubert, Speziale, & Carpenter, 2011). This was achieved through detailed descriptions of the whole research process for anybody to be able to evaluate how the findings from the research can be made applicable to individuals and situations with similar characteristic as that of this study. Important observations were documented as field notes so that the researcher's decisions, choices and insights could be monitored by the supervisors. All transcribed data and field notes that were taken were kept for the purpose of audit trial. It is hopeful that this study will be meaningful to others in similar settings

Dependability refers to the consistency of the findings and whether or not it can be repeated by other researchers (Polit, Beck & Hungler, 2010). This was done in this study by describing in detailed the research methodology under which the research was carried out. The detailed description of the research methodology would offer readers of this study the opportunity to assess how far the researcher followed approved guidelines for conducting the research and hopes this will pave the way for future researchers to repeat the study. The researcher again explained the data gathering process into details, and elaborated on what really

took place on the field, the number and length of data collection and the period of time data was collected.

Lincoln and Guba (1985) described confirmability as the degree of neutrality or the extent to which study findings are determined by the participants without any bias, motivation, or interest from the researcher. Confirmability was ensured by ensuring that all the researcher's preconceptions about the study were made known in the research report. The researcher explained in detail her choice of specific research methodology and the conceptual framework guiding the research. The researcher also gave an audit trail to help readers know the step by step approach that was taken to conduct the study. The researcher finally verified from the study participants after the data collected and transcribed, represented their ideas or what they intended to share with the researcher.

3.15 Ethical Considerations

Ethical clearance was sought from Noguchi Memorial Institute for Medical Research, University of Ghana, Legon. An introductory Letter was then taken from the School of Nursing and Midwifery to the authorities at the Shai Osu-Doku District Hospital where the research was done. An information sheet (Appendix B) was given to the participants. Participants were asked to demonstrate consent to participate by signing a consent form (Appendix B) for the study. The participants were informed that they could opt out of the study anytime they so wished despite signing the consent form. No form of coercion was used to attract or retain them.

The participants were also informed that each interview session would be audio recorded and that they would be free to answer or not answer the questions put to them. Privacy was ensured by doing the interviews without any interference from anybody and confidentiality ensured by

holding all information provided confidential, not making it accessible to others. Participation in the study was entirely voluntary. All data including audiotape recordings, field notes of all interviews and other relevant materials have been saved electronically on hard and external drives. To ensure confidentiality, only the researcher and supervisor have access to the raw data. Instead of the names of participants, pseudonyms were used in order to ensure anonymity. No cost was incurred by the participants in the study. The benefit of participating in this study could assist health professionals to identify the problems patients face and develop strategies to help patients take their medications to limit complications and increase their lifespan. The next section centers on the findings of the current study.

CHAPTER FOUR

PRESENTATION OF FINDINGS OF THE STUDY

4.1 Introduction

The purpose of the study was to find out the reasons of nonadherence to medication in people living with type 2 diabetes mellitus at Shai Osu-Doku District Hospital in Dodowa, a suburb of Accra. Data was collected from eleven (11) informants, who were purposively selected and interviewed. These interviews started on the 5th of February 2019 and ended on 15th of April 2019. Eight (8) of the interviews were done in a room that was provided by the hospital authority and this provided a lot of privacy for the participants, except three (3) which were conducted in the homes of the respondents. Data collected were manually transcribed and thematic content analysis was applied in analyzing the data based on the constructs and themes of the Medication Adherence Conceptual Framework Model (Jaam et al., 2017). Other sub themes that emerged from the data were derived using content analysis. Field notes were taken during the interview which served as a form of additional information. The incidences that were heard, seen, experienced and thought about during the process of data collection were recorded by writing, in other to comprehend and interpret the content of the interviews better (Bogdan & Bicklen, 2003). Stern (1985), noted that field notes assist in developing subsequent interview questions, deciding future settings for the study and making theoretical sampling decisions. Field notes also guides the researcher to ask relevant questions and particularly assist to validate the information being gathered to make it credible and trustworthy. In describing the experiences of the participants, pseudonyms have been used for anonymity. The pseudonyms include “Ebenezer, Aseda, Onyametease, Nyamebekyre, Nyamenehene, Seli, Eyram, Etornam, Dzifa, Fafali, and Mawutor.

This chapter has been organized by beginning with the description of the participant's demographic characteristics, followed by a presentation of themes and sub themes backed by verbatim quotes from the data and finally ends with a summary.

4.2 Participants' Demographic Characteristics

Eleven (11) participants were successfully interviewed. They were 10 males and one female. All of them were living with type two (2) diabetes mellitus. Their ages ranged from 23 years to 78 years. One of the participant's had lived with diabetes for a year, two have lived with it for two years, two have lived with it for five years and another have lived with it for 7 years. Also, one participant has lived with type 2 diabetes for 9 years, another for 10 years and yet another for 11 years. The last two participants have been living with diabetes for 20 years. These two who have been living with diabetes for 20 years happens to be a husband and a wife living under the same roof. Incidentally this husband for the past two months had switched to homeopathic treatment at the time of the interview, but the wife is still on orthodox treatment. The participant who had lived with diabetes for the past three years have initially been on anti-diabetic medications for the first year then switched to herbal medications for the second year then back on anti-diabetic medications again in the third year. The participant who has been living with diabetes for 11 years has been on anti-diabetic medications for 8 years and on herbal treatment for 3 years. He is currently on diabetic medications.

One of the participants completed middle school living certificate and is a mason. Another is a secondary school leaver and a fisherman. Two of them went to Polytechnic and out of these two one is an Administrative Assistant and the other a technical supervisor. Another participant is a student at the Accra Technical University who happens to be the youngest among all the

participants. Another is a first degree holder and a retired public servant. There was also a West African Examination Advanced ('A') level holder who used to be a teacher but now a driver. One also has a masters' degree and is a teacher. One of them went to school in America and said he finished college and now a Telecommunication technician. The last two a husband and a wife, the husband is a retired educationist a proprietor of a school and the wife who went to secretarial school is a retired banker. Two of the participants were not married, one is married but not living with the wife who is living in the United States and he is in Ghana alone. The remaining eight (8) participants were all married and living with their spouses. Out of the eleven participants, seven of them were Christians and three are Muslims. The last says he is neither a Christian nor a Muslim. He says he believes in God but not in religion (The Telecommunication technician).

4.3 Description of Themes and Sub-Themes

A total of five (5) major themes, and sixteen sub-themes emerged from the data. This was achieved using the Medication Adherence Conceptual Framework Model as a guide. The objectives of the study were also derived from the Medication Adherence Conceptual Framework Model. The major themes are: Knowledge on the condition, perceptions and beliefs, comorbidities, quality of life and other factors. Direct quotes from the participants were used to support the issues that emerged from the themes.

4.4 Themes and Sub-themes

The table below shows the themes and sub-themes that emerged from the data.

Table 1: Themes and Sub-themes

THEMES	SUB-THEMES
Knowledge on type 2 diabetes mellitus	• Knowledge about the diabetic medication and how it works • Knowledge about the disease • Knowledge about the normal and abnormal glucose levels • Knowledge about the complications of the disease
Perception and beliefs about type 2 diabetes mellitus	• Perception of wellness of their condition • Perceived benefits of the diabetic medication • Spiritual/Religious beliefs on diabetes mellitus • Frustration about spending most of the day in the hospital •
Comorbidity	• Comorbidity/Poly-pharmacy
Quality of life	• Social Status • Physical Status • Marital Relationship
Other factors	• Routine in medication taking • Forgetfulness in taking the diabetic medication • Using other methods to control the disease other than diabetic medication

4.5 Knowledge on type 2 diabetes mellitus

The first theme captured was knowledge on type 2 diabetes. This had three sub-themes, which include knowledge about the medication and how it works, knowledge about the disease and knowledge about glucose level. The participants needed to have knowledge in these areas to compel them to adhere to the treatment regimen.

4.5.1 Knowledge about the diabetic medication and how it works

This question was posed to the participants to see if they know the medication and how it works. It is expected that when the participants know how the drug works, this will determine the participant's ability to adhere or not adhere to the treatment regimen. The literature said that when participant's have knowledge on the medication and how it works, it helps them to adhere, but this was not the case in this study. The following are direct quotes of participant's knowledge on the medication and how it works.

> *I take metformin and glibenclamide. When you take it regularly it regulates the urine flow but as soon as you delay in taking it you begin to urinate frequently, that is when you delay a day or two. Also when you eat the wrong food like eating too many carbohydrates it increase the sugar level even though you are taking the medication correctly. So the drugs may not be effective if you don't eat the correct food.* ***(Ebenezer)***

From the narration above it seems to me that the clients does not comply with the education that is given on the disease condition.

