SCHOOL OF NURSING
COLLEGE OF HEALTH SCIENCES
UNIVERSITY OF GHANA, LEGON

ADHERENCE TO TREATMENT REGIMEN AMONG TYPE 2
DIABETICS AT THE RIDGE HOSPITAL, ACCRA.

BY
BENEDICTA KWAKYE
(10233457)

THIS THESIS IS SUBMITTED TO THE UNIVERSITY OF GHANA,
LEGON IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR
THE AWARD OF MASTER OF PHILOSOPHY DEGREE IN NURSING

JULY, 2016
Adherence to Treatment of Type 2 Diabetes

DECLARATION

This is to certify that this thesis is the result of research undertaken by Benedicta Kwakye towards the award of the Master of Philosophy in Nursing in the School of Nursing, College of Health Sciences, University of Ghana. I further declare that this thesis has not been partly or wholly submitted for any other degree in this university or any other university.

…………………………
Benedicta Kwakye
(Student)
Date

…………………………
Dr. Kwadwo Ameyaw Korsah
(Supervisor)
Date

…………………………
Dr. Yacoba Atiase
(Supervisor)
Date
ABSTRACT

Diabetes mellitus is a chronic disease that occurs when the pancreas is no longer able to produce insulin, or when the body cannot make good use of the insulin it produces. There are three main types of diabetes. The most common type is the Type 2 diabetes which represents 90% of cases worldwide. The other types of diabetes are Type 1 diabetes and gestational diabetes. Type 2 diabetics are faced with challenges and experiences such as financial difficulties, forgetfulness, and problems taking the medication, stigmatization, depression and anxiety. These experiences hinder their ability to adhere to treatment. The study seeks to explore the factors that influence treatment adherence at the Ridge Hospital in Accra. An exploratory descriptive research design was used for the study. Fourteen participants were recruited from December 2015 – March 2016. Interviews were conducted in the English and Twi languages. Interviews conducted in the local language were translated into the English afterwards. Data was analyzed using thematic content analysis. The study identified some factors that influence treatment adherence. These include knowledge of the diabetes, complications to avoid, efforts to improve the condition and benefits of adherence. It also identified some barriers to adherence such as forgetfulness, difficulty taking medication, depression, anxiety, stigma, blindness, amputation and others. The study recommended ways that health providers could employ to intensify patient education on each visit. This education would be holistic in order to increase the rate of adherence by the people living with diabetes. Future research into adherence to treatment regimen among diabetics which looks at the health providers’ perspective can be carried out.
DEDICATION

This thesis is dedicated to God Almighty for all His goodness to me. I also dedicate it to my husband, Rev. Dr. Abraham Nana Opare Kwakye, my daughters: Adina, Trish, and Danielle, and my parents, Mr. & Mrs. Ampomah for their immeasurable support, love and sacrifices they made throughout my course.
ACKNOWLEDGEMENT

I am immensely indebted to Dr. Kwadwo Ameyaw Korsah, my principal supervisor, for the timely support, encouragement and guidance throughout this study.

My profound gratitude goes to Dr. Yacoba Atiase for her support and guidance. I am also thankful to Professor Ernestina Donkor, Dean of School of Nursing, all faculty members, and staff of the School of Nursing, University of Ghana, Legon for their immense support and encouragement.

I am very grateful to the Management of Ridge Hospital and also the entire staff at the Out Patient Department; especially to Mrs. Frances Lawson for her contribution and support. My appreciation goes to all the participants who willingly shared their experiences with me. I am grateful to the Rev. Professor Cephas Narh Omenyo, Provost of the college of Education, University of Ghana for the encouragement he offered to me throughout my programme.

Finally, I wish to thank all those who contributed in several ways to the successful completion of this study.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>DECLARATION</td>
<td>i</td>
</tr>
<tr>
<td>ABSTRACT</td>
<td>ii</td>
</tr>
<tr>
<td>DEDICATION</td>
<td>iii</td>
</tr>
<tr>
<td>ACKNOWLEDGEMENT</td>
<td>iv</td>
</tr>
<tr>
<td>TABLE OF CONTENTS</td>
<td>v</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td>ix</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td>x</td>
</tr>
<tr>
<td>LIST OF ACRONYMS</td>
<td>xi</td>
</tr>
</tbody>
</table>

## CHAPTER ONE

### INTRODUCTION

1.0 Introduction .............................................................. 1  
1.1 Background of the study ........................................... 1  
1.2 Problem Statement .................................................... 5  
1.3 Purpose of the Study .................................................. 6  
1.4 Objectives of the Study ............................................. 6  
1.5 Research Questions ................................................... 7  
1.6 Significance of the Study ........................................... 8  
1.7 Definition of Terms .................................................. 8  

## CHAPTER TWO

### LITERATURE REVIEW

2.0 Introduction .............................................................. 9  
2.1 Diabetes and treatment adherence ............................. 9  
2.2 Individual factors .................................................... 13  
2.3 Diabetes and treatment factors ................................. 15  
2.4 Relationship factors and Social support .................. 17  
2.5 Health Belief Model ................................................... 20  

## CHAPTER THREE

### METHODS

3.0 Introduction .............................................................. 23  
3.1 Research Design ....................................................... 23  
3.2 Research Setting ....................................................... 23  
3.3 Population of the study .............................................. 24  
  3.3.1 Inclusion Criteria .................................................. 25
### Adherence to Treatment of Type 2 Diabetes

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.3.2 Exclusion Criteria</td>
<td>25</td>
</tr>
<tr>
<td>3.4 Sample and Sampling Procedures</td>
<td>25</td>
</tr>
<tr>
<td>3.5 Instrument</td>
<td>27</td>
</tr>
<tr>
<td>3.5.1 Pretesting of the Interview Guide</td>
<td>28</td>
</tr>
<tr>
<td>3.6 Data Management</td>
<td>28</td>
</tr>
<tr>
<td>3.7 Data Analysis</td>
<td>28</td>
</tr>
<tr>
<td>3.8 Research Rigor</td>
<td>29</td>
</tr>
<tr>
<td>3.9 Ethical Considerations</td>
<td>31</td>
</tr>
<tr>
<td>Confidentiality</td>
<td>32</td>
</tr>
<tr>
<td>Privacy</td>
<td>32</td>
</tr>
<tr>
<td>3.10 Expected Outcome/Results</td>
<td>33</td>
</tr>
</tbody>
</table>

### CHAPTER FOUR ............................................................................................................. 34

#### FINDINGS OF THE STUDY ........................................................................................... 34

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.0 Introduction</td>
<td>34</td>
</tr>
<tr>
<td>4.1 Demographic findings of research participants</td>
<td>34</td>
</tr>
<tr>
<td>4.2 Key findings from the interview data</td>
<td>36</td>
</tr>
<tr>
<td>4.3 Factors that influence adherence</td>
<td>36</td>
</tr>
<tr>
<td>4.3.1 Avoidance of complications</td>
<td>36</td>
</tr>
<tr>
<td>4.3.2 Recovery from diabetes</td>
<td>39</td>
</tr>
<tr>
<td>4.3.3 Avoidance of Burden</td>
<td>39</td>
</tr>
<tr>
<td>4.3.4 Avoid Early Grave</td>
<td>40</td>
</tr>
<tr>
<td>4.3.5 Knowledge about Diabetes Treatment</td>
<td>41</td>
</tr>
<tr>
<td>4.4 Perceived benefits</td>
<td>42</td>
</tr>
<tr>
<td>4.4.1 Good health</td>
<td>42</td>
</tr>
<tr>
<td>4.5 Challenges of adherence</td>
<td>44</td>
</tr>
<tr>
<td>4.5.1 Forgetfulness</td>
<td>44</td>
</tr>
<tr>
<td>4.5.2 Financial Difficulty</td>
<td>45</td>
</tr>
<tr>
<td>4.5.3 Problem integrating medication taking into daily life and activity</td>
<td>46</td>
</tr>
<tr>
<td>4.5.4 Lack of Support</td>
<td>47</td>
</tr>
<tr>
<td>4.5.5 No challenge to treatment adherence</td>
<td>48</td>
</tr>
<tr>
<td>4.6 Coping strategies</td>
<td>48</td>
</tr>
<tr>
<td>4.6.1 Diabetes Self-Care Practices</td>
<td>49</td>
</tr>
<tr>
<td>4.6.2 Social support</td>
<td>50</td>
</tr>
<tr>
<td>4.6.4 Relying on God</td>
<td>51</td>
</tr>
<tr>
<td>4.6.5 Alcohol intake (Negative coping)</td>
<td>52</td>
</tr>
<tr>
<td>4.7 Effects of non-adherence</td>
<td>53</td>
</tr>
<tr>
<td>4.7.1 Complications</td>
<td>53</td>
</tr>
<tr>
<td>4.7.2 Death (The ultimate may occur)</td>
<td>54</td>
</tr>
<tr>
<td>4.8 Improvement of Adherence</td>
<td>54</td>
</tr>
</tbody>
</table>
6.5.2 Ghana Health Service ....................................................................................... 97
6.5.3 Ridge Hospital .................................................................................................. 98
6.5.4 The patients ....................................................................................................... 98

REFERENCES ............................................................................................................... 100

APPENDICES ................................................................................................................ 117
APPENDIX A: ETHICAL CLEARANCE ..................................................................... 117
APPENDIX B: INTRODUCTORY LETTER – SCHOOL OF NURSING ............... 118
INTRODUCTORY LETTER – GHANA HEALTH SERVICE ............................... 119
APPENDIX C: CONSENT FORM ............................................................................... 121
APPENDIX D: INTERVIEW GUIDE ........................................................................... 125
Adherence to Treatment of Type 2 Diabetes

LIST OF TABLES

Table 4.1: Themes on Factors that Influence DM Treatment Adherence.......................... 35
Adherence to Treatment of Type 2 Diabetes

LIST OF FIGURES

Figure 1: Health Belief Model by (Rosenstock et al., 1988) ............................................ 21
Adherence to Treatment of Type 2 Diabetes

LIST OF ACRONYMS

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Abbreviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antiretroviral</td>
<td>ARV</td>
</tr>
<tr>
<td>Gestational Diabetes Mellitus</td>
<td>GDM</td>
</tr>
<tr>
<td>Health Belief Model</td>
<td>HBM</td>
</tr>
<tr>
<td>Human Immunodeficiency Virus</td>
<td>HIV</td>
</tr>
<tr>
<td>International Diabetes Federation</td>
<td>IDF</td>
</tr>
</tbody>
</table>
CHAPTER ONE
INTRODUCTION

1.0 Introduction

This chapter presents a general introduction to the treatment of diabetes mellitus. It includes a description of the condition, the manner of treatment, adherence to the treatment and the importance of the study. This chapter also describes statement of the problem, purpose of the study, specific objectives, significance of study, and operational definition of some terms used in the study.

1.1 Background of the study

Diabetes mellitus is a chronic disease that occurs when the pancreas is no longer able to produce insulin, or when the body cannot make good use of the insulin it produces (International Diabetes Federation (IDF), 2014).

Insulin is a hormone produced by the pancreas that acts like a key to let glucose from the food we eat pass from the blood stream into the cells in the body to produce energy. All carbohydrate foods are broken down into glucose in the blood. Insulin helps glucose get into the cells. Not being able to produce insulin or use it effectively leads to raised glucose levels in the blood known as hyperglycaemia (IDF, 2014). Diabetes mellitus may present with characteristic symptoms such as thirst, polyuria, blurring of vision, and weight loss. In its most severe forms, ketoacidosis or a non-ketotic hyperosmolar state may develop and lead to stupor, coma and, in absence of effective treatment, death. The chronic hyperglycemia of diabetes is associated with long-term damage, dysfunction, and failure of various organs, especially the eyes, kidneys, nerves, heart, and blood vessels.
Adherence to Treatment of Type 2 Diabetes

There are three main types of diabetes. The most common type is the Type 2 diabetes which represents 90% of cases worldwide (American Diabetes Association, 2006). The other types of diabetes are Type 1 diabetes and GDM. Diabetes is mainly caused by specific genetic defects of beta-cell function or insulin secretion, and/or diseases of the pancreas drugs or chemicals (Deshpande, Harris-Hayes, and Schootman, 2008).

Type 1 diabetes used to be called juvenile-onset diabetes. It is usually caused by an autoimmune reaction where the body’s defense system attacks the cells that produce insulin. Scientific research has not yet managed to explain what leads to this situation. People with type 1 diabetes produce very little or no insulin. This type of diabetes may affect people of any age, but usually develops in children or young adults. People with this form of diabetes need injections of insulin every day in order to control the levels of glucose in their blood. If people with type 1 diabetes do not have access to insulin, they will die (IDF, 2014).

Type 2 diabetes used to be called non-insulin dependent diabetes or adult-onset diabetes. It is characterized by insulin resistance and relative insulin deficiency, either one or both of which may be present at the time diabetes is diagnosed. The diagnosis of Type 2 diabetes can occur at any age. Type 2 diabetes may remain undetected for many years and the diagnosis is often made when a complication appears or a routine blood or urine glucose test is done. It is often, but not always, associated with overweight or obesity, which itself can cause insulin resistance and lead to high blood glucose levels. People with Type 2 diabetes can often initially manage their condition through exercise and diet however, over time most people will require oral drugs and or insulin (Inzucchi et al., 2012).
Adherence to Treatment of Type 2 Diabetes

Gestational diabetes mellitus (GDM) is a form of diabetes consisting of glucose intolerance which is first recognized during pregnancy (Crowther et al., 2005). It develops in one of 25 pregnancies worldwide and is associated with complications to both mother and baby. GDM usually disappears after pregnancy but women with GDM and their children are at an increased risk of developing Type 2 diabetes mellitus later in life. Approximately half of women with a history of GDM go on to develop Type 2 diabetes within five to ten years after delivery. GDM is due to buildup of glucose in the blood caused by the pancreas producing hormones during pregnancy. The hormones reduce the action of the insulin which requires the pancreas to produce more insulin to keep the blood glucose level to normal range. Usually the pancreas can make enough insulin to handle the excess glucose in the blood. When this fails then the woman develops GDM.

Diabetes is increasingly becoming a global public health problem with huge financial implications in most countries (Diabetes UK, 2009; World Health Organization, 2011). This has caused some patients diagnosed with Type 2 diabetes mellitus to poorly control their glucose (glycaemic) which often leads to higher glycosylated haemoglobin (HbA1c) and in the long run may lead to fatal complications (Cramer, 2004).

Globally, 387 million people have diabetes and by 2035 this figure is expected to rise to 592 million (IDF, 2014). The number of people with Type 2 diabetes is increasing in every country (IDF, 2014). It has also come to light that 77% of people with diabetes live in low- and middle-income countries. The highest number of diabetes is in the ages of 40 and 59 years. It is estimated that 179 million people with diabetes are undiagnosed (IDF, 2014). In the year 2014, diabetes caused 4.9 million deaths. Every seven seconds a person...
Adherence to Treatment of Type 2 Diabetes

dies from diabetes. In the 2014 global health expenditure, diabetes cost about 612 billion US dollars (IDF, 2014) Out of this 11% of total spending was on adults. More than 79,000 children developed Type 1 diabetes in 2013, and in the same year 21 million live births were affected by diabetes during pregnancy (IDF, 2014).

In Africa, 76% of deaths due to diabetes occur in people under the age of 60 (IDF, 2014). In sub-Saharan Africa, diabetes was believed to be rare. In 2010, more than 12 million people in the sub-region were evaluated to have diabetes, and 330,000 people will die from diabetes-related conditions. Over the next 20 years, it is anticipated that sub-region will have excessive growth in the number of people with diabetes of any region in the world - the 2010 estimated number is predicted to almost double in 20 years, reaching 23.9 million by 2030 (Diabetes Leadership Forum, 2010). Because of the ageing and expanding population, rapid urbanization with its associated processed diet and reduced exercise, and many other factors, the prevalence of diabetes is rising rapidly. The demographic changes alone in sub-Saharan Africa will account for an increase of 9.5 million people with diabetes between 2010 and 2030 (Diabetes Leadership Forum, 2010)

Ghana is one of the 32 countries that belong to the (IDF) Africa, and statistics shows that there are more than 22 million people in Africa with diabetes and this will almost double by the year 2035. In the year 2014, 450,000 diabetes mellitus cases were recorded in Ghana out of which an estimated 13,478 people were between the ages of 20 - 79 years. The number of deaths among adults in Ghana due to diabetes was 8,528 (IDF, 2014). It accounts for 3.3% of the total adult population (IDF, 2014). IDF Africa estimated that the total cases of adult between 20 - 79 years with diabetes per (1000s) was 450.0 and the number of cases of diabetes that are undiagnosed per (1000s) was 337.9 (IDF, 2014).
Ridge Hospital is the regional hospital for the Greater Accra Region. It has a diabetic clinic which records about 200 people attending weekly (mostly patients diagnosed with Type 2 diabetes). It also recorded an annual average of about 1900 cases of diabetes between 2012 and 2014 (Ridge Hospital annual Report, 2015). In the year 2012, the total number of cases reported at the hospital was 2,132 (Ridge Hospital annual Report, 2015). Out of this there were 556 males and 1765 females. In 2013, it recorded a total of 1,765 patients. This was made up of 492 males and 1273 females. In 2014, the clinic recorded a total attendance of 1,841 with female patients diagnosed with Type 2 diabetes mellitus being 1382 and 459 males. It is observed that female patients diagnosed with Type 2 diabetes mellitus consistently recorded higher prevalence than men in all three years.

1.2 Problem Statement

People living with diabetes are mostly faced with the need to adjust their eating pattern and to regularly take their medication in order to live well. Glucose control matches with diet, physical exercise, lifestyle and medication (American Diabetes Association, 2013). Patients diagnosed with Type 2 diabetes mellitus are expected to combine the treatment regimen and their lifestyle to help achieve the goal of controlling the blood glucose level due to the chronic nature of the disease. This becomes difficult for most patients diagnosed with Type 2 diabetes mellitus when they have to control it over a long time (Polzer and Miles, 2005; Savoca, Miller, and Quandt, 2004). The chronic nature of the condition and its associated complications are costly and impact upon the individual's quality of life (Asante, 2013). Patients' adherence to treatment regimen improves their metabolic control and decreases morbidity and complications (Cramer, Roy, and Burrell, 2008; Nathan, Buse, and Davidson, 2009; Walker, Shmukler, and Uman, 2011). The
American Diabetes Association recommends that people with diabetes should receive diabetes self-management education according to National Standards for Diabetes Self-Management Education and Support at diagnosis and as needed thereafter (American Diabetes Association, 2013).

