HEALTH-RELATED QUALITY OF LIFE AMONG PEOPLE DIAGNOSED WITH DIABETES MELLITUS ATTENDING A TERTIARY HEALTH FACILITY, BENIN CITY, EDO STATE, NIGERIA

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IN PARTIAL FULFILLMENT OF THE COURSE RESEARCH PROJECT NSC 527 REQUIREMENT SCHOOL OF BASIC MEDICAL SCIENCES, UNIVERSITY OF BENIN, BENIN CITY

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DECLARATION

This is to declare that this research project titled Health-Related Quality of Life Among People Diagnosed with Diabetes Mellitus, Attending A Tertiary Health Facility, Benin City, was carried out by IBADIN NICOLET, and is solely the result of my work, except where acknowledged as being derived from other person(s) and/or resource(s).

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CERTIFICATION/APPROVAL PAGE

This is to certify that the project is done by Ibadin Nicolet with matriculation number BMS1605080 has been examined and approved for the award of BACHELOR OF NURSING SCIENCE (B. NSC).

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EXTERNAL EXAMINER

ABSTRACT

Nigeria has the highest number of diabetics in Sub-Saharan Africa. As a chronic illness, diabetes mellitus (DM) places serious constraints on the people living with diabetes mellitus. The short-term and long-term complications affecting the physical, psychological and social functioning of diabetics can impinge on their health-related quality of life (HRQOL). This aim of this study was to assess the quality of life among diabetic mellitus patients in the university of Benin Teaching Hospital Benin City, Edo State, Nigeria, using 200 diabetic patients from the ages of 30 for the study. A descriptive cross sectional research design was utilized. Four objectives and three null hypotheses were formulated to guide the study. The study adapted the WHOQOL-BREF a 26-item standardized questionnaire with 15 additional questions soliciting demographic and clinical data was used for data collection. Data generated were processed and analyzed using the statistical package for social sciences (SPSS) version 20. Ethical approval was collected from the Health Research Ethics Committee UBTH. Findings revealed that both male and female respondents were of the same percentage (50%). There is no significant relationship between the socio demographic factors (age p = 0.041), level of income (p = 0.000) , educational qualification (p = 0.014) , co-morbidities p = 0.000), and patients quality of life. There is a significant difference in the quality of life between male and female respondents with diabetes mellitus (p =0.011). There is no significant difference between the predicators of quality of life of patients with diabetes mellitus. Overall quality of life was fair among respondents, social relationships (p= 0.104), access to health services (p= 0.001), level of income (p= 0.022).

Keywords: quality of life, diabetes, health-related quality of life, predicators, perceived interventions

DEDICATION

This research project work is dedicated to God Almighty for his grace and protection through the period of this research.

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CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Diabetes mellitus(DM)is a disease of global public health importance associated with high morbidity and mortality (Nnachi et al., 2023). According to International Diabetes Federation report of 2015, about 415million people have DM globally with the figure projected to have increased to 642million by 2040 or maybe even doubled by the year 2040 (Nwatu et al., 2019). The greatest increase will be in developing countries (69%) compared with developed countries (20%), withn non-communicable disease (NCDs) accounting for up to 80% of deaths among developing countries. In Botswana, the prevalence of DM among adults (20–79years) is approximately 52 per 1000 people out of which 31.6 per 1000 remain undiagnosed. Health-related quality of life (HRQOL) refers to the physical, psychological and social aspects of health that are influenced by person's experience on beliefs, expectations and perceptions (Nwatu et al., 2019). Understanding these domains by health care workers has an advantage in terms of incorporating chronic disease management strategies into routine care, leading to a reduction of both morbidity and mortality, including patients in developing countries (Afolalu et al., 2022). The psychosocial burden of living with diabetes mellitus is considerable as it affects self-care behaviors, leading to long term poor glycemic control, increased risk of long-term complications and poor quality of life (Nwatu et al., 2019). Understanding the measurements of HRQOL as well as the factors associated with poor quality of life has a benefit in terms of improving the physical and psychosocial burden associated with DM, ultimately reducing associated costs, morbidity and mortality (Nwatu et al., 2019). Published studies have found that DM patients without complications have higher overall utility values than those with complications. Currently, most of the published literature on HRQOL of patients with DM is based on developed countries with little known among developing countries (Nnachi et al., 2023). Whilst it is well acknowledged that there is better access to health in developed countries compared to developing countries, there are more associated morbidities of DM in developing countries, which will have a considerable impact on their HRQOL (Nnachi et al., 2023). The findings may also be of interest to other African countries with increasing rates of NCDs including diabetes. Diabetes mellitus(DM) is one of the chronic diseases that affect both developed and developing countries (Nnachi et al., 2023). The International Diabetics Federation (IDF) reported that in 2015, the disease affected 415million people worldwide and will rise to 642million in 2040. An estimated 14.2million adults aged 20–79 suffer from diabetes in the Sub-saharan Africa. Ethiopia is one of the most populous countries in this region and has the highest number (1.3million) of people with diabetes. The prevalence of DM, which is one of the four major chronic diseases in the