This participant said that the diabetic drug works to control the sugar in the system. In his exact words this was what he said

"It controls the sugar in your system". ***(Semankyea)***

This participant also said the diabetic drug works to control the sugar in his blood

"I know that the medication controls the sugar in your blood" ***(Onyametease)***

This participant said he was told at the clinic that the diabetic medication reduces blood sugar and prevents diabetic complication

"I have been told at the clinic that it reduces blood sugar and also prevents diabetic complications". ***(Nyame Bekyere)***

Nyamenehene and Seli said that the medication controls the sugar in the blood. In their own words he said that

"I know it controls the sugar level in my blood" ***(Nyamenehene)***

"All l know is that it controls the sugar levels in the blood". ***(Seli)***

Mawutor said that all he knows is that the diabetic medication controls the sugar in the blood. He puts it this way in his own words

"All l know is that it brings down the sugar level" ***(Mawutor)***

Two of the participants Eyram and Dzifa said they don't really know how the drugs work.

"I don't know how it works but if l don't take it l just go off, it makes me weak and feel very dizzy" ***(Eyram)***

"I don't know how the medication works. The doctor said l should take them and that l am going to be on them for the rest of my life. It's quite worrying. Taking drugs all the time" ***(Dzifa)***

The findings appear to suggest that participants could not give a deep knowledge of the diabetic medication and perhaps that accounted for the reason why they did not adhere to the diabetic medication because their knowledge on the use of the medication was shallow

4.5.2 Participant's knowledge about type 2 diabetes mellitus

Participants were asked about the knowledge on the cause of the disease that they were living with, they mentioned varied causes such as life style, hereditary and others gave exactly what the nurses told them what causes diabetes. The following were their responses

"I was told that one's life style could cause diabetes and also it may be from the family, that is hereditary. This are the two major cause l know". ***(Ebenezer)***

Oh, it can be inheritance, it can be your life style, that is what l know. My mum had diabetes. I am not sure but l think l inherited it from my mum ***(Aseda)***

In fact, I think that because it is in the family. It is hereditary ***(Seli)***

From the narrations above, it was deduced that the participants believe the cause of diabetes is hereditary.

Findings from another participants revealed the understated.

*"The nurses told us that when the pancreas is diseased it may not produce insulin that will work on the glucose in the blood which makes the glucose accumulates in the blood. She spoke about other causes as well". **(Etornam)***

*"What l know is that, diabetes they say is too much sugar in the blood"**. (Fafali)***

Some of the participants expressed little knowledge about the disease they were living with

*"I don't know what causes diabetes, but l know that it can be inherited, and l am aware that my grandfather suffered from diabetes" **(Eyram)***

*"I don't know what causes it. But l hear people say too much sugar. You can also be bewitched when people don't like you. In this case you need to see a herbalist or a native doctor. I am planning to use herbs because the other day in the "trotro" a local guy was selling herbs and said that they are the best cure for diabetes and a few people testified that it is really good. I have plans to go for it because l really want a complete solution to this my illness" **(Dzifa)***

*"I don't know what causes diabetes" **(Nyame Bekyere)***

"Drinking too much alcohol? I don't really know what causes diabetes"

(Semankyea)

It appears that participants had shallow knowledge in what causes diabetes. They categorically stated they did not know what causes diabetes or will just give one cause of the disease. They seem to be interested in the cure of the disease and were ready to use anything that would help cure the diabetes.

4.5.3 Knowledge on normal and abnormal glucose levels

Some of the participants had fair knowledge of glycaemic control. Participants understood that they needed to check their blood glucose levels to avoid the abnormal levels. The normal fasting blood sugar level ranges from 3.5mmol/L to 5.5mmol/L. The following quotations came from

the participant on their knowledge on glucose levels:

> *"Actually l have been seeing FBS and l know it is just to check the sugar level in the blood"* ***(Ebenezer)***

> *"Testing for sugar in the blood first thing in the morning before you eat. Simply you don't eat before the tests"* ***(Onyametease)***

> *"You will not eat in the morning and they will take your blood and test to see the sugar level"* ***(Onyame Bekyere)***

> *"Checking your blood sugar level early in the morning before eating"* ***(Semankyea)***

> *"Not eating in the morning and using the glucometer to check the amount of sugar in the blood before you eat and take your medication. The sugar should be below a certain level otherwise if it is more than that, then trouble"****. (Seli)***

It appears that, the participant is aware of the repercussions of allowing the blood sugar levels to be too high or too low

> *"It means that that l don't eat before they test my blood for sugar in the morning* ***(Eyram)***

> *"It means that you know your blood sugar level by not eating in the morning by checking it with the glucometer"****. (Etornam)***

> *"You don't have to eat in the morning and test your blood before you take your drug and eat as well". (****Dzifa)***

> *"Not eating in the morning and checking the amount of sugar in the blood before you eat. We were taught that in the hospital".* ***(Fafali)***

> *"To check the amount of sugar in your blood, and this is done in the morning before you eat. I am able to do this myself in the house". (Mawutor)*

The participant's knowledge of glucose levels did not correspond with the taking of their diabetic medication. The researcher thought that they will adhere to the diabetic medications since they knew the implications of abnormal levels of glucose in the blood

4.5.4 Knowledge about the complications of type 2 diabetes mellitus

Participants narrated various degrees of complications of diabetes blindness, sexual weakness, ulcers that may eventually lead to amputation among others and some said because of the complications it brought fear into their lives so they were careful not to experience any.

> *"Yes l have fear because l am a human being. I have seen other people amputated and also fear of sexual weakness"* ***(Ebenezer)***
>
> *"I use not to be afraid until l began to experience problems with my sight. This has disturbed me a lot and brought me a lot of worries. When l saw that my friend's leg was amputated, it disturbed me a lot and brought me a lot of fears".* ***(Mawutor)***
>
> *"Yes l have fear because l hear if you don't take good care of yourself you get sore that can lead to amputation, you can become blind or even die. I hear about people suffering from diabetes and its complications, l never thought that today l will also suffer from this disease"* ***(Dzifa)***

It appears they were afraid of the complications of diabetes

> *"My fear is when the sugar goes high because if you not careful it can kill you"*
>
> ***(Etornam)***

The following quotes were from Eyram, Seli, and Semankyea who spoke about the various complications of diabetes

> *"Usually from the education l am given when l come to the hospital is that if l don't take good care or do not comply with treatment, my sugar can either go high or reduce which can lead to coma and if l am not fortunate can eventually lead to death. I know also that it can cause blindness and sores if you have a cut and you don't take good care of it".* ***(Eyram)***

> *"I know there are complications in diabetes which include blindness, sore that does not heal that sometimes lead to amputations. But personally, I have sexual weakness for almost 10 years now. But fortunately my wife has adjusted, she understands".* ***(Seli)***
>
> *"I know that it may give you sore that may lead to amputation if you are not careful. I also heard about blindness and coma that can lead to death"* ***(Semankyea)***

Though the, participants were aware of the complications of diabetes, they still did not take the medication religiously.

The following also had this to say;

> *"There is a woman l know who is diabetic, they have amputated her leg. A month ago when I was going to renew my driving license, l failed the eye test, then l was later told that it's because l am a diabetic".* ***(Nyamenehene)***
>
> *"When there is a sore it will not go thus when you have a cut on your body it is difficult to heal".* ***(Onyametease)***
>
> *"It slows you down, like l had a seizure and l was brought here and that is one of the things that happen to you when your sugar level goes down. We also have been educated that it can cause blindness and sores that may not heal that can also lead to amputation and a whole lot".* ***(Aseda)***

The impression about the findings of their knowledge on the complications of diabetes is that they did not want to experience these complications. Though they know about the complications, the next step which is very important, is the step of adhering to the diabetic medication to prevent the occurrence of complications. On the contrary they did not adhere to the medication.

4.6 Perceptions and beliefs about type 2 diabetes mellitus

Participants gave varied perceptions and beliefs about diabetes. They spoke about the religious and spiritual beliefs, their perception of wellness and frustrations.

4.6.1 Religious and spiritual beliefs on type 2 diabetes mellitus

Some of the participant's perception about diabetes is that it is a natural phenomenon and may run in families and have the belief also that the cause may or may not be spiritual

The following participants said there is nothing spiritual about diabetes and that it is a natural phenomenon or a normal illness

"It's a natural phenomenon, life style and hereditary". ***(Aseda)***

"I think that because the diabetes is in my family that is why l have it. I don't think there is anything spiritual about this. It is a disease from my .family". ***(Onyametease)***

"I believe it is just a disease and it came by perhaps my own life style. Eating too much party food and sugary food". ***(Nyame Bekyere)***

"You can acquire either it through your eating habit or life style It is not spiritual cause, but the worse l can say is that it is hereditary". ***(Nyamenehene)***

"I don't believe that this is a spiritual disease. As far as l am concern this is a familial disease. I told you my father and two sisters also have it, so it is hereditary". ***(Semankyea)***

"I think it is hereditary, because like l told you earlier my father and mother had diabetes and also some close relatives. Now l think other causes include eating habits and life style". ***(Seli)***

My impression here is that she believes that the condition is hereditary and a combination of other factors

"I personally don't believe that diabetes is spiritual. I think it is a natural disease and that one can leave with the disease comfortably if you comply with the health person's advice". ***(Eyram)***

"*I believe that it is a normal illness. It is not spiritual".* ***(Mawutor)***

> *"They normally say that diabetes is a sickness for the rich. But l have come to see that diabetes is no respecter of persons. It can affect any one be it rich or poor. So me l don't think about it. I don't belief that it is spiritual. I just also told you that that it may be hereditary since l believe my father may have had diabetes before he died at age 75 years".* ***(Etornam)***

This participant even though beliefs that the disease may be familial, she wants to ascribe it to witch craft since there is no family member with the disease and therefore will resort to herbal treatment and also consult the native doctor. In her own words, she said ….