Turning to the Ridge Hospital in Accra, one identifies non-adherence to the treatment regimen as a major challenge. It has been observed by medical personnel including myself at the Ridge Diabetic Clinic that most patients diagnosed with Type 2 diabetes mellitus report to the hospital with poor glycemic control. Poor glycemic control is associated with poor patient adherence to treatment regimen. This is because they fail to keep appointment with their doctors and also fail to take medication that has been prescribed for them. The study will explore adherence to treatment regimen among Type 2 diabetics at the Ridge Hospital, Accra.

1.3 Purpose of the Study
This study seeks to explore and describe factors that affect adherence to treatment (patients’ perspectives) among patients who are diagnosed with Type 2 diabetes mellitus at the Ridge hospital in Accra. It is anticipated that findings from the study will provide information that will improve Type 2 diabetes mellitus care and treatment at the hospital.

1.4 Objectives of the Study
The study has the following objectives:

- To find factors that influence adherence to treatment regimen among Type 2 diabetics.
Adherence to Treatment of Type 2 Diabetes

- To identify perceived benefits associated with treatment regimen among Type 2 diabetics.
- To explore the challenges faced by these patients regarding adherence to treatment at the Ridge Hospital.
- To find how diabetic patients cope with treatment/management at the Ridge Hospital.
- To explore the effect of non-adherence from the perspectives of Type 2 diabetics at the Ridge Hospital.
- To find ways of improving adherence to treatment among patient diagnosed with Type 2 diabetes.

1.5 Research Questions

- What are the factors that influence adherence to treatment regimen among Type 2 diabetics?
- What are the perceived benefits associated with treatment adherence among Type 2 diabetics?
- What are the challenges faced by these patients regarding adherence to treatment?
- How do patients cope with treatment/management of the diabetes?
- What are the effects of non-adherence among Type 2 diabetics?
- What ways can adherence to treatment be improved among these patients?
1.6 Significance of the Study

This study sought to explore the general knowledge and medication adherence in Type 2 diabetes. Exploring into these factors in details and in the context, the present study would endeavour to bridge current knowledge gaps, add to existing knowledge and also help to improve Type 2 Diabetes adherence at the Ridge hospital in Accra. It is expected that this study would generate interest in health professionals and academia alike to research into finding better diabetes treatment/management techniques. The findings would give us a better understanding of challenges associated with adherence to treatment among Type 2 diabetes mellitus, so that appropriate interventions are identified to address them in a holistic manner.

1.7 Definition of Terms

**Adherence**: An ideal way a patient takes his/ her medication, follows a diet and also modifies lifestyle behaviour to improve on health status with minimal supervision.

**Type 2 Diabetes**: It is characterized by insulin resistance and relative insulin deficiency.

**Diabetes Mellitus**: Diabetes mellitus is a group of metabolic conditions characterized by high blood glucose or hyperglycemia, and by both under-and-over secretion of insulin, the hormone that transports glucose across cell membranes.

**Treatment Regimen**: A plan or a regulated course, such as a diet, exercise, or treatment that is designed to give a good result.

**Seriously ill Diabetic**: A patient whose illness is of such severity that the individual may not be able to participate in this study. Example is a patient diagnosed with Type 2 diabetes mellitus who is extremely weak and fragile.
CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter presents a discussion of the literature pertaining to Type 2 diabetes mellitus treatment adherence which has been organized around the following heading; a) Diabetes and Treatment Adherence, b) Individual factors, c) Diabetes and Treatment factors and, d) Relationship factors and Social support. At the end of the chapter, the Health Belief Model (HBM) by Rosenstock, Strecher, and Becker, (1988) is discussed along with its application to medical treatment adherence and how useful it may be applied in the case of Type 2 diabetes at the Ridge Hospital in Accra.

The literature review collected information about diabetes mellitus treatment from several data sources. These sources were HTNARI, CINAHL, Pub Med, Science Direct, SAGE Publications, JSTOR and Google Scholar. These were mainly studies from 2004 to 2015; however, other older studies that were very significant and pertinent for better understanding of the study are included. Now, let us consider diabetes as a disease condition.

2.1 Diabetes and treatment adherence

In order to remain healthy, individuals with diabetes must follow a strict treatment regimen of insulin injections, oral medications, diet, and exercise (Ghana Health Service, 2010). In a study, it became evident that wellness and healthy living leads to blood glucose control (Ngo-Metzger, Sorkin, Billimek, Greenfield, and Kaplan, 2011). Monitoring of blood glucose levels is required using portable electronic meters (Rubin...
Adherence to Treatment of Type 2 Diabetes

and Peyrot, 2001). Unlike the majority of other chronic illnesses, a great deal of self-management is required for individuals with diabetes as variations in physical exercise and diet can influence the amount of insulin required (Sapkota, Brien, Greenfield, and Aslani, 2015). Previous reviews, have shown that adherence promoting interventions resulted in remarkable outcome (Odegard and Capoccia, 2007; Sunaert et al., 2009). On the other hand, poor self-management of this condition can result in complications. In particular, an increased level of glucose in the blood (i.e., hyperglycaemia) can result in damage to the nerves, cardiovascular system, eyes, and kidneys (Lanting, Joung, Mackenbach, Lambert, and Bootsma, 2005; Amy Lewandowski and Drotar, 2007; Rintala, Jaatinen, Paavilainen, and Åstedt-Kurki, 2013) Similarly, when the glucose level is kept within the normal range it can reduce the micro vascular complications (Nathan, Buse, Davidson, et al., 2009).

Not only do individuals with diabetes have to be watchful for hyperglycaemia, they also have to be concerned about developing hypoglycaemia (i.e., low blood glucose) as a result of too much insulin and/or exercise or too little food. Hypoglycaemia can also result in complications such as impaired cognition, confusion and loss of consciousness, and, in severe cases, brain damage and death (Lanting et al., 2005).

According to Haynes, McDonald, Garg, and Montague, (2002), adherence is the extent to which patients follow the instructions they are given for prescribed treatments. Non-adherence to medical regimens can consist of a non-attendance at medical appointments, lateness to medical appointments, a lack of commencement of a treatment or behavioural recommendations, or a variation in medication instructions (too much, too little, terminating treatment; (Levensky and O’Donohue, 2006). According to Meichenbaum
Adherence to Treatment of Type 2 Diabetes

and Turk, (2007), non-adherence consists of a wider range of behaviours, including behaviours related to prescription use (i.e., not taking medication, not taking medication as prescribed, taking other medications not prescribed), treatment attendance (i.e., delayed or lack of seeking medical care, stopping treatment prematurely), and behaviour change (i.e., not implementing or following behaviour change procedures).

The importance of control over blood glucose cannot be understated. A decreased adherence to diabetic medication has been found to be costly as it is related to increased health care service utilization (Balkrishnan et al., 2003; Utz et al., 2006). Higher cost of diabetic medication reduces treatment adherence as it was noted in a survey. According to a survey of Canadian Diabetes Association members, more than half of its members pay for a portion of their supplies (Canadian Diabetes Association, 2003). Due to the multiple components of treatment (i.e., medication, diet, exercise, blood glucose monitoring) and because adherence to one component is not necessarily related to adherence to another component, it is important to examine treatment components separately (Howteerakul, Suwannapong, Rittichu, and Rawdaree, 2007).

In one study, researchers found that patients with diabetes were highly adherent to medication use (92.2% with good adherence), less adherent to diet (54.3%), and even less adherent to physical exercise (31.7%) (Howteerakul et al., 2007). These results are consistent with past research, demonstrating that patients with diabetes report the most difficulty in managing their diet and exercise (Glasgow, Hampson, Strycker, and Ruggiero, 1997; Glasgow, McCaul, and Schafer, 1989). However, other studies have proven that diet, exercises and other lifestyle changes have been very successful in minimizing complications and improving patient quality of life (Sharma, Kalra,
Adherence to Treatment of Type 2 Diabetes

Dhasmana, and Basera, 2014). Other authors have found lower medication adherence. In a summary of treatment adherence for oral medication, Rubin, (2005) found adherence rates ranging from 36% to 85%, and rates ranging from 60% to 85% for insulin treatment.

In a literature review by Cramer, (2004), adherence rates to oral diabetes mellitus medication were found to range from a low of 36% to a high of 93% in individuals with Type 2 diabetes. According to Delamater, (2006), individuals with Type 1 diabetes demonstrate higher adherence rates when compared to individuals with Type 2 diabetes across aspects of treatment, especially with regards to medication adherence and blood glucose monitoring.

A large body of research has been dedicated to understanding factors affecting treatment adherence in populations of individuals with diabetes. Many researchers have attempted to summarize components of treatment adherence in diabetes by grouping components in various ways. In general, researchers have recognized the following factors to influence treatment adherence: factors relating to the individual (i.e., stress, depression, anxiety, perceived barriers, coping styles), the treatment and illness (i.e., complexity of treatment, adverse effects), social support, patient-provider relationships (i.e., satisfaction with providers), comprehension of the treatment, and treatment setting (i.e., accessibility, helpfulness of staff) (Levensky and O’Donohue, 2006; Mishali, Vaknin, Omer, and Heymann, 2007; Rubin, 2005). In the discussion that follows, factors related to the individual, diabetes and treatment factors, and relationship factors are presented.
Adherence to Treatment of Type 2 Diabetes

2.2 Individual factors

Individual factors affecting treatment adherence include psychological concerns, cognitions, and coping styles. Psychological concerns are common in individuals with diabetes and have been found to influence treatment adherence negatively (Das-Munshi et al., 2007). For instance, Peyrot, Rubin, and Siminerio, (2006) found that 70% of their participants with diabetes had difficulties with treatment adherence due to psychological concerns. Das-Munshi et al., (2007) found that individuals with diabetes were 50% more likely to have a mental disorder than individuals without diabetes; most common are anxiety, depression, comorbid anxiety and depression. Rates of depressive symptoms in individuals with diabetes vary by study and have been found in 14% to 19% of individuals with Type 2 diabetes (Chyun et al., 2006; Gonzalez et al., 2008) and 24% of individuals with Type 1 diabetes (Roy, Roy, and Affouf, 2007).

Meta-analyses of the literature have also shown that depression is consistently associated with diabetes treatment non-adherence (Gonzalez et al., 2008). Several studies have also linked depression to increased risk for mortality (Black, Markides, and Ray, 2003; Katon, et al., 2005, Zhang et al., 2005). Importantly, subclinical symptoms of depression and distress tend to be very common in patients with diabetes, are persistent over time, and are more closely related to diabetes control than mood disorders in particular (Fisher, Brownson and O’Toole, 2008). Subclinical symptoms of depression are also associated with treatment non-adherence (Gonzalez et al., 2008) and risk of complications and mortality in patients with Type 2 Diabetes (Black et al., 2003).

Ciechanowski, Katon and Russo, (2000) reported that individuals with Type 1 and Type 2 diabetes who had a greater severity of depressive symptoms had lower rates of dietary
Adherence to Treatment of Type 2 Diabetes

and medication adherence than those with a lower severity of depressive symptoms. Researchers have found an association between both clinical and subclinical depressive disorders and reduced dietary, exercise, and medication adherence in individuals with Type 2 diabetes (Gonzalez et al., 2008). Chao, Nau, Aikens and Taylor, (2005) found that the relationship between depressive symptoms and low adherence to oral medications was mediated by health beliefs, including perceived barriers to and self-efficacy regarding medication use. Furthermore, in a meta-analysis of 24 studies, Lustman et al., (2000) identified a positive relationship between depressive symptoms and hyperglycaemia, indicating poor blood glucose control in both individuals with Type 1 and Type 2 diabetes. An important caution is that poor blood glucose control does not always imply poor treatment adherence as other factors may also play a role in blood glucose control, such as stress and duration of diabetes (Mann, Ponieman, Leventhal and Halm, 2009).

Fournier, Ridder and Bensing, (2002) found that individuals with Type 1 diabetes had a relatively high level of internal locus of control when compared to patients with rheumatoid arthritis and multiple sclerosis. This difference suggests that in comparison to individuals with other chronic illnesses, those with diabetes acknowledge the importance of their own behaviours with regards to participation in the treatment regimen to remain healthy. The most important component in self-care of any chronic disease is the effective involvement on daily basis in the management (Wilkinson, Whitehead, and Ritchie, 2014). Asante has rightly stated that tackling challenges to adherence appropriately could enhance Type 2 diabetes mellitus patient metabolic control, treatment adherence and lives as a whole (Asante, 2013).
O’Hea et al., (2005) also demonstrated a weak association between internal locus of control and better blood glucose levels. The way an individual copes with stressors can also be an important individual factor influencing treatment adherence in individuals with diabetes. In terms of the coping strategies, Peyrot, Rubin and Siminerio, (2006) found that individuals with Type 1 diabetes who had more active coping styles (i.e., remaining task focused) had better treatment adherence as compared to those with more emotion-based coping styles (i.e., responding with anger and impatience). In addition to finding a positive association between treatment adherence and active coping strategies, Tucker et al., (2004) found a positive relationship between active coping and better blood glucose levels in men with Type 1 diabetes. In a study among the African-American and Hispanic-Latino, participants stated specifically that their belief in God was a source of strength and a very essential support for the management of diabetes (Devlin, Roberts, Okaya, and Xiong, 2006). Emotion-focused coping strategies such as denial of factors related to diabetes have been found to be a barrier towards treatment adherence in individuals with diabetes (Mishali, Vaknin, Omer and Heymann, 2007).

### 2.3 Diabetes and treatment factors

Treatment and illness factors have also been found to influence treatment adherence, including complexity of the treatment, knowledge and understanding of the treatment, adverse effects, and medication costs. Examining the complexity of the treatment, Paes, Bakker and Soe-Agnie, (2007) found that adherence was higher for individuals with Type 2 diabetes who had a lower number of daily doses of medication. In view of that, there should be common ways that medication use can adapt on daily regimen to regularize its intake (Borgsteede et al., 2011). Meichenbaum and Turk, (2007) suggest that individuals,
who must follow complex treatment regimens, such as with diabetes, may have difficulty adhering to the treatment because of information overload and may respond by forgetting, making errors, or avoiding treatment procedures. Supporting this speculation, (Mann et al., 2009; Nam, Chesla, Stotts, Kroon, and Janson, 2011) found that beliefs about the complexity of the treatment regimen were related to low adherence rates in a minority population.

Although not all studies have found a relationship between increased diabetes knowledge and treatment adherence or better blood glucose levels, an understanding of the impact of diabetes on health and lifestyle appears to be an important factor in treatment adherence (Rubin, 2005). In a study of pregnant women with Type 1 and Type 2 diabetes, increased knowledge about diabetes was associated with better medication and dietary adherence (Spirito et al., 2003).

Uitewaal, Hoes and Thomas, (2005) found that individuals with Type 2 diabetes who did not adhere had limited knowledge about diabetes. Peyrot et al., (2006) found that education increased medication adherence, blood glucose monitoring, and exercise adherence that, in turn, improved blood glucose levels. In the same vein, a study in the United States on African-American adults with diabetes revealed that knowledge was connected with participants’ perceived self-efficacy to manage their Type 2 diabetes mellitus. Increased knowledge is associated with better disease management (Chlebowy, Hood, and LaJoie, 2010).

A range of adverse effects can occur with treatment for diabetes that can negatively influence adherence, including side-effects, the development of hypoglycaemia, and
interactions with other medications such as for hypertension or high cholesterol (Rubin, 2005). Chao, Nau, Aikens and Taylor, (2005) found that patients with diabetes who reported experiencing medication side-effects also reported non-adherence to medication. Furthermore, Mann et al., (2009) found that beliefs about side-effects also contributed to low medication adherence rates. The cost of diabetes medication is so high, thereby hindering treatment adherence in those with lower incomes or poor health care plans. Although coverage of diabetes mellitus supplies by health care plans in Canada is variable, according to a survey of Canadian Diabetes Association members, 52% of members have to pay for a portion of their supplies (Canadian Diabetes Association, 2003). Medication costs are a significant factor in non-adherence to treatment for diabetes (Piette, Heisler, and Wagner, 2004).

2.4 Relationship factors and Social support

Relationships with family, friends, and providers also can influence treatment adherence. The majority of studies on social support have been conducted on children and adolescents. Generally, findings have revealed an association between treatment adherence and increased or improved social support; however, this association may hold better for women. Chao et al., (2005) found that although satisfaction with social support was associated with improved blood glucose levels for women, satisfaction with social support was associated with poor blood glucose levels for men.

Furthermore, higher levels of perceived social support were associated with higher medication and dietary adherence in pregnant women in a study by (Landel-Graham, Yount and Rudnick, 2003). Similarly, a strong social support was linked with high
Adherence to Treatment of Type 2 Diabetes

adherence to blood glucose monitoring, dietary regimen, and physical activity recommendations among Type 2 diabetes mellitus patients (Sousa, Zauszniewski, Musil, McDonald, and Milligan, 2004; Wen, Parchman, and Shepherd, 2004; Robin Whittemore, Melkus, and Grey, 2005; Tang, Brown, Funnell, and Anderson, 2008). In a meta-analysis of the literature, Albright, Parchman and Burge, (2001) found that lower adherence levels were related to a more negative social environment. It was also noted that lack of social support result negatively on patient adherence to treatment regimen in general and worse glucose control (Mayberry and Osborn, 2012).

In a study of 592 individuals with Type 1 diabetes, Landel-Grahami et al., (2003) found that self-reported treatment adherence was positively associated with social support. Researchers like Thomas and colleagues, have also found that increased social support reduces the likelihood of a diagnosis of clinical depression or anxiety disorder experienced by individuals with Type 2 diabetes (Thomas, Jones, Scarinci and Brantley, 2007). Social support could potentially mediate the relationship between psychological disorders and treatment non-adherence. Furthermore, Albright et al., (2001) found that multiple relationship factors were associated with treatment adherence in individuals with Type 2 diabetes, including family social relationships and satisfaction with their relationship with their physician. Social support plays significant role in the lives of patients and non-patients and its impact on the management of diabetes is very crucial (Kasznicki, Glowacka, and Drzewoski, 2007).

