



Diabetes Mellitus Type 2 Self-Care and Self-Management In Nigeria: A Scoping Literature Review

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Abstract:

Globally, an estimated record of 422 million adults in 2014 was diagnosed with diabetes mellitus. In Nigeria, the disease burden of Diabetes Mellitus Type 2 is about 8-10%. There is huge knowledge gap of self-management and self-care practices. The utilization of the customary medication is increasing. The focus is to identify the factors affecting self-care and self-management practices followed by the patient of type 2 diabetes in the Nigeria. This study aims to describe different factors that affect the self-management and self-care of Diabetes Mellitus Type 2 in Nigeria. The study will investigate the current situation of Type 2 Diabetes Mellitus in Nigeria by presenting different types of literature on self-care and management of the diabetes mellitus in the Nigeria currently available. A scoping review was used to collect and analyze our research data. Resources like CINAHL, and EBSCO were used to obtain relevant researches by a proper strategy consist of a controlled set of keywords. Four hundred and thirty-eight researches were collected, and 13 researches and some chapters from a book were selected for final review. Self-care and self-management practices are followed by a few percentages of patients of type 2 diabetes in Nigeria. There is a lack of social support and accessibility of medicine. The burden of disease is staggering due to complicated cases of Type 2 diabetes. A detailed study is needed to assess the severity of the problem; patients and relatives should be appropriately counseled and encourage them to follow self-care and self-management practices. Training programs should be introduced to decrease the burden on doctors and to improve the provision of healthcare.

Language: English

Key words: diabetes mellitus type 2, self-care practices, self-management practices, self-care and self-management support system, nigeria

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List of Abbreviations

ASMMT	Adherence and Self-Management Monitoring Tool
β -cell	Beta cell
BMI	Body Mass Index
C-peptide	Connecting peptide
DAN	Diabetes Association of Nigeria
DM	Diabetes Mellitus
DPP	Diabetes Prevention Program
DKA	Diabetic Ketoacidosis
DSME	Diabetes Self-Management Education
DSME /S	Diabetes Self-Management Education and Support
DMR	Daily Medication Reminder
DSCK	Diabetes Self-Care Knowledge
IDF	International Diabetes Federation
NAFDAC	National Food and Drug Administration and the Control Agency
NCDs	Non-Communicable Diseases
NYSC	National Youth Service
SBGM	Self-Blood Glucose Monitoring
T2D	Types 2 Diabetes
WHO	World Health Organization

1 Introduction

In the past decade, a significant rise of a complex disease, Diabetes Mellitus Type 2, in sub-Saharan African has been observed. The increase in this epidemic disease, Diabetes Mellitus, is partly due to urbanization, dietary lifestyle, cultural changes, lack of controlled preparedness, societal obstacles such as poor education and illiteracy, lower socioeconomic status and lack of health care facilities (Hilawe, Yatsuya, Kawaguchi, & Aoyama 2013, 671-682).

Globally, an estimated record of 422 million adults in 2014 was diagnosed with diabetes mellitus. It has been the cause of death of 1.5 million people in 2012, which is the cause of eighth leading death worldwide among both sexes, and it has been considered as a risk factor of cardiovascular fatalities and chronic kidney diseases. Moreover, 43% of those deaths happened before the individual reaches 70 years of age. In African regions, the occurrence rate of the diabetes mellitus may almost have been doubled in numbers from 3.1% in 1980 to 7.1% in 2014, which corresponds to the 4 million persons from 1980 to the 25 million persons in year 2014 (Roglic 2016, 6).

Nigeria is a country which is most populated in the whole of the Africa with a population of 158 million inhabitants, 50% of Nigerians live in the urban area with cultural diversity and a record of 398 ethnic groups. The provision of healthcare in Nigeria is currently under the responsibility of the government and private health care providers. Both play a vital role in delivering an excellent health care service. According to the studies carried out by Ogbera and Ekpebeigh (2014), it showed an increasing rate of diabetes prevalence in Nigeria from 0.8% in 1960 up to 2.8% in 2000. The current Diabetes Mellitus (DM) prevalence in Nigeria is unknown but is value to be around 8%-10% (Ogbera & Ekpebeigh 2014, 905-911).

Type 2 (T2) Diabetes is initiated mainly by the amalgamation of the genetic elements which are associated to the compromised secretion of the insulin, insulin resistance as well as other factors like overeating, insufficient physical activities, constant stress, in addition to aging. The Type 2 Diabetes Mellitus is produced by the insulin resistance as well as relative insulin deficit that results in impaired glycaemic control. (Ozougwu, Obimba, Belonwu, & Unakalamba 2013, 46-57).

Diabetes Mellitus is a progressive illness and leads to great complications. Diabetes affects almost every system of the body including eyes (Diabetic Retinopathy), cardiovascular system (Increase risk of thromboembolism), renal system (Diabetic Nephropathy) and extremities (Diabetic Neuropathy). There is an bigger risk of earlier problems in developing countries, and the use of early interventions and educational strategies can significantly reduce the morbidity and improves the overall healthy life period (Shrivastava, Shrivastava, & Ramasamy 2013, 12-14).

Major causes of death in diabetes type 2 in Nigeria are a cerebrovascular accident, diabetic foot ulcer, myocardial infarction, and diabetic nephropathy. Self-care and self-management strategies minimize the risk of co-morbidities and mortality associated with diabetes mellitus type 2 (Ojobi, Odoh, Aniekwensi, & Dunga 2017, 17-20). Self-care practices are further predisposed by the several factors such as age, family history, time of consultation, socio-economic status, educational background, and occupation. Duration of diabetes had no relation with regularity in self-care practices. But patients with excellent educational background score high on the self-practice index (Rahaman, Majdzadeh, Naieni, & Raza 2017, 1059).

There is a massive gap in knowledge of self-care practices in Nigeria. According to one study done in the University of Rwanda, 54.9% patients didn't know how many time they should check their glucose levels per day, 63.7% didn't know the importance of dietary modifications and lifestyle modifications (Mukeshimana, Hakizimana, Mwali, & Umuhoza 2015, 24).

There have been enormous benefits in the early intervention as well as avoidance or the delay of the progression to diabetes mellitus type 2. It increases in life expectancy as well as the quality of life, in addition to economic positions for the society and the healthcare payers. Some clinical trials as well as computer modelling simulation scrutinized the charge-effectiveness of the treatment designed at reducing the development of the compromised glucose tolerance to the Type 2 Diabetes (Alberti, Zimmet, & Shaw 2007, 451-463).

Lifestyle management is essential in diabetes care, by undergoing intensive physical activities, proper diet and nutrition, health care counselling, self-management education, and support. Diabetes Prevention Program (DPP) shows that a rigorous lifestyle

intervention might reduce the incidence of the type 2 diabetes by 58% over the three years (American Diabetes Association 2017, 142).

The disease burden due to diabetes mellitus and its complications is increasing every day. Co-morbidities such as neuropathy and nephropathy is influencing the healthcare system of Nigeria. Patients are not receiving proper healthcare and counseling regarding self-care and self-management due to an increase in patient's burden. It was important that all the available literature should be collected and charted for a broader view of the situation. A scoping review was chosen as a method to obtain related researches and to address the research question.

2 Research aim and Research questions

This study aims to describe existing factors that affect the self-care and management of the Type 2 Diabetes Mellitus in the Nigeria. This study will investigate current situation of diabetes mellitus in Nigeria by presenting different types of literature on self-care and management of the diabetes mellitus in Nigeria currently available.

The questions of this research focus on:

- 1 What type of self-management and self-care is in use by Type 2 Diabetes Mellitus patients in Nigeria?
- 2 What kind of self-management and self-care support system is available for Type 2 Diabetes Mellitus patients in Nigeria?

3 Theoretical Background

This chapter aims to offer information on various topics about the areas of the study, which consists of Diabetes Mellitus Type 2, hazards of Diabetes Mellitus Type 2, self-management and self-care in Nigeria.

3.1 Diabetes Mellitus Type 2

Type 2 diabetes or the non-insulin dependent diabetes mellitus progresses due to insulin resistance of target organs such as muscles and adipose tissues. Hyperglycemia forces the

islet cells to secrete more insulin to meet the demand. Eventually, islet cells will burn out, and insulin secretion will be decreased. Diabetes mellitus type 2 is considered to have a strong genetic background and intensified mostly by environmental factors, lifestyle, obesity, and unhealthy food consumption (Kahn, Cooper, & Prato 2015, 1068-1083).

Diabetes Mellitus of all types leads to the development of chronic complications in various parts of the body eventually resulting in premature death. 20% of Type 2 diabetics have at least one identifiable complication at the time they were diagnosed. However, most patients live without feeling the burn of diabetics' symptoms. These complications can vary from a heart attack, vision loss, stroke, to nerve damage. Also, pregnant diabetic patients with poor control and care suffer the increased risk of fatal death and other complications (Scobie & Samaras 2014, 27-34).

When diabetes is not well taken care of, the patient's health and quality of life may be endangered leading to acute complications and contributes to premature death.

Uncontrolled diabetes often leads to abnormally high blood glucose with the capability of a life-threatening impact causing complications for instance diabetic ketoacidosis (DKA) in Diabetics Type 1, in addition hyperosmolar coma in the Type 2. On the other hand, abnormally low sugar occurs in all types of diabetes that sometimes causes seizures or loss of consciousness. In addition to these traditional complications of diabetes, a study shows that diabetes is connected with the augmented rates of the specific cancers as well as cognitive and physical disability. Diabetes Mellitus is also known to be the leading cause of lower extremity amputations (diabetic neuropathy), kidney failure or diseases (diabetic nephropathy) and vision impairment or blindness (diabetic retinopathy), thus impacting the quality of life (Roglic, 2016, 13).