country, is about 3.8% (Nnachi et al., 2023). The impact of diabetes on a patient can be measured by traditional methods, like biochemical, morbidity and mortality although attention has recently been given to measuring health-related quality of life (HRQOL). HRQOL is important to assess the impact of the disease from the patient's perspective (Afolalu et al., 2022). Hence, HRQOL can be defined as "the subjective assessment of the impact of disease and its treatment across the physical, psychological and social domains of functioning and well-being" (Afolalu et al., 2022). How diabetic patients feel about their blood glucose level and worry about the complications they might be developing or actually exist. Moreover, the never-ending care and lifestyle adjustments, like dietary change and exercise have an impact on patients' HRQOL (physical, emotional and social well-being) (Afolalu et al., 2022). Different studies have shown that the presence of diabetes has an impact on HRQOL and reduces the physical, psychological, environmental and social domains of health (Afolalu et al., 2022). People with diabetes experience significant impairment in their HRQOL compared to non-diabetes people. Healthprofessionalscanidentifythephysiologicalderangementanddegreeofdeteriorationsduetodiabetes. Nevertheless, an individual patient's health perceptions and well-being are not directly proportional to symptoms and functional limitations which in turn are not directly proportional to physiological and anatomic abnormalities. Therefore, the effects flowing from biological abnormalities to HRQOL are mediated and modified by psychological, social and cultural factors (Afolalu et al., 2022). However, studies in our country, including those in the current study area focus on the impact of diabetes in terms of morbidity and mortality alone. As far as we know, there has been no study on the psychosocial impact of diabetes in the study area. Therefore, this study aimed to determine the HRQOL of diabetic patients and to identify factors associated with it (Nnachi et al., 2023).

1.2 Statement of Problem

Non-communicable diseases are the leading cause of disability and death world-wide and type 2 diabetes mellitus is among the four most prominent of these chronic non communicable diseases (Moore, 2019). Diabetes mellitus serves as a trigger factor for cardiovascular disease which is the number one killer disease among non-communicable diseases. It has debilitating and serious end organ damages of important organs of the body including the renal system, central nervous system and the eye (Azimini, 2017). Illiteracy is prevalent in developing countries and patients' knowledge of diabetes mellitus and the associated risk factors may be inadequate. The ignorance fuels the devastating effects of diabetes mellitus (Umoh, 2016).

Current recommendations for ideal risk factors targets and specific therapy to improve glycemic control, do generate significant benefits. Nevertheless, this tends to focus on the disease rather than the patient (Gerich, 2016).

Consequently, diabetic management should go beyond achieving improved clinical characteristics to include how satisfied the patient is with the care; that is the social and psychological status of the patient in relation to care (Azinimi, 2017). This has an important bearing on whether the patient will continue to adhere to the treatment including modifying his lifestyle. Hence, the impact of diabetes mellitus on the patient, including its complications and treatment outcome that is his quality of life, affects adherence to drug therapy and lifestyle modification. This is a very important aspect of diabetes mellitus care particularly by primary care physicians, who see more than 70% of type 2 diabetes patients in most settings worldwide (Frenandez, 2017).

Diabetes can cause cardiovascular disease and cancer which can lead to death. Increasing QOL or living healthy can help to reduce these symptoms and give one a longer life.

1.3 Aims of the Study

General Aim

To determine the health-related quality of life of patients attending University of Benin teaching hospital in Benin city, Edo state.