Other authors like Mishali et al., (2007) have demonstrated the importance of the patient-provider relationship, finding an association between dissatisfaction with the medical team and non-adherence to treatment. In a study in Ghana, it was shown that the patients
Adherence to Treatment of Type 2 Diabetes

diagnosed with diabetes mellitus respond to the condition based on the explanation received from the healthcare providers or based on the experiences they have had with the condition. Further discussions were that the kind of reaction the patient living with diabetes mellitus exhibits during diagnosis determines how the person may carry on with the disease (Korsah, 2015).

Findings from a meta-analysis study by DiMatteo, (2004) revealed a significant relationship between structural (e.g., marital status, living arrangement) or functional (e.g., practical/instrumental, emotional, family cohesion) social support and patient adherence to prescribed medical regimens. Other factors such as practical, emotional, and one-dimensional social support; family conflict and cohesiveness; marital status; and living arrangements were investigated. Results indicated that practical support had the highest correlation with adherence, with marital status and living arrangements having more modest relationships. Practical support is defined as a more direct kind of support relating specifically to treatment regimen.

Similarly, a study by Tucker et al., (2004) examined psychosocial mediators of antiretroviral (ARV) non-adherence in HIV-positive adults with substance use and mental health problems. The study included data from 1,889 HIV-positive patients on ARV medication who participated in the HIV Cost and Services Utilization Study. The aim of the study was to explore whether or not non-adherence to ARV could be explained by difficulty in getting treatment and/or negative attitudes towards ARV medication. Findings suggest that difficulty in getting medications and poor fit with lifestyle were cited as the two most significant mediators. Poor fit with lifestyle referred to heavy use of
alcohol and narcotics, which results in compromised memory, motivation, and social support. Now, let us consider the model on which this study is based on.

### 2.5 Health Belief Model

According to Rosenstock, Strecher, and Becker, (1988) the Health Belief Model (HBM) is a health behaviour change model developed for studying and promoting the impact of knowledge and beliefs on health behaviours. The HBM is based on the following precepts: (1) perceived susceptibility, i.e. one's perceived risk of contracting a certain condition; (2) perceived severity, i.e. one's feelings about the seriousness of contracting a certain illness; (3) perceived benefits, i.e. one's belief concerning the perceived benefits of effectiveness of the actions taken to reduce the disease threat; (4) perceived barriers, or the negative aspects of a particular health intervention that may function as a hindrance to complying with the recommended behavior; and (5) cues to action, which are the stimuli that trigger the decision making process (as cited in Gutierrez and Long, (2011). Figure 1 is an illustration of the HBM. The next section looks at the methods used in this thesis.
Adherence to Treatment of Type 2 Diabetes

<table>
<thead>
<tr>
<th>Individual Perceptions</th>
<th>Modifying Factors</th>
<th>Likelihood of Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived susceptibility/Perceived severity</td>
<td>Age, Sex, Ethnicity, Personality, Socioeconomic, Knowledge</td>
<td>Perceived Benefits minus Perceived Barriers</td>
</tr>
<tr>
<td>Perceived Threat</td>
<td></td>
<td>Likelihood of Behaviour</td>
</tr>
<tr>
<td>Cues to Action</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Figure 1: Health Belief Model by (Rosenstock et al., 1988)**

Essentially, the HBM proposes that individuals are more likely to comply with treatment recommendations if they believe that (1) there is a threat to one's health, (2) one is susceptible to negative consequences, (3) one has some control in averting a negative health consequence, and (4) there are no perceived barriers to performing the desired behaviour. The HBM has been broadly applied in predicting health-related behaviours, preventive health behaviours, sick role behaviours and clinic use. In simple terms the model has been explained by considering the following:

Perceived Susceptibility: This considers the participants’ beliefs about what would happen if they did not take medications as directed by their doctor. This included how likely they would be to develop complications, have complications worsen, or have shortened life expectancy.
Perceived Severity: This looks at the participants’ beliefs about the severity of diabetes as a health problem or the severity of complications arising from diabetes as health problems.

Perceived Benefits: This is the participants’ perception of how sticking to their diabetic medication will benefit their overall health.

Perceived (Side Effect) Barriers: That is the participants’ perception of the discomfort of side effects from diabetes medications as well as their worries about long term effects of their medications.

Perceived General Barriers: This refers to other barriers to taking medications, such as: forgetfulness, family problems, and difficulty integrating medication taking into daily life and lack of motivation.

Diabetes Self-Efficacy: This is the confidence the participant felt in their ability to manage their diabetes.

Perceived Diabetes Control: This asks participants how well they are managing to control their diabetes.

The model is likely to be useful in the current study because the study seeks to explore and describe factors that affect adherence to treatment (patients’ perspectives) among patients living with Type 2 diabetes mellitus at the Ridge Hospital in Accra. The various constructs in the HBM will be harnessed to address the issues of this study. For example, to address the challenges/ barriers patient faced in adherence to treatment of Type 2 diabetes mellitus.
CHAPTER THREE

METHODS

3.0 Introduction

This chapter details the steps taken to conduct the study. These are discussed under the following headings: research design, research setting, population, sample and sampling procedure, instrument, data collection procedure, data analysis and ethical issues involved in the conduct of research involving human participation.

3.1 Research Design

An exploratory descriptive research design was used for this study. Based on the research questions, qualitative research methods was deemed appropriate for this study to obtain a greater understanding of the dimensions of adherence to treatment regimen among patients living with Type 2 diabetes mellitus. Qualitative methods is considered to be appropriate research methods when little is known about the phenomena, complex human interactions are involved, and the focus is interdependent relationships instead of discrete transactions (Gephart, 2004). As a descriptive study in nature, it also involves direct exploration, analysis and description of the particular phenomenon in question (Creswell, 2012). This research design allows one to capture the subtle nuances of a situation and present information in a way that the general population can relate to (Kruger, 2003). In this type of design, open ended and emerging data is collected with the primary aim of developing themes (Creswell, 2005).

3.2 Research Setting

The study area was Ridge Hospital. It is located along the Castle road in Accra, Ghana. It occupies a total land area of about 15.65 acres and falls within the Osu Clottey sub metro
Adherence to Treatment of Type 2 Diabetes

of the Greater Accra Region. It is a Ghana Health Service level ’A’ facility and serves as a referral point for all district hospitals in the Greater Accra region. It has 194 bed capacity and its immediate catchments area includes Nima, Maamobi, Kanda, Accra New Town, Kotobabi, Osu, La, Adabraka, Achimota and Central Accra. The hospital has 528 nurses with qualifications in different specialties. A whole range of general and specialist services are provided to people within and beyond its catchment area. The hospital provides both out and in-patient services. It has a Computed Tomography Scan machine and other basic equipment necessary for providing care for all patients. An average of about 600 cases are seen every day at the Out Patient Department in the hospital and out of these, some clients are admitted to the ward. The hospital also has a Medical ward, Surgical ward, Paediatric ward, Female ward, Postnatal ward, Maternity ward, Neonatal Intensive Care Unit, Physiotherapy unit, Public Health unit, Blood Bank, Laboratory unit, and ARV unit. It also has about twenty (20) specialists providing various specialist services.

3.3 Population of the study

In the opinion of Agyedu, Donkor, and Obeng, (1999), population of a study refers to a complete set of individuals (subjects), objects or events having common observable characteristics in which the researcher is interested. They further stressed that; population constitutes the target of a study and must be clearly defined and identified.

The population of this study therefore consists of all persons with Type 2 Diabetes Mellitus who attended the Ridge Hospital, situated in the Greater Accra Region of Ghana. Ridge Hospital is a Government health facility, which provides among other things, self-care management and education about treatment to people who have been
clinically diagnosed with Diabetes Mellitus. Participant recruitment took place from December 2015 to March 2016.

3.3.1 Inclusion Criteria

All Type 2 diabetic patients who have lived with the disease for six month and above who are not seriously ill. All persons living with Type 2 diabetes mellitus and have been on treatment for six months and above.

3.3.2 Exclusion Criteria

All Type 2 diabetic patients diagnosed less than six month and other types of diabetes mellitus were excluded. All seriously ill Type 2 diabetic patients were excluded.

3.4 Sample and Sampling Procedures

The study drew knowledge from patients diagnosed with Type 2 diabetes mellitus who visited the Ridge Hospital during a given period and the sample size was determined by saturation, where no new information was identified which was estimated to be on the tenth participant. In other words, in qualitative research, sample size is determined by data saturation in which, data is collected until it will be sufficient in-depth and quality with ten participants (Procter and Allan, 2010). With the tenth (10) participant, the data collected will be enough to fully understand all the dimensions of the key themes because of the amount of time spent with each participant, and the quality of the discussion. When the data reached saturation additional participant added no further new data; and the themes and categories in the data of subsequent interviews become repetitive and redundant. This study employed purposive sampling strategy. Purposive sampling is a form of non-probability sampling in which decisions concerning the individuals to be
Adherence to Treatment of Type 2 Diabetes

included in the sample are taken by the researcher, based upon a variety of criteria which may include specialist knowledge of the research issue, or capacity and willingness to participate in the research (Oliver and Jupp, 2006). The sampling method is important to identify any significant patterns that run through the variation (Polit and Hungler, 1999). It helped the researcher to sample participants who have much knowledge and experience on the topic (Diabetic treatment adherence) and is a good method of selecting participants with the information needs emerging from the early findings" (Polit and Hungler, 1999) the very purpose of this research. Purposive sampling is based on the belief that a researcher's knowledge about the population can be used to handpick the cases to be included in the sample (Polit and Hungler, 1999). This procedure was used to satisfy the researcher’s interest and was also used to obtain answers for the specific objectives set for the study. An introductory letter (Appendix B) was taken from the School of Nursing, University of Ghana which was addressed to the Director of the Ridge hospital and copied to the Deputy Director of Nursing Service and the Nursing Administration seeking permission to recruit Type 2 Diabetic clients in the facility for a study. After permission was granted, the OPD was visited. The process, purpose and objectives of the study were explained to the unit manager.

A discussion was held with the unit manager on the best way to recruit participants. A day was fixed, based on the convenience of the participants to brief them about the study. During the briefing session participants were informed about the purpose of the study, how data was going to be collected from them; that was face–to–face interview between the researcher and the participant which was recorded on an audio tape. Potential participants were assured of confidentiality and how data was to be managed to promote
privacy and avoid any trace. They were also informed of their right to withdraw at any point in time they wish during the study and the incentive package they stand to benefit. They were also given the opportunity to ask questions.

Participants who were willing to take part in the study were given a consent form which was further explained to them. Those who gave their consent by signing the consent form took part in the study. They also kept copies of the signed consent forms.

3.5 Instrument

Data for this study was collected by the use of semi-structured interview guide (Appendix D). The interview was conducted by the researcher herself. The interview guide was developed in accordance with the objectives set for the study. The major sections of the interview guide were two. The first section focused on the patients’ socio-demographic characteristics and the second part focused on the factors that influence treatment. This method of data collection was used because it is not rigid in nature and sequence of questions allow for probing into specific areas of interest to the researcher during an interview (Mason, 2006). The questions on the interview guide were pretested among two patients diagnosed with Type 2 Diabetes mellitus at the Adabraka Polyclinic in Accra to ensure clarity and prevent ambiguity. Adabraka polyclinic was used for the pre testing because patients in that hospital share similar characteristics with those at the Ridge Hospital. The interview guide (Appendix D) contained only open ended questions typed in English. However, participants who were not able to speak the English language were interviewed by the researcher using the Twi language. The added advantage is that the researcher speaks the Twi language very fluently.
3.5.1 Pretesting of the Interview Guide:
Pretesting of the interview guide is the process of interviewing a few participants who share similar characteristics as participants in the study setting to ensure appropriateness of the interview guide (Hennink, Hutter, and Bailey, 2011). The instrument was piloted or pretested among two participants who have similar characteristics with the study participants at Adabraka Policlinic. Questions that were not clear were restructured. Thus, analysis of the responses obtained was able to improve upon the main interview guide where necessary. Data gathered from the pretest was not included in the main study.

3.6 Data Management
The main purpose of data management in a qualitative study is “store data for maximal efficiency in retrieval and analysis” (Padgett, 1998). The researcher kept a field note and diary in which she wrote the date, time and place where the interview was conducted. Each participant was given pseudonym which was written in a file separately kept for each individual for easy retrieval. Participants were assured that every response given would be handled confidentially. All audio tapes, transcribed data, field notes and diaries as well as all documented information were kept in a safe place which would be accessible to only the researcher and her supervisor. If they are needed again for further research, permission would then be sought. After 5 years if they are no more needed, they will be destroyed.

3.7 Data Analysis
The main data analysis technique that was used to analyze the interview data was the thematic content analysis by Huberman and Miles, (1994) which was helpful in identifying the themes and subthemes that emerged from the data.
The interview was transcribed verbatim, immediately after each interview and analysed alongside data collection. Thematic content analysis was done: it requires coding frames which consist of a group of categories under which occurrences were placed. This was done according to the constructs of the model which have preexisting themes. The idea of the analysis was to classify words into much fewer content categories. The analysis was able to identify units of meanings that were extracted from the statements that described participants’ experiences. Transcripts were read several times to make meaning out of participant’s narratives.

Coding of various concepts was done. Codes with similar meanings were categorized. Each category was labeled. The transcripts were reviewed to validate the codes and categories. Several themes which emerged were identified to describe adherence to treatment regimen in patients diagnosed with Type 2 diabetes mellitus at Ridge hospital. Field notes from the interview were used to supplement the analysis. An example is when a participant was in a sad mood. This was actually noted down and was helpful during the write up.

3.8 Research Rigor

Rigor in qualitative research refers to the trustworthiness of the research findings. Speziale and Carpenter (2007), suggested four criteria for establishing trustworthiness of the study, namely: credibility, transferability, dependability and confirmability.

These concepts were used by the researcher to ensure trustworthiness of the research findings. Credibility was ensured by reviewing initial interview in order to evaluate the quality of the interview and proficiency of the researcher’s questioning skills. The
Adherence to Treatment of Type 2 Diabetes

probing of questions, reframing of questions, repetition of questions, or expansion of questions on different occasions were ways used to increase credibility. The availability of the audio recordings and transcripts of interviews was helpful for supervisor to critically evaluate the interpretations from direct quotes. All documents were discussed with the supervisors. This allowed for clarification of the information.

Transferability refers to the extent to which the findings from the data can be transferred to other settings or groups. Transferability was ensured by providing a complete description of a rich, thorough description of the research setting, context of transactions and processes throughout the investigation period. By so doing, the degree to which the findings of this study can be applied to other, situations, context or populations was clearly stated, and judgment can be made by a potential user on the transferability of the findings of this research.

Dependability of qualitative data refers to data stability over time and over conditions Polit, Beck, and Hungler, (2001). Dependability allows for logical following of the processes and procedures by the researcher. To ensure this, the researcher audio taped interviews, recordings were transcribed and, data from this were examined closely. Selection of themes was supported by quotes to make them credible. Audiotapes and transcripts were carefully maintained to ensure that they were not lost in any circumstance.

Confirmability is associated with objectivity of the research data. In this regard, documentary evidence of the study was made available to a neutral expert or research supervisor in order to review it and verify the path that the researcher followed from the
emergence of raw data to results. This was fortified by having an audit trail of all the interviews and transcripts and a draft of the final study to ensure that others can follow to confirm the findings.

3.9 Ethical Considerations

In this research, all ethical guidelines regarding the use of human participants were adhered to in order to protect the participants. The researcher obtained ethical clearance (Appendix A) to conduct the study first from the Institutional Review Board (IRB) of Noguchi Memorial Institute of Medical Research (NMIMR), University of Ghana. The researcher also identified and introduced herself to the authorities of the Ridge hospital. Each participant was permitted to be part of the study by signing or thumb printing an informed consent form (Appendix C). The researcher sought permission from the participants to record the interviews on an audio recorder before the commencement of each interview. Participants were also informed about voluntary participation and that they were free to terminate their participation in the study at any time without suffering any consequences. Participants were also made aware of the incentive of a handkerchief after each interview. They were also told that the tapes and the transcripts will be available to only the researcher and her supervisor. The tapes and the hard copies of the transcripts would be kept under lock and key. Soft copies of the tapes would be kept in a computer that has a password known to only the researcher and supervisor.
Confidentiality

Participants were informed that no information about them would be disclosed to others and this would ensure confidentiality. The names of participants were not written anywhere in the report but rather pseudonyms were used. All participants’ information on the audio recorder and laptop computer had a password to protect it, to prevent unauthorized access by others. The researcher intends to keep the protected data for five years after the publication of the work so that she can provide evidence to any person who doubts the authenticity of the findings.

Privacy

To prevent unnecessary intrusion by other people, interviews were conducted at a private place that was convenient to participants. All identifiable information collected from participants was put under lock and key. No one else except the supervisor has access to the information for cross checking. The researcher used pseudonyms in the place of participants' name throughout the study so that others will not be able to match the quotes or responses with participants' identity. Again, the researcher excluded names of the participants and their folder numbers from the research report to maintain anonymity of the participants.

Risk: Any foreseen risk for participating in the study was addressed accordingly, for instance participants’ apprehension during the interview due to the fear of unknown. The participants were assured that the data collected would be used for research purposes only and would not be used to penalize them.
3.10 Expected Outcome/Results

It was expected that by the end of the study, the non-adherent behavioral characteristic of patients diagnosed with Type 2 diabetes mellitus would be described. The findings would help nurses and other health care providers to plan better care for people living with Type 2 diabetes who had difficulty in adhering to their treatment regimen.
CHAPTER FOUR

FINDINGS OF THE STUDY

4.0 Introduction

The findings of the study are presented in this chapter. The main purpose of the study was to explore and describe factors that affect adherence to treatment among patients who are Type 2 diabetics. In all data saturation reached fourteen (14) participants who willingly participated in a tape recorded, face to face interview. Data obtained from these fourteen (14) Type 2 diabetes mellitus patients were analyzed using thematic content analysis technique. The study generated seven main themes namely factors that influence adherence, perceived benefit, challenges of adherence, coping strategies, effect of non-adherence, improvement in adherence and experiences living with diabetes. Each of the themes has sub-themes under it. Participants were assigned pseudonyms to ensure participants' confidentiality as well as anonymity.