3.2 Risk factors for Diabetes Mellitus Type 2

The risk of diabetes mellitus type 2 can be traced to genetic and metabolic factors. Also, early mortality and increase in morbidity are associated as a consequence of Type 2 Diabetes, especially in an urban environment where risk factors for instance sedentary lifestyle, obesity, as well as unhealthy nutritional behavior are common.

Collectively, the risk factors of type 2 diabetes mellitus include; obesity or overweight, unhealthy diet, genetic influences, physical inactivity, sedentary lifestyle, smoking, family history (Roglic 2016, 25-29).

3.2.1 Obesity or overweight

The most important risk factor of diabetes mellitus type 2 is obesity. Diabetes mellitus type 2 due to obesity is a major contributor of world diabetes burden. Unhealthy lifestyle, lack of exercise and unbalanced diet are associated with obesity and are indirectly increase the risk of diabetes. People with BMI higher than 25 are considered as obese and are at the greatest risk to have diabetes in future. There are a number of environmental and behavioural factors such as lack of physical activity, which can contribute to increase in weight. (Roglic 2016, 25-29).

3.2.2 Dietary and Nutrition

Essentially, insulin resistance as well as relative insulin deficit characterize as Type 2 diabetes. The kind of food we consume and dietary instructions play a role in determining the additional insulin required by the body. Factors that influence the nutritional behavior varies based on individual needs by implementing a dietary strategy to target specific risk factor. For instance, overweight or obese individual strategizes dietary plan to target weight reduction.

According to Scobie and Samaras (2014), Dietary recommendations for the past 30 years in diabetes mellitus, lay much emphasis on diets with low saturated fat. Low saturated fat intake is crucial to reducing cardiovascular risk and limiting dietary cholesterol. Balancing macronutrients is also vital and differs in dietary approaches depending on individual needs. For instance, an obese individual would compromise energy intake if energy intake results in increased fat consumption regardless of fat quality. Thus, lower carbohydrates and high protein intakes are beneficial in type 2 diabetes diets (Scobie & Samaras 2014, 74-81).

3.2.3 Physical Activity

Amongst other factors for the risk of type 2 diabetes mellitus, physical activity plays a crucial role as substantial factor for the type 2 diabetes mellitus. Increase in physical activity levels is essential in preventing weight gain and reducing overall weight to manage the development of diabetes. Regular exercise results in an improvement in insulin action, blood pressure reduction, and improvements in lipid profile consequently decreasing the risk of heart disease and stroke.

Although, Scobie and Samaras (2014) recommended that diabetic individuals exercise for 20 minutes, three days per week. Exercising strategies vary across diabetic patients; there may be conditions that can make more protracted exercise problematic. For instance, diabetic patients with renal failure, retinopathy should be discouraged from participating in physical activity that could raise blood pressure significantly (Scobie & Samaras 2014, 74-81).

3.2.4 Smoking habits

Cigarette smoking is considered a modifiable risk factor for some, ailments, including cardiovascular infection. Subsequently, smoking expands the danger of creating diabetes mellitus type 2 and enhance both micro as well as macro vascular problems of type 2 diabetes mellitus. The study shows smoking, and its addictive effects is an autonomous hazardous factor related with insulin opposition and beta cell work on the pervasiveness of the type 2 diabetes, to such an extent that insulin and C-peptides reactions to the oral glucose load were essentially higher in the smokers. Smoking contributes and worsens diabetic nephropathy (kidney failure), having antagonistic effects on the diabetic nephropathy in the type 2 diabetic patients (Chang 2012, 399-403).

3.3 The Nigerian Health Care System

The Nigerian health system is divided into primary, secondary and tertiary care hospitals. The primary healthcare is regulated by the Local Government, and the State Government's responsibility is to provide secondary healthcare. The overall regulation, policy-making and tertiary care hospitals are regulated by the Federal Government. The primary healthcare is where funds are low, and patients move towards secondary or tertiary care hospitals to seek quality healthcare. The provision of healthcare is impacted by increased patient's burden in secondary and tertiary hospitals. As per the census of 2004, there are 23,640 public and private hospitals in Nigeria (Pharm. Access Group 2015, 10-11).

Over 70% of patients in Nigeria can afford their hospital costs through their minimum wages or from their close relative. Patients who have insurance coverage for medications and tests are below 10%. While on the other hand, 62% of Nigeria earn below 1000 US dollar per annum. However, it is not surprising that the number of patients that cannot perform self-blood glucose monitoring (SBGM) is about 20%. Although many patients in

secondary health care services do not know the meaning of what cholesterol or A1C is or interpret what they measure it, while 80% of the patients do not understand what kind of medication they are using in some few centers. Additionally, the healthcare management to most patients who have diabetes are pluralistic with many patients using alternative solution such as traditional or other complementary drugs, there has been a confusion, poor conventional medicine adherence, and a prolong mortality and morbidity due to the mixture of treatment, according to the study carry-out in Lagos state it was observed that patients have a high reliance on correlative/elective solution which shows that less than 50% of diabetes patients are using other complementary medications (Fasanmade & Dagogo 2015, 821-829).

3.3.1 Health care personnel

Nigerian nurses have no specialty in diabetes care, however they are responsible for carrying out bedside urine test, blood glucose result, significant support on health such as dietary, patients self-training on injecting insulin and as well as providing fundamental care to patients at all level, including patients suffering with cognitive dysfunction and unfit to perform self-injection (Fasanmade & Dagogo 2015, 821-829).

Nigerian nurses have the most significant numbers of staffs in the healthcare services and are also the ones who regularly do a semi-formal diabetes instruction to the patients. However, findings showed that there not much information about nurses and other health professionals on the caring knowledge for diabetes patients in Nigeria (Odili & Eke, 2010).

Generally, the doctor to the patients' ratio in Nigeria is relatively poor. In fact, at both Primary and secondary health centers, the diabetes facilities are overburdened with the ratio of approximately 5 to 10 doctors to 100 to 200 patients. More so, there are no 24 hours facilities centers for diabetes patients. The centers only run once every week from 8 or 9 AM to 1 to 2 PM. This implies that the overburdened doctors to patients' ratio will result in doctors spending only a minimal amount of time together during the appointment. Additionally, the majority of the facilities are not occupied by doctors with special training on diabetes treatment; rather they are commonly specialist doctors, expert family doctors, or endocrinologist's consultant. The doctors are not able to effectively examine the eye or feet of the patient, not to mention satisfactorily auditing glucose meter results or examining dietary or exercise records. Lately, the quantity of endocrinologists/diabetologists has expanded altogether over the most recent 3 decades in contrast to 1980s when there were

less than 10 endocrinologists/diabetologists in Nigeria, with more than 50% of the located in the southwest region of the country while some of the other parts of the did not have any. It must be stated that nowadays, this number has increased significantly to around 100, including pediatric endocrinologists (Fasanmade & Dagogo 2015, 821-829).

3.3.2 Medication

Another factor that can influence the patient's knowledge of diabetes is the kind of medication he/she is using. Due to the development of new medication in the past few decades, the medication protocols have been changed completely along with other aspects of diabetes mellitus management (Odili, Isiboge, & Eregie 2011, 637-642).

Medication adherence is associated with improvement in glycemic control, which will improve the quality of life. Adherence to medication is also cost effective because it will decrease the chances of re-occurrence and hospitalization. Prognosis of the disease is also good with medication adherence. There are a number of factors that can contribute to the non-adherence behavior of patients. Some of them are forgetfulness, local medication, and lack of knowledge and fear of side effects. (Fadare, Olamoyegun, & Gbadegesin 2015, 65-70).

According to the research conducted by Fadere et al (2015) about the number of medication, a diabetic is using and cost effectiveness. They found out that the cost of medication is enormous in developing countries such as Nigeria. As a fact, in Nigeria patients suffering from diabetes, monthly cost of buying medication is between N4462 to N6557 Nigeria Naira (NGN). In which over 50% of patients pay by themselves. Findings show that the majority prefer to use alternative medication such as traditional medicines (Fadare et al. 2015, 65-70).

3.4 Government and private sectors' efforts to deal with diabetes

As stated by the Nigerian Diabetes Association (DAN), the incidence rate in the Nigeria ranges from 0.65% in Mangu (north) rural areas, 6.8% in Port Harcourt to 11.0% in Lagos, and with high morbidity and mortality.