However, the specific aims of this project includes

1. To assess quality of life among patients with diabetes mellitus attending university of Benin teaching hospital.

2. To ascertain the domains of quality of life mostly affected among the patients with diabetes mellitus attending university of Benin teaching hospital

3. To determine quality of life predictors among diabetes mellitus patients attending university of Benin teaching.

4. To determine the perceived interventions to improve quality of life among diabetes mellitus patients attending university of Benin teaching hospital

1.4 Research questions

1. What is the quality of life of diabetic patients attending UBTH
2. What domains of quality of life of diabetes patients attending UBTH are mostly affected
3. What are quality of life predictors for diabetic patients attending UBTH
4. What are the perceived interventions of diabetes patients attending UBTH to improve their quality of life

1.5 Research Hypotheses

1. H1: There is no significant relationship between the socio-demographic factors and the patients quality of life
2. H2: There is a significant difference between male and female quality of life in UBTH
3. H3: There is no significant difference in the predictors to quality of life between the male and female diabetic patients in UBTH

1.6 Scope of the Study

The scope of this study covers patients diabetes mellitus out-patients and in-patients in ward (A1, A3 and surgical wards), using University of Benin teaching Hospital, Benin City, Edo state.

1.7 Significance of the Study

Findings from this study will reveal how diabetic patients cope with this disease, treatment and life. This study will reveal specifically the health-related quality of life of diabetic patients regarding their; psychological domain, environmental domain, physical domain and social domain. Findings from this study will provide health care professionals with important information that is needed to support decision making, taking both psychosocial and biomedical aspects to consideration in managing diabetic patients. For a nurse, a well-tailored management

and education that is based on needs that has been identified from this study will help the patient in leading a normal/healthy life and coping with problems that are associated with this ailment.

To those who make policies, findings from this study will help them address issues that concerns diabetes mellitus e.g., employment, insurance etc. This study will not only address patients subjective experience of how living with diabetes mellitus feels like, it will also develop/generate new and better ways of improving diabetes care.

1.8 Operational Definition of Terms

1. Diabetes Mellitus: A disease that is characterized by an increase in the level of glucose in the blood, can be diagnosed medically if fasting blood glucose if 7.0mmol/L (126mg/dl) or higher.
2. Health Related Quality of Life (HRQOL): The instrument used was the WHOQOL-BREF of the WHOQOL-100 scale. This questionnaire contains 14 questions in the socio-demographic sector and computed into four specific domains: physical, psychological, social and environmental. The mean score on items within each domain was used to calculate the domains score. Higher scores denoted a higher HRQOL, and lower scores indicated lower HRQOL.
3. Quality of Life (QOL): This is the perceived quality of that individual's daily life, which involves an assessment of their lack of knowledge or well-being.
4. Diabetic patients (DM) type 2: Patients are 30years and above.
5. Perceived Interventions: these are strategies employed by patients with diabetes mellitus to improve their quality of life

6. Domains of quality of life: dimensions of health that are important as an integration of sense of wellness
7. Predicators: these are variables that determine the quality of life of patients with diabetes mellitus patients

CHAPTER TWO

LITERATURE REVIEW

This chapter reviewed relevant literature on the concepts and models that have direct flow on the study. The literature reviewed is presented under the following major sub-headings: Conceptual review, theoretical review, empirical review and summary of reviewed literature.

2.1Conceptual Review on Diabetes Mellitus

The American Diabetes Association (ADA) defined Diabetes Mellitus as a group of metabolic diseases characterized by increased levels of glucose in the blood (hyperglycaemia), resulting from defects in insulin secretion, insulin action, or both (ADA, 2016). Similarly, (Walsh & Crumbie, 2017), defined diabetes mellitus as a group of disorders of carbohydrate, fat and protein metabolism characterized by chronic hyperglycaemia, degenerative vascular changes and neuropathy. Walsh & Crumbie further stated that the basic problem in diabetes is that either the Islets of Langerhans gradually diminish their insulin output or there is increased peripheral resistance to the action of insulin or there is a combination of decreased insulin secretion and increased insulin resistance. In normal circumstances, there is a certain amount of glucose that circulates in the blood. This glucose is derived from absorption of digested food from the gastrointestinal tract and the glucose formed by the liver from food substances. Normal plasma glucose level ranges from 3.3-5.5mmol/L.