The demographic characteristics of the participants are presented first followed by the themes.

4.1 Demographic findings of research participants

Fourteen (14) participants aged between twenty seven (27) and Seventy-seven (77) years were recruited for the study. Participants were all persons living with Type 2 diabetes and residing at different suburbs in the Accra metropolitan area. The duration of illness of the participants ranges from one (1) to twenty (20) years. Out of the fourteen participants, eight (8), constituting majority of the participants were females. The languages spoken by participants were Twi and English. Nine (9) of the participants spoke Twi, and five (5) spoke the English language. Twelve (12) participants had some form of formal education.
and Two (2) had no formal education. Six (6) of the participants were married; two (2) were divorced, five (5) were widows and one was not married. The number of participants who were Christians from different denominations were eleven (11) and three (3) were Muslims. The data was transcribed verbatim. The next section looks at the main themes as well as their sub-themes.

**Table 4.1: Themes on Factors that Influence DM Treatment Adherence**

<table>
<thead>
<tr>
<th>NO.</th>
<th>MAIN THEMES</th>
<th>SUB- THEMES</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Factors that influence adherence</td>
<td>■ Avoidance of complication</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ Recovery from DM</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ Avoidance of burden</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ Avoid early grave</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ Knowledge about DM treatment</td>
</tr>
<tr>
<td>2</td>
<td>Perceived benefit</td>
<td>■ Good health</td>
</tr>
<tr>
<td>3</td>
<td>Challenges of Adherence</td>
<td>■ Forgetfulness</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ Financial difficulty</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ Problem integrating medicine taking into daily life and activity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ Lack of support</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ No challenges</td>
</tr>
<tr>
<td>4</td>
<td>Coping strategies</td>
<td>■ Diabetes self-care practices</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ Social support</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ Institutional support</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ Relying on God</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ Alcohol intake</td>
</tr>
<tr>
<td>5</td>
<td>Effect of non-adherence</td>
<td>■ Complication</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ Death</td>
</tr>
<tr>
<td>6</td>
<td>Improvement of Adherence</td>
<td>■ Conscious effort in treatment</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ Keeping safe</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ Mental restructuring</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ Exercises</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ Healthy eating</td>
</tr>
<tr>
<td>7</td>
<td>Experiences with Diabetes</td>
<td>■ Physical experiences</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ Psychological experiences</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ Social experiences</td>
</tr>
</tbody>
</table>
4.2 Key findings from the interview data

The presentations of the results are organized under six main headings according to the aims/objectives of the study. These include the factors that influence adherence to treatment regimen among Type 2 diabetic patients, the perceived benefits associated with treatment adherence among patients living with Type 2 diabetes mellitus, the challenges faced by these patients regarding adherence to treatment, patients coping strategies used in with treatment/management of the diabetes, the effects of non-adherence among patients living with Type 2 diabetes mellitus, ways adherence to treatment be improved among the patients and the experiences of living with Type 2 diabetes. The responses from the participants regarding each of the six key themes are summarized below.

4.3 Factors that influence adherence

The analysis of the interview data showed that the reasons given by the participants for adhering to their treatment regimen can be grouped into six main sub-themes, namely; Avoidance of complications, Recovery from diabetes, Institutional support, Avoidance of Burden, Avoid early grave and knowledge about diabetes treatment. The various sub-themes are presented and discussed with verbatim quotes below;

4.3.1 Avoidance of complications

It came up from the analysis of the interview that most of the participants adhered to their treatment regimen because of fear of diabetes complications. This is because diabetes has several and severe physical complications such as nephropathy, retinopathy, renal failure, and hypertension among others. Thus, the participants adhere to their treatment regimens to avoid these severe physical and psychosocial complications of diabetes.
Adherence to Treatment of Type 2 Diabetes

A 67 year old participant in expressing his view of factors that affect his adherence to diabetes treatment regimen stated that:

“I was told that if I do not take my medicine what will happen will not be good at all. I do not play with the taking of my medication because I learnt that when I develop a sore it may take a long time to heal or may not even heal at all” (Agya).

A 58 year old woman also shared her view on how she wants to avoid complications with the condition. She mentioned:

“I know that if I do not take my medication, the diabetes will also show up all the time so I have to make constant effort to take the drugs always” (Tiwaa).

These participants like other participants adhered to their treatment regimens especially taking of diabetes medications in other to avoid complications as they have been told. The information about the severe negative consequences of diabetes treatment non-adherence could be very crucial in diabetes education as most patients try to avoid complications of diabetes.

Other participants also stated in response to factors that affect adherence to diabetes treatment regimen that non-adherence to the treatment regimen could lead to undesirable outcome or severe negative consequences. One of them who was eager to speak also had this to say:

“I know that if I continue to abstain from taking my medication I will die, so this time, knowing what I have been through I will take it” (Atswe).

A 53 year old woman who wants to avoid any negative effect of diabetes also stated:
Adherence to Treatment of Type 2 Diabetes

“I do not want to fall sick, I do not want diabetes to cripple me, and neither do I want to go blind. I do not want my legs to be amputated or have any problem with my kidneys or have heart problems” (Awura).

Similarly, a 70 year old, Eno Pokua, lamented emphatically the need to avoid all the unfavorable body responses so she will adhere to treatment:

“If I do not take my medication then all my body pains me”

Another participant threw more light on the reasons for adhering to her treatment by saying what she had learnt from a television programme on diabetes care: This is what she said:

“there was a day that I watched television and there was a discussion on diabetes and the doctor who spoke said it is not all the diabetes that will end up in blindness or sores but there are some that can end with stroke when you do not take your medication well, so I now take my medications” (Amina)

Moreover, a 45 year old woman stated shortly that she does not want to die early so she adheres to her treatment regimen. She strongly noted:

“I do not want to die early” (Alima).

It is interesting to note that eight participants in the study adhered to their treatment regimens because of fear of complications as has been communicated to them by the healthcare professionals. It is also noted in diabetes care, that self-management protocols and adherence to treatment in general may be some of the measures employed by affected individuals to avoid complications.
Adherence to Treatment of Type 2 Diabetes

4.3.2 Recovery from diabetes

It also came to light from the data that some of the participants adhere to the diabetes treatment regimen to be healthy, strong and if possible recover from the illness. This belief could derive from the fact that the adherence to the treatment reduces the complications and as such the patients are healthy and strong. Examples of some narratives from the participants will throw more light on this assertion.

“I consider that, when I take my medicines I will get well”

(Etonam)

Also, a 70 year old lady had the conviction that taking medication will make her recover from the diabetes. This is how she put it:

”I consider that, I have to take the medication so that I will be healthy and strong” (Adei)

In the same vein, a 48 year old man who believes that he can recover from the disease so that he can live a normal life had this to say:

“So that at least I can return to my normal life. I use to be energetic and very fit but look at me now for that matter I do not joke with my medicines” (Seidu).

The narratives from the participants showed that one of the key factors that influence their adherence to their treatment regimens is the desire to be healthy and return to their normal lives. In addition, being very optimistic that the disease can be cured is a motivating factor for affected individuals’ adherence to treatment.

4.3.3 Avoidance of Burden

As mentioned previously, the factors identified by the participants as influencing their adherence to their treatment regimen, some of the participants were of the view that they
Adherence to Treatment of Type 2 Diabetes

adhere to their treatment regimens in order not to fall sick and become a burden to their children and family in general. The burden could be financial and emotional as a 77 year old man rightly put it;

“Hmmm.. I do not also want to be sick and weak and my children will be taking care of me. When they see that I am sick they are sad and they weep so I do not want to see them in that state. For that matter I take my medicines” (Opanyin).

In a sad mood, this is what a 70 year old Adei also said:

“If I end up losing my limb and I become dependent on my children it will be a problem for them. The same people have to go to work to get money for my upkeep. They are the same people who have to send me to the hospital and also feed me. It causes a great burden on them” (Adei)

The views expressed by these participants showed that even though adherence to the treatment regimen would be beneficial to the patients, her focus is to reduce the economic as well as psychosocial burdens on their children. In the long run, the family will be well resourced to assist the individual to adhere better to treatment.

4.3.4 Avoid Early Grave

Related to avoidance of burden, another narrative from some of the participants to adhere to their treatment regimen is to avoid ending up early in the grave and leaving their children to suffer. They prefer to live healthy uncompromising lifestyle for the sake of their children. A 67 year old retired banker had this to say:

“I make sure I take my medication. I realized that my grandchildren like me so I do not want to die, so I take care of myself” (Agya)

A woman whose husband is dead but wants to live longer had this to say:
Adherence to Treatment of Type 2 Diabetes

“I want to live longer for my children. My husband is dead and I have my children so I do not want anything to happen to me now so I will take my medication very well so that my life will prolong for them” (Amina)

From the narratives above, it is clear that there is a strong bond between the individuals and their family which serves as a motivation to adhere to treatment and this results in living longer lives to avoid ending their lives abruptly.

4.3.5 Knowledge about Diabetes Treatment

It appeared from the interview data that patient knowledge on the treatment regimen was significant to adherence. Twelve of the participants had knowledge about the dosage (the exact dose to be taken) and the time (morning and evening) they are supposed to take the medication. This is how a 67 year old widow expresses her knowledge:

“I take my medicines 2 times daily, I take it after meals. The evening medication is taken after 5 pm when I have eaten. I have some biscuits with no sugar in it on me all the time. I take it with water in the night when I am hungry” (Amina)

Similarly, a 77 year old Opanyin has insight on the time he takes his medications and when to take his last meal for the day. He stated it this way:

“I take the Daonil before breakfast and after that I take the other medications. I eat latest by 5:30 pm them I take my evening medications” (Opanyin).

In the same vein, Agya, the 67 year old man also has knowledge about the medication he takes in the morning and evening. He uttered it this way:

“When I wake up in the morning, I take my Daonil and after 30 minutes then I take porridge before I take the other medications. I take my Daonil 30 minutes before I eat then I take the other drugs in the evening. I do this every day” (Agya).
Adherence to Treatment of Type 2 Diabetes

It is obvious from the narratives that the awareness of the time to eat and take medication by patients living with Type 2 diabetes mellitus is very essential to treatment regimen. When patients are knowledgeable on the time and what to take at every given time it influences them to make decision for themselves regarding treatment.

4.4 Perceived benefits

The analysis of the interview data showed that only one sub-theme run through the responses of all the participants in the study, that is, Good Health. This is not surprising because the ultimate purpose of adhering to treatment regimen is to have good health outcomes of which good health is the ideal.

4.4.1 Good health

The desire to reach the utmost goal of attaining good health is what the patients require. They desire to be well and feel strong all the time so that they will be able to carry out their daily activities without any difficulty. The following are some of the responses from the participants to highlight the benefits of adhering to their treatment regimen;

“I know that when I take my drugs, the diabetes will stop and I will feel well” (Opanyin)

Etonam confessed that he will adhere to the treatment to gain health. He has realized that it is only through adhering to his treatment that he can enjoy good health. He recounted:

“I know I will recover. I am sick now because I did not stick to my treatment” (Etonam).

Similarly, Atswei admitted that she does not want to end her life now so she will adhere to treatment so that she can enjoy good and healthy life. With a sad looks she stated that:

“I know that if I continue to abstain from taking my medication I will die, so this time, knowing what I have
Adherence to Treatment of Type 2 Diabetes

been through I will take it to gain strength and good health” (Atswei)

Another participant who value life so well that he believes adhering to his treatment will ensure that he enjoy life to the fullest through good and healthy lifestyle. He expressed it this way:

“I needed my strength back. Life is precious so I take my medication to keep me strong” (Atsu).

Moreover, 67 year old Alima has the conviction that she will be healed from the diabetes so she will strongly take the medication and follow all the self-care management steps to gain her strength and avoid complications. This is how she puts it:

“I take my medication so that I will feel well again. I know that when I take my medication well I will be cured of diabetes. I try to take it well because if I do not take it I do not feel fine and I do not want to cheat myself” (Alima)

Moreso, Seidu has the notion that he will be healthy when he adheres to his treatment. This will reflect in the blood glucose results when he visits the health care providers. He had this to say:

“I will be healthy. When I come to the hospital the doctors will know that I am serious and I have done everything I was told to do” (Seidu)

These narratives from the participants showed that all of the participants know at least one benefit of adhering to their treatment which is commendable.
4.5 Challenges of adherence

The researcher also examined the challenges faced by patients regarding their adherence to treatment and identified four sub-themes with two (2) participants reporting no challenge in their adherence to the treatment regimen. These sub-themes include; Forgetfulness, Financial difficulty, difficulty integrating medicine taking into daily life and lack of social support. The details of the various sub-themes are presented below.

4.5.1 Forgetfulness

One of the participants interviewed was of the view that forgetfulness is his main barrier or challenge to adherence to his diabetes medication. A very worried 67 year old man had this to say:

“I sometimes forget to take my medicines, especially the Daonil. I must take it before I eat but sometimes I forget. I realize that I do not feel well when I forget to take it. My worry is that I cannot take it after eating” (Agya).

Another, participant who is a 53 year old banker, also declared her problem of forgetfulness which results in non-adherence. She stated:

“The challenges are when I forget to take it the whole day as a result of removing the medicine from my bag and I go to the office. Also I sometimes forget to take it after I have eaten” (Awura).

Failure to remember to adhere to treatment can have an adverse effect on the quality of life of the individual. In these regard participants require techniques that will serve as a reminder to be able to overcome their challenges of forgetfulness and therefore, this should form part of diabetes education.
4.5.2 Financial Difficulty

Seven participants stated that money is one of the major barriers or challenges to their adherence to diabetes treatment regimen. Purchasing of the medicines requires money as well as keeping up with some specific diet regimens. Some of the narratives from the participants to illustrate the financial constraints as a key barrier to adherence are presented below;

“Initially I was not on health insurance, and at the time my daughter was not working. It was a problem when we had to buy drugs. Now I have done the national health insurance so I use it to get my drugs. The only thing is when the insurance does not cover some of the medicines, that one we buy it but not much” (Amina).

Another participant who looked very worried mentioned that it is difficult for her to purchase her medication because she is on pension so the meagre income cannot support her expenses. She remarked:

“Money is a big challenge for us because we are pensioners, my husband and I, so sometimes when we have to buy the medicines it becomes a problem” (Atswei).

A 43 year old IT specialist voiced the amount of money that has gone into his treatment within a short time. He stated sadly that:

“My challenge is the money I spent on the diabetic foot...The health insurance can cover 2 days of the dressings and the rest I have to pay for it. I have spent about two thousand cedis since I came here. Some of the drugs the insurance does not cover and I have to buy them. This is excluding the transport I bring here” (Nii)

Sena, a 53 year old widow shared the difficulty she sometimes face before she purchase the medicines
“[Shaking her head] The challenge I face is that when I have to buy medicines and my daughters do not get money for me. It delays the treatment and my blood glucose level goes up. They are not paid at their place of work on time and so I do not get money to buy drugs on time. When it happens like that and I come for review then they detect that the blood glucose goes up” (Sena)

It was clear from the responses from most of the participants that money is a major barrier to adherence to diabetes treatment regimen as has been observed earlier among persons living with diabetes in Ghana (Korsah, 2015). The national health insurance scheme is not able to cater for all the cost the patient incurs at the hospital and it leads to serious challenges for the patients (Korsah, 2015).

4.5.3 Problem integrating medication taking into daily life and activity

Medication taking is a key barrier for most patients who have to take it for life. It becomes difficult for most people especially the elderly when they have other comorbid conditions such as hypertension and arthritis and have to combine the treatment. The quantity of the medicine, swallowing and or injecting the anti-diabetic drugs can become problematic for most patients. A 70 year old widow has this to say:

“The only challenge is the quantity of medicine I take a day. I have to take my blood pressure medication and the diabetes so sometimes I will not take it at all. I tell myself that I will rest from swallowing medicine all the time. Now I know that if I refuse to take the medication it brings problem to me. So I have decided to take it” (Adei).

A 63 year old woman who has been living with diabetes for ten (10) year felt it was too tiresome to be taking medication all the time. She recounted:

“I am tired of taking the medication. Every day I am swallowing medicine, why” (Atswei).
Injecting insulin on daily basis can be very challenging in itself and therefore, the youngest participant reported tiredness with the injection of insulin as his main challenge. His narrative is presented below;

“My challenge is that, I feel tired of injecting insulin all the time” (Etonam).

Expressions from the participants show that they have challenges in taking the medication due to the quantity and regularity. From the narratives, it is not only important to take the prescribed medication; it is equally important to encourage patients living with diabetes to adhere to the treatment to improve on their total wellbeing.

4.5.4 Lack of Support

On the other hand, one participant also stated that lack of support from family serves as a major challenge to her adherence to treatment regimen. A patient who was frustrated living with diabetes expressed her agony this way:

“The only challenge I can mention is when I am sick and nobody is around to help me. I have to wait for my children to come before I take my medication. Sometimes I will be lying down and it was difficult to get up to eat and take the drugs” (Alima).

Throughout the interview process and the analysis, it was realized that family support plays a significant role in the adherence to diabetes treatment regimen among the patients and lack of support from the family will be a major barrier to recovery. The experience from the hospital reveals that social support is very significant in the life of the sick person where they contribute to the upkeep of the sick. This is a very common practice in the Ghanaian context. Family members help with medications, diet and provide financial as well as emotional support to the patients.
4.5.5 No challenge to treatment adherence

However, three of the participants indicated that they do not have any challenges to their adherence to the diabetes treatment regimen. Their narratives are presented below:

“*I do not have any challenge with the treatment at all*” (Opanyin).

More so, a 49 year old gainfully employed man mentioned that he has no challenge at all with his treatment adherence because he can afford to manage the diabetes well. This is what he had to say:

“No I do not have any challenge. I am gainfully employed so I can afford to purchase my medication. My NHIS card expired some time ago and I haven’t renewed it. I can afford to purchase. There is no challenge with my treatment in general” (Atsu).