Health Minister Mr. Isaac Adewole alleged federal government had developed six key programmes to decrease the hazards associated with the diabetes as well as non-

communicable ailments in the Nigeria. He expressed that the Department of Health had accepted a global observing framework to develop national diabetes plans and policies as a way to stop the trend of the diabetes in the Nigeria. Others consist of amplified monitoring in addition monitoring systems participation, improved reach to care as well as sustainable diabetes management funding. As said by him, the Department has implemented a worldwide framework that focuses on the data gathering to strengthen the international burden of the disease. Adewole further said that the Ministry of Health had developed national policies and strategic action plans for non-communicable diseases and national nutrition guidelines on the prevention, control, and management of non-communicable diseases. This document lists local foods with glycaemic index and provides information to Nigerians to make informed decisions about food choices (Muanya, 2016)

In addition, the Nigerian Ministry of Health is building up a structure for observing diabetes, saying it will help screen inclines in diabetes rate and commonness in Nigeria. He said it would likewise incorporate the administration of the chronic diseases in welfare of Nigerians at the primary care level. The Minister suggested that the Nigerians should sustain a healthy mass, eat healthy nutrition and maintain physical activity. Minister advises diabetics to stick to the doctor's advice in addition keep in touch with the doctor. According to estimates by the Nigerian Ministry, there are about 160 million people, of whom 4 million have diabetes. In addition, it is worrying that the number of diabetic patients is ratio of undiagnosed or untreated patients, who account for 70%-80% of the 4 million diabetic patients. As diabetes has undoubtedly changed the health care landscape in Nigeria for decades according to him, they are concerned of the increasing crisis of diabetes, hypertension as well as other non-communicable diseases in Nigeria (Owoseye, 2017).

A recent study published by Ogbera in the World Diabetes Journal showed that in the early 1990s, Nigerians did not know much about DM. Traditionally, people linked DM to "curse." The diagnosis is created on the basis of blood or urine tests for the glucose. Presently, DM patients are susceptible to oral hypoglycaemic agents rather than insulin. The cost of the diabetes care in many cases borne by the individual, and usually the expense is "self-sufficient" – this is a consequence of the dysfunctional National Health Insurance Plan. The study's title "is" Diabetes in Nigeria: Past, Present, and Future." Ogbera said that the key issues for diabetes in the future involve an increase in Nigeria's population, increased life expectancy in Nigerians, and an expected incidence as well as prevalence of the diabetes. The short per capita earnings of many Nigerians, the

underdeveloped health care organization and the contemporary primary means of using health services are “paying for themselves” (Ogbera & Ekpebegh 2014, 905-911).

In Nigeria, cooperation amongst healthcare workers, pharmaceutical industry, strategy makers and the National Food and Drug Administration and the Control Agency (NAFDAC) is becoming possible to make sure the import, native production as well as use of the anti-diabetic drugs in the Nigeria and under adequate supervision. In addition, the organization will receive funding and adequate guidance to implement a tailored diabetes secondary prevention program. This will help to implement established evidence-based interventions and community-based diabetes care approaches in different settings, to improve the health outcomes of people with diabetes. Later, in some states of Nigeria, Edo, Ondo and Lagos, three months of diabetes campaigns began. A three-month campaign is being launched to ensure awareness and early diagnosis of diabetes, and quality care is provided by trained medical professionals. The ultimate goal is to enable more diabetics to lead a better life and avoid complications associated with diabetes. The campaign will involve screening and education in selected local communities to screen more than 42,000 people at risk for diabetes.

Similarly, Diabetes Prevention Project - WDF16-1354 is also initiated. The project will help the Ministry of Health to work along with National Youth Service, Ministry of Education along with other partners and stakeholders to achieve better results by guiding them towards a specific goal. Training programs will be introduced to prepare the healthcare professionals for preventive activities along with evaluation of the available information. This program will also provide course material for all the stakeholders such as nutrition teachers, educators, National Youth Service members and other organizations. (Oladejo, 2017)

To change the behaviour of community, proper information will be added in school curriculum along with awareness programs and text messages. Awareness programs and training sessions will be held regularly to promote healthy lifestyle. Community members will be screened to diagnose diabetes at earlier stages and to improve the quality of life. (Oladejo, 2017)

3.5 Self-Management

According to the World health organization (2016), self-care and management in early detection of diabetes contribute to the patient's long and healthy lifestyle. Essential activities and good management services should be in place to intervene and potentially prevent the complications of diabetes. Interventions are proven to be feasible and cost-effective in settings characterized by lack of funds to cover health costs, on a societal or individual basis. Risk factors can be controlled through educating and counseling patients to promote healthy dietary and physical activities. Self-Management aids reduction in diabetes complication and improves the management of critical risk factors.

Access to building up a structure for checking diabetes, saying it will surely help screen slants in diabetes occurrence and predominance in Nigeria. He included that it would likewise incorporate the administration of chronic illnesses by implementing basic intervention methods. Such intervention methods involve medication, health education, healthcare awareness campaigns, counseling, consistent follow-up, diabetes care plan (continually updated), easy access to care-personnel and periodic review of metabolic control, geared towards the reduction in various diabetic complications (Roglic 2016, 49-79).

According to Protheroe, Rowlands, Bartlam, and Zamir (2017), self-management in diabetes is well organized in area of research, with focus on putting more effort and supporting the maintenance of optimal glycemic control. In diabetes mellitus type 2, the level of the blood glucose control is associated with the risk of building up diabetic problems. Different ways to achieve and maintain glycemic control include; the patients' awareness about diabetes, their behavior towards self-management, as well as self-management expertise, alongside quality lifestyle choices. Health literacy, which is the particular characteristics and assets needed to access and understand the use of information as well as facilities to make informed health results. Therefore, low health familiarity contributes mainly to diabetes-related problems (Protheroe, Rowlands, Bartlam, & Levin 2017, 3).

The chronic disease, diabetes mellitus, requires its patient to develop several judgements of routine self-management. Diabetes Self-Management Education and Support (DSME /S) offers a basis that helps diabetic patients to navigate these decisions as well as activities, resulting in improved health reactions. The DSME/S programs are well structured and

designed in such a way that it addresses the patient's health opinions, social norms, current familiarity of disease, emotional anxieties, family provision, financial support, medicinal history, and many other issues that affect a person's capability to follow self-management practices (Powers et al. 2015, 1372-1382).

3.6 Self-Care

The process of learning to take care of self during the progression and evolution of diabetes mellitus is known as self-care. Patients and families with diabetes handle the majority of daily care. Hence, there is an essential necessity for reliable and real self-care measures for the self-organization of diabetes. Fundamental self-care practices of patients who foresee great results are smart dieting, being physically unique, watching glucose, reliable with medication, heavenly basic reasoning capacities, strong adjusting aptitudes, and risk declining practices. These actions are useful for the clinicians as well as educators who treat diabetic patients, along with scholars who are assessing new approaches. Diabetes self-care necessitate for the patient to make way of life and dietary modifications enhanced with the supporting job of human services professionals for giving a more grounded dimension of self-assurance prompting an effective conduct change (Shrivastava R. B., Shrivastava, Ramasamy, & Jegadeesh 2013, 12-14).

3.7 Social Support

The support system provided by the family members and the social support system is essential in managing diabetes treatment. More could be done by counseling other family members about the nature of the disease and highlight the importance of their support for the patient to deal with the progression of the disease (Rad, Bakht, Feizi, & Mohebi 2013, 62)

Mayberry and Osborn (2012) argue that the utmost theories to health behavior is to change the needs of diabetes self-care performance in such a way that will contain the social support, and in which members of the family will be considered as a substantial source of social support to diabetes patients, especially people of old age with diabetes patients. However, the family member has a crucial role to play because of their positive or negative attitudes influences on the well-being of people with diabetes, as well as how they interfere with or promote the activities towards self-care, such as; buying foodstuff, prescription refilling. Additionally, a couple of intervention for older age people with diabetes is to

involve the family member that has been inconsistent with their approach and ineffective in impacting the outcomes to health. The result of the research shows that patients were able to share their opinion on how important the use of instrumental support they get from their relative in different areas for examples, medication adherence, monitoring of blood glucose, diet and nutrition, work-out and handling the doctors' appointments. Additionally, the following section highlights some of the real-life situations experienced by the patients that participated in the research as shown in their own words (Mayberry & Osborn 2012, 1-7).

One of the respondents emphasized the family support received from her husband. And other participants as well mentioned that they can perform better self-care management if their family members are aware of their diabetes-specific needs. Some of the respondents even shared the supportive measures provided by his better half who dependably convey bites and additional medications in her satchel for him. Additional patient described how sister of hers comprehended her prescription's reactions and assisted her oversee them. (Mayberry & Osborn 2012, 1-7). It was clearly stated in the statement from the patient.

“I take my medication in the morning regularly, but after two hours of breakfast, I usually feel unwell. On Sunday it got worse in the church. As my sister knew understood the nature of my disease, she rushed and brought me some juice (A 53 years old African American female)”

Although some patients were happy with the family support they got from their family, some other patients, however, did express the frustration of their family members' nonsupportive behaviors. Two types of non-supportive behaviors were reported:

1. Lack of supportive behavior by informed family members towards the patient's self-care management. These kinds of family members are informed enough about the disease, but they do not show a significant form of support to the patients.
2. The possible conflict resulted from miscarried helping behaviors by the family members towards the patients. Some participants even mentioned that their relatives were not prepared or even propelled to make way of life changes or bolster their diabetes self-care practices. These patients mentioned that these kinds of non-supportive behaviors might have been as a result of inadequate information about diabetes to persuade family to carry out supportive attitudes. Some patients even shared some stories of non-supportive behaviors from family members even though they have enough knowledge and awareness

about the disease thereby discouraging patients from embracing and performing their self-care behaviors. One of such stories is quoted below (Mayberry & Osborn 2012, 1-7).