> *"They say you must have somebody in the family to suffer the disease, then you can also get it. There is nobody in the family, yet l have it. So where is it coming from. Perhaps l have been bewitched. This one calls for herbal treatment and also consulting the native doctor"****. (Dzifa)***

This participant also said there is nobody in the family with the disease, yet he has it. She also ascribed it to spiritual cause and said that that is the reason why she goes for prayer camps. She said she will not take chances at all. She said ….

> *"I don't really know but sometimes l believe that it is spiritual so l also go to the prayer camps at Assin Fosu for prayers. I say it may be spiritual because there is nobody in the family that has suffered diabetes before. It is not in my family. I think it is spiritual. I told you that it may be spiritual and this brings a lot of fear and that is one of the reasons why l also go for prayers at the prayer camp. I will not take chances at all".* ***(Fafali)***

This participant beliefs that the devil can also cause the disease. In his own words he said;

> *"I have seen on TV people being delivered from diabetes which means that it can be also spiritual even though we know that it may be caused by one's own life style and it may be inherited. Truly the devil can also do it".* ***(Ebenezer)***

It is obvious from the participant's narrations that one group had a spiritual belief about diabetes and the other group had no spiritual or religious beliefs about diabetes mellitus and the latter

believes that diabetes is a normal illness or had a natural cause. The first group ascribed it to witchcraft and will therefore see the native doctor or go for prayer camps for deliverance and perhaps that may explain why the non-adherence of the diabetic medication.

4.6.2 Perceptions of Wellness of their condition

The participants said they have been afraid because the disease is life long and expressed various fears because of the effects of living with diabetes and this brought them a lot of worries. The following quotes were from the respondents on their perception of wellness.

This participant stopped taking the medication for one year until he had a relapse

> *"After l was diagnosed, l took the medication for one year and l stopped. For one year l did not take it .There was a break for one year. After that l came back on the drugs again because l had a relapse and was brought to the hospital and l was put back on the diabetic drugs. So l have been on tablets for one year now. So all together l have been on diabetic drugs for two years".* ***(Fafali)***

The condition brought a lot of fear to these participants because they had the perception that it is a lifelong disease and that may probably kill them. These participants had this to say

> *"I use not to be afraid until l began to experience problems with my sight. This has disturbed me a lot and brought me a lot of worries. When l saw that my friend's leg was amputated, it disturbed me a lot and brought me a lot of fears. I know l will not be well again".* ***(Mawutor)***

The impression was that they pitied themselves which brought a lot of emotional worry to them.

> *"I have never heard of any diabetic getting well again. At best the conditions is controlled, but the condition is still with you. You continue to leave with it. You cannot be cured".* ***(Fafali)***

> *"I know this is a life-long disease. You leave with it for the rest of your life. As for wellness, don't talk about it. I know that this is the condition that may probably take me to my grave".* ***(Etoenam)***

The following participants said they will never be well again and my impression is that they pitied themselves which brought a lot of emotional worry to them

> *"Look at where the sickness has brought me. I keep going in and out of hospital. Will l ever get well again"?* ***(Aseda)***

> *"Those who are well don't come to hospital like l do. Somebody who is well need not see a doctor. I am always here for review, at least once every three months". (****Semankyea)***

> *"Those who are well are not taking any medication. I take medication every blessed day. This tells you that l am not well. So l am not well". (****Ebenezer)***

> *"Will l be ever well again? It is this sickness that has brought me on admission now. I am tired and fed up with this illness. Always taking medications. What crime have l committed. God is not fair with me".* ***(Onyametease)***

> *"My family has suffered so much because of this my ailment. Will l be ever well again? It is better if l die so my family will be free. There will be no more worries for anybody".* ***(Nyamenehene)***

The participants narrated that they are not well and also said that the diabetes brought untoward problems their way. This should have compelled them to adhere to the diabetic medication but they did not. Others said because the condition is life long, they are fed up and tired of taking the medication.

4.6.3 Perceived Benefits of the diabetic medication

The participants spoke well about their perceive benefits of the diabetic medication even though some also spoke negatively about it. Their belief is that, the medication works well if you take it religiously. In their own words the following participants praised the medication.

> *"Yes, they put you on it, to sustain you for some time. It helps you keep to track, go about your normal activities. It is okay, its good"***. *(Ebenezer)***

> *"The diabetic medication will prolong your life. It controls your sugar level in the blood"*. ***(Onyametease)***

> *"It reduces the sugar level"*. ***(Nyame Bekyere)***

> *"It helps you to live long. I think that when you stick to the advice of the doctor you get the full benefits of the medication. It controls the sugar in the blood. It keeps out of trouble, l mean the complications of diabetes. Please don't tell anybody I am very good at taking medication, but l skipped one or two doses. See where it has landed me, on admission now. So the drugs benefits us a lot when we comply"*. ***(Semankyea)***

It appears this participant is aware of the implications of not taking the medication, yet he said he skipped one or two doses which eventually brought him on admission.

> *"When you don't take the medication it makes you weak. But when you take it, you are better off"*. ***(Seli)***

This participant had this to say

> *"Personally, l personally benefit from the diabetic medication because that is what keeps me alive. If l don't take it l feel l am losing my life so l think that it is very very beneficial to me". (Eyram)*

This participant said no high blood or low blood sugar if you take the medication according to the doctor's prescription.

> *"If you take the medication according to the doctor's prescription you will not have problems. No high blood or low blood sugar"*. ***(Etornam)***

This one also said he feels that when one takes the medication and you are okay, so you stop taking it and believes that one should be healed totally and not go back to the medication

> *"I think it will help cure the diabetes. I feel that when you take the medication and you are okay, you don't have to come for review. So l don't come until l am rushed to hospital in a bad state. That is why l stopped taking the medication for one year. For me the benefits are that when you take the medication you are supposed to be healed totally"*. ***(Fafali)***

These two participants said that the diabetic medication that is supposed to benefit them has not helped them and therefore will switch to herbal or try any other thing that anybody suggest. They had this to say.

> *"I know that it controls the sugar to an appreciable level in the body* ***(Mawutor)***

> *I know the medication is supposed to cure my diabetes? But look at me l am on admission. I think the medication hasn't helped me so l must switch to herbal. I am not benefitting from the diabetic medication, honestly really will switch to herbs"*. ***(Dzifa)***

This one also said

> *"You are sick, you've been put on the medication, you don't see improvement, somebody suggest another one, you try it and it is good. That is the situation"* ***(Nyamenehene)***

Almost all of the participants demonstrated in their narration that they know that the diabetic medication benefits the diabetic patient who takes it religiously but this is what they have not been able to do. My impression is that they are not patient enough to be on the medication for long to see the long term benefits but rather they want a quick fixed. Perhaps they also lack the will power to adhere to the consumption of the diabetic medication.

4.6.4 Frustration about spending most of the day in the hospital

The participants recounted how frustrating it is to spend the whole day in the hospital facility any time they come for review. They said that it is tiring, boring and this is a problem that something must be done about.

> *"Oh this is where the problem is. We are plenty so we spend a lot of time in the hospital, almost the whole day. It is so tiring boring and worrying. The doctors are not enough for the huge numbers of patients that visit the clinic. You people must do something about it. It's frustrating".* ***(Mawutor)***
>
> *"l spend the greater part of the day (the whole day) in the hospital. It can be tiring, frustrating and boring. I think the numbers are too much (****Nyame Bekyre****)*
>
> *The whole day. It is tiring and boring. This is also one of the reasons why l sometimes don't come for consultations. Herbal treatment is not like that".* ***(Dzifa***
>
> *"Frankly speaking l spend too much time when l come to the hospital. You almost spend the whole day in the hospital. Something must be done about this one and l think that more health persons must be employed".* ***(Etornam)***
>
> *"Many of us that come to the diabetic clinic, our major problem is that, we keep too long in the hospital. Spending almost the whole day in the hospital. You know we don't eat before we go and it takes a long time before they check our fasting blood sugar. They don't come early. You will be in the queue for long time, it is frustrating and because we don't eat before we come we get hungry. It's a big source of worry".* ***(Eyram)***
>
> > *"Sometimes you don't stay for long relatively, but normally we spend almost all the day in the hospital. It can be frustrating. Many times we come without eating. Something must be done about it".* ***(Seli***
>
> *"Lots of people come to the diabetic clinic, so if you don't come early you leave very late. You can spend the whole day in the hospital facility. It is a big source of worry".* ***(Semankyea)***
>
> ***i)***

This particular participant has switched from orthodox treatment to homeopathic treatment in the past two months. At the time of the interview he narrated how he spends less time at the homeopathic clinic. He said that

"At dodowa l spend almost the entire day there, but at the homeopathic clinic maximum two hours they are done with me and l come home". ***(Nyamnehene)***

"My sister, the diabetic patients, we are a lot, so if you don't come early you are likely to be at the clinic for the whole day. It can be tiring and boring as well". ***(Onyametease)***

"When people are many you spend a lot of time and this can be boring and tiring" ***(Ebenezer)***

From the above narrations almost all the participants expressed worry and frustrations because when they come for review they spend a better part of the day in the diabetic clinic, and that is the reason why the last but one respondent resorted to homeopathic clinic where he said he spends a maximum of two hours whenever he visit the homeopathic clinic for review.