Moreover, another participant who wants to adhere better to her treatment, stated emphatically that she keeps the medicines at the places she find herself more frequent. She communicated it this way:

“I do not have any challenge because I have some of the medicine in the house, at work and even the bag I use for my rounds” (Awura)

These are statements made by participants who have good support system cushioning them to manage the diabetes appropriately.

4.6 Coping strategies

The analysis revealed three main sub-themes used by the patients in coping with their illness. These are Engagement in Diabetes Self-Care Practices, Reliance on social support from family members and Spirituality. The details are presented below.
Adherence to Treatment of Type 2 Diabetes

4.6.1 Diabetes Self-Care Practices

Most of the participants in the study reported their engagement in diabetes self-care practices such as adherence to medicine, foot care, diet and exercising as their main coping strategies. Some of the narratives are presented below:

“When I wake up in the morning, I take my Daonil and after 30 minutes then I take porridge before I take the other medication then I will wash my car, and then take a walk because I do not want to grow old and weak to use a walking stick. I have a taxi that I work with. I pick up my grandchildren from school in the afternoon. I take my Daonil 30 minutes before I eat then I take the other drugs in the evening. I do this every day except on Saturdays and Sundays” (Agya).

Also, Atsu has a daily routine of managing the diabetes by adhering to the time he takes his medication and food. He expressed it this way

“I inject the insulin in the morning by 7am. I wait for a while because that is what I was told from the hospital before I take porridge, I will take some rest and in the afternoon eat Banku with Okro soup. Later in the evening I inject the insulin and eat before 6pm, I find something to do but if there is nothing to do I go to bed” (Atsu).

Again, there are other self-care practices that are essential to treatment adherence which this participant mentioned

“I eat well and take my medication. On diabetic clinic days i was educated on how to care for my foot as well. I wash in-between my toes apply pomade to it. I clean under my feet and keep it dry. I do not walk bare footed especially in stagnant water where I am not sure something in the water can cause injury to my feet and can lead to sores” (Adei)

From the above narratives, it is clear that the participants use self-care practices as the main coping strategy to empower them to adhere to treatment. It requires practicing self-care continuously to help achieve healthy life.
4.6.2 Social support

The analysis further revealed that most of the patients use social support from their families as a coping mechanism. A narrative from a 67-year old woman living with Type-2 diabetes shed some light on this;

“When I wake up in the morning, my daughter bathes me, prepares my meals and gives me my medication. I first pray before I eat then I take my medication. When she or her brother has to go somewhere, they put all my meals very close to me, including my medicines for easy reach... where I live is a family house so when I am in need and I call anyone, they come to assist me because they are not sure of what may happen to me” (Amina).

A 43 year old man narrated the immense support he received from his wife during his admission at the hospital and afterwards.

“My wife has been a great support throughout. She saw the swollen foot when the bottle pricked me and rushed me to the hospital. I was admitted and she stayed here in the hospital for the 5 days I spent. She gives me food and even helps me with the things I need. She supported financially because I couldn’t do anything” (Nii).

Social support plays an important role in the lives of patients and non-patients and in times of need or crisis, the family and friends are there to give a shoulder to lean on. The impact of social support is to give a positive self-image to patients living with diabetes mellitus which is very crucial in the treatment adherence and should be encouraged.

4.6.3 Institutional support

The data analysis also revealed that some of the participants were adhering to their treatment regimen due to the advice and support they received from their healthcare providers. That is to say that, these patients do not experience any severe negative
Adherence to Treatment of Type 2 Diabetes

complications but they just follow the recommendation by the doctor, nurse and the dietician since they are living with the diabetes.

A 67 year old woman expressed her desire to take the medication because of the motivation she gets from the health providers. She stated joyfully:

“I always get encouragement from the doctors and nurses to continue to take my medication all the time” (Alima).

In the same way, a 43 year old married man also mentioned the satisfaction he got from the education given by the dietician which motivated him to adhere to treatment.

“I was referred to see the dietician who educated me on how to manage the disease and the kind of food I should eat” (Nii).

The view expressed by the participant points to the importance of diabetes education to patients’ adherence to their treatment. Therefore, it is important that doctors, nurses and other healthcare professionals communicate to the patients with Type-2 diabetes about their illness to ensure strict adherence to the treatment regimen. From the narratives, it is not only telling them to take their medications and diet, it is also very important to use persuasive approaches to educate and support patients diagnosed with Type 2 diabetes mellitus to adhere to their treatment.

4.6.4 Relying on God

Some of the participants made mention of God as playing a significant role in coping with their illness. Atsu outlined the need to recognize the supremacy of God in the management of diabetes.

“God has His own time of doing things...If the medicine does not work, does not mean your prayers have not been answered... As a Christian you have to know the dynamics
of all these things. So I always pray to God because I know with Him all things are possible [laughs]” (Atsu)

A 70 year old woman also mentioned that her hopes were on God, who has sustained her for the past days. She noted in an optimistic way:

“If it hadn’t been God where will I have been? When I look back at where I was, if God had not answered my prayer by now, I would have died and gone” (Eno Pokua).

Religion offers hope and strength to the sick. The hope that the person has in God is that, the illness will be healed and they believe that he can return to a normal life. The individual also has strength to carry on when he relies on God. The strength motivates him to take his medication and also to self-manage which will enhance the persons self-image. However, there is an argument over how relying on God will reduce the blood glucose level of affected individuals with diabetes. Polzer and Miles, (2005) have shown in their study that reliance on God is a source of support that people with chronic ailment including diabetes mellitus receive. This spiritual support improves upon their self-management which leads to reduction of the blood glucose level (Polzer and Miles, 2005).

4.6.5 Alcohol intake (Negative coping)

However, one participant resorted to drinking alcohol to cover up with the worries of living with Type 2 diabetes mellitus. He could not accept the fact that he was living with Type 2 diabetes mellitus and felt that taking alcohol will erase the reality from his mind. He sadly mentioned that:

“Anytime I remember that I am a diabetic, I become worried and take alcohol” (Etonam)
Adherence to Treatment of Type 2 Diabetes

Alcohol taking has negative effect on the diabetes. It can either cause the blood glucose to rise or fall depending on the amount of alcohol that was taken so adopting to the consumption of alcohol can be detrimental to the individual in the management of diabetes. It may also cause problems to the liver of the patient.

4.7 Effects of non-adherence

The analysis of the interview data shows two main sub-themes across the participants in terms of the effects of non-adherence among patients living with Type 2 diabetes mellitus. These are complications and death.

4.7.1 Complications

Most of the participants interviewed were of the view that non-adherence to the diabetes treatment regimen could result in severe negative consequences. Some examples of their responses to the effects of non-adherence are presented below;

“You start feeling dizzy, your blood glucose will go up and sometimes you can go blind or they can cut your legs. So it is important to go according to what the doctors said at the hospital” (Agya).

Another participant who is conscious about the enormous effect the diabetes can result in said it is important for her to adhere to the treatment by being serious with her treatment.

“You can have so many problems. You can have problem with your eyes, your legs and even high pressure. Madam, so me I do not joke with my medication” (Amina).

Just like the rest of the participants in this study, most of them were concerned about the physical complications including kidney disease, amputations, and cardiovascular disease among other which can lead to non-adherence to their diabetes treatment regimen. In this
regard, participants are willing to ensure that they adhere to the treatment to prevent such impediments which may result in death.

4.7.2 Death (The ultimate may occur)

One of the participants says that the effect of non-adherence is death. He spoke from his past experience with a near fatal consequence.

“If you do not follow what the doctors say, like taking your medication, eating well and exercise, you will die hmm, it has happened to me before when I stopped taking my medicines. I became unconscious and I thought I will die, so for me, I think nobody should stop the treatment” (Opanyin).

This is what a 63 year old had to say, after she had defaulted for one year without medication. She knew she was heading towards the end of her life. She narrated it this way:

“I know that if I continue to abstain from taking my medication I will die, so this time, knowing what I have been through I will take it to gain strength and good health” (Atswei)

Participants have knowledge about the nature of the disease and the effect it can cause when someone fails to adhere to the treatment recommended by the health care providers. Most of the patients have had some experience of pain in their bodies when they relaxed with the treatment and they know that the end result is death.

4.8 Improvement of Adherence

The examination of the interview data has shown that the patients diagnosed with Type 2 diabetes mellitus can make their management better through their own effort and the measures that they will put in place to enhance their standard of living. The reasons given
by the participants for ways that adherence to treatment can improve among patients can be put into five sub-themes, namely conscious effort in treatment, keeping safe, mental restructuring, exercises and healthy eating. The various sub-themes are discussed with examples below;

4.8.1 Conscious Effort in Treatment

The analysis of the interview showed that most of the participants stated that being conscious of treatment as a way of adherence to treatment can improve among patients. A 67 year old participant in expressing his view on ways his clock goes off telling him when to take his medication from time to time stated that;

“I have a clock that reminds me to take my drugs. I think I have to write a note on my first aid box to remind me to take the Daonil before I eat” (Agya).

Similarly, Etonam has realized the importance of adhering to his treatment and the need to improve upon it even when he has no or limited support. He stated boldly that:

“I will make conscious effort to take my treatment even if there is nobody around to remind me” (Etonam).

Another participant also expressed this treatment consciousness by saying that she is going to follow the treatment sternly to better her adherence which will result in good health;

“I was not serious with my treatment but now I can see the seriousness of it so I will be vigilant. I want to be vigilant in taking my medication” (Atswei).

All these responses demonstrated that one of the ways adherence to treatment regimen can be improved among patients is treatment consciousness. This treatment
consciousness is achieved by one’s own effort or determination to improve on the state of life.

4.8.2 Keeping Safe

It also emerged from the data that one of the ways treatment adherence can be improved among patients is safety awareness. The participants were able to identify what poses a threat to them and awareness of these dangers encouraged them to put in efforts to avoid them. For example a participant recounted by saying he wants to avoid injury so he takes precautionary measures to maintain safety;

“I am conscious of developing a sore so I do not have to walk bare footed otherwise something can prick me. I am taking care of myself” (Atsu).

A 45 year old participant who although walks barefooted in her room stated she does that with caution.

“I also walk in my room barefooted but I am careful not to cause any injury to myself” (Alima).

These responses show that keeping safe and being conscious as persons living with diabetes can help in improving adherence by being cautious of injuries to the foot which can lead to amputation. Patients living with Type 2 diabetes mellitus have to avoid pricks from sharp objects and also the need to wear loose fitting footwear to enhance good self-care.

4.8.3 Mental restructuring

Another related factor from the data gathered as to ways treatment adherence can be improved is mental or cognitive restructuring. Some of the participants have restructured and conditioned their minds not to bother so much or think about their illness.
Adherence to Treatment of Type 2 Diabetes

A 52 year old participant believes that she has to improve on her wellbeing by avoiding being emotional all the time. She noted that when the mind is not stable it affect the whole body which in effect will disturb adherence to treatment regimen. She emphasized this by saying;

“\textit{I have to stop being anxious. Anything that will get me anxious should be avoided. I have to stop being angry and shouting too}” (\textbf{Sena}).

A 49 year old man need not to risk worrying all the time because he is living with Type 2 diabetes mellitus and lose his life. He expressed it this way:

“\textit{I do not have to be worried because people have had diabetes and they are still living. I once worked with a man who is about 80 years now. He has had diabetes for over 40 years and he is still living so why should I be scared}” (\textbf{Atsu}).

It emerged from the narrative that being anxious or troubled can have adverse effect on the individual’s state of health. Life becomes better when the individual develops a positive attitude towards the diabetes which will improve his or her self-image and will ensure better adherence to treatment.

4.8.4 Exercising

Another factor that came up as a means through which quality of life can be improved among patients is through exercising. Eleven of the participants make use of exercising in order to improve upon their health. When the individual is fit, he may be able to carry out his daily activities including self-management

An example is Opanyin who is 77 years stated that he would exercise to improve on the insensitive area on his limbs. He commented it this way:
Adherence to Treatment of Type 2 Diabetes

“I will also try and do some exercise to improve upon the numb limbs” (Opanyin).

In a similar trend, Awura tries to do some aerobics for 30 minutes every day to keep her fit. When she is physically fit, she can self-manage the diabetes more efficiently and improve on her status. This is how she said it:

“I try to exercise at least 30 minutes every day before I go to work if I do not do it in the morning, I will do it after work in my yard until I see that I am sweating then I take a bath before I retire to bed.” (Awura).

In another way, Alima stated that even if she does not go out she still tries to do some form of exercise in her room. This is what she said:

“I have to exercise. If I do not go out, I still have to exercise in my room. I stretch my legs and raise them up” (Alima).

This activity by the participants is commendable as exercise is one of the recommended self-care practices that improve on quality of life which is aimed at achieving good health outcomes.

4.8.5 Healthy eating

Another sub-theme that was developed from the data on ways that adherence to treatment can be improved among patients is healthy eating. Majority of the participants were aware that healthy eating is a good means of health improvement. Diabetes is a disease that is closely linked to diet and the need to stick to the right diet to improve on their health was emphasized by the participants.
Atswei, a 63 year old participant who defaulted for a year expressed her decision to adhere to treatment by taking only the recommended food and medication. This is how she put it:

“I will stop all the sweet things I eat and stick to what I was told to eat and take my medicines as well” (Atswei).

A 43 year old man, who has lived with the diabetes for ten years but has not, managed his treatment well mentioned that, this time he wants to ensure that he will not miss the time to eat and taking of the medication. He revealed it this way:

“For me to recover well, I have to stick to my medication and to eat the right food. I can improve my adherence by carrying the medicine along to the office and also get a lunch pack with food so that if I have to stay and work for a longer time I can take my meal and medicine to improve on my health.” (Nii).

A 53 year old woman who said she is always busy with her work schedule had this to say to improve on her eating habit:

“I am conscious of the diabetes so I do not eat too much sugar. I have to make or find time to eat. I think I have to sneak time off my busy schedule to eat. If I have some vegetables then I can eat that before lunch” (Awura).

The narratives above showed that the participants consider diet as a very important means of achieving optimum diabetes outcome. Participants are aware that healthy eating will maintain their health and gives them energy to perform their daily activity to the maximum.

4.9 Experiences with Diabetes

All the participants have had experiences with the diabetes which had some implication on their general well-being and for that matter treatment adherence for patients living
Adherence to Treatment of Type 2 Diabetes

with Type 2 diabetes mellitus. Three sub-themes were developed from the experiences and these are physical, psychological and social experiences.

4.9.1 Physical experience

It appeared from the data gathered that diabetes has its physical signs and symptoms and can have a great toll on the well-being of the individual in general. This is how a 77 year old Opanyin put it, indicating that the disease makes him restless and affects his sleeping pattern.

“It is a disease that makes me restless all the time, it does not allow me to sleep well. I have to get up and urinate throughout the night” (Opanyin)

There is physical weakness, dizziness and weight loss which a 63 year old woman expresses as making her life miserable from the diabetes and it affects her self-management and inevitably affect treatment adherence. She put it this way:

“It is not a good thing, it makes me feel weak, dizzy and I grow lean. I urinate frequently and my whole body aches” (Atswei)

The physical manifestation of the disease can have negative consequences on the person. When they have to visit the wash room frequently to urinate, at the same time taking lots of water, losing weight and at the same time feeling weak and ill among others, this can be stressful and may disorganize the person. When the person is ill, he or she cannot manage the diabetes well and then unavoidably results in non-adherence to treatment.

4.9.2 Psychological experiences

Psychological symptoms can have a great impact on the well-being of patients. The mind can be preoccupied with worries, hopelessness, uncertainties and fear which can depress
Adherence to Treatment of Type 2 Diabetes

the individual and could affect treatment adherence in the life of the person. One elderly man mentioned with sadness in his face that when it was announced to him that he was a diabetic patient, he became very worried and depressed and didn’t know what to do. This is how he put it:

“I felt very bad, so sad and I was confused, I didn’t know what to do” (Agya)

An energetic and happy going 48 year old man became worried and depressed when he got to know that he was a diabetic. This is how he described it:

“I was worried and very sad because I am someone who does not fall sick and I do not even go to the hospital then the first time I went to the hospital then I was told I have this disease” (Seidu).

This is evident from his reaction that he became devastated from the news he received from the hospital the very first time he visited. He had to face the reality of living with Type 2 diabetes mellitus.

A 70 year old woman, sometimes become worried, and when she cannot sleep again, then her sleep is interrupted, it affect her daily activity which includes treatment adherence. This is how she expresses herself:

“When I go to bed and my mind start wondering, I can’t sleep then I begin to sweat throughout and I will be turning in bed. When it happens that way I get up and pray, when I feel thirsty and drink water then I will urinate plenty and it disturb my sleep” (Adei).

The narrative above has shown that physical and psychological manifestation has some significance which it can affect the whole body mechanism of an individual including treatment adherence.
4.9.3 Social experiences

Social experiences are experiences that enable people to interact and show love and feel part of the society. Certain illnesses and diseases have caused some people to encounter negative social responses in their life and they have been stigmatized. This includes diabetes because of the weight loss that is associated with the disease. The shame that is linked with the disease makes it difficult for some people to freely discuss their predicament with others. One participant with tears in his eyes put across his worry about the stigma that is associated with diabetes. He only tells people he believes will understand his plight. This is how he stated it:

“When I was growing lean some people thought I had HIV so it was difficult to tell them I had diabetes. I only say that my glucose level is gone high. Those who know the disease understood… initially my wife refused to have any sexual relations with me” (Nii)

On the other hand, another participant felt that there was no shame associated with diabetes and that speaking freely about it to people when they meet would rather be of help to her. She believes that when she mentions it to others, there may be some support in the form of advice and learn more to manage the disease. This is how she made it known:

“I do not feel shy to tell people I’m a diabetic because I know that if I keep it to myself, I might not get help but if I tell others then I can learn more and add it to the knowledge I have so that it can help me manage the diabetes” (Alima)

Stigma can cause emotional trauma to the individual depending on the environment the person find himself or herself in. The general public needs to be educated to accept people with chronic disease including patients living with Type 2 diabetes mellitus to
assist them to have a sense of belonging and boost their confidence to manage the diabetes which will in the long run, result in treatment adherence.