Normal physiology

Insulin is secreted by beta cells in the islets of Langerhans in the pancreas. When a meal is eaten, insulin secretion increases, and moves glucose from circulation into muscle, liver and fat cells. Insulin stimulates storage of glucose in the liver and muscle; it also enhances storage of dietary fat in adipose tissue and accelerates the transportation of amino acids derived from dietary protein into cells. Insulin further inhibits the breakdown of stored glucose, protein and fat. In normal conditions insulin is released continuously into the blood stream. The activity of released insulin lowers blood glucose and facilitates a stable, normal glucose range of approximately 3.9 to 6.7mmol/l. During fasting periods (between meals and overnight) there is a decreased release of insulin and increased release of glucagon. Glucagon counters the effects of insulin because it stimulates the release and breakdown of glycogen from the liver and thereby increases blood glucose levels. The net effect of the balance between insulin and glucagon levels is to maintain a constant level of glucose in the blood (Smeltzer & Bare, 2017).

Pathophysiology

Smeltzer and Bare (2017) describe the pathophysiology of type I diabetes mellitus, which is marked by a deficiency in the production of insulin by the pancreatic beta cells. Fasting hyperglycaemia occurs as a result of unchecked glucose production by the liver. Glucose from food eaten cannot be stored but remains in the blood stream and contributes to postprandial (after-meal) hyperglycaemia. If the concentration of glucose in the blood is high, the kidneys may reabsorb all the filtered glucose. The glucose then appears in the urine, the term for which is glucosuria. When excess glucose is excreted in urine it is accompanied by excessive fluid and electrolyte loss. As a result of the excessive loss of fluid, the patient experiences increased urination (polyuria) and increased thirst (polydipsia) (Smeltzer & Bare, 2017).

Insulin deficiency also impairs the metabolism of proteins and fats, leading to loss of weight. Patients may experience an increased appetite (polyphagia) due to decreased storage of calories. Breakdown of stored glucose (glycogenesis) and of new glucose from amino acids (glyconeogenesis) occurs as the insulin deficiency progresses. These contribute further to hyperglycaemia (Smeltzer & Bare, 2017).

In type II diabetes there are two main problems related to insulin, namely insulin resistance and impaired insulin secretion (Smeltzer & Bare 2017:1025). Insulin resistance refers to decreased sensitivity of the tissues to insulin. Normally insulin binds to special receptors on cell surfaces. As a result of insulin binding to these receptors, a series of reactions involved in glucose metabolism occurs within the cell. The insulin becomes less effective in stimulating glucose uptake by tissues (Smeltzer & Bare, 2017).

Excessive secretion of insulin should take place in order to overcome insulin resistance and to prevent the build-up of glucose in the blood. If the beta cells fail to secrete excessive amounts of insulin, the glucose level rises and type II diabetes develops (Smeltzer & Bare, 2017)

Classification of Diabetes Mellitus

Diabetes has been classified in different ways. The different types differ in etiology, clinical course and treatment.

1. Type 1 Diabetes

This was formally called insulin dependent diabetes, or juvenile diabetes. It is caused by the destruction of beta cells in the Islets of Langerhans by an autoimmune response associated with environmental and genetic factors. The onset is usually very rapid, and affects people less than 30 years of age.

2. Type 2 diabetes

Type 2 diabetes, previously called non-insulin dependent diabetes or maturity onset diabetes covers various types of disorders. The problem here is either that the Islets of Langerhans gradually diminish in their insulin secretion or there is increased resistance to action of insulin or both. The onset is slow and patient live with it for some years before diagnosis. Obesity and lack of exercise are the commonest causes of insulin resistance and therefore type 2 diabetes. The most common age of onset is 50 to 70 years. There is a strong genetic influence, and as a result certain families and ethnic groups are much more likely to have type 2 diabetes (Frenandez, 2017).

Apart from Types 1 and 2 diabetes usually referred to as primary diabetes, secondary diabetes do exist. Secondary diabetes is due to a range of conditions such as diseases of the pancreas or disorders such as Cushing's syndrome. It may occur as side effect of medications such as steroid therapy, diuretics or it may be pregnancy induced which is called gestational diabetes. Whatever the cause is, the result is deficiency of insulin or inadequate insulin function. This leads to inadequate transfer of glucose into the cells; the utilization of glucose for energy and cellular products and its conversion to glycogen and fat and storage as such are depressed. Glucose accumulates in the blood causing hyperglycaemia (Frenandez, 2017).