4.7 Comorbidities and Poly-Pharmacy

Some of the participants narrated that they also suffered from other disease and therefore were put on other medications apart from the diabetic medications.

These participants said they specifically were hypertensive in addition to the diabetes and were put on antihypertensive drugs as well. They complained that they had a lot of drugs to swallow so they either took their anti-hypertensive medication and skip the diabetic drug or vice versa. They had the following to say

"I swallow 2 tablets in the morning and 2 tablets in the evening. I also take hypertensive drugs. But l don't take it always. I concentrate more on the diabetic drugs" ***(Mawutor)***

> *"I take anti hypertensives. Two different drugs. In total l take 3 tablets in the morning and 3 in the evening. I think it is too much for me. The doctor needs to consider my age. Because of this sometimes l skip some of the doses. Too many tablets for me. It's not good for my age"* ***(Dzifa)***

The impression here was that because they took antihypertensive medication in addition to diabetic drugs, the numbers of pills they took was too much, so they skip some of the doses.

This participant said emphatically that he is tired of taking too many medication every day

> *"Metformin and daionil. l take one of tablet each in the morning and in the evening. I am also on insulin and l inject it myself morning and evening. I also inject one at 10pm. I have been on all this medications for 5 years since l was diagnosed as a diabetic. I also take antihypertensive drugs I have two of that. Frankly speaking this affect the way l take my medications because the medications are a lot so sometimes l skip the diabetic medication. The doctor told me that is why l am on admission now. Madam nurse, if it were you wouldn't you get tired of taking too many medications every day"?* ***(Semankyea)***

> *"Hmmmmmm I was doing herbal, thus mango and sweat apple leaves boil and drink. I used them for about two years and l stopped because somebody said it will eventually destroy my kidney. It's been 2 months since l stopped. I am also on hypertensives. I take it once a day. I started taking them the same day l started with the diabetic medication. So l have been on it for 20 years".* ***(Nyame Bekyere)***

> *"I take antihypertensive. Two of them".* ***(Onyamatease)***

As narrated above the participants were on diabetic drugs and anti-hypertensives and this increased the drugs that they need to take in a day. Therefore they stated emphatically that because of the large number of pills they had to take in a day, it made them skip some of the medications. In my opinion this calls for strong education on the need to take both diabetic and

antihypertensive medications, without which the participants risk getting complications that would be detrimental to the health.

4.8 Quality of Life

The participants shared how the disease affected their quality of life. They narrated that it affected their social status by not being able to mingle with their friends, physical status by making them dizzy, having blurred vision and weakness in all the body parts. Marital relationships were affected because they had sexual weakness.

4.8.1 Social Status

Participants could not socialize or mingle with people. Even if they went out, they were careful what they ate. The reason was that, they may be tempted to take alcoholic beverages and high carbohydrate diet.

> *"I don't think so. The medications have not placed any restrictions on my life except that when you go out with friends you cannot eat anything like they do. I am so careful and particular about what I eat".* ***(Eyram)***

> *"I hardly mix with friends since l started taking the diabetic medication. I don't go out to drink with them again as l use to do in the past".* ***(Seli)***

> *"It slows me down, makes me get tired early and does not make me mingle with my friends any more".* ***(Semankyea)***

He could not socialize because he wanted to prevent a situation where he may not be able to control himself and will therefore drink and eat what he is not supposed to consume as a diabetic

> *"Yes it has, you can't go out because you can't eat certain things, you can't drink, you can't do certain things, so it makes you stay back and lay back. Back in the states l use to drink vodka and smoke a lot. And l smoke more than l drink but now l am restricted because of the diabetic medication. So you can't mingle with people who do that stuff. You can't socialize that much because you are restricted in a lot of food, drinks and you got to know the kind of activities you participate in, so you are restricted".* ***(Aseda)***

4.8.2 Physical Status

The participants described how serious it is living with type 2 diabetes. They described how their blood sugar went high if they skip their medication. They said they experienced dizziness, felt weak in their body and sometimes they go into coma.

This participant had this to say

> *"Yes my diabetes is very serious, because if l don't take the medication l get dizzy. You see that is what have brought me on admission now. Sometimes you get tired of taking the medication and you stop taking it for period. I think the diabetes is affecting my eyes, because sometimes my vision is blurred".* ***(Mawutor)***

> *"It is very serious. That is why l am here now. The doctor told me that it is because l have been skipping the medication that is why l am on admission. And that it can kill me if I don't take the medication regularly as prescribed".* ***(Dzifa)***

> *"I have been able to control my diabetes. I am very conscious of what l eat and I take my medication. But sometimes my blood sugar goes as high as 19 and when that happens you feel like you are dying. You can't walk and somebody must bring you to hospital".* ***(Etornam)***

This participant said if he does not take his insulin injection he goes off, cannot see anything, can't talk and gets weak and weak

> "*I think it is very serious because if l don't take injection for just a day l just go off. By going off l mean l can't see, can't hear, can't raise my hand, can't talk, and l start getting very weak and weak and weak, unless l take the injection before".* ***(Eyram)***

> *"It is very serious because it has made me to lose weight, it also makes me weak".*
>
> ***(Semankyea)***

He said that physically he feels pain in some parts of his body and finds it difficult to walk

> *"Feeling dizzy and pain in some parts of the body. I cannot walk well. I can only drive. If l am able to sit in the car, l drive but when l get down l cannot walk. It's been about 3 years now".* ***(Nyamenehene)***

This one also said he feels dizzy and heaviness in the body

> *"At times some make me dizzy, heaviness in my body so l cannot move others make my leg stiff, others make my heart beat. Sometimes when l go they tell 8, other times 12. It was only the last time when l went they said it was 16. It was high".* ***(Nyame Bekyere)***

> *"My diabetes is serious because it makes me lose weight and it makes me weak and dull".* ***(Onyametease)***
>
> *"It makes me restless and l become tired. I am not all that strong, always feeling tired".* ***(Ebenezer)***

> *"Initially l suffered a lot because we did not understand what was wrong with me so l had relapses and taken to hospital frequently for admissions for not less than two weeks.*

> *I have been in and out of hospital. Last Wednesday am told l was brought in in a comatose state". **(Fafali)***

The impression gathered here was that perhaps because of these physical feelings that they experience due to diabetes which of cause are not pleasant, does not motivate them to take the medication and this probably accounts for the frequent relapses and frequent admissions.

4.8.3 Marital Relationship

Some of the participant spoke about sexual weakness as a result of the medication, even though they said that it did not affect their marital relationship, it was a source of worry to them. Their wives understood the situation and continued with the relationship

This participant had this to say

> *"I am the one taking the medication and l know the side effect the drug has on me. I couldn't erect again. I could not sleep with my wife. We have 4 children. My wife knows that is because of the sickness other than that it would have been a different thing. That is why l will like to change to herbs. This problem is still there. And l am also fed up with the drug. For nine years now l am on diabetic drugs. You the doctors and the nurses know the side effects, though it minimizes the sugar in the system, it is not good. It has not affected our relationship, my wife understands". **(Etornam)***

The same participant also said

> *"All depends on your diet. If you eat your vegetables well it brings the sugar level down, but if you don't eat well, you will be taking it, but today it is okay, and tomorrow it is something else. I must say that it is working well, it is effective with regular exercise and good diet. The only problem is with the side effect of my penis not erecting". **(Etornam)***

This participant said he has not erected for over six years

> *"Sometimes after taking the medication l feel dizzy, sexual weakness, the more l take the metformin, the more weaker l become. The erection does not come at all for over six years now".* ***(Seli)***

This participant said his sexual performance had reduced

> *"Mmmmm, well you realize that because of this medication, eating at dawn becomes a problem. You are not ready to eat at dawn but because you need to take the medication you are compelled to eat so that you can go to work. And then as you age your sexual performance sometimes comes down. You may perform but not to your satisfaction like when you are not having diabetes".* ***(Ebenezer)***

The narrations from the participants clearly shows that they attribute their sexual weakness to the diabetic medication. They may be right because the literature also clearly spells out that metformin reduces the level of testosterone in diabetics that leads to low sex drive and low testosterone-induced erectile dysfunction but not the sulfonylurea that rather increase testosterone levels thereby increasing sex drive. My impression is that, they did not adhere to the diabetic medication because of the side effect of the diabetic medication that causes them to be sexually weak.