“My husband has diabetes for a longer period than me, but he is eating all types of unhealthy food in front of me and even offers me cookies sometimes. He doesn’t care for himself. He takes one pill per day and continues to eat unhealthy food. Sometimes he mocks me because I check my insulin 8 times per day and eat balanced food to keep my sugar levels in the normal range. Although I always say no to cookies, he is sabotaging my daily dietary plan by offering me again and again. It seems like the only support I have is myself. (A 61 years old white female)”

Another participant also described how his family members showed non-supportive behavior by taking him out to a restaurant that does not serve a healthy meal. The reference to such an incident is highlighted below (Mayberry & Osborn 2012, 1-7).

“Sometimes my family goes to a restaurant and invite me along with them. They know I shouldn’t be eating chicken fingers, but I cannot control myself when they offer me to eat. All I can do is to take more insulin than usual and go with them (A 46 years old African American male)”

As it is generally perceived that when relatives show more diabetes-explicit steady practices, that will prompt medicine adherence or glycaemic control, and relatives' strong practices co-happened with non-supportive practices. Interestingly, the perception is not necessarily accurate, but a distinction must be made between non-supportive behavior and sabotaging attitudes, in which relatives are well aware of the nature of the disease, but encourage the individual to eat unhealthy food. Thus, family members who discourage patients from following self-care activities can create clashes and impact negatively on the management of the disease. (Mayberry & Osborn 2012, 1-7)

In the study by Mayberry and Osborn (2012), participants reported that when they receive unrewarding help from relatives and performing annoying practices to energize self-care practices in their other relatives who have diabetes. They also stated that their family members’ behaviors could be spontaneous, thereby underlining its significance in the diabetes management. The research argues that this kind of study can help the patient to minimize their contact with family’s activities that can interfere in management (Mayberry & Osborn 2012, 1-7).

4 Earlier Researches

The most relevant publications were selected from a huge amount of literature available to highlight the factors related to self-care practices and the importance of self-management of diabetes in the prevention of complications due to Diabetes Mellitus.

4.1 Knowledge of diabetes management as well as control by diabetic patients at Federal Medical Centre Umuahia, Abia State, Nigeria

The study was conducted by Okolie, Ehiemere, Iheanacho, and Kalu-Igwe (2009) to identify patient awareness of diabetes management, control measures, patient understanding of the self-care in the diabetes controlling as well as monitoring, and determine health knowledge that patients receive from healthcare providers. The study was conducted using a descriptive research design. This specified approach is considered much appropriate because little is known about the knowledge of management/control and self-care for patients who already know about diabetes. Through descriptive methods, it is intended to collect data to reveal the information needed, as the aim of this study is to reveal out already available knowledge of the subject. The study population is all diabetic patients attending diabetes clinics (Okolie, Ehiemere, Iheanacho, & Kalu-Igwe 2009, 353-358).

The tools utilized for the data collection are questionnaires which may also serve as an interview monitor for the illiterate subjects. It consists of the 19 open and closed questions, divided into the following three parts: The first part "A" contains five questions for collecting demographic data for instance age, sex, marital status, education position as well as occupation status. The second part "B" consists of the seven questions for obtaining information about diabetes patients' knowledge of the diabetes processes and the management/control practices (self-care). Then the last section "C" contains seven questions concerning the self-monitoring of the urine and the type of food the subject consumes. It also assesses the types of information they receive and the specified health workers who provide them with the information. Culturally literate subjects complete the questionnaire independently while reading and interpreting questions for illiterate respondents and recording their responses. The specific content of questionnaire comes from the recent writings on the diabetes awareness as well as self-management.

The results of the survey showed that most subjects (80.2%) knew that diabetes was a sugar disease. This discovery is expected because they have become victims and most of them are traditional patients. The findings are consistent with the findings of Ngwu EK(2005), which found that 75% of diabetic patients who are attending the University of Nigeria's teaching hospital Enugu have a good understanding of disease (Ngwu, 2005). Knowledge of self-care measures to prevent complications in the order of managing/controlling diabetes showed that a large number of the subjects (74.0%) who believed in the patronizing patented drug distributors, while the minority (4.2%) also agreed to adopt the healthy diet plan (Okolie et al. 2009, 353-358)

Knowledge of subjects who manage/control diabetes to prevent complications from self-care measures shows that a large number of the subjects (74.0%) believe in the patronizing patented drug distributors, while the minority (4.2%) agree that it is necessary to embrace a healthy diet plan. This shows a lack of knowledge. Prevention of diabetic complications includes adherence to medications and dietary regimens, in addition, simple health as well as self-care management to avert the injury, particularly to the inferior extremities of human body, and to maintain skin uprightness. Lack of this level of knowledge may expose diabetics to the risk of complications that may predispose them. More than fifty percent of the participants believed that herbs could cure diabetes. This is another important finding because many of these works have not yet been determined, although there are many effective herbs available for the treatment of many diseases.

Based on the findings, the researchers observed that most people with diabetes know what diabetes is, but do not know why, prevention, control, self-monitoring and other self-care measures are important. It would be beneficial to establish a diabetes clinic and information centre to teach diabetics. In addition, nurses, doctors, dieticians and other health team members should work together to help these diabetics lead a healthy life and provide them with the right information at every possible opportunity. Lack of knowledge will destroy people (Okolie et al. 2009, 353-358).

4.2 Self-management practices among type 2 diabetics patients in Nigeria

Another study conducted by Yusuff, Obe, and Joseph (2008), to highlight the practices of prescribing anti-diabetic drugs and compliance of patients along with self-management practices (such as learning of ideal values of blood glucose levels, symptoms of hypoglycemia and use of daily reminder) in patients with Type 2 Diabetes Mellitus in the

tertiary care hospital in Nigeria. The study employed a method of cross-sectional interviews, with pre-validated Adherence and Self-Management Monitoring Tool (ASMMT), of 200 sequential type 2 diabetic patients. The patients displayed their medication solutions at the satellite drug store unit at University College Hospital (UCH), Ibadan Nigeria. The study identified hypertension as well as obesity as the most continuous comorbidities amongst the patients and firmly connected with cerebrovascular illness in the type 2 diabetes. Ordinary evaluation of adherence to diabetic medication, particularly necessary in Nigeria, is needed to guarantee that just decisions that urge adherence to lessen the recurrence of reactions and improves glycemic control are utilized. In this manner, bound to encourage the decrease of morbidity as well as mortality among the Diabetic Type 2 patients. The findings of the study suggested that checking of glycemic control in the Nigerian diabetics might be not exactly ideal, which is a contributing variable to late discovery of patients in danger of confusions and demise because of inadequately controlled Type 2 Diabetes Mellitus.

Due to the low-income settings in Nigeria, physicians might not be utilizing the HbA1c test for assessing glycemic control considering patients' affordability. To ensure that patients can access important diabetes care-enhancing test, the government and stakeholders should explore a strategy for health cost reduction. Using Daily Medication Reminder (DMR) to aid adherence was high among type 2 diabetic patients. Hence, it is crucial that, as portion of diabetes maintenance process, identifying patient-specific daily routine and using it to plan patient's medication schedule by the physicians as well as counseling throughout dispensing by the pharmacologists. The study also recorded a low awareness and practices of the critical constituents of the diabetes self-management among the cohort studied. The study pointed out a necessity to train patients about perilous components of the diabetes self-management, in addition the therapeutic welfare inherent in these practices. Also suggested that such knowledge could be impacted through the methods for inspirational systems, for example, peer-training or sharing of learning and encounters through patient care groups, booking home visits by assigned diabetes facility staff to assess and reinforce adherence with medicine and self-administration practices (Yusuff, Obe, & Joseph 2008, 876-883).

5 Theoretical Framework

A theoretical framework strengthens the work of a research study as well as standing as a core element that helps the researcher in demonstrating their understanding of theory and concept. Additionally, it helps the researcher to easily connect and support their work with established theory within the prevailing literature that has been approved, certified and generally accepted by others (Grant & Osanloo 2014, 4).

5.1 Orem's self-care theory

In the 1950s, Dorothea Orem established her self-care theory and is that theoretical framework which will be used in this research study. She was well known as a nursing theorist in the 20th century as well as being the recipient of many awards through her continued contribution and development toward nursing theory and science. Her purpose for creating a nursing theory and its unique knowledge framework was to establish the ideology that nursing interventions in the promotion of self-care are only required when patients cannot already achieve the optimal goal of attaining a healthy lifestyle and wellness for themselves. Hence, in that case, nurses will then intervene by playing the role of an advocate, educator, and supporter (Snowden, Donnell, & Duffy 2010, 198).

Orem's theory consists of three theories which are.

- Theory of nursing systems
- Theory of self-care
- Theory of self-care deficit



Figure 1. Orem's self-care theory (Adapted from Orem's 2001)

5.1.1 Nursing system

A nursing system is an art and creation of the nursing care. This theory means, nurses should assist patient to carry out his/her self-care needs. Hence, the self-care deficit theory was set forth to answer the question of why and when do patients/clients' needs the nursing serving? The reason was due to the deficit in patient's knowledge to complete their self-care imperatives. Consequently, the need for nursing to educate and make sure that the well-being and the quality of life are well maintained and performed for patients/clients to meet-up with the self-care deficit according to the Orem (Orem, 2001).

The initials definition of Orem's nursing concern included patients are the individuals responsible for their self-care independently, in their daily life activities. Nursing interventions in promoting self-care are only required when patients cannot achieve an optimal goal of attaining a healthy lifestyle and wellness. Hence, Nurses intervene by playing the role of an advocate, educator, and supporter (Snowden, Donnell, & Duffy 2010, 198).