4.10 Conclusion

The findings of the study focused on the experiences of participants with Type 2 diabetes on factors and challenges that affected their treatment adherence. The demographic characteristics of participants from the study revealed that there were more females than males, the ages range from twenty seven years to seventy seven years. Twelve of them had had some form of formal education whereas two had not had any. There were more Christians than Muslims.

Seven themes with their sub-themes emerged from the study and suitable quotes from the participants were used to support the findings to make it trustworthy. The narratives looked at were factors that influenced adherence which looked at avoidance of complications, avoidance of burden and participants knowledge as some of the factors that impact them to adhere better to their treatment. Secondly, the benefit that is derived from adhering to achieve optimum good health was significant in their adherence. Moreover the support system that motivates and encourages them from their families, friends, colleagues and the healthcare providers, cushion the participants to adhere to their treatment.

However, there were challenges that they face in the management of the diabetes. These include forgetfulness to take their prescribed medication and manage the disease, financial difficulty that serves as a barrier to self-manage the diabetes, lack of support and problem with the taking of their medication were mentioned. Participants also
Adherence to Treatment of Type 2 Diabetes

mentioned the effect of non-adherence to be the severity of the diabetes and death which is the ultimate end. It also emerged that to avoid or to delay the complications and death, they have to put in measures to improve on their status. They mentioned exercises, eating healthy meals and making conscious efforts to manage the diabetes to achieve optimum outcome and prolong life span.
CHAPTER FIVE

DISCUSSION OF FINDINGS

5.0 Introduction

This chapter discusses the findings of the current study which is about diabetes treatment adherence. The discussion of the findings was done with reference to available literature and also to determine areas that confirm or contrast the research findings. It was based on the HBM by (Rosenstock, Strecher, and Becker, 1988). The discussion begins with the demographic characteristics followed by the main themes.

5.1 Demographic Characteristics

The participants in this study were both male and females who are living with Type 2 diabetes. Most of the participants were married with children. It appeared that almost all the participants have had some form of formal education except two who have not had any formal education. Among the formally educated, three had obtained tertiary education, one was a sixth former with five completing secondary school. The remaining three had some form of basic education. Two completed form four and one ended at junior secondary school. It also emerged that the participants have been living with Type 2 diabetes mellitus and have been on treatment ranging from a period of one to twenty years. Participants’ ages range from twenty-seven to seventy seven years. Six of the participants were married, five were widows, two were divorced whiles one was not married. Majority of the participants were females and they accounted for eight whiles the men were six.
5.2 Factors that Influence Adherence

According to the HBM, perceived susceptibility or severity are ways that patients become aware of the risk of contracting certain conditions and or become aware of the feelings about the seriousness of contracting certain illness. With this apprehension in mind, most patients develop ways that will influence their adherence to treatment. People have different ways of responding to situations that they find themselves in and in this respect the various factors were looked at.

Adhering to treatment regimen is a personal decision and the target one set for himself or herself. There are several and severe complications that arise when one defaults from taking medications when diagnosed with Type 2 diabetes. Some of the complications are nephropathy, retinopathy, renal failure and hypertension among others which may be due to higher levels of the blood glucose (Lanting et al., 2005). In the study some of the participants mentioned that they do not want to go blind, have their legs amputated or develop kidney failure so the need for them to adhere to their treatment all the time to avoid those complications. Adhering to treatment regimen will ensure that the blood glucose level will be in the almost normal range and this will definitely reduce complications. This is in line with the findings by Nathan, Buse and Davidson, (2009) who noted that one has to keep to the glucose level as near to the non-diabetic range as possible which has been indicated to have a strong beneficial effect on diabetes-specific micro vascular complications, including retinopathy, nephropathy, and neuropathy (Nathan, Buse, and Davidson, 2009). When complications have been reduced and the person is able to maintain glycemic level to almost normal, then the patient will be healthier and stronger and will see him or herself as ‘recovering from the illness. Some of
the participants mentioned that they adhere to the medication taking so that they will return to their normal self and also to be healthy and strong like they used to be. This will yield notable results when the patients adhere strictly to their treatment. The statement support findings from previous reviews, where adherence promoting interventions resulted in remarkable results (Odegard and Capoccia, 2007). Odegard and Capoccia, (2007) did not give detailed adherence promoting interventions. In other studies conducted by Kocurek, (2009) and Sapkota, Brien, Greenfield, and Aslani, (2015) they outlined some adhering promoting interventions that could yield notable results. These are the education that the patient acquire to understand the treatment in general, positive behavior towards taking medication and the support patients receive from their families and the health institution. There were other factors that prompted some of the participants to adhere to the medication. There were a significant number of participants who mentioned that their families are burdened emotionally with worries, and also fear that they will develop complications. They are aware of the financial burden that they go through. A study by Burns, (2013) revealed that families of people with diabetes experience physical, financial and emotional burden. It was stated in the study that, the family members become distressed, fear that the person with diabetes may develop hypoglycemia at night and also the diabetes may cause negative financial impact on them (Burns, 2013). The participant in this current study mentioned that they wanted to avoid being a burden on their families and also want to avoid dying early. They prefer to stick to their treatment regimen than to end up with complications that will burden the whole family with emotional trauma and financial burden.
The level of education can have an effect on treatment adherence of persons with Type 2 diabetes. Educational level can either enhance or decrease the knowledge base of an individual. Knowledge is a powerful tool that enhances the ability to adhere better to treatment. It appeared that most of the participants were knowledgeable about the medication they take. They could mention the name of the medication, the exact dose they are to take and the time interval that they take their medication. They appreciated the dietary management with the diabetes; knew the importance of exercising, foot care and monitoring their blood glucose. (Peyrot, Rubin, and Siminerio, 2006) found that education increased medication adherence, blood glucose monitoring, and exercise adherence that, in turn, improved blood glucose levels. The level of education has influence on medication adherence because people with increased knowledge are able to manage their disease better (Chlebowy et al., 2010). Participants mentioned that they obtained knowledge about diabetes self-management through self-information seeking. This was through reading books and getting information on diabetes on the internet, listening to health talks on radio. Some also stated that they got information from their health care providers, and other persons who have the diabetes.

General knowledge about the disease helps boost the confidence of the patient to manage the diabetes well. In a study in the United States on African American adults with diabetes it emerged that knowledge was connected with participants’ perceived self-efficacy to manage their Type 2 diabetes mellitus. Increased knowledge is associated with better disease management (Chlebowy, Hood, and Hood, 2010). However, some of the participants mention that they defaulted in taking their medication. Some refused to take it for a couple of days, others for weeks and the longest was a year. Findings
corroborated with previous study that lack of knowledge results in low adherence (Uitewaal, Hoes, and Thomas, 2005). The experience the researcher had in the hospital working as a nurse shows that people with no education or low education have difficulty reading and understanding the dosage and times to take the medication. Education on diabetes mellitus should be an on-going activity for the patients on each visit. They have to receive as much education as well as encouragement from the health care providers to adhere to their treatment for them to live longer lives.

5.3 Perceived Benefit

In this study context, benefit is the advantage the patient obtains from adhering to the treatment to prevent any adverse effect. When the patient becomes conscious of the good that he will derive from sticking to the treatment, they become satisfied with the treatment they are taking. Every person who is ill desires to recover from illness. He or she hopes to live healthy lives, to feel well and strong. It is evident from the responses given by the participants that everyone hopes to be well and live healthy lives. In order to remain healthy, individuals with diabetes are expected to follow a stern treatment regimen of insulin injections, oral medications, diet, foot care and exercise (Ghana Health Service, 2010). When the individual follows the treatment in a precise manner, it will help to bring the blood glucose level to the required range.

On the contrary, other participants indicated that they adhere to treatment because they had come to the hospital with complications due to their non-adherence to treatment. One of the participants mentioned that he was sick because he stopped taking his medication (perceived severity) and another also stated that if she continues to abstain from the treatment, she knows she will die so she will stick to the treatment in order to
gain health. It is worth stating that, some of the participants have noticed that the diabetes is causing some inconveniences in their daily living. Some of the inconveniences they experience are weakness, easy fatigability, weight loss, poor vision and increase in blood glucose level. They have decided to adhere to their treatment in other to be well and healthy (perceive benefit). Wellness and healthy living will lead to blood glucose control (Ngo-Metzger, Sorkin, Billimek, Greenfield, and Kaplan, 2011).

The narratives from the participants showed that all of the participants know the benefit of adhering to their treatment which is commendable. Economic (financial) benefits is also an essential support that people with diabetes receives from the family, friends and significant others. De-Graft Aikins, (2005) mentioned that family, friends and some self-help group normally offer financial support to people with diabetes. (De-Graft Aikins, 2005) further stated that in the hospital the hospital staff sometimes show sympathy to these people and support them with money to buy medication and food. These benefits assist people living with diabetes to adhere to their treatment regimens more effectively. Patients living with Type 2 diabetes mellitus should continue to receive encouragement and support from their health providers in order to adhere better to treatment. This would help avoid frequent hospitalization which requires money, time and support from the family.

5.4 Challenges of Adherence

Diabetes is a lifelong disease and patients are bound to face challenges. Diabetes like any other chronic disease has challenges that the patient has to learn to cope with. Wilkinson and colleague argue that the most important component in self-care of any chronic disease is for the individual to get involved effectively on daily basis in the management
Adherence to Treatment of Type 2 Diabetes

(Wilkinson and Whitehead, 2009). It is necessary for the individual to be abreast with self-care management and also identify challenges that are associated with it.

A study by Asante (2013), rightly stated that when challenges to adherence are tackled appropriately, it is believed that it could enhance Type 2 diabetic patient metabolic control, treatment adherence and their lives as a whole (Asante, 2013). In this study, some of the participants mentioned forgetfulness as a challenge in the treatment. One person stated that he sometimes completes his breakfast before remembering that he should have taken his medication before eating. It was also mentioned that they did not feel well when they failed to take their medication. A similar story was shared in a focused group findings among urban African American Adults with Type 2 diabetes. It appeared that several of the participants experienced memory loss (Chlebowy et al., 2010). It was stated that participants sometimes forgot to take their medications; they did not remember to monitor their glucose level and also failed to eat regularly (Chlebowy et al., 2010). Memory loss, therefore, affects the management of the diabetes as a whole. Participants would not remember these events until they are confronted with diabetic symptoms (Chlebowy et al., 2010). These participants require behavioral techniques that will serve as a reminder to be able to overcome their challenge of forgetfulness and therefore, this should form part of diabetes education to include memory aids.

Another challenge that was mentioned was financial difficulty. The importance of control over blood glucose cannot be overlooked. A low adherence to diabetic medication has been found to be costly as it is related to increased health care service utilization (Balkrishnan et al., 2003; Utz, Steeves, Wenzel, and et al., 2006). Low adherence results in poor blood glucose control which eventually leads to the onset of complications. When
Adherence to Treatment of Type 2 Diabetes

complications such as poor eye sight and diabetic sores set in, patients spend extra money to manage the disease and also frequent the hospital and this becomes costly. Some of the participants confessed that the national health insurance does not cover every medicine. They have to find money to purchase those medications that the insurance does not cover. Another man who goes to the health facility to dress his diabetic ulcer mentioned that the health insurance was able to cover the dressing material for two days and the rest, he had to foot the bill which exclude the transportation expenses involved on daily basis.

Financial constraint is a problem for the elderly participants who are on retirement and have to drain their little income to manage diabetes. This is in agreement with what the Canadian Diabetes Association mentioned that the cost of diabetes medication is so high, thereby reducing treatment adherence in those with lower incomes. Although coverage of diabetic supplies by health care plans in Canada is unstable, according to a survey of Canadian Diabetes Association members, more than half of its members have to pay for a portion of their supplies (Canadian Diabetes Association, 2003). Financial difficulty associated with diabetes care is a remarkable factor in non-adherence to treatment for diabetes (Piette, Heisler, and Wagner, 2004). In another study by De-Graft Aikins, (2007), it was noted that, managing diabetes in Ghana can lead to financial constraint on the person. This can occur in situations where the person is not on any health insurance scheme and had to pay out of pocket (De-Graft Aikins, 2007).

Another challenge that most patients living with Type 2 diabetes mellitus encounter is the ability to integrate medication taking into their daily activity. Borgsteede, Westerman, Kok, Meeuse, de Vries and Hugtenburg (2011) posit in their research that there should be common ways that the medication use can adapt on daily regimen so that its intake
Adherence to Treatment of Type 2 Diabetes

will be regularized. Daily routines and regularity were related with higher adherence (Borgsteede et al., 2011). The daily routines are the times scheduled for eating and taking medications which are regulated to guide the individual to manage the diabetes well to bring about positive outcome. Medication taking is a key barrier to most patients who have to take it for life. It becomes difficult for most people especially the elderly when they have other comorbid conditions such as hypertension, back pain and arthritis and have to combine the treatment. The quantity of the medicine, swallowing and or injecting the anti-diabetic drugs can become problematic for most patients. An elderly woman said that she was also hypertensive. It was difficult for her when she looked at the quantity of medicines she had to take at a time so she refused to take it at all and said that she sometimes takes a break or rest from taking the medication. It is consistent with what Paes and colleagues, (2007) found in their study which shows that patients with small number of daily doses of medication, have better adherence (Paes, Bakker, and Soe-Agie, 2007).

In a similar study, researchers found that people with complicated treatment tend to have problems adhering to the treatment because of information overload which they may respond to by forgetting, making errors, or avoiding treatment procedures (Meichenbaum and Turk, 2007). Co-morbidities are barriers to self-management because of competing treatment regimens (Nam, Chesla, Stotts, Kroon, and Janson, 2011). (Mann, Ponieman, Leventhal, and Halm, 2009) found out that decreased adherence were related to complex treatment regimen. The reason could be that, patients are mindful of the times to eat and take medication, watch what to eat and what not to eat, exercise and examine the extremities and checking the blood glucose all the time. This makes the treatment
complex for the patients. The youngest participant who was on insulin also expressed his worries about injecting insulin all the time and he was tired of doing that. Similar expressions were made by other participants in another study to show that people detest the act of injecting insulin and find it challenging to remember taking their medication on daily basis if there are no reminders (Chlebowy et al., 2010). The possible explanation may be that injecting insulin could probably be due to the pain associated with the needle pricks or lack of support from the family. When there is no access to blood glucose monitoring device on daily basis and even where they are available, some try to avoid sores that will be developed on the fingers as a result of the pricks.

The complex nature of the treatment for Type 2 diabetes mellitus could be a threat to adherence. There is evidence from some studies that social support plays a very important role in the life of a patient and therefore when it appears that there is no support, it creates room for non-adherence. One participant mentioned that when there is nobody around to help, it becomes difficult for her to eat and take her medication. The reason could be that because she was sick and could be weak or have poor vision and could not remove the tablet from the blister. This adversely affects patient’s ability to adhere to treatment effectively. In a meta-analysis of the literature, (Albright, Parchman, and Burge, 2001) found that decreased adherence levels were linked to a more negative social environment. When there is no social support and social networks can lead to undesirable self-care behaviors such as not checking the blood glucose on regular basis, no motivation to take medication and to eat the required amount of food (Chlebowy et al., 2010). There were two participants who seem to have no challenges that they could lay their hands on. They mentioned that they have no challenge and this could be that, they are gainfully employed
and also their social standing may be strong and therefore they do not see any barriers to their Type 2 diabetes mellitus management. The health education must be done on every visit and patients need encouragement from the health care providers. There is also the need to involve the family to be closer in order to aid better self-management that enhances healthy living.

5.5 Coping Strategies

The issue of coping is linked or connected with stress and anxiety by Grey, Boland, Davidson, Li, and Tamborlane, (2000). Coping involves efforts that are made by individuals to deal with challenges or problems that are confronting them in order to adapt in an appropriate manner (Grey et al., 2000). There are two major types of coping. These are problem-centered and emotional-oriented coping methods (Grey et al., 2000). Coping is a complex concept and phenomenon in nature because individual who use coping methods do it based on their individuality and use several strategies. Some are complex and others are simple to deal with situations confronting them. Some are positive whiles others are negative which may have repercussions on the individual using it. Some of the coping strategies employed by participants in this current study are:

5.5.1 Social support

Furthermore, social support plays a very vital role in adherence to diabetes mellitus treatment regimen. The family supports the patients to take their medication, get food for them, and provide their financial needs and emotional needs as well. The participants in the study revealed that the support they obtain from their families plays a significant role in their lives. Someone mentioned that her daughter does almost everything for her including bathing. This has positively affected her adherence behavior towards treatment.
Previous findings indicated that the presence of some friends and family members who support the patients with healthy eating usually stir up some positive responses to adhere to their treatment regimen. A strong social support was linked with high adherence to blood glucose monitoring, dietary regimen, and physical activity recommendations among Type 2 diabetes mellitus patients (Sousa, Zauszniewski, Musil, and et al., 2004; Wen, Shepherd, and Parchman, 2004; Whittemore, Melkus, and Grey, 2005; Tang, Brown, Funnell, and Anderson, 2008; Rad, Bakht, Feizi, and Mohebi, 2013). The reason could be that social support offered by family members especially spouses can have significant influence that promote self-care activities like eating the right food, checking blood glucose, taking medication and examine the lower limbs for sores by the person living with diabetes.

Social support has an essential influence on Type 2 diabetes mellitus self-management and it was noted that lack of social support can result negatively on patient adherence to treatment regimen in general and glucose control in particular (Mayberry and Osborn, 2012). The reason could be the lack of motivation and encouragement from family members and friends to supervise and to praise when patient does the right thing. Patients may have the feeling that nobody is interested in their well-being and so they might not cater for themselves well which will affect glucose control. Social support, therefore, plays a significant role in the lives of patients and non-patients and its impact on the management of diabetes is very crucial and should be encouraged (Kasznicki, Gowacka, and Drzewoski, 2007). It will therefore, be very helpful to patients living with Type 2 diabetes mellitus when the health-care providers in our hospitals in Ghana organize training or educational sessions for families of patients living with Type 2 diabetes
Adherence to Treatment of Type 2 Diabetes

mellitus. The training could be centered on family members’ role and the impact of their support in the self-care activities of persons living with diabetes. Therefore, getting the family members, especially the spouse, involved in self-care behavior can be of significant importance in providing health care to patients with diabetes.