4.9 Other Factors that are reasons for non-adherence among the participants.

Majority of the participant have used herbal treatment before or are combining it with the diabetic medication from the hospital or have plans of using it. Only one participant is using homeopathic treatment. Others have either used herbal treatment before or are combining it with

the orthodox medication. Others simply forgot to take the diabetic medication because of their busy schedules and finally because of the routine in medication taking. The following are quotes of the respondents;

4.9.1 Routine in Medication Taking

The participants said they were either tired or it is a bother taking the medication because of the routine in medication taking. This compels them to skip some of the dosages.

This participant said much as he tries to take the medication, once a while he still skips some dosages because he is tired of the taking the medication.

> *"I have taken the medication until now and l am tired but what do you do, you still continue taking it since it will help you, but l am a human being, once a while l skip some of the doses". (**Mawutor)***

> *"Sometimes l feel tired of taking the medication, because the feeling is like all the time medication, all the time medication, it's too much. Even though l know that that is what will help me but it is tiring taking and l miss it. The main reason why l miss it is not because l don't want to take the medication but l forget due to leaving home in a rush to school". **(Eyram)***

They were tired of the routine of having to take medication all the time.

This one said he tries to attempt not to stick to the treatment plan. In his own words he said

> *"Oh yes it really a bother, taking medications always is a bother and sometimes one tries to attempt not to stick to the treatment plan". **(Seli)***
>
> *Oh yes it really a bother, taking medications always is a bother and sometimes one tries to attempt not to stick to the treatment plan **(Semankyea)***

This participant has run out of stock for three days, but is not motivated to go for a new stock because he is tired of taking the medication.

> *"In fact l feel very very very very uncomfortable, taking medicine always why. That is why sometimes l don't take it. I am tired of taking the medication. It's been three days since l run out of stock so l will go to the pharmacy to buy some".* ***(Nyame Bekyere)***

This participant said he feels like to stop taking the medication entirely. He said sometimes he skips the medication

> *"I told you earlier that l have been on this medication for five years and even though l know that it is good for me and it will prolong my life it is tiring taking it for all this year and truly sometimes l feel like to stop. So sometimes l skip some of the medications".* ***(Onyametease)***

> *"I told you earlier that I stopped taking the medication for a whole year, Yes sometimes l feel it is an inconvenience to be taking medication all the time and for the rest of your life".* ***(Fafali).***

The conclusion drawn here is that they were tired of taking the diabetic medication. Also there is the need to intensify education on the need to take the medication and to be on it for life.

4.9.2 Forgetfulness about medication taking

Participant gave various reasons why they forget to take their medications. Chief among them was their busy schedules and also because they had to travel. The following are direct quotes from the participant;

> *"When l was working in Tema sometimes l skip taking the drugs because l forget. It is not because the drugs that l have to swallow are too much".* ***(Mawutor)***

> *"Sometimes l feel tired of taking the medication, because the feeling is like all the time medication, all the time medication, it's too much. Even though l know that that is what will help me but it is tiring taking and l miss it. The main reason why l miss it is not because l don't want to take the medication but l forget due to leaving home in a rush to school".* ***(Eyram)***

The impression why these participants forget to take the medication is that, they have to leave home in a rush for work in the mornings, coupled with routine medication taking.

He forgets the medication because of his travels

"Once a while l miss taking the medication, not because I don't want to take it but because l travel and forgot to take the medication along". ***(Seli)***

He forgets the medication because of his busy schedules

> *"Sometimes l forget because l am a human being and as a human being sometimes we become forgetful. It is because of my busy schedule that is why l forget. It is human error". (Aseda)*

> *"This is what l do every day and sometimes you get fed up and wouldn't want to take the medication Sometimes l forget because l am in a hurry to go to work".* ***(Ebenezer)***

> *"Sometimes l forget. At other times like I said earlier it is an inconvenience taking medications all the time. With the education from the healthcare provider, l am willing to comply". (Fafali)*

In the narrations above all of them admitted that they forget to take the medication because of either their busy schedules, or rushing to work or school or because they have to travel. The

participants can be reminded either through text messages or whatsApp as a way of motivating them to take their medications.

4.9.3 Using other methods to control the disease other than medication

Majority of the participants have used herbal treatment before or are combining it with the diabetic medication from the hospital or have plans of using it. Only one participant is using homeopathic treatment. Others have either used it before or are combining it with the orthodox medication. The following are quotes of the participants;

He thinks that he has not benefitted from the diabetic medication so he is switching on to herbal treatment

> "*I know the medication is supposed to cure my diabetes? But look at me l am on admission. I think the medication hasn't helped me so l must switch to herbal. I am not benefitting from the diabetic medication, honestly l really will switch to herbs".* ***(Dzifa)***

These participants stopped using herbal treatment and went back on diabetic medication after they realized that the herbs did not help them.

> *"Yes l have tried herbal before, but it never count. I took it for almost three years. They were recommended by friends and sometimes adverts on radio and television. I really don't know the names of the herbs, they are leaves that l cook and drink, but it did not help me so l had to stop after three years of trying them. I buy them from the herbal shops and sometimes from herbal drug peddlers in 'trotro".* ***(Eyram)***

The impression about this participant is good since he had to return to the use of orthodox medicine after the herbal treatment failed.

> *"When you are sick you come across so many adverts on medications and the disease they treat. I have bought some diabetic herbal drugs from my home town Odumase.*

> *For the 11 years that l have been sick, three years l have been on herbal treatment, that is why l told you earlier that l have been on the diabetics drugs for 8 years. It did not control the sugar properly that is why l have come back to the doctor for the diabetic medications"***. *(Seli)***

> *"People talk about herbal medication for diabetic treatment, but it doesn't work. I have tried them before, but it did not work so l stopped. I was on the herbal medication for a period, but l stopped since it did not help me. l will advise anybody on diabetic medication not to stop it because it is the best. Yes it is tiring when you are on diabetic medication because you are on it for life. But what can you do since it will save your life. You must try and take it all the time".* ***(Mawutor)***

He used the herbal treatment alongside the diabetic medication.

> *"Initially l took the herbal medication. I was taking lily tea, a cup in the morning and a cup in the evening. It helps bring down the sugar level. There was another that l took that also boost my erection and it makes you become fit as a man. I used the herbal alongside the orthodox".* ***(Ebenezer)***

This participant who have been on diabetic medication for twenty years have switched to homeopathic treatment for two months at the time of the interview. He said that the homeopathic treatment is more effective.

> *"No, but l just started homeopathic treatment just about two months ago at a clinic on the Spintex road. I saw the advert on TV so l went there. I was given a liquid drug there to take daily and when it finishes you go back for more. After sometime they ask you to see the doctor and you go through the various test and they repeat the drugs or they change it for you. I think it is more effective than the diabetic medication".* ***(Nyamenehene)***

The conclusion drawn from the participant's narrations above is that, those who experimented with the herbal treatment had to quickly come back to the diabetic medication because they saw the difference between the two. The inference is that those who switched or are intending to switch to the herbal medicine may eventually come back to the diabetic medication.

4.9.4 Field Experience and Reflections

The researcher is generally attentive and good listener. This attribute coupled with her facial expression gave the participants the power to readily give the needed information the researcher was looking for. They had a lot of confidence in me as a practicing nurse.

The researcher before the study thought that the participants had enough education on the need for medication adherence and the importance of regular reviews. When they reported for review, some did not looked like people that were not complying with the diabetic medication. During the interviews, the researcher brought to bear her listening skills that made the participants to freely narrate their stories. The most revealing was the way those who experienced sexual weakness readily and openly narrated their stories with passion. As a practicing nurse, this study has thought me that we should take the education we give to our patients seriously and to lay emphasis and to make sure that the patients imbibe the information. This especially goes to the old clients who have been on the medication for over six (6) months and above.

This aspect of the work also brought into light the researchers perception about people living with type 2 diabetes mellitus before and after the study. The researcher's assumption before the

study was that, the participants took their medications as prescribed. She did not know that they had challenges on the disease condition. She also thought they grasped every advice that they were given on every information concerning diabetes mellitus and anti-diabetic medication.

After the study the researcher saw the need to probe further about health in general and to know if they have pertinent issues. She also learnt that as a professional nurse she should not use only their facial expressions to mean that all is well with them.

The study helped her to understand her clients better and to relate with them in a more loving manner.