Epidemiology

Diabetes mellitus has gradually become a public health issue with increasing incidence as well as heavy economic burden on the individual and the society in general. International Diabetes Federation (IDF, 2016) confirms that diabetes is increasing and increasing rapidly in every part of the world. It is estimated that 3.8 million men and women will die from diabetes in 2007, more than 6% of total world mortality. Diabetes is the third leading cause of death from disease, because of the high rate of cardiovascular disease among people with diabetes. Hospitalization rate for diabetics are 2.4 times greater for adults and 5.3 times greater for children than for the general population (Smeltzer et al, 2018). It has been observed that there is recent epidemic of diabetes in the world today in which over 180 million people worldwide are suffering from diabetes mellitus, attributable to environmental factors (Wokoma et al., 2017). The World Health Organization statistics indicates that Nigeria has the highest number of diabetics in Sub-Saharan Africa (Chinenye & Ogbera, 2017). The International Diabetes Atlas, 6th Edition (2014) indicates that Nigeria has 3.747million diabetics, with a prevalence of 5.3%. A study carried out by (Chinenye et al., 2017), in Rivers State found out that 10,518 have overt diabetes. These figures are most likely to be on the increase due to increase in population.

Clinical Manifestations of Diabetes Mellitus

The classical manifestations of all types of diabetes are the "three Ps" – polyuria, polydipsia and polyphagia. Polyuria and polydipsia occur as a result of the excessive loss of fluid due to osmotic diuresis while polyphagia is due to catabolic state induced by insulin deficiency and the breakdown of protein and fats (Wokoma et al., 2017).

Concept of Quality of Life (Qol)

The issue of QOL has continued to appear in literature, until 1976 that the concept entered as a key word in the index medicus. Since then, a good number of studies have been carried out and published on QOL. That notwithstanding, there is still a lack of consensus among researchers about the definition of the concept. Quality of life has a wide range of context, including the fields of international development, healthcare, and politics (Wikipedia, 2017).

As a result of its wide range of contexts, people from different disciplines define it from their own perspective as it is a broad concept that incorporates all aspects of life. Different studies have shown that the presence of diabetes has an impact on HRQOL and reduces the physical, psychological, environmental and social domains of health. People with diabetes experience significant impairment in their HRQOL.

From the literature, it has not been very easy to really define the term quality of life. The researcher is of the view that like "pain", the patient or individual is in the best position to say what life is for him/her. Health professionals may think that from biometric assessment and close observation, they are in the best position to define the patient's condition and/or quality of life. (Singh & Bradley, 2017) stressed the highly subjective characteristics of QOL by defining it as "what the patient says it is". What defines QOL varies from person to person. This therefore means how well or bad a person perceives his/her life to be. It is therefore necessary to measure the QOL so as to capture the individual's subjective evaluation of their QOL and not what others imagine it to be. Thus, this multidimensional construct, encompasses aspects of psychological, social and physical well-being and should reflect the patient's subjective evaluation of well-being rather than the healthcare professional's view (Singh & Bradley, 2017).

Quality of one's life refers to the broadest range of human experience including, personal finances, jobs, housing, personal relationships, political, and cultural climate, traffic, environmental considerations etc. while HRQOL is primarily concerned with how QOL may be affected by health and disease (Polonsky, 2017). The assessment of quality of life will reveal how the disease intrudes into the quality of life of the individuals.

The discussion and use of QOL as a measurable outcome in health has increased in recent decades as healthcare has shifted from a disease-focused biomedical model to a more holistic, well-being focused biopsychosocial model. QOL has also become more important with improvements in medical treatments and disease management leading to longer lives of people in general and particularly those living with chronic diseases. Examples of QOL assessments are the WHOQOL-BREF and WHOQOL-100.

Farquhar (2016), developed taxonomy of quality of life definitions based on literature review. Definitions of quality of life were classified in terms of origin: that is whether they are 'expert' (professionals') definition, i.e. those presented in the published academic literature (published conferences, abstracts, journal papers, and books), or whether they are lay definitions. Farquhar identified four major types of definitions within the 'expert' literature and they are (1) global or general definitions (2) component definitions (3) focused definitions, and (4) combination definitions.

Global definitions - this definition is the most common type of definition of the concept of quality of life. It is more encompassing but they say much about the components of quality of life or how the concept can be operationalized. They incorporate ideas such as satisfaction/dissatisfaction and happiness/unhappiness. Often, it is over generalized such that it does not allow enough specificity of the major component to use it practically.