5.1.2 Theory of self-care

Orem defined theory of the self-care as an individual's capability to manage or pay attention to themselves with the aid of the nursing guidelines. The potentiality of a self-care management system is developed to train and educate people about their capabilities and power in various approaches to self-care (Renpenning & Taylor 2003, 328).

Orem also added in her self-care theory that Patients should be able to perform self-care independently and also be capable of providing care and the need of their family. Nursing is an act of providing care services to others, as well as to performed intentionally and deliberately. Human office is practiced in finding, creating and transmitting and intends to recognize requirements for, and make contributions to, self as well as other people. There is also a need for mutual communication among the patients as well as the nurses to achieve an effective self-care programme.

In essence, self-care is the individual's measured exercise of action to maintain life and achieve well-being and a healthy lifestyle. A well-defined concept of self-care provides three main components: health deviation, universal, and development of self-care requirements (Snowden, Donnell, & Duffy 2010, 198).

To illustrate, patients who are suffering from diabetes mellitus are prone to develop different types of complications such as lower extremity amputations (diabetic neuropathy), kidney failure or diseases (diabetic nephropathy) and vision impairment or blindness (diabetic retinopathy) if they are not well-educated in terms of self-care. It must be highlighted that self-care is an essential practice for patients to maintain and achieve good health. In as much as patients are advised to take charge of their health independently through self-care, Orem also suggests that nurses should help high-risk patients to achieve a healthy and quality lifestyle by encouraging patients to participate in consistent self-care actively. The following paragraph further explains the key focus and assertions of self-care theory as proposed by Orem (Orem, 2001).

Orem argues that social, age, family background, and economic situations are the main key factors affecting self-care activities. Orem also suggests that the capability and demand requirements of self-care should be balanced out. This will ensure that there is no shortfall. In essence, both the demand for self-care and the self-care deficit itself should be equitable. More so, Orem also proposes that nurses should be able to carry out effective self-care for patients. Nurses are also required to motivate and support patients to achieve independent

self-care when needed. Additionally, nurses are expected to select a reliable and effective plan of action making use of relevant technologies to attain effective self-care by patients. Another key component Orem asserts is that to achieve improved and regulated self-care capabilities, all stakeholders involved in achieving and providing self-care must be ready to commit and engage in the programme.

5.1.3 Theory of Self-care Deficit

The theory of self-care deficit addresses the relationship among the individual demand upon self-care and therapeutic self-care.

A self-care deficit can be either partial or comprehensive. A total deficit is where one is altogether incapable of the performance of self-care. On the other hand, partial self-care deficit is the inability of an individual to meet the requirements of one or more activities, e.g., a patient who is recovering from surgery (Snowden, Donnell, & Duffy 2010, 198).

On the whole, the theory expounds a therapeutic self-care approach used by nurses to diagnose and implement the necessary actions between two or more people (nurse and patient). It helps nurses to determine what type of self-care deficit action to offer when diagnosing or evaluating the ability of the patient. And also, it helps in how to educate the person about managing or overcoming a deficit (Renpenning & Taylor 2003, 328).

6 Methodology

A very little amount of literature related to the research questions was found while searching from different databases. So, a scoping review is selected as an alternative of a systemic review to address our research questions and to present the available information. According to Arkesy, H and O'Malley, L (2005) scoping review is used to map out the available data and to address the area where comprehensive research is lacking. A scoping review is a little bit different from the systemic review, but both use the same comprehensive technique to analyze the data. The aim of the scoping review is mapping the available literature on specific research question, but systemic review sums up all available writings related to our research query. Scoping review includes an extensive range of the study designs as well as methodologies without critically evaluating based on bias and address a broader question. (Pham et al. 2014, 371-385). Scoping review may be used to find the extent of research that is available, to find the research gap and to identify the importance of more comprehensive studies in that specific area. According to Arksey

and O'Malley (2005), moreover, there is no need for the quality valuation in the desired scoping review. But Levac et al. (2010), further clarifying the scoping review, mentioning that without quality assessment it is difficult to interpret scoping review and to use it in policy development.

6.1 Identifying the research question

As the scoping review is selected as the methodology of this review, it gave the wide-ranging option for choosing the literature using various keywords of the Research questions. As the first research question is “What kind of the self-management and self-care is in use by Type 2 Diabetes Mellitus patients in Nigeria?” And the second research question is that “what kind of self-management and self-care support system is available for Type 2 Diabetes Mellitus patients in Nigeria?” Self-care practices include modifications in lifestyle, healthy eating habits, proper exercise, and medication compliance. The self-care support system includes all kinds of support a person gets from his friends, relatives, healthcare practitioner and community in the form of counseling, guidance, and community support groups.

6.2 Identifying relevant studies

As two of the research questions of this study are aiming for answering two different features, each question was investigated independently. Published research papers were the primary source for both research questions. Resources available at a university such as CINAHL and EBSCO Host were used by using keywords such Diabetes type 2 self-care, Diabetes mellitus type 2 self-management, Diabetes mellitus type 2 self-management in Nigerian society, Diabetes mellitus type 2 complication and Diabetes type 2 complications. All the collected researches were summarized in a proper list to process the data further. As the scoping review is the method of reviewing the available literature, the research strategy was evolved during the collection process. The evolved keywords were used on the EBSCO Host database to find further related literature. A research strategy is comprehensively presented in appendix 1. Printed copies of collected researches were used to apply inclusion and exclusion criteria and to remove duplicated data. First of all, duplicated data was removed and then inclusion and exclusion criteria were applied one by one to find the most relevant studies.

6.3 Study Selection

Study selection and the screening is considered as part of the scoping review. Initially, the repeated material was removed then examining the identified readings for the selection, by the relevant title as well as abstract, if accessible (Because of the lack of the abstract in the some of the grey materials). The criteria of Lincoln and Guba (1985) was used to assess the credibility of qualitative research: credibility, transferability, reliability, and identifiability (Lincoln & Guba, 1985). All the necessary and appropriate article were identified for inclusion as well as exclusion criteria.

Researches published from 2010 were included, and studies published in a language other than English were excluded. This criterion was adopted to save time, but some valuable researches may have been missed. 438 research papers were found, and 13 studies and some chapters from a book (Nursing Research: Generating and Assessing Evidence for Nursing Practice, 9th Edition) were used in the final review. The aim was to identify all the factors that affect the self-care and management in Diabetes type 2 patient and map all the literature by using scoping review.

The inclusion and exclusion criteria were devised post hoc to refine the research data.

Inclusion Criteria:

- Articles that are free to access and with full text
- Articles Written in the English Language
- Articles published between the year 2010 and 2019
- Articles relevant to research question and topic (materials that study patients with Type 2 Diabetes Mellitus, their self-management, in Nigerian Society)
- Articles with abstract

Exclusion Criteria:

- Articles that involves charges
- Articles that are written in other languages
- Non-scientific articles.

- Irrelevant and quantitative articles.

6.4 Charting and analysing the data

According to Arkesy, H and O'Malley, L (2005) merely charting of summaries is not so much useful in scoping review. The collection of information related to each study by applying descriptive analytic tool is more valuable than merely summarizing the available data. The extracts of all the relevant studies are presented in Appendix 2. A compressive table with following categories was made to present the most relevant studies.

- Title
- Author name
- Year of publication
- Aim/objective
- Study design and Methodology
- Results/conclusions

All the data was arranged based on numbers and study designs. A qualitative analysis tool was used to analyze the available data. Available researches were arranged, marked and segregated based on similarities and research questions. By thorough reading and reviewing, all the available research papers were analysed.

7 Findings

In this chapter, findings related to the research question have been presented. As the scoping review was used as a method to review the research question, all the available information is presented to access the depth of research data. Firstly, the findings related to the first research question, the types of self-care and self-management practices adopted by patients of type 2 diabetes in Nigeria, are presented. After that, the findings related to the second research question are presented.

7.1 Self-management adopted by patients of Diabetes Mellitus type 2 in Nigeria

In a study conducted by Ndibuagu Edmund et al. in (2016) findings of the researchers revealed that for patients to effectively self-manage their diabetes disease, they must be knowledgeable and able to understand what the disease is all about. Moreover, increasing in age is considered as inversely associated to the knowledge of the DM in patients. Many young adults including men as well as females in the pastoral community possibly considered as the free therapeutic outreach regime as a workout for the old and poor, hence they remained away (Ndibuagu, Onyia, U, & Chime 2016, 1-7)

Information related to self-care such as diabetic food, diabetic diet, diabetic medications, and effect of sugar-free food on glucose levels was lacking in the majority of the population. Level of education, attendance in educational seminars, household wealth and being a government employee were some of the factors associated with the level of self-care knowledge (Jasper et al. 2014, 39). Knowledge score was associated with the duration of the disease; patients with longer disease duration had more knowledge than others. Similarly, knowledge of self-care is more in chronic disease patients than newly diagnosed patients. Level of knowledge was affected by several factors such as socio-economic status and attitude towards their disease (Jackson, Adibe, Matthew, & Chinwe 2014, 404).