4.10 Summary of findings

In summary, this chapter presents the findings of the study and also sets the foundation for discussions in the next chapter in relation to reviewed literature. A total of five (5) major themes and fifteen (15) sub-themes were covered in this chapter. This was achieved using the Medication Adherence Conceptual Framework Model as a guide. The results of the study showed that respondents did not adhere to diabetic medication for varied reasons which include poor knowledge on the disease condition, their perception and beliefs about the condition, comorbidity and poly-pharmacy, quality of life and other factors such as forgetting to take the medication for various reasons, tired about the routine in medication taking and using other methods such as taking of herbal medication to control the disease among others.

CHAPTER FIVE

DISCUSSION OF FINDINGS

5.1 Introduction

This section of the study focuses on the main findings in relation to previous studies, to determine the extent to which this study compares to studies that have been conducted previously. It concentrates on the objectives of the study, the findings that were discovered in the study interspersed with the Medication Adherence Conceptual Framework Model (Jaam et al., 2017).

5.2 Knowledge of participants living with type 2 diabetes mellitus

The first research objective was to identify the knowledge of participants living with type 2 diabetes mellitus. The study discovered that the participants exhibited varied knowledge about the disease, knowledge about how the medication worked, knowledge about glucose levels and knowledge about the complications of the disease.

The findings of the study showed that the participants did not have sound knowledge of the way the medication works. Because of that they did not adhere to the treatment and was brought to the hospital for admission. These findings agree with the study of Kalyango, Owino,and Nambuya, (2008) who noted that nonadherence, poverty, lack of knowledge and poor follow-ups were the main factors observed in poor glycemic control. Feleke, Alemayewu and Adanu, (2013) also noted in their study that diabetes being a chronic illness requires sound knowledge of self-care by clients, so that they can give out their best considerably in the management of their lives

Again the study revealed that the participant's knowledge about diabetes type 2 was poor. They mentioned just one cause of the disease or simply said they did not know. This may be the reason why they were brought to hospital in a bad state of health for admission. This finding is similar to the findings of the study by Jing, Sklar, Min Sen Oh and Chuen (2008), who noted that the patient-centered factors can be demographic (age, gender, educational level, and marital status) and psychological (patients' beliefs and motivation towards the therapy, negative attitude, patient-prescriber relationship, understanding of health issues, and patient's knowledge).

Another finding revealed that participant's knowledge about glucose levels was only fair. This is similar to the study done by Egede, (2015) whose findings from diabetes mellitus population have shown that good medication adherence has been associated with lower HbA1C levels.

The findings of the current study also discovered that participants had only fair knowledge on complications of type 1. Complications of diabetes can be diabetic ketoacidosis, retinopathy, infection, nephropathy, diabetic foot ulcer (Holt, 2004), but in the current study the participants could not give all this knowledge. The study by Feleke et al. (2013) also reported limited knowledge on diabetes mellitus complications. However, they also said that, this level of insubstantial knowledge regarding risk factors and complications may lead to decreased precaution of patient for complication and these are high economic burden for the country in the management of complication which comes due to insubstantial precaution for the complication. Based on the above, they concluded that there was the need for emphasizing diabetics' complications during diabetes education.

5.3 Comorbidities and other factors that leads to medication nonadherence in people living with type 2 diabetes mellitus

The second research objective sought to identify comorbidities and other factors that leads to medication nonadherence in people living with type 2 diabetes mellitus. The study identified that some of the participants in addition to the diabetes, they also suffered from hypertension, which meant that they were taking anti-hypertensive drugs as well, which increased the number of tablets they have to swallow in total for each day. This finding is similar to the study done by Kardas (2005) who noted that poor adherence to therapies is common, especially when comorbidities exist. The study also discovered that participants were not adherent to medication because of the routine in medication taking. They narrated that it was tiring and a bother taking the medication every day and let alone to be on the medication for the rest of their lives. This is in contrast with the study findings of Jaam et.al, (2015) who said lifestyle-related changes included changes in medication dose based on diet and discontinuation of medicines when exercising, all of which in turn affected medication adherence. The study identified that participants forget to take the diabetic medication because of their busy schedules and also because sometimes they have to travel. This is consistent with the findings of Raimi (2017), who reported in his study on factors affecting medication adherence among patients with diabetes mellitus and hypertension that 19% of the participants said that they were not adherent because of forgetfulness. It should be noted that many additional factors have been described in the contemporary literature such as depression, forgetfulness, and limited diabetes knowledge.

The current study also identified that the participants use herbal medicine to control the diabetes they were living with or are combining it with the orthodox. Some of the participants have plans to start using herbal medicine because they said the orthodox medicine has not

benefited them. As noted by other researchers (King, 2008) nonadherence to medication could results when some patients belief herbal medications are more effective in controlling diabetes so little or no attention is paid to the orthodox medications and rather focus on taking herbal medication for the management of their diabetes until they start developing complications. However a few of the participants who have come back to the use of the diabetic medication, after they have tried the herbal medicine and it has not worked for them. This is a good sign and a plus for them.

5.4 Quality of life of patients living with type 2 diabetes mellitus

The third objective sought to describe the quality of life of patients living with type 2 diabetes mellitus. Social status, physical status and marital experiences were shared by the participants. The participants narrated that they could not socialize or mingle with people because when they take the medication, they experienced dizziness and tiredness among some side effects of the medications. They did not mingle because they wanted to avoid their past life style of eating anyhow, anywhere. This findings may be incongruent with Raimi (2017) who noted in his study, factors influencing medication adherence among patients with diabetes mellitus and hypertension in Nigeria that, to ensure adequate blood pressure and glucose control, patients need to adhere to their antihypertensive and anti-diabetic drugs. He said that, this will in turn improve their quality of life and prevent complications and hospitalization. Even though his study looked at patients adherence to medication to ensure adequate glucose control, which in turn will improve their quality of life, the current study noted that, the participants also avoided socialization where they feared that they could not discipline themselves and will eat what they

are not supposed to eat, that will land them in trouble thereby affecting their quality of life negatively instead of improving it.

Another response from the participants was their physical status. The study discovered that the respondents experienced dizziness, felt tired, weak and sometimes went into coma. Even though their experiences affected their quality of life, this findings is in contrast with the study findings of Karter, Subramanian & Saha, (2010) who noted that many patients hold considerably negative or highly doubtful beliefs about their prescribed medications, often fearing that the long-term risks outweigh any likely benefits which invariably affects their quality of life.

The responses from the current study also indicated that the medication they were taking because of their condition made some of the participants sexually weak. This made them very worried even though they said that their female spouses understood what they were going through. This finding is also in contrast with the study findings of Fischer et al., (2010) who reported that side effects such as gastrointestinal disorders (nausea, vomiting, and diarrhea), following medication has been shown to be significantly linked to nonadherence (Fischer et al., 2010). However the findings were similar to the study done by Al-Kuraishy & Al-Gareeb (2016), on erectile dysfunction and low sex drive in men with type 2 diabetese mellitus: The Potential Role of Diabetic Pharmacotherapy, who reported that "Metformin in type 2 diabetes leads to significant reduction in testosterone levels, sex drive and induction of low testosterone-induced erectile dysfunction, whereas; sulfonylurea in type 2 diabetes leads to significant rise in testosterone levels, sex drive and erectile function" Pg 21., and Corona, Rastreli, Morgentaler, Sforza, Mannucci, & Maggi, (2017) also reported in their study, meta-analysis of results of testosterone therapy on sexual function based on international index of erectile function, that testosterone replacement therapy improves erectile dysfunction in diabetes mellitus.

Patient who experience adverse reaction from medication are more likely to discontinue with the medication than those who do not.

5.5 Perceptions and beliefs and the psychological feelings of people living with type 2 diabetes mellitus

The fourth and final objective of the study, sought to identify the perceptions and beliefs, and the psychological feelings of people living with type 2 diabetes mellitus. The responses from the participants in the current study indicate that their perception of wellness is based on their beliefs and what they have heard from the public. They feared the long term risk, or may even die from diabetes. This finding is similar to the findings of the study done by Polonsky and Henry (2016), that many patients hold considerably negative or highly doubtful beliefs about their prescribed medications, often fearing that the long-term risks outweigh any likely benefits. Another findings from the study showed that the participants knew that the medication will benefit them if they took it religiously according to the doctor's prescription. Others said that, they did not benefit from the medication so they were planning to switch to herbal treatment. These findings agree with the findings of Atinga et al. (2018) who noted that nonadherence was the result of perceptions that the diabetic drugs were not adequate for managing the conditions. Patients with these perceptions abandoned the medications and turned to herbal medicines and spiritual healing as therapeutic alternatives, because of their easy accessibility, perceived efficacy and affordability

Another findings from the current study revealed that participants did not take the anti-diabetic medication or the orthodox medicine because of spiritual or religious beliefs. This findings are similar to the findings of Mandewo et al. (2014) when they discovered that some

patients did not take their medication because they believed that God could cure them from diabetes without taking their medication. Other patients claimed that there were no religious or cultural convictions on their adherence behavior. However, some said that their culture prevented them from adhering to treatment recommendations particularly to drugs. They also admitted to have consulted apostolic faith healers to deliver them from diabetes. Again, some also admitted to have consulted traditional healers for treatment of the diabetes

The study finally discovered that the participants narrated that they were frustrated when they came for review because they wasted all the day in the hospital just to receive consultations from the hospital. They said it was tiring and a bother to them. The findings of the current study is in contrast to the Mandewo et al. (2014) study, who noted that assessing nonadherence to treatment among diabetic patients, there was no statistically serious association between waiting time and nonadherence to medication regimen. Although they noted that patients who bought their medication from private pharmacies than spending long waiting time at health facility were not encouraged to adhere to their medication regimen.