5.5.2 Relying on God

Another coping strategy is the reliance on God. The participants indicated that their reliance on God as a source of hope and strength influences them to adhere to treatment. This hope assists the individual to believe that the diabetes will be cured and he or she can enjoy a normal lifestyle. Again there is the strength that inspires the person to manage the diabetes well. When the diabetes is managed well it is seen in the blood glucose level reducing. In a study among the African American and Hispanic/ Latino, participants stated specifically that their belief in God was a source of strength and a very essential support for the management of diabetes (Devlin, Roberts, Okaya, and Xiong, 2006). The belief in a spiritual or a supernatural being helps patients to cope with the illness. In this study setting, participants stated clearly that it is through the help of God that their medication can work because they believe that God can heal them.

In the Ghanaian setting, a spiritual being plays significant role in the lives of individual and for that matter; most African Christians believe that, through prayers God answers and support them in the management of illnesses. The reliance on spiritual coping is not new to the Ghanaian as it has been documented by other earlier diabetes researchers in Ghana such as (Korsah, 2015). Korsah, (2015) explained that there were instances where health providers teamed up with clergymen to give spiritual care to patients and relatives
in the hospital in difficult situation such as serious ill health and dying situation (Korsah, 2015).

5.5.3 Institutional Support

Institutional support is another important coping measure that the patients rely on. It is therefore important that doctors, nurses and other healthcare professionals communicate to the patients with Type-2 diabetes about their illness to ensure strict adherence to the treatment regimen. In this study, the participants mentioned that they receive encouragement from the doctors and the nurses. They also stated that the dietician helps with the dietary education and it motivates them to adhere to the treatment regimen. It is possible from the expression given by the participants that they trust the discussions from the health care providers and it is having remarkable influence on their adherence to treatment.

Most patients have trust in the health care providers because they know that they can provide them with details of their treatment which can expand their knowledge. In this current study, participants stated that they sometimes get encouragement from the doctors and the nurses to take their medication all the time. They were also educated on the types of food to eat and what not to eat, the time to eat and when to take their medication. They were also educated on what to do to protect their foot from injury.

One of the participants mentioned that one of the doctors always scares her with amputation and blindness if her blood glucose does not stabilize. She said she became apprehensive and would neither take the medication nor do the laboratory test she was asked to do for one year. She mentioned that she was scared of and always thinking of
what the doctor said and it affected her self-management. This confirms what Chlebowy and colleagues 2010 mentioned in their research that although the patients get knowledge from their health care providers, it does not always mean it may improve adherence because some of the doctors do not inspire or strengthen them to adhere to their treatment (Chlebowy et al., 2010).

As a nurse I believe that health providers must have close association with patients living with Type 2 diabetes mellitus so that they can open up to receive calls from the patients even when they are at home to assist them in emergency situations. Other authors like Mishali et al., (2007) have demonstrated the importance of the patient-provider relationship, findings revealed an association between dissatisfaction with the medical team and non-adherence to treatment. The diabetes mellitus care givers in the hospital must receive more education to ensure that they desist from putting fear into patients living with Type 2 diabetes mellitus when they report to the hospital with complications. Better communication between the patient and the provider in terms of encouragement, pampering and praising them when they adhere to their treatment will promote quality self-care management and this may result in improvement in adherence to treatment in patients living with Type 2 diabetes mellitus.

5.6 Effect of non-adherence

Non-adherence consists of not implementing or following behaviour change procedures (Meichenbaum and Turk, 2007). Not being faithful to or not sticking to the treatment can result in fatality in the treatment of Type 2 diabetes. The complications that are associated with diabetes were known to almost all the participants in the study. Poor self-management among Type 2 diabetics can result in complications, especially when the
blood glucose level is high (hyperglycaemia) which can cause damage to the nerves, cardiovascular system, eyes, and kidneys (Lanting et al., 2005; Lewandowski and Drotar, 2007; Rintala, Jaatinen, Paavilainen, and Astedt-Kurki, 2013). Some of the complications that aggravate the diabetes leave the person in pain whilst others result in severe weight loss that makes the patient mistakenly taken for an (Human Immunodeficiency virus) HIV patient which makes them depressed. There are other complications that are life threatening like blindness and amputation which makes the person deformed and less mobile. Patients living with Type 2 diabetes mellitus have to be mindful of developing hypoglycaemia (low blood glucose) as a result of too much insulin and/or exercise or too little food. Hypoglycaemia can also result in complications such as impaired cognition, confusion and loss of consciousness, and, in severe cases, brain damage and death (Lanting et al., 2005). The participants were much concerned about the diseases that can aggravate the diabetes which can result in non-adherence and they were willing to desist from the complications which can bring the ultimate end which is death to the individual. They mentioned that they want to avoid complications and most importantly to do exactly what they were asked to do in the hospital.

Others also stated that they would take their medication religiously to keep their blood glucose level to the normal range. The ultimate aim of every patient living with Type 2 diabetes mellitus is to keep the blood glucose level to almost normal for them to enjoy adequate health without any complications. The findings of this present study are congruent with a study by Benzel-Lindley 2005 who concluded that the goal of diabetic self-care management is to put a stop to or slow down the complications in diabetes so that the individual will have a general sequence of normal glycemia to help them live
Adherence to Treatment of Type 2 Diabetes

their lives to the maximum (Benzel-Lindley, 2005). Health care providers must motivate patients living with Type 2 diabetes mellitus to adhere to their treatment in order to suspend or block the occurrence of the complications and subsequently avert death which can also happen when complications sets in. The health education in the hospitals must be ongoing to assist people living with diabetes to modify their self-care activities towards treatment regimen to avoid complications which will lead to death.

5.7 Improvement of Adherence

There are means by which patient can make their lives better which will have significant impact on diabetic treatment adherence. The desire to get well and live better lives is the motivation that the patients derived to adhere to treatment. The study found that the patients have deliberately made up their mind to adhere to treatment. Further the patients see the need to improve on their treatment regimen so that they can return to their normal lives. In the study, one participant who made up his mind to stick to the treatment had to put a clock by his bed side that goes off to alert him on the time to take his medication. He also felt that he could do much more by writing a note to remind him on his first aid box. It clearly shows the determination that the patients puts in to improve on their health status. This is consistent with what Chlebowy and colleagues mentioned in their study that apart from friends and family who support the patients by reminding them, there are automatic devices that have been programmed that reminds them to adhere to treatment (Chlebowy et al., 2010). There should be more devices that are programmed that patients living with Type 2 diabetes mellitus can acquire at affordable prices so that those who may forget their treatment can have reminders from them. This can be recommended for people living with Type 2 diabetes mellitus in Ghana.
Adherence to Treatment of Type 2 Diabetes

In addition, there were others who saw the need to live healthy lives after recovering from complication and these patients were willing to improve on their treatment. Moreover, they noticed that they felt much better after adhering to the treatment so they strive to stick to the treatment.

Another improvement measure the patients use is the desire to keep themselves safe from injuries. They have recognized the importance of keeping their extremities free from knives, needles and other sharp objects to avoid being pricked by these. This safety measures are kept to prevent the leg from developing sores which can lead to amputation which shows deformity and immobility. The participants mentioned in this study that, they have been educated in the hospital to keep their foot from injuries. Again, they have also seen other patients living with Type 2 diabetes mellitus with amputation and would not want to have that experience, and more so they have read from books, on the internet, on radio and listened to information on diabetes complications from the television. So as persons living with diabetes, they are conscious of injuries so that they can improve on their self-care management which can result in improvement in adherence. The health care provider must inculcate in their teachings the need for patients living with Type 2 diabetes mellitus to inspect their lower extremities for possible injuries to report for early treatment. On the contrary, in a study conducted by Wilkinson and colleagues (2014), they stated that the participants felt it was difficult to do daily examination of their feet (Wilkinson, Whitehead, and Ritchie, 2014).

Furthermore, mental or cognitive restructuring is another means that participants stated as assisting them to make their lives better in the management of the diabetes. Improving on the self-management of any chronic disease needs a person who is determined to work
Adherence to Treatment of Type 2 Diabetes

hard towards achieving it. The participants mentioned that being anxious about the
disease was affecting their health care behavior so they had to improve upon their mental
state by avoiding worries and anxiety to be able to set the mind free and have a positive
attitude towards treatment adherence. One person mentioned that he had seen someone
who had lived with the disease for forty years and so he need not worry about living with
Type 2 diabetes mellitus. Emotional stability or instability can have effect on self-care
activities of an individual (Wilkinson et al., 2014). It is clear that with a positive approach
towards diabetes, the individual is able to manage and also improve on his self-
management behaviors to eventually improve on adherence. The patients must be
encouraged to develop positive attitude towards diabetes and also they should get the
opportunity to meet people who have lived with the diabetes for many years to speak to
the patients living with Type 2 diabetes mellitus to encourage and strengthen them to
adhere to treatment and live long.

Diet and Exercises are important self-care requirements that patients living with Type 2
diabetes mellitus must follow to assist with the improvement of adherence. Diet,
exercises and other lifestyle changes have proven to be very successful in minimizing
complications and improving patient quality of life (Sharma, Kalra, Dhasmana, and
Basera, 2014). Exercises are carried out to keep up or improve health and fitness. Most of
the participants mentioned that they exercise to keep their body healthy. Though there
were few who do the exercises less frequent. They mentioned that they exercise once a
while others do exercise more frequently. In the same way healthy eating helps
participants to maintain their health and gives them energy to perform their daily activity
to the maximum. They stated that they will stick well to what their dieticians have
Adherence to Treatment of Type 2 Diabetes

educated them on. Some of them suggested that they have to make conscious effort to carry lunch packs to work so that they can maintain the specific dietary regimen and also eat on time to maintain the required glucose level for better health outcome (Ghana Health Service, 2010). People with diabetes have to consider the variations in the physical exercise and diet in their self-management as it can influence the amount of medication required for them (Sapkota, Joanne, Jerry, and Parisa, 2015).

However, it is a difficulty for most people living with Type 2 diabetes to stick to the recommended diet by the dietician for a long time in their life. One participant mentioned that, he finds it difficult to avoid eating when he attends family meetings and social gathering like parties, birthday celebrations, weddings, funerals and others. He feels isolated when he sits (Rosenstock et al., 1988) and does not eat anything. People normally ask him why he wouldn’t eat anything so to avoid giving long explanation he tries to satisfy curious people at the expense of his life. In a study by Romeo (2000), it was mentioned that to achieve optimum glucose level the patients living with Type 2 diabetes mellitus cannot eat anyhow but must follow the instructions given by the nutritionist (Romeo, 2000). For patients living with Type 2 diabetes mellitus to maintain a strict dietary regimen for a long time, they have to make conscious efforts to modify their behaviour (Rosenstock et al., 1988). Education and encouragement from the family and the health providers can increase their confidence to improve on their total well-being.

5.8 Diabetes Experiences

Every diabetic patient has had an encounter or experience with the disease. In this study setting, the manifestations they encounter are the physical, psychological and social
experiences. All the events that the patient encounter have significant effect on them and their adherence to treatment regimen. The physical symptoms that the participants mentioned were frequent urination which interrupts their sleep at night and makes them restless, they also become weak when they make short distance walk. They eat and also drink lots of water but get hungry very often and still grow lean which is a bother to them. Again some of them experience numbness of the extremities, dizziness, body aches and pain in the eyes. These manifestations that come with the diabetes have some repercussion on the individual self-management. It was also mentioned in the study that, when there are body pains and numbness they cannot do any meaningful activity. One person stated that because of the weakness he cannot work and another also said that she normally waits till she feels much better before she sets off to the market where she works. When they are down with these symptoms, they feel unwell and would not be able to exercise, eat well and take the medication which has been prescribed for them.

Some participants described the effects of the drugs given to them from the hospital. One elderly woman stated that one of her medication gives her sleepless night whenever she takes it at night so she decided to shift it to the mornings which made her feel much better with that medicine. Another also mentioned experiencing side effect as heaviness, sweating and weakness when her metformin was increased. This was adversely affecting her treatment adherence until the dosage was reduced for her and she felt better. This is consistent with (Chao, Nau, Aikens, and Taylor, 2005) study which found that patients with diabetes who reported experiencing medication side-effects also reported non-adherence to medication. In the same vein, (Mann et al., 2009) found that beliefs about side-effects also contributed to low medication adherence rates. The reason could be the
Adherence to Treatment of Type 2 Diabetes

weakness and sweating the patients experiences and this leads them to stop taking the medication which is associated with non-adherence in treatment.

Furthermore, psychological experiences have some significant effect on the diabetic patients. The patient must make deliberate efforts to respond to the disease well in order to successfully live with it (Korsah, 2015). Korsah (2015) posits that the response of patients diagnosed with Type 2 diabetes to the condition is based on the explanation received from the healthcare providers or based on the experiences they have had with the condition. He further argues that it is very necessary to know the kind of reaction the person will exhibit during diagnosis which will determine how the patient diagnosed with Type 2 diabetes mellitus may carry on with the disease (Korsah, 2015).

Diabetes like any other chronic disease is a long lasting disease. If the affected person adapts well to the condition then it will result positively with treatment adherence. In the same way, when the person cannot conform or adapt well it may result in non-adherence. The mind has a strong impact on the individual and when it is affected with anxiety, confusion and depression it manifests clearly on the outward. Psychological causes are very frequent among people with diabetes and have been found to influence treatment adherence in a negative way (Das-Munshi et al., 2007). This is because when the person is worried and anxious and does not know the outcome of the disease, he may not have the inner strength to manage the diabetes well.

The participants mentioned that when they reported to the hospital, the news about living with diabetes made them anxious and left them in confusion. This was because the thought of living with the disease for the rest of their lives gave them a sense of insecurity. This is because the disease cannot be cured and also its management is
Adherence to Treatment of Type 2 Diabetes

toughing and above all it can kill very fast. One of them said that when these issues come up in her mind then she starts to get anxious. Her sleep becomes affected and the whole body becomes sick and this affects her treatment adherence. This affirms a study by Gonzalez and colleagues which stated in their literature that depression is constantly linked with diabetes treatment non-adherence (Gonzalez et al., 2008). This is because depression causes the individual not to take prescribed medication, not eating healthy meals and poor exercises and not performing the self-care management well. This will result in non-adherence to treatment. A number of studies have also associated depression to increased threat of death (Black, Markides, and Ray, 2003; Zhang et al., 2005; Katon et al., 2005). It is important for healthcare providers to educate patients diagnosed with Type 2 diabetes well to accept the condition and adapt well to it. The hospital can arrange for affected persons to meet with diabetics who have lived with the disease for years on clinic days to share their experiences with newly diagnosed to allay fears and to encourage proper treatment adherence for better self-management.

Society has a civic responsibility towards each other which can enhance quality of life or otherwise. People in the society must show love, affection and provide safety for everyone. The sick and vulnerable are not to be left out. Certain illnesses and diseases have caused some people to encounter negative social responses in their life and they have been stigmatized. This includes diabetes because of the weight loss that is associated with the disease. The stigma that is linked with the disease makes it difficult for some people to freely discuss their predicament with others.

Most patients living with Type 2 diabetes who the researcher encountered at the hospital, expressed with worry, the stigma that is associated with the diabetes. In this study, one
participant with tears in his eyes expressed worry about the stigma that is linked with diabetes. He said that people felt that he had contracted HIV and so when they ask him, he was not bold enough to speak to them about his condition. He stated that, initially his wife was not willing to have any sexual relations with him, thinking that she might get infected with the disease. He indicated that his wife became convinced and relaxed after she had been tested and proven to have normal glucose level and received counseling before she related well with him. Stigmatization has been noted to be common in our society whether literate or not and it does not matter the social group one find himself or herself (Korsah, 2015). In the study, stigma is associated with severe weight loss and the person is seen as carrying a contagious disease like HIV and so people frown on him and would not associate with the person.

However, there were other participants who felt they should not hide their status because informing others could lead to obtaining help and possibly learn new ways of managing the condition to improve on their adherence to treatment. These participants believe in the Akan proverb that “when you sell your disease you will find solutions to it”. In view of this, they tell others about their condition in order to obtain help which could be of benefit to them in case of emergency when the blood glucose rises or drops. This supports the findings by Korsah (2015), who argues that when the person due to stigmatization isolate himself, he can develop sudden complications that may lead to coma and may require immediate attention (Korsah, 2015). In this regard the general public must be educated on stigmatization and its consequence on the affected person. Society should be educated on its support for patients living with Type 2 diabetes to have meaningful life.
In summary, the participants explained various factors that influence their adherence to treatment. They believe that they can avoid complications, avoid being a burden on their family by adhering to their treatment. They also noted that education on the disease and its management can help patients living with Type 2 diabetes to adhere better. Moreover, good health is the ultimate aim for all the patients. For the patients living with Type 2 diabetes, perceived benefit is to ensure normal or almost normal glucose level which means to adhere well to the treatment. Again the participants also noted that coping measures like self-support, family support, institutional support and religious and spiritual inclination provide bedrock to manage the diabetes effectively. Participants also indicated the need to make conscious efforts in treatment, keep their extremities safe from injuries, avoid being emotional and in addition exercise to reduce weight and increase blood circulation for healthy life. They also acknowledged that eating healthy foods is one of the means by which they can improve on their adherence. Nevertheless, there are barriers that they encounter in their self-management protocol which has adverse effect on the medication taking and keeping up appointment with their healthcare providers. Participants mentioned forgetful attitude, financial constraint and the limitation in taking their medication. The experiences with the diabetes being physical, psychological or social, have a significant effect on them and affect their adherence and can lead to perceived severity of the disease and can even cause death. The next section considers the summary, implications, limitations, conclusions and recommendations.
Adherence to Treatment of Type 2 Diabetes

5.9 The Value or Effectiveness of the Model used in this study

The construct used in this study is the HBM which effectively addressed the objectives raised in the study. Some of the constructs that have effectively addressed the objectives raised are as follows:

Perceived susceptibility or perceived severity as a construct in the model examined diabetes as a health problem which obviously results in complications. This construct addressed the effect of non-adherence as an objective. Non-adherence among people living with diabetes leads to complications and the ultimate, the death.