7.2 Self-care adopted by patients of Diabetes Mellitus Type 2 in Nigeria

Adibe and colleagues (2011) reported that a few people with diabetes exercise or have SMBG. Especially in developing countries, the ability to exercise is very poor. In addition, these aspects of self-care (physical activity, SMBG) are often not emphasized in areas such as diet and general medication. Therefore, health care providers should often emphasize regular physical activity, their impact on blood sugar (and therefore anti-diabetes drugs) and the need to implement conventional SMBG (Adibe, Aguwa, & Ukwue, 2011)

Rendering to the findings of another study, doctors are the center of care for most patients, so whatever they say or do is considered the best and irrevocable. This can explain why the knowledge problem is close to the doctor's opinion or decision that only the doctor should formulate a plan for how the diabetic patient can achieve the goal; there should be a consensus between the diabetic patient and the doctor. He/she cannot change the specific

lifestyle and bear his/her Drugs; no one should check blood sugar and blood pressure in diabetic patients, except for qualified doctors and other medical staff in the hospital (Jackson, Adibe, Matthew, & Chinwe 2014, 404).

7.3 Self-care Support system for the patients of insulin-independent Diabetes Mellitus in Nigeria

Patients with strong self-care societal support system could prevent the occurrence of non-optimum functional complications. This helps them to follow self-care and self-management practices to improve their physical, social and mental condition and quality of life. Increasing the level of the self-care as well as self-confidence positively affect the physical, psychological, as well as social conditions; consequently, it leads to an upsurge in the activity along with improvement of the life quality overall. As generally believed, social support has proven to have a great impact on human health. Hence the need for even more social support for diabetes patients is justified. Influence of the societal/family support on diabetic rehabilitation is considered positive. Moreover, the findings specified that the improvement of medication adherence in patients with the DM was associated with societal support. It indicates that patients with Diabetes Mellitus Type 2 may need to broaden their minds by attaining help from friends, relatives as well as other organizations (Affusim & Francis 2018, 71-80).

The support system and social support provided by family and friends cannot be underestimated in fighting diabetes. Lack of such system will weaken the spirit of fighting and overcoming the disease. This implies that the availability of a support system by the family members, especially the spouse can provide health care to patients with diabetes. This means the DM patients must be willing to accept help as well as support from the family members, associates, and other organizations. Such support system provides a major component in achieving a supportive behavior pattern in which such patient can embrace effective medication adherence; this can be in the form of for instance prompting patients for taking medicine on time to help them embrace a healthy diabetic diet, etc. (Oputa & Chinenye, 2015).

Additionally, the social support network provided by the family members leads to patients to perceive the received social support from outsiders as a means to make them feel that they are recognized as well as cared by the other individuals. Moreover, their quality of life

might be improved; as a result, they will effectively embrace positive behaviour to their existing chronic diseases. It is evident from the result of the study and other previous researches that the influence of the social household and everyday support on diabetic therapy lead to a significant positive result. In the management procedure, family might perform a significant part, which may want them for establishing a compassionate atmosphere in addition adjusting the sympathetic attitude in refining the patient's devotion to the medication, for instance reminding the patients for taking medication on the time as well as supervising the healthy diet, etc. (Tabasi, Madarshahian, Nikoo, Hassanabadi, & Mahmoudirad 2014, 113)

Low adherence to medication was related to age, gender, and affordability of medication. Health education and counselling had improved the adherence rate by 86.8 percent (Awodele & Osulale 2015, 513-522). Non-adherence to medication was also associated with negative beliefs that medicine will cause more harm than good and poison their body (Olorunfemi & Ojewole 2019, 197-202). 58.2 percent of patients with normal levels of blood glucose had strong social support, but no significant relation was found between glucose levels and social support. Family support can be taken as an indicator of better personal behaviour toward self-care. Financial support from family also affects the maintenance of glucose levels. Patients with good social and financial aid perform better than others. (Adisa, Olajide, & Fakeye 2017, 64-77)

7.4 Self-management practices for Type 2 Diabetes Mellitus patients in Nigeria

Findings of the study advocate that in the outpatient tertiary care facility in the Nigeria, patients with the diabetes type 2 use an oral hypoglycemic combination of therapy, mainly metformin. Although current prescription strategies achieve glycemic balance in about one-third of patients, most do not meet the suggested glycemic goals because of bad adherence to prescription drug treatment regimens and insufficient knowledge as well as the practice of the effective self-management (Adisa & Fakeye 2013, 156-165)

According to study knowledge of registered nurses to the diabetes mellitus estimated was not as much adequate; areas of the knowledge deficits comprise diet as well as signs of the acute problems of diabetes in addition to proper feet care (Lilly-West, Mildred, & Clement, 2018). Although some nurses have been trained by non-governmental organizations

(NGOs) and doctors to train each patient temporarily, that is, diabetes clinics are often overburdened, and about 5-10 doctors visit 100 to 200 patients in a short period. In addition, full-time medical staff in such a patient with a dietitian, physiotherapist or certified diabetes educator is often a luxury in Nigeria. Since most Nigerians provide personal income for medical expenses, and the coverage of medical insurance is not easy to achieve or unavailable. By using traditional and complementary alternative drug options, patients often find that care and management of diabetes are common (Polit & Beck 2012, 153-156).

In addition, insufficient funding in the health sector has been the root sources of Nigerian mortality as well as morbidity. The results of the Nigerian Health Financing System Review study show that health care spending is high across the country, that governments at all levels have low health budgets, and that health insurance organizations are poor. Insufficient funding in the public health sector has increased the cash outlays of citizens. In addition, the Nigerian government lacks the political will as well as commitment to backing of non-communicable ailments. Lack of the government support has hampered the coordination of the country's diabetes network because of the high administrative costs, has also made most people with diabetes economically exhausted by disease (Agofure, Oyewole, Igumbor, & Nwose, 2010).

8 Discussion

Type 2 diabetes or the non-insulin reliant diabetes mellitus advances due to insulin resistance of target organs such as muscles and adipose tissues. Diabetes mellitus type 2 is intensified mostly by environmental factors, lifestyle, obesity, and unhealthy food consumption (Kahn et al. 2015, 1068-1083). According to the literature, 20% of Type 2 diabetics have at least one identifiable complication at the time they were diagnosed. Diabetes Mellitus is also known to be the leading cause of lower extremity amputations (diabetic neuropathy), kidney failure or diseases (diabetic nephropathy) and vision impairment or blindness (diabetic retinopathy), thus impacting the quality of life (Roglic 2016, 13).

Conferring to the Nigerian Diabetes Association (DAN), the incidence rate in the Nigeria ranges from 0.65% in the Mangu (north) rural areas, 6.8% in Port Harcourt to 11.0% in the Lagos, in addition with the high morbidity as well as mortality. Ministry of Health in

Nigeria has developed national policies and strategic action plans for non-communicable diseases and national nutrition guidelines on the deterrence, control and management of the non-communicable infections. According to estimates by the Nigerian Ministry, there are about 160 million people, of whom 4 million have diabetes. The low per capita earnings of the most Nigerians, the underdeveloped health care organization and the contemporary primary means of using health services are “paying for themselves” (Ogbera & Ekpebegh 2014, 905-911)

Theory of self-care established by Dorothea Orem in the 1950s, that theoretical framework is utilized in this research. It is based on Ideology that nursing interventions in the promotion of self-care are only required when patients cannot already achieve the optimal goal of attaining a healthy lifestyle and wellness for themselves. It has three basic principles including Theory of the nursing systems, along with Theory of self-care as well as Theory of the self-care insufficiency. Nurses intervene by playing the role of an advocate, educator, and supporter (Snowden, Donnell, & Duffy 2010, 198). But the Nigerian nurses have no specialty in diabetes care. However, they are responsible for carrying out subsidiary activities. Findings showed that there not much information about nurses and other health professionals on the caring knowledge for diabetes patients in Nigeria.

Accordingly, Orem defined the theory of self-care as an individual’s capability to manage or be careful to themselves with the aid of nursing guidelines. Moreover, patients should be able to accomplish self-care independently, also be capable of providing care and cater to the needs of their family (Renpenning & Taylor 2003, 328). Self-care and management in early detection of diabetes contribute to the patient’s long and healthy lifestyle. Access to systematized care provided by the experienced health-care providers perform a significant role in the management of patients with Type 2 Diabetes Mellitus by implementing basic intervention methods (Roglic 2016, 11). Health literacy, which is the particular characteristics as well as resources required to access and understand the use of information and facilities to make informed health judgements. Therefore, inadequate health knowledge contributes mainly to diabetes-related problems (Protheroe et al. 2017, 3). Diabetes Self-Management Education and Support (DSME /S) offers a groundwork that helps diabetic patients to pilot these choices and actions, resulting in improved health reactions. Family support, monetary support, medicinal history, and many other aspects that affect a person's capability to follow self-management practices (Powers, et al. 2015, 1372-1382)

The study was directed by Uchenna et al. (2009) to Identify patient awareness of diabetes management, control measures, patient understanding of self-care in the diabetes management as well as control, and determine health knowledge that patients receive from healthcare providers. Knowledge of subjects who manage/control diabetes to prevent complications from self-care measures shows that a large number of the subjects (74.0%) believe in the patronizing patented drug distributors, while the minority (4.2%) agree that it is necessary to embrace a healthy diet plan. This shows a lack of knowledge. Prevention of diabetic complications includes adherence to medications and dietary regimens, in addition, simple health as well as self-care management for preventing the injury, particularly to sustain skin integrity.