Component definitions – these are those definitions which break quality of life down into a series of component parts or dimensions or identify certain characteristics deemed essential to any evaluation of quality of life. These component definitions are found to be more useful in empirical work than the global definitions since the component definition is a little closer to operationalizing the concept. An example of this is the World Health Organization Quality of Life (WHOQOL) group (1995) definition as "an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns. This is a broad-ranging concept, affected in a complex way by a person's physical health, psychological state, and level of independence, social relationships, and relationship to salient features of their environment". The dimensions contribute to the global definitions. The component definition is subdivided into type (a) and (b). Type (a) is those that are not specific to the research topic. These definitions present quality of life in terms of four underlying dimensions two of which reflect the personal judgment of the individual. The objective dimensions are general and functional status and economic status. The dimensions that reflect personal judgment of the individual, or subjective valuations, are life satisfaction and related measures, and self-esteem and related measures.

Focused definitions – they refer to only a small number of the components of quality of life. The most common form of focused definition refers only to components relating to health/functioning ability. Focused definitions can be explicit or implicit. Explicit focused definitions are found in papers that use terms such as 'health-related quality of life' or a micro-economic definition of quality of life itself. Implicit focused definitions occur where authors use the term 'quality of life' but define it in terms of one or two components of the whole concept i.e. they focus definition on one or a small number of the component, but do not make it explicit.

They are usually limited to health and functional status (Farquhar, 2016). Combination definitions – according to Farquhar, these are definitions of quality of life which do not neatly fit into the taxonomy described so far. It is a combination of global and component definitions.

Kiadaliri et al. (2018), defined QOL in the medical setting as "a concept encompassing a broad range of physical and psychological characteristics and limitations, which describe an individual's ability to function and to derive satisfaction from doing so". The importance of HRQOL as a public issue cannot be over emphasized. The World Health Organization had earlier on in 1949, defined health as "a state of complete physical, mental, and social well-being and not merely an absence of disease and infirmity." With improvement in medical management and technology, people are living longer than before and the emphasis is no longer on causes of death and morbidity but to examine the relationship of health to the quality of life of the individual. In a position paper in 2005, the World Health Organization stated the need to evaluate and improve the quality of life of people.

Diabetes and HRQOL

Diabetes mellitus is a very demanding chronic illness that leads individuals to make permanent life style changes in order to live. It is one of the most psychological demanding chronic diseases with psychosocial factors pertinent to nearly every aspect of the disease and its treatment. It is a medical condition that places serious constraints on people's activities (Issa & Baiyewu, 2017). Rubin, (2017), states that most studies report worse quality of life for people with diabetes compared to the general population, especially regarding physical functioning and well-being. The long-term complications of diabetes mellitus affect physical functioning, psychological state and social relationship.

Kiadaliri et al. (2018), in a study on quality of life in people with diabetes: a systemic review of studies in Iran stated that six studies mainly examined the effect of diabetes – related complications on HRQOL in patients with diabetes and reported negative effects of these complications on HRQOL. In addition, among remaining studies, 9 studies included these complications as a predictor of HRQOL and found that these complications were associated with lower HRQOL. They also reported that six studies which examined the effect of diabetes on HRQOL, compared HRQOL in people with and without diabetes and reported negative effects on both type I and type 2 diabetes on HRQOL.

T2DM is a complex and serious chronic disease that imposes a significant burden on patients and society in a term of morbidity and premature mortality Kiadaliri et al. (2018). In the long term, diabetic patients have to face many complications. HRQoL is an important outcome for persons with T2DM, and is used to evaluate the impact of the disease and its treatment on individuals and health care costs. The disease itself can have a negative impact on the quality of life.

QoL studies have been recognized as an important health outcome of all medical interventions and has become a core issue in diabetes care. They provide clinicians with important information to support clinical decision making, taking both biomedical and psychosocial into consideration.

Persons with T2DM report lower HRQoL than the general population Kiadaliri et al. (2018). The main cause of health-related quality of life (HRQoL) diminution are: Diabetes-related complications, Episodes and fear of hypoglycemia, Change in lifestyle. Several factors have been identified as predictors of HRQoL and diabetes-related quality of life in T2DM, including; Older age, Female sex, Depressive symptoms, Number of diabetic complications, Presence of comorbidities, and Insulin use Kiadaliri et al. (2018).