Personality as a construct effectively tackled the factors that influence adherence to treatment. It is a personal decision and desire to adhere to diabetic treatment to avoid complications, avoid being a burden on the family and dying early and or to recover from the disease. Further knowledge is a construct in the model and it is a factor that influences a person to make decisions for him or herself to adhere to the treatment regimen. Socioeconomic construct in the model looked at the coping strategies that were used in the management of diabetes. The support from the family, friends, peers, and colleagues, as well as support from the hospital and reliance on God helped to manage the diabetes.

Perceived benefit as a construct identified benefits associated with treatment whilst perceived barriers looked at the challenges that patients encounter regarding treatment. Some experiences the patients face also become challenging for adherence to treatment. These experiences were physical, psychological and social and were found to be a threat to adherence to treatment which was looked at. Cues to action as a construct in the study,
Adherence to Treatment of Type 2 Diabetes

addressed the ways or actions put in place to improve on treatment adherence in the objective such as healthy eating, exercising and conscious effort are mentioned to help improve on treatment.

Age and sex as constructs were mentioned in the demographic characteristics. Ethnicity as a construct did not affect or address any of the objectives set for this study.
CHAPTER SIX

SUMMARY, IMPLICATIONS, LIMITATIONS, CONCLUSION AND RECOMMENDATIONS

This final chapter presents a summary of the research and the conclusion that has been drawn. The findings of the study provide knowledge for nursing practice, policy and research. The limitations encountered during the study have also been outlined and recommendations made.

6.1 Summary

The study explored the factors that influenced treatment adherence among Type 2 diabetics. It was guided by the Health Belief Model (HBM). Ethical clearance was given by Noguchi Memorial Institute for Medical Research’s Ethical Review Board, approval was sought from the management of Ridge Hospital after which data collection commenced. The interview guide was pre-tested at the Adabraka Polyclinic to ensure that it was free from arguable questions, and also to make sure that the data exhibited the right views and stance of participants as claimed. Participants’ recruitment, interviews and data transcription was done at the same time. Recruitment of participants began in December 2015 and ended in March 2016. The participants, who agreed to take part in the interviews, signed the consent form after the agreement. The data collected was audio taped and transcribed verbatim. Data analysis was done based on the constructs of the HBM and other themes that emerged from content analysis.

The study showed that Type 2 diabetic patients were willing to adhere to treatment. Some of the factors that prompted them to adhere include the desire to avoid complications and putting burden on their families. They also adhere to gain recovery from the disease to
prolong their life span. The knowledge about the treatment regimen was a factor that influenced their treatment. Again the awareness of non-adherence which could lead to perceived severity and death was known to the patients living with Type 2 diabetes so it gave them the will power to adhere better. It also emerged that depression, anxieties, frequent urination and also severe weight loss linked with stigmatization associated with the disease, were some of the experiences that put them on the line to adhere to their treatment.

The study also revealed some barriers to treatment adherence such as forgetfulness, financial difficulty, the problem of taking medication daily, and lack of social support. On that score, patients living with Type 2 diabetes were willing to improve upon their current state by making a conscious effort to adhere, to avoid the lower extremities from developing sores and to keep their foot clean from injuries. The need to exercise and eat healthy meals and also putting up positive self-image improved the quality of lives of the diabetic and increase their treatment adherence. The next section looks at the implications of the study.

**6.2 Implications of the study**

The current study findings revealed some implications for attention for nursing education, nursing practice, research and policy formulation.

**6.2.1 Nursing Education**

Most patients diagnosed with Type 2 diabetes who defaulted had not understood the treatment regimen, therefore, health education and counseling could be done on a one-on-one basis for easy understanding and also for effective communication. More specialized
nurses should be trained specifically for non-communicable diseases to provide supervision, home visits and telephone calls to remind and encourage patient adherence. They could inculcate family and social support training programme to strengthen the social support system in Ghana to help improve on their adherence. The training of nurses in Ghana need to include in the curriculum development positive improvement in the educational system that could help address the needs of people living with diabetes. The nursing administration need to develop a written protocol that can be used in counseling the diabetic since it is done without any laid out written code.

6.2.2 Nursing Practice

The findings revealed that the Type 2 diabetic patients active participation of their care and decision making process promote health and enhance adherence to treatment. Healthcare personnel must put in measures to identify defaulters and potential ones and assist them in their self-care management to improve on adherence. The use of telemedicine could be instituted to monitor and remind them of their review or appointment dates. Home visits by the nurses to encourage them, to check on their well-being and also to praise and motivate those who adhere well will serve as an eye opener or prompt the people living with diabetes to always adhere.

6.2.3 Research

A quantitative study of factors that influence treatment adherence should be designed and conducted. In addition, a research into adherence to treatment regimen among patients diagnosed with Type 2 diabetes which looks at the health providers perspective to bring forth a balance needed to provide care to the patients can be carried out. Due to the
numerous barriers that lead to non-adherence and the stigma associated with the disease, there is the need to research into the depth of diabetic awareness and understanding of the disease in the Accra metropolis and Ghana as a whole.

6.2.4 Policy
The Ministry of Health of the Republic of Ghana through its agencies in Ghana formulates and implements policies. It is therefore important that the Ministry of Health as a policy maker provides adequate funding for logistics such as glucometers and strips at affordable prices for patients diagnosed with Type 2 diabetes to purchase so that individuals can own personal ones to reduce the cost of checking their blood glucose level from the market and pharmacies.

6.3 Limitations of the study
The findings may not be applicable to other settings and population because of the method used and also different settings used. Also, another limitation could be in the language translation where most participants were interviewed in the Twi language and later translated by the researcher into English. It is possible that some vital information or language expression might have been lost or taken out of context. In trying to avoid this problem, the researcher did not employ research assistant and so all interviews and translations were done by the researcher to avoid common inconsistency.

6.4 Conclusion
The study sought to explore the factors that influence treatment adherence among Type 2 diabetics at the Ridge hospital. Some of the study findings have several similarities with the construct of the HBM by Rosenstock, Stretcher and Becker (1988). These include
knowledge about treatment adherence, social support which consist of family support, institutional support, and spirituality attachment that influence adherence. However, ethnicity did not appear to influence treatment adherence. Some personal factors that affect adherence were to recover from the disease to avoid complications and burdening family and to avoid dying early. The benefit of adherence is good health which every individual seeks to attain. However, the study revealed that there were barriers that needed attention. These were forgetfulness, financial difficulties, problem taking medication and lack of social support. On the other hand, depression, anxieties, poor eyesight, growing lean and stigma were some of the experiences that participants indicated as hindrance to treatment adherence.

Nevertheless, the likelihood of a behavior change as a construct of the theory indicate the improvement the participants desire in their treatment. Issues of behavioral change like making conscious effort in treatment, keeping safe, mental restructuring, exercise and healthy eating were some of the major concerns that could improve self-management and adherence. Treatment adherence is a challenge and so the need to intensify education and identify defaulters and assist them will improve their adherence to reduce morbidity and mortality.

6.5 Recommendation

Recommendations to the Ministry of Health, Ghana Health Service, Ridge Hospital and the individuals based on the study findings are presented below.
6.5.1 Ministry of Health

- Ministry of Health in collaboration with the pharmaceutical companies should simplify drug therapy to make it easy for swallowing to improve adherence among patients diagnosed with Type 2 diabetes.

- Ministry of Health should draw up proposals to amend the National Health Insurance Scheme to cover all diabetic medications. This will give the patient the opportunity to get the medications more easily to improve adherence.

- The Ministry should provide health institutions with glucometers at affordable prices for individuals to acquire some. This will ensure that most people living with diabetes can own personal glucometers to improve on the monitoring of the blood glucose level to enhance adherence.

- Glucose strips should be covered by the National Health Insurance Scheme. This will make it more available for patients diagnosed with Type 2 diabetes to increase the frequency of monitoring the glucose level which will promote adherence.

6.5.2 Ghana Health Service

- Further research could be designed and conducted on treatment adherence among patients living with Type 2 diabetes to reveal the Health professionals perspective in order to improve on the care for diabetic patients.

- Diabetic patients with financial difficulties especially the elderly and pensioners should be identified and supported by the Ghana Health Service in conjunction
Adherence to Treatment of Type 2 Diabetes

with other corporate social bodies. The support could be in the form of subsidizing the purchase of medication and required dietary product.

- The Ghana Health Service should import devices that are programmed at subsidized prices for the patients diagnosed with Type 2 diabetes to serve as a reminder to improve on adherence. The programmed devices could be in the form of wrist watches.

6.5.3 Ridge Hospital

- The hospital must provide training for the nurses and other health care providers on effective communication skills to ascertain Type 2 diabetic defaulters to assist and maintain adherence.

- Family education on social support should be organized at the hospital so that support will be more relevant and diabetes management and adherence more achievable.

- Training of significant others such as family, friends and peers to help with the management of the people living with diabetes immediately a family member is diagnosed is essential.

6.5.4 The patients

- The patients should acquire knowledge from the health care providers to understand the importance of adherence to treatment regime and the need to keep up with medical reviews. The need to show interest in learning from the health providers to keep up with self-care practices to improve on adherence.
Patients should make conscious effort to set alarm to remind them to take the medication in order to improve adherence. The alarm could be on the cell phones and wall clocks. The family could assist the patients to acquire the alarms.
Adherence to Treatment of Type 2 Diabetes

REFERENCES


Adherence to Treatment of Type 2 Diabetes


https://doi.org/10.1002/cth.2958


https://doi.org/10.2337/diacare.26.10.2822


https://doi.org/10.1007/s11096-011-9534-x


Adherence to Treatment of Type 2 Diabetes


Adherence to Treatment of Type 2 Diabetes


Adherence to Treatment of Type 2 Diabetes


Adherence to Treatment of Type 2 Diabetes


Adherence to Treatment of Type 2 Diabetes


https://doi.org/10.1093/jpepsy/jsl037
Adherence to Treatment of Type 2 Diabetes


Adherence to Treatment of Type 2 Diabetes


https://doi.org/10.1093/fampra/cmm057


Adherence to Treatment of Type 2 Diabetes


Adherence to Treatment of Type 2 Diabetes


111


https://doi.org/10.1177/1074840712471899


https://doi.org/10.1177/109019818801500203


https://doi.org/10.1177/109019818801500203


https://doi.org/10.1016/j.amjmed.2005.04.012

Adherence to Treatment of Type 2 Diabetes

https://doi.org/10.1371/journal.pone.0128581


https://doi.org/10.1891/rtnp.18.4.293.64089


113

https://doi.org/10.1080/08870449308401927


https://doi.org/10.1177/0145721708315680


Adherence to Treatment of Type 2 Diabetes


APPENDICES

APPENDIX A: ETHICAL CLEARANCE

ETHICAL CLEARANCE

FEDERALWIDE ASSURANCE FWA 00001824

NMIMR-IRB CPN 022/15-16 IRB 00001276

IORG 0000908

On 4th November 2015, the Noguchi Memorial Institute for Medical Research (NMIMR) Institutional Review Board (IRB) at a full board meeting reviewed and approved your protocol titled:

TITLE OF PROTOCOL: Adherence to treatment regimen among type 2 diabetes at the Ridge Hospital, Accra

PRINCIPAL INVESTIGATOR: Benedicta Kwakye, 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 November, 2016. You are to submit annual reports for continuing review.

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

cc: Professor Kwadwo Koram
Director, Noguchi Memorial Institute
for Medical Research, University of Ghana, Legon

4th November, 2015
APPENDIX B: INTRODUCTORY LETTER – SCHOOL OF NURSING

SCHOOL OF NURSING
COLLEGE OF HEALTH SCIENCES
UNIVERSITY OF GHANA
LEGN

December 7, 2015

The Medical Director
Ridge Regional Hospital
Accra.

Dear Sir/Madam,

INTRODUCTORY LETTER

I write to introduce to you Benedicta Kwakye, an M.Phil Year II student of the School of Nursing, University of Ghana, Legon. She is conducting a research on “Adherence to Treatment Regimen among Type 2 Diabetics at the Ridge Hospital, Accra”. Your facility has been chosen as her data collection outlet.

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

Thank you.

Yours faithfully,

Dr. Kwadwo Ameyaw Korsah
Head, Dept. of Adult Health
INTRODUCTORY LETTER – BENEDICTA KWAKYE
M.Phil – SCHOOL OF NURSING

This is to introduce to you the above named student from University of Ghana who has been granted permission to conduct a research on “Adherence to Treatment Regimen among Type 2 Diabetics” at the Ridge Regional Hospital.

Attached is a copy of her introductory letter from the school for your perusal.

Kindly give her the necessary support and assistance.

Thank you.

MR. EMMANUEL TAADI
DEPUTY CHIEF HEALTH SERVICE ADMINISTRATOR
FOR: REGIONAL DIRECTOR OF HEALTH SERVICES
GREATER ACCRA REGION

[Stamp and signature]

Mar. 16

Kindly assist Benedicta to conduct her research.

[Signature]

[Stamp]
Adherence to Treatment of Type 2 Diabetes

In case of reply the number and date of this Letter should be quoted

My Ref No. GAR/ADM. 15
Your Ref. No.

Ghana Health Service
Greater Accra Regional Health.
Directorate
P O Box 184
Accra.
Tel.0302 – 234225

DECEMBER 14, 2015.

THE MEDICAL SUPERINTENDENT
ADABRAKA POLYCLINIC
GHANA HEALTH SERVICE

INTRODUCTORY LETTER - BENEDICTA KWAKYE
M.Phil – SCHOOL OF NURSING

This is to introduce to you the above named student from University of Ghana (School of Nursing) who has been granted permission to conduct a research on "Adherence to Treatment Regimen among Type 2 Diabetics" in your facility.

Attached is a copy of her introductory letter from the school for your perusal.

Kindly give her the necessary support and assistance.

Thank you.

MR EMMANUEL TAADI
DEPUTY CHIEF HEALTH SERVICE ADMINISTRATOR
FOR: REGIONAL DIRECTOR OF HEALTH SERVICES
GREATER ACCRA REGION
APPENDIX C: CONSENT FORM

CONSENT FORM (Appendix C)

Title: ADHERENCE TO TREATMENT REGIMEN AMONG TYPE 2 DIABETICS AT THE RIDGE HOSPITAL, ACCRA.

Principal Investigator: BENEDICTA KWAKYE

Address: Department of Adult Health, School of Nursing, College of Health Sciences, University Ghana, Legon, Email: aduaben@gmail.com

General Information about Research

Diabetics are expected to combine the treatment regimen and their lifestyle to help achieve the goal of controlling the blood sugar level due to the chronic nature of the disease. This study seeks to find out the extent to which type 2 diabetics take their medication. In other words, the study is to explore factors that influence type 2 diabetics to comply with treatment in general at the Ridge Hospital in Accra. When you agree to take part in this research, the information that you will provide are for research and academic purposes only. You will be interviewed by the researcher on the benefits and barriers of adhering to your medications. The interview is expected to last between 30 to 45 minutes. The interview will be recorded using a recorder for the purposes of analysis. You are expected to respond to questions that will be asked by the interviewer and you are free to offer further explanations to your responses. The interview will be conducted at a place and time convenient to you.

Possible Risks and Discomforts

There are no possible risks to you as a participant in this study. However, if the length of the interview may cause some form of discomfort that will be dealt with by allowing for a rest period of 5 minutes if requested by you.
Adherence to Treatment of Type 2 Diabetes

Possible Benefits
The outcome of the study would be useful for Nurses, Doctors and other health care providers in educating the public about treatment adherence by persons living with Type-2 diabetes and how the care should be handled. The study is also likely to unearth or identify challenges or problems that are faced by type 2 diabetics in their treatment so that these concerns are addressed, in order to improve on their quality of life. Similarly, identification of the challenges associated with their care will give us a better understanding of how to care for them in a holistic and purposive manner.

Confidentiality
The information you provide would be protected. The information on the consent form will be separated from the data collected so that it will be impossible for anyone to link your name to the information provided. You are assured that neither your name nor initials or anything that could be used to trace you would be mentioned to others. My research supervisor will have access to the data if I am required to provide it but this will also be for academic purposes only.

Compensation
There is no financial benefit if you participate in this study. However, a handkerchief for your time spent during the interview will be provided.

Voluntary Participation and Right to Leave the Research
Your participation in this study is voluntary and you have the right to withdraw at any time without any penalty. Your inability to participate or withdraw from the study will not in any way affect the treatment and care you receive at the Hospital.

Contacts for Additional Information
You can contact the researcher or the supervisor on the following contacts with any issues concerning the study:
Benedicta Kwakye (Student)
Mobile: 024-4986095
Email: aduaben@gmail.com

Dr. Kwadwo Ameyaw Korsah. Lecturer, School of Nursing, College of Health Sciences, University of Ghana,Legon.

Phone number: 024-3547317
Email: korsah19@yahoo.com

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 (Adherence to Treatment Regimen Among Type 2 Diabetics at the Ridge Hospital, Accra) 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

VALID UNTIL
03 NOV 2016

APPROVED DOCUMENT
APPENDIX D: INTERVIEW GUIDE

INTERVIEW GUIDE (Appendix D)

You are invited to take part in a study to explore the factors influencing adherence to Treatment Regimen among type 2 Diabetic. This will help me understand what you think about the disease, some of the difficult situations you go through in adhering to your medication as a result of the disease as well some of the things that can be done to improve adherence to medication. The interview is expected to last for thirty (30) to forty-five (45) minutes and it will be audio tape recorded. Thank you.

SECTION A: Demographic Data

1. Please tell me about yourself
2. How old are you
3. What is your marital status
4. What is your level of education
5. What is your religion

SECTION B: Factors that influence adherence to treatment

1. How long have you been diagnosed as a diabetic?
2. Tell me your experience with Diabetes?
3. What factors do you take into consideration before taking your medication?
4. Tell me what you intend to gain when you stick to your treatment?
5. What roles do your family/ spouse play in order for you to take your medications regularly?
6. Tell me about some of the things that happen at the hospital that has helped you to continue taking the drugs?

7. How has your association with those living with the illness or other support groups assisted you in taking your medication?

8. What other influences enable you to take your medicines regularly?

9. What are some of the challenges or barriers you think are associated with treatment in general?

10. In what ways do you manage your treatment in general including problems and challenges that you find?

11. What can you do to improve adherence to your treatment in general?

12. Are there any other issues related to your treatment you want to talk about?