Orem theory also suggests that the capability and demand requirements of self-care should be balanced out. On the other hand, partial self-care insufficiency is the incapability of a person to meet the requirements of one or more activities, e.g., a patient who is recovering from surgery (Snowden, Donnell, & Duffy 2010, 328). Over 70% of patients in Nigeria can afford their hospital costs through their minimum wages or from their close relative. Although many patients in secondary health care services do not know the meaning of what cholesterol or A1C is or interpret what they measure it, while 80% of the patients do not understand what kind of medication they are using in some few centers. According to the study carry-out in Lagos state, it was observed that patients have a high reliance on a correlative/elective solution which shows that less than 50% of diabetes patients are using other complementary medications (Fasanmade & Dagogo 2015, 821-829).

The diabetes facilities are overburdened with a ratio of approximately 5 to 10 doctors to 100 to 200 patients. More so, there are no 24 hours facilities centers for diabetes patients. Lately, the quantity of endocrinologists had expanded altogether over the most recent three decades in contrast to 1980s when there were less than ten endocrinologists in Nigeria (Odili & Eke, 2010). The high charges of the medications, the fear of the adverse drug effects, in addition poor awareness about the illness are contributing factors to poor adherence (Fadare et al. 2015, 65-70).

Literature is evident in the study conducted by Yusuff, Obe, and Joseph (2008), which highlight the prescription of anti-diabetic drugs and patient's compliance along with diabetes self-management practices amongst patients with the type-2 diabetes in the tertiary setting in the Nigeria. The study identified hypertension as well as obesity as recurrent comorbidities amongst the patients and strongly related with the cerebrovascular

diseases in the type-2 diabetes. Frequent appraisal of the anti-diabetic medication prescription, particularly necessary in Nigeria, is needed to ensure adoptions that encourage the adherence to lessen the frequency of the side effects as well as advances glycaemic control.

The first question of the study was to find what type of self-management as well as self-care is in use by diabetes mellitus type 2 patients in Nigeria. The second question was in light of first question and background study, that what kind of self-management and self-care support system is available for diabetes mellitus type 2 patients in the Nigeria. To answer the mentioned questions, the available research papers were reviewed and analysed.

At first, I couldn't find enough material on the subject of the paper, so an alternative called scoping review was selected. Hence, the scoping review is considered as literature review that allows researchers to use a wide range of data. It can include quantitative, qualitative and grey materials. According to Arksey and O'Malley (2005), there is no need for the value evaluation in the desired scoping review. But Levac et al. (2010), additionally clarifying the scoping review, mentioning the need for a tool for evaluating the value of the scoping reviews, and noting that the lack of the quality valuation makes scoping review difficult to interpret and therefore difficult to use for further use, as policy development.

According to the research, researchers should conduct a critical assessment to examine the value of the research. The main part of examining the reliability and validity of a study is to see if the data used is suitable for describing the facts. In order to provide a quality assessment, a qualitative content analysis of the collected data was done. Research questions were answered mainly based on qualitative articles and then selected quantitative articles for comparison of similarities and differences. The criteria of Lincoln and Guba (1985) was used to assess the credibility of qualitative research: credibility, transferability, reliability, and identify-ability.

Credibility indicates the trustworthiness of the data. (Polit & Beck 2012, 153-156) There are a few ways to improve the credibility of this research. First, read the data thoroughly and carefully select the best-trusted data using inclusion as well as exclusion criteria. Second, the review of selected data should be conducted. According to a study by Lincoln and Guba (1985), researchers can apply strategies to improve transferability by providing readers with a sufficiently detailed explanation of the topic so that readers can also use and draw conclusions from other situations. (Lincoln & Guba, 1985)

Reliability refers to stability regardless of the time and conditions of the study. In this research, a scoping review was used, which allowed me to select data from different methods and combine them in the findings. Ensure identify ability through “Audit trail” and provide all the processes of the study in as much detail as possible.

In this section, information collected from the background for diabetes mellitus type 2 and self-care and self-management will be linked with an obtained result from the chosen articles and grey materials. The first question of the review was to find the type of the self-management and self-care in use by type 2 diabetes mellitus patients in Nigeria. Similarly, the first problem definition of the dissertation seeks to address this issue. To address the required objective, the material found was overviewed and analysed.

The finding for the first question “What type of self-management and self-care is in use by Type 2 Diabetes Mellitus patients in Nigeria?” suggest that greater number of patients are cognizant of the significance of consistent physical movement. However, they do not recognise that the blood glucose must be evaluated earlier as well as afterwards the movement, similarly nor will it not reduce necessity of the insulin or the additional diabetes drugs. Adibe and colleagues (2011) reported similar findings. Few people with diabetes exercise or have SMBG.

Self-care information is related to the level of the education, regular income, as well as duration of the diabetes. The relation between level of knowledge and negative attitude towards their disease was significant. In findings of another study, information of the diabetes mellitus established on the diabetes awareness test was meagre. Moreover, there were information deficits which are related to misapprehensions in diabetic’s diet as well as awareness of the blood glucose intensive care with the glycosylated haemoglobin test (Odili & Eke, 2010). Knowledge score was associated with the duration of the disease; patients with longer disease duration had more knowledge than others. Similarly, knowledge of self-care is added in patients with the chronic disease than newly diagnosed patients. Degree of the knowledge was affected by the several factors for instance socio-economic status and attitude towards their disease (Jackson et al. 2014, 404)

While answering the second question “that what kind of self-management as well as self-care support system is available for the type 2 diabetes mellitus patients in Nigeria?”, The researcher focused on the patients with the diabetes mellitus type 2 who use an oral hypoglycaemic combination of therapy, mainly glibenclamide and metformin. Although current prescription strategies achieve glycaemic balance in around one-third of the

patients, most do not meet the suggested glycemetic goals because of bad adherence to prescription drug treatment regimens and insufficient knowledge along with the practice of the effective self-management (Yusuff et al. 2008, 876-883).

According to study knowledge of registered nurses to the diabetes mellitus estimated was not as much adequate; areas of the knowledge deficits comprise diet as well as signs of the acute problems of diabetes in addition to proper feet care. Although some nurses have been trained by non-governmental organizations (NGOs) and doctors to train each patient temporarily, that is, diabetes clinics are often overburdened, and about 5-10 doctors visit 100 to 200 patients in a short period. Also, full-time medical staff in such a patient with a dietitian, physiotherapist or certified diabetes educator is often a luxury in Nigeria. Since most Nigerians provide personal income for medical expenses, and the coverage of medical insurance is not easy to achieve or unavailable. By using traditional and complementary alternative drug options, patients often find that care and management of diabetes are common (Polit & Beck 2012, 153-156).

It is evident from the result of this study and other preceding researches that the impact of the societal support on the diabetic therapy leads to a significant positive result. In the treatment procedure, family fellows might perform a significant part, which may need them for establishing a compassionate atmosphere as well as adjusting the sympathetic attitude in refining the patient's devotion to the medication, for instance reminding the patients for taking medication on the time as well as supervising the healthy diet, etc. (Tabasi et al., 2014).

8.1 Recommendations

To address the considerable knowledge gap in the self-care and management of the diabetic patients in Nigeria, the government should develop a systematic and comprehensive plan to educate communities. The social support system should be strengthened by arranging seminars, educating people in groups and using print and electronic media. Due to the low percentage of doctors in Nigeria, concerned institutions should train nurses to provide adequate counselling and guidance. The use of traditional medicines is ubiquitous because of affordability. The government should take appropriate measures to reduce the price of diabetes drugs to improve accessibility. For long-term relief, the government should introduce training programs or short-term courses to increase

the number of dietitians, physiotherapists, and podiatrists. This will reduce the ratio of patients to doctors and increase the availability of health care. Since diabetes self-care behaviour have a substantial effect on decreasing glycated haemoglobin level, health care workers, as well as educators, should evaluate and advise the patients about barriers to self-care behaviour. When following self-care activities, the patients are occasionally expected to devise things that are medically determined in many cases. Similarly, most patients are uncomfortable or unable to perform such multifaceted assessments. Also, these necessities or the modifications must be specific to every patient; in addition, should be changed based on the response of the patient. Also, in chronic diseases such as diabetes, the necessity for consistent follow-up could never be undervalued and is therefore considered a fundamental part of its long-term management.

8.2 Limitations

Since the scoping review is used to collect and analyse the research data, it is a possibility that some valuable research may have been missed. Although a large amount of literature has been collected, its scoping review is only used to identify more research areas, rather than specifically answering research questions. Only resources available at the university are free to use when collecting data. Another limitation involving most of the methods used in the study is that the results are mostly self-reported. Although utilization of the self-reported methods for instance medication observance might undervalue patient non-compliance. Several methods might be needed for detection of those who account compliance but might be essentially non-compliant.

8.3 Conclusion

Self-care and self-management practices are followed by a few percentages of the patients of type 2 diabetes in Nigeria. Due to the low ratio of the patients to doctors, doctors are unable to give appropriate time to consult and check the attention of patients with the type 2 diabetes. Owing to appropriate medications, social norms or lack of education, patients are using traditional treatments. There is on no account proper social support structure to encourage patients to follow self-care as well as self-management practices. The load of disease is increasing. A detailed study is needed to assess the severity of the problem. Government agencies should try to work with doctors, NGOs and other private

stakeholders to increase self-care as well as self-management practices for the people with the type 2 diabetes.