5.6 Effectiveness of the Medication Adherence Conceptual Framework Model

The components of the model include healthcare provider, medication, societal, healthcare system, diabetes, and patient-related factors that leads to nonadherence. The objectives and the research questions were derived from the model. Because of the huge nature of the model, the researcher limited herself to research into the patient-related factors which includes specific demographics, knowledge, comorbidity, psychological feelings, quality of life, beliefs and perceptions, and other factors. It was noted that most interactions were identified to be within the patient-related factors.

This framework has potentially enhanced the understanding of the complex relation between different barriers for medication adherence in diabetes and will facilitate design of more effective interventions.

5.7 Summary of Discussions

Participants demonstrated fair knowledge in the disease they were living with and how their perceptions and beliefs prevented them from adhering to the anti-diabetic medications. Other reasons that made them not to adhere to their anti-diabetic medications included comorbidity, forgetfulness, using herbal treatment to control the disease and how all these factors contributed to affect their quality of life. Nonadherence was also affected by culture. Advice that some of the participants received from apostolic faith healers invariable prevented the participants from adhering to the diabetic medication.

CHAPTER SIX

SUMMARY, IMPLICATIONS, LIMITATIONS, CONCLUSION AND RECOMMENDATIONS

6.1 Introduction

This chapter of the study centers on the summary of the research findings, conclusions and recommendations. It also discusses the study's contributions to policy and nursing practice and the limitations of the study.

6.2 Summary of the Study

In order to address the objectives of the study, the study adopted a qualitative approach and shared the view of qualitative philosophical assumptions (Creswell, 2013) which argue that human behavior is so complex and as such cannot wholly be subjected to mere numbers and therefore asking people to construct their own meaning of reality is one of the ways to identify truth.

The first objective was to explore the knowledge of the participants on diabetes. It was discovered from the study that participants again had poor knowledge on diabetes and this invariably affected their adherence to medication negatively

The second objective of the study set out to identify comorbidities and other factors that leads to medication nonadherence in people living with type 2 diabetes mellitus. The study found out that comorbidities were some of the reasons why the respondents did not adhere to the diabetic medication.

Furthermore, the study set out to describe the quality of life of patients living with type 2 diabetes mellitus. The study discovered that because of nonadherence to medication this affected their quality of life socially, physically and their marital relationship negatively.

Finally, the study sought to identify the perceptions and beliefs, and the psychological feelings of people living with type 2 diabetes mellitus. It was discovered that whilst some benefited from the medications others did not. Finally it was discovered that participants were frustrated because they spent almost the whole day in the health facility whenever they visited the hospital facility for review.

6.3 Implications of the study

The findings of this study have implications for policy formulations, nursing practice and for future nursing researches into the subject.

6.3.1 Implication for Policy Formulation

In the light of study findings, Ministry of Health as the stewardship body and responsible for the health of people has to initiate policies and take actions that contribute to the promotion of adherence to medications among type 2 diabetes mellitus. Among these policies are: improving the provider–patient relationship and building a trust relation; and making the treatments accessible at the time of use. Moreover, Ministry of Health should establish a diabetes education service to raise patients' awareness of diabetes mellitus and enhance health belief perception toward the benefit of treatments, severity, and susceptibility of nonadherence in the occurrence of complications.

6.3.2 Implications for Nursing Practice

The participants had various reasons for not adhering to their medications, which health professionals usually do not probe into. As health professionals communication skills should be in-depth in finding reasons for patient's nonadherence to anti-diabetic medication.

Health professionals, will see the need to continue educating patients on admission. It will assist the public health nurses to lay emphasis in the follow up of the clients in the community and continue counselling, caring for clients. Clients with such problems should be followed up in the community. Nurses should call patients after discharge and find out whether they are taking their medications and stress daily on the need for review before discharge and the effects of medication nonadherence and its serious implications on health.

6.3.3 Implication for Future Research

The study has identified further areas that can be researched in the future. The current study explored nonadherence to treatment among people living with type 2 diabetic mellitus. The study findings provide a future research to compare the nonadherence rate between male and female diabetics using quantitative methods. Other areas worthy of researching into is to ascertain reasons why diabetic patients combine both orthodox and herbal treatment.

6.4 Limitations of the study

While generating important insights, this study also has limitations. The sample size in this study is small. Therefore the findings should be confirmed in a larger study using quantitative methods. The healthcare system related factors and healthcare provider related factors were not determined. Two things could also limit the generalization of the study. The fact

that the study was done in one hospital and all the participants incidentally express themselves only in English language.

6.5 How the study has influenced me as a practicing Nurse

The study has helped me understand the need to probe further when handling diabetic patients with the problems they present when they come for review. It has also helped me not to generalize diabetic patient's issues but to treat them as individuals. It also helped me show more concern towards my clients generally more than before the study.

6.6 Conclusion

The research revealed that people living with diabetes mellitus who were nonadherent to medication did so because of the following reasons; poor knowledge on diabetes, their perceptions and belief's in other methods that they used to control the diabetes and comorbidity. The study also described the quality of life of people living with type 2 diabetes mellitus and finally identified the perceptions and beliefs and psychological feelings of people living with type 2 diabetes mellitus. Adherence with anti-diabetic drugs was low in this study. Patient related factors that was explored really contributed greatly to poor adherence. Enhancing patients knowledge and recognition with diabetes, through diabetes educator, is necessary to improve self-management of diabetes mellitus and increase the rate of adherence

6.7 Recommendations

To The Health Providers in General

- Introduction of telephone calls, WhatsApp messages, SMS (text message), and e-mail reminders will help improve adherence among the patients who are on diabetic medication
- Many of the barriers associated with nonadherence can be addressed with proper counselling and education
- Increase interaction and having a partner relationship with the patients are keys to improve patients' adherence to medication
- Patients' knowledge should be improved through proper educational and training programs.
- Regimens should be kept as simple as possible and that they should be integrated into patients' existing habits and lifestyles with as little adjustment as possible to existing patterns in patients' lives.

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Appendix A: Ethical Clearance (Noguchi Memorial Institute for Medical Research Institutional Review Board)

NOGUCHI MEMORIAL INSTITUTE FOR MEDICAL RESEARCH
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INSTITUTIONAL REVIEW BOARD

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My Ref No: DF22
Your Ref. No:

4th March, 2020

ETHICAL CLEARANCE

FEDERALWIDE ASSURANCE FWA 00001824 **IRB 00001276**

NMIMR-IRB CPN 037/18-19 *revd. 2020* **IORG 0000908**

On 4th March 2020, the Noguchi Memorial Institute for Medical Research (NMIMR) Institutional Review Board (IRB) at a full board meeting conducted continuing review and renewed your protocol titled:

TITLE OF PROTOCOL : **Nonadherence to medication among people living with Type II Diabetes mellitus: a study at the Shai OsuDoku district Hospital**

PRINCIPAL INVESTIGATOR : **Gladys Awo Potakey, MPhil Cand.**

Please note that a final review report must be submitted to the Board at the completion of the study. Your research records may be audited at any time during or after the implementation.

Any modification of this research project must be submitted to the IRB for review and approval prior to implementation.

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

This certificate is valid till 3rd March, 2021. You are to submit annual reports for continuing review.

Signature of Chair: .....
Mrs. Chris Dadzie
(NMIMR – IRB CHAIR)

Appendix A1: Ethical Clearance (NMIMR – IRB)

NOGUCHI MEMORIAL INSTITUTE FOR MEDICAL RESEARCH
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21st December, 2018

ETHICAL CLEARANCE

FEDERALWIDE ASSURANCE FWA 00001824 **IRB 00001276**

NMIMR-IRB CPN 037/18-19 **IORG 0000908**

On 21st December, 2018, the Noguchi Memorial Institute for Medical Research (NMIMR) Institutional Review Board (IRB) conducted expedited review and approved your protocol titled:

TITLE OF PROTOCOL : **Nonadherence to Medication Among People Living with Type II Diabetes mellitus: a study at the Shai Osudoku District Hospital**

PRINCIPAL INVESTIGATOR : **Gladys Awo Potakey, MPhil Cand.**

Please note that a final review report must be submitted to the Board at the completion of the study. Your research records may be audited at any time during or after the implementation.

Any modification of this research project must be submitted to the IRB for review and approval prior to implementation.

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

This certificate is valid till 20th December, 2019. You are to submit annual reports for continuing review.