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Appendices:

Appendix 1: Search Strategy

Database	Search terms	Research papers found after the initial search	Researches used in final review after applying inclusion and exclusion criteria
CINAHL	Diabetes Mellitus Diabetes Mellitus Type 2	121	3
EBSCO Host	Diabetes Mellitus Type 2 Self-Management	18	1
EBSCO Host	Diabetes Mellitus Type 2 Self-care	21	1
EBSCO Host	Diabetes Mellitus Type 2 Complications	78	1
EBSCO Host	Diabetes Mellitus Risk Factors	105	4
EBSCO Host	Diabetes Mellitus Self-Management Nigerian Society	95	4
		438	13

Appendix 2: Most Relevant Literature

Study	Aim	Method	Results	Conclusions
Oputa , R. N., & Chinenye, S. (2015). Diabetes in Nigeria – a translational medicine approach. African Journal of Diabetes Medicine, 23(1)	To review studies and policies available on diabetes to recommend preventive strategies for Nigeria.	Translational medicine approach.	The prevalence of diabetes increases from 4.7-11.2 percent in men and 5.7 to 8.7 percent in females. BMI is the major indicator associated with diabetes. Antropometric measures are also important to measure the changes associated with diabetes	The local government should provide free primary healthcare. Secondary health services should be provided by the state government. The National Health Insurance Scheme should cover tertiary health services.
Lilly-West, B. R., Mildred, E. J., & Clement, I. (2018). Knowledge of Diabetic Foot Care among Nursing Practitioners in Rivers State, Nigeria. Texila International Journal of Nursing.	To assess the knowledge of diabetic foot care in nurses.	Cross-sectional study design. Information was collected with the help of interviews based on a questionnaire.	Nurses who had more than ten years of training had more knowledge of foot-care than nurses who had less than ten years of training.	The knowledge of diabetic foot care was significantly low in nurses.

<p>Jasper, U. S., Ogundunmade, B. G., Opara, M. C., Akinrolie, O., Pyiki, E. B., & Umar, A. (2014). Determinants of diabetes knowledge in a cohort of Nigerian diabetics. <i>Journal of Diabetes Metabolic Disorders</i>, 39.</p>	<p>To assess the knowledge of diabetes and the effect of social and demographic factors in diabetics.</p>	<p>Cross-sectional study design. Information was collected with the help of a questionnaire.</p>	<p>Most of the participants lack knowledge of diabetic diet and tests for diabetes. Knowledge gap was associated with household wealth, government jobs, level of education and age.</p>	<p>Knowledge of diabetes was poor and associated factors are employment, age, satisfaction, education and wealth.</p>
<p>Awodele, O., & Osuolale, J. A. (2015). Medication adherence in type 2 diabetes patients: study of patients in Alimosho General Hospital, Igando, Lagos, Nigeria. <i>African Health Science</i>, 513-522.</p>	<p>To assess medication adherence on the prognosis of diabetes type 2.</p>	<p>Descriptive and prospective. Descriptive method was used to assess the medication adherence prevalence and prospective method was used to assess</p>	<p>The proportion of females/males ratio is 69:31. Fifty one percent couldn't afford their medication. Education and counseling are associated with adherence to medication.</p>	<p>Non-adherence leads to increased morbidity and mortality ratio. The marked reduction in non-adherence practices was observed after educational interventions.</p>

		the effect of educational interventions on levels of glucose control.		
Affusim, C., & Francis, E. (2018). The Influence of Family/Social Support on Adherence to Diabetic Therapy. International Journal Of Advances In Scientific Research And Engineering, 4(5), 71-80.	To find out the influence of social support on adherence to ant-diabetic medicines.	Descriptive and cross-sectional study design. The Multidimensional Scale of Perceived Social Support (MDSPSS) was used to assess the level of social support and Morisky Medication Adherence Scale-8 (MMAS) was used to assess the level of adherence to medication.	70.9% respondents had low, 19.6% had moderate and 9.5% had high adherence to anti-diabetic medication. There was a significant relationship between social support and adherence to medication but no relation between social support and blood glucose levels.	Involvement of family members in self-care practices will significantly improve the provision of healthcare services.

<p>Adisa, R., Olajide, O. O., & Fakeye, T. O. (2017). Social Support, Treatment Adherence and Outcome among Hypertensive and Type 2 Diabetes Patients in Ambulatory Care Settings in southwestern Nigeria. Ghana Med J, 64-77.</p>	<p>To analyze the available sources of social support among patients of diabetes mellitus type 2 and hypertension.</p>	<p>Cross-sectional study design. Data were collected by questionnaire.</p>	<p>Social support from family was available but there was no government or private institutional social support, especially financial support, available. Glucose levels of patients with family and financial supports were much better than others.</p>	<p>An organized social and government support are required to ensure better outcome. Affordability is associated with adherence to medication and better outcomes.</p>
<p>Olorunfemi, O., & Ojewole, F. (2019). Medication belief as correlate of medication adherence among patients with diabetes in Edo State, Nigeria. Nurs Open, 197-202.</p>	<p>To assess the impact of medication beliefs on medication adherence.</p>	<p>Correlational research design. Information was collected by a BMQ, belief about medicine questionnaire and Morisky medication adherence scale.</p>	<p>Participants had negative beliefs about medication that it will cause more harm than good.</p>	<p>Medication beliefs were significantly related to medication adherence.</p>

<p>Tabasi, H. K., Madarshahian, F., Nikoo, M. K., Hassanabadi, M., & Mahmoudirad, G. (2014). Impact of family support improvement behaviors on anti diabetic medication adherence and cognition in type 2 diabetic patients. Journal of Diabetes & Metabolic Disorders.</p>	<p>To determine the impact of family support on adherence to anti-diabetic medications in patients of Type 2 Diabetes Mellitus.</p>	<p>Randomized control trials. Data on demographics were collected with the help of a drug administration part of Diabetes Social Support Questionnaire - family version (DSSQ). Morisky Medication Adherence Scale (MMAS) was used to measure adherence to medicines, number connection test was applied and HbA1c was measured</p>	<p>A significant relation between DSSQ score and MMAS was noted in the intervention group but not in the control group.</p>	<p>Educating family members based on their needs may improve adherence to anti-diabetic therapy.</p>
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		<p>before and after the intervention.</p> <p>Intervention: Educate family members according to the needs in small groups.</p>		
<p>Ndibuagu, E. O., Arinze-Onyia, S. U., & Chime, O. H. (2016). Knowledge and Attitude on Diabetes Mellitus among Residents of A Rural Community in Enugu State, Southeast, Nigeria. International Research Journal of Medical Sciences, 1-7.</p>	<p>To assess the knowledge and attitude on diabetes among rural population.</p>	<p>Descriptive, cross-sectional study design. Information was collected by pre-tested questionnaire.</p>	<p>Only 50 percent of respondents knew that diabetes can be prevented and curable, 19 percent knew about risk factors and 18.2 percent knew about symptoms of diabetes.30 percent knew that diabetes can be prevented by nutritional modification and 19.9 percent knew that with regular exercise, diabetes can be prevented.</p>	<p>A huge knowledge gap was found. Government should work in rural areas to promote education so that patients modify their life willingly.</p>

<p>Adisa, R., & Fakeye, T. O. (2013). Effect of number and type of antidiabetes medications on adherence and glycemia of ambulatory type 2 diabetes patients in southwestern Nigeria. <i>Pharm Pract (Granada)</i>, 156-165.</p>	<p>To assess the impact of type and number of medicines on medication adherence in diabetes type 2 patients.</p>	<p>Cross-sectional study design. Information was collected by using a pre-tested questionnaire.</p>	<p>Two-third of patients were using more than four medicines and adherence was better in these patients than others who were using less than four medicines. Adherence to oral anti-diabetics alone was better than insulin plus oral medicine.</p>	<p>Prescription of more than four medicines was related to good glycemic control.</p>
<p>Jackson, I. L., Adibe, M. O., Matthew, O. J., & Chinwe, U. V. (2014). Knowledge of self-care among type 2 diabetes patients in two states of Nigeria.</p>	<p>To assess the knowledge of diabetes and factors affecting that knowledge.</p>	<p>Descriptive, cross-sectional study design. The diabetes self-care knowledge (DSCK-30) was used to collect information and also questions related to</p>	<p>Majority of the participants had better knowledge about self-care. Associated factors are education, monthly income and disease duration.</p>	<p>Self-care knowledge was associated with education, income and duration of diabetes. Negative attitude towards disease was associated with a knowledge deficit.</p>

Pharmacy Practice, 404.		demographics were also added.		
Adibe, M., Aguwa, C., & Ukwe, C. (2011). The Construct Validity of an Instrument for Measuring Type 2 Diabetes Self-Care Knowledge in Nigeria. Tropical Journal of Pharmaceutical .	To develop a method to measure the knowledge about the disease in diabetic patients.	Cross-sectional study design. 30 questions (DSCKQ-30) were formulated to conduct this study.	Correct percentage ranged from 16.7 to 86.7 percent with the average of 55.6 percent.	DSCKQ provided a quantitative measure of knowledge of self-care in diabetics.
Agofure, O., Oyewole, O., Igumbor, E., & Nwose, E. (2010). Diabetes care in delta state of Nigeria: An expository review. Open Access Text.	To assess the current status of diabetes	Semi-systematic review	Lack of awareness and knowledge gap were found. There is also a lack of organizational support to people with diabetes. Lack of trained personnel, screening programs and poor governments'	A multi-dimensional approach should be used to improve the awareness and IDF BRIDGES2, a peer education intervention is a best possible option. More diabetic clinics should be established to reduce the burden of disease.

			behavior towards diabetes control were also the indentifiable factors associated with diabetes care.	
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