Signature of Chair: .....
Mrs. Chris Dadzie
(NMIMR – IRB, Chair)

Appendix B: Consent Form

NMIMR-IRB CONSENT FORM TEMPLATE

Title: Non-adherence to medication among people living with type 2 diabetes mellitus: A study at the Shai-Osu Doku District Hospital

Principal Investigator: Gladys Awo Potakey

Address: C/O, School of Nursing, University of Ghana, Legon

General Information about Research

Diabetes health care providers know that if only their patients adhered to their treatment recommendations, they could do well and avoid diabetes-related complications. This study is therefore being conducted to know the reasons why you do not take your diabetic medications properly. This study could assist health professionals to develop strategies to help you take your medications to limit complications and increase your lifespan. I will ask you questions that may last from 30minutes to 1 hour and 30 minutes. You are free to ask any question concerning the research. Privacy and confidentiality will be ensured by holding all information provided confidential. It is entirely voluntary. All data including audiotape recording, field notes of all interviews and other relevant materials will be kept safely under lock and key foe five years and then discarded when there is no use for it. Only the researcher and the supervisor will have

access to the raw data. Your names will not be used: instead fake names will be used to ensure anonymity.

Possible Risks and Discomforts It is not expected that you will face any risk and discomfort by participating in this study.

Possible Benefits

This study could assist health professionals to identify the problems you face and develop strategies to help you take your medications to limit complications and increase your lifespan. Identified factors can also guide medical professionals in their attempts to increase the likelihood of your adherence to drug treatment regimens

Confidentiality

The interview will take place at a location convenient to you such that no one will hear or know about what you say. The interview will be tape recorded and later typed out. Fake names will be used on all documents written about our talk. Numbers will also be written on the audiotapes and the typed papers so that only the researcher will be able to know your identity. Everything you say will be kept under lock and key for five years so that only the researcher and the supervisor will have access to the raw data and later destroyed when not needed again. A copy of the report will be given to policy makers for decisions to be taken. A copy of the report will also be given to you if you want. These reports will however not have your names in any of them

Compensation

There will be no compensation in cash but in kind, by providing food or snack of your choice after the Interview session

Additional Cost

There will be no additional cost to you, during or after the research

Voluntary Participation and Right to Leave the Research

The research is voluntary and you can withdraw at any time if you do not want to continue, and you will not be penalized

Termination of Participation by the Researcher

Your participation in the study will be terminated if you do not sign the consent form and if you are not willing to give information regarding the study

Contacts for Additional Information

For more information about the study, you can contact the following people

Supervisors

Dr Kwadwo Ameyaw Korsah
Department of Adult Health
School of Nursing and Midwifery
University of Ghana
Legon - Accra
0243547317
korsah19@yahoo.com

Dr Gwendolyn Mensah
Department of Adult Health
School of Nursing and Midwifery
University of Ghana
Legon
0208127756
gpmensah@ug.edu.gh

Your rights as a Participant

This research has been reviewed and approved by the Institutional Review Board of Noguchi Memorial Institute for Medical Research (NMIMR-IRB). If you have any questions about your rights as a research participant you can contact the IRB Office between the hours of 8am-5pm through the landline 0302916438 or email addresses:

nirb@noguchi.ug.edu.gh

VOLUNTEER AGREEMENT

The above document describing the benefits, risks and procedures for the research title **(**"Nonadherence to Medication among People Living with Type II Diabetes Mellitus: A Study at Shai-Osu Doku District Hospital"***)*** has been read and explained to me. I have been given an opportunity to have any questions about the research answered to my satisfaction. I agree to participate as a volunteer.

_____ _____

Date Name and signature or mark of volunteer

If volunteers cannot read the form themselves, a witness must sign here:

I was present while the benefits, risks and procedures were read to the volunteer. All questions were answered and the volunteer has agreed to take part in the research.

_____ _____

Date Name and signature of witness

I certify that the nature and purpose, the potential benefits, and possible risks associated with participating in this research have been explained to the above individual.

_____ _____

Date Name Signature of Person Who Obtained Consent

Appendix C: Statement of Compliance

STATEMENT TO COMPLY WITH ETHICAL PRINCIPLES

Appendix

Appendix A: Ethical Clearance (NMIMR – IRB)

Appendix B: Consent Form

Appendix C: Statement of Compliance

STATEMENT TO COMPLY WITH ETHICAL PRINCIPLES

As the principal investigator (PI) of the protocol 'Nonadherence to Treatmentof Type II Diabetes Mellitus: A Study at SODA Hospital, Accra' and on behalf of my supervisors, I write inform your committee that we will diligently abide by all the ethical principles which includes justice, respecting the autonomy of the individual respondents avoiding harm, being faithful to the respondents and ensuring that the study is of benefit to the respondents.

To achieve this, the transcribed scripts and the interview guide will be kept in a cabinet and locked in the supervisor's office. The cabinet will be accessible to only the Principal Investigator and the Supervisor. In addition, the lab top on which all the information will be kept will be protected by a password that will be known by the Principal Investigator and the Supervisor.

The use of the data will only be the purposes of this study and not for any other purposes than this MPhil thesis.

We promise to strictly abide by all the ethical principles and guidelines throughout this study.

Thank you

Gladys Awo Potakey

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Dr Kwadwo Ameyaw Korsah
Department of Adult Health
University of Ghana
School of Nursing and Midwifery

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Appendix D: Introductory Letter from University of Ghana to Shai Osu Doku District Hospital

UNIVERSITY OF GHANA
DEPARTMENT OF ADULT HEALTH
SCHOOL OF NURSING

ID: 10324334

1st February, 2019

Ref. No.:.....

The Medical Superintendent
Ghana Health Service
Shai Osu-Doku District Hospital
Accra - Ghana

Dear Sir/Madam,

LETTER OF INTRODUCTION

This is to introduce to you **Gladys Awo Potakey**, an MPhil second year student of the School of Nursing and Midwifery, University of Ghana, Legon.

As part of the MPhil programme, she is conducting a research on **"Nonadherence to Medication among People Living with Type II Diabetes Mellitus: A study at Shai Osu-Doku District Hospital".**

Your facility has been chosen as her data collection site.

I would be grateful if you could offer her the necessary assistance to enable her collect data for her thesis.

Counting on your usual co-operation.

Thank you.

Yours faithfully,

Yours faithfully,

Dr. Kwadwo Ameyaw Korsah
SUPERVISOR

COLLEGE OF HEALTH SCIENCES

• P. O. Box LG 43, Legon, Accra, Ghana. • **Telephone:** +233 (0) 302 513 250 / 0289 531 213
• **Email:** adulthealth.son@chs.ug.edu.gh • **Website:** www.nursing.chs.ug.edu.gh

Appendix E: Interview Guide

SEMI-STRUCTURED INTERVIEW GUIDE

Section A: Demographic Data

1. Age
2. Sex
3. Marital Status
4. Level of Education
5. Religion
6. Occupation

Section B

How long have you had diabetes? .....

How long (in years) have you been on current treatment? ……

What do you think causes diabetes?

What do you think fasting blood glucose means?

Do you have or have you ever had a diabetic patient in your family?

Tell me how the health provider explains your disease condition to you?

Can you tell me all you know about the diabetic drug you are taking?

Can you tell me how you discuss you complications with you healthcare provider?

How do you acquire your drugs?

What are your beliefs and perceptions about diabetes?

Can you tell me the number of pills you have to swallow every day in total for your diabetes?

Do you think the number of pills swallowed in affect your continued usage?

Probe. How does it affect your continues usage

What kind of support do you receive from family and friends?

Taking medicine every day is a real inconvenience for some people; tell me if you ever feel hustled about sticking to your treatment plan?

What are the probable reasons for missing the medication?

What are the probable reasons for not visiting the Physician for regular consultation?

THANK YOU

TABLE 2: Participants Characteristics

Participants code	Ebenezer	Aseda	Onyametease	nyamebekyre	nyamenehene	Seli	Eyram	Etornam	Dzafa	Fafali	mawutor
Age in Years	53	59	47	23	68	62	63	72	78	44	48
Sex	M	M	M	M	M	M	M	M	F	M	M
Marital Status	YES	YES	YES	NO	YES	YES	YES	YES	YES	YES	NO
Level of Education	Primary	Secondary	Tertiary	Tertiary	Primary	Tertiary	Secondary	Tertiary	Secondary	Secondary	Tertiary
Religion	Christian	Christian	Christian	Moslem	Christian	Christian	Christian	Moslem	Christian	Pagan	Christian
Occupation	Technical supervisor	Driver	Human rescuers manager	Student	Mason	Public servant	Fishman	Retired educationist	Retried banker	Telecommunication technician	Teacher
Duration of illness	2yrs	3yrs	9yrs	10yrs	19yrs	11yrs	5yrs	20yrs	20yrs	5yrs	4yrs
Duration of Treatment	2 yrs.	2yrs	9 yrs.	10yrs	19yrs	11yrs	5 yrs	20yrs	10yrs	5yrs	2yrs