Diabetes and Physical Functioning

The physical health domain assesses the impact of the disease on the; Activities of daily living, Dependence on medical substances, A lack of energy and initiative, Restricted mobility, Capacity to work.

Polonsky (2017), outlined three major ways by which diabetes can affect physical functioning. The development of long-term complications such as vision loss, kidney damage, significant heart disease, erection problem and peripheral neuropathy which in turn result in chronic pain, amputation, and/or difficulty in walking or any of a host of autonomic neuropathy problems e.g. gastroparesis or loss of bladder function. These will lower the persons perceived HRQOL. When these problems arise, the patient will not be able to carry out activities of daily living.

Diabetes and Psychological Functioning

The diagnosis of diabetes usually compromises psychological functioning of the patient and family members. The patient may go into grief and emotional deprivation. Many diabetics feel overwhelmed by the continuous burden of the disease and the management (Rubin, 2017). Diabetes is one chronic disease where patient is involved in most aspect of the management including planning of diet, exercise, glycaemic control and administration of injection insulin to themselves all these affect emotion. Polonsky (2017), stated that the demand of diabetes can have a potent impact on mood both short- term and long -term. Many patients may become chronically frustrated, discouraged, and/or engaged with a disease that often does not seem to respond to their best efforts. They may also feel hopeless or despondent about the possibility of avoiding long- term complications. Signs/symptoms of diabetes such as fatigue, frequent

urination, etc, can exacerbate depressed mood. Frequent hypoglycaemic episodes can be exhausting, debilitating, discouraging and potentially quite frightening. The emotional and social burdens of diabetes mellitus may be compounded by the acute physical distress of hypoglycaemia or hyperglycaemia and by the chronic physical distress of diabetes-related compilations (Rubin, 2017).

Facing a disease that is often confusing to manage, patient may feel a pervading sense of helplessness that distracts significantly from the overall sense of well-being. To assess this dimension, evaluation might focus on patient perceived emotional distress due to diabetes related symptoms, self-care, relevant problematic situations and broader diabetes issues (Polonsky, 2017). Onyinuka and Enkator (2017), in their study on psycho-social issues among adolescents with diabetes mellitus: Experience from two Nigerian Hospitals, concluded that psychosocial challenges are common among adolescents with diabetes mellitus.

Diabetes and Social Functioning

The social domain assesses personal relationship, social support and sexual activity. Social relationships were one of the main area affected in people living with T2DM. People value their relationship with self and with others. When an individual is no longer able to physically, emotionally, or sexually relate to self and others, quality of life is often negatively affected. The effect of management of diabetes on patient cannot be overemphasized as it poses a lot of problem on the patient's social life. The requirement of meal planning may affect food choices at social events that may be different from family/friends preferences. With this, a patient with diabetes may not receive all cooperation from family and friends in social settings be it home or outside home (Sundaram, 2018).

The mere presence of diabetes can affect quantity and quality of a patient's relationship. As patient begins to institute changes in daily habits in order to manage diabetes most effectively, loved ones may begin to rebel choosing not to participate in any necessary changes, or actively sabotaging any and all self-care efforts (Polonsky, 2017). When long term complications begin to manifest, people living with diabetes experience social isolation due to impaired mobility and consequent physical and emotional ill health (Sundaram, 2018).

Dimensions of Health-Related Quality of Life

Polonsky (2017), noted that HRQOL is understood to be a multidimensional construct involving a variety of domains that can contribute independently to HRQOL. The dimensions refer to patient's sense of how the disease in question is compromising the well-being in three broad domains of physical, psychological and social function. In diabetes mellitus, subsets of these dimensions may include symptom distress, general physical functioning, mental/emotional state, social functioning, perceived burden of the treatment regimen, treatment satisfaction, and an overall sense of well-being (Snoek, 2019).

Measurement of Health-Related Quality of Life

Different instruments have been developed over the years for the measurement or assessment of health-related quality of life. These instruments are usually made to cover different or relevant domains of daily functioning including physical, mental and social lives. There are two types of instruments used to measure QOL – generic and disease – specific instruments. Generic instruments measure aspects of health that are of universally importance and allow comparisons of HRQOL among different groups of patients, while disease-specific e.g., diabetes-specific instruments measure specific impacts of diabetes on functioning and well-being (Andayani, et al.,

2018). Hart et al. (2018), opined that generic instruments are applicable to healthy people as well as persons with disease, and hence enable comparisons to be made between various groups of patients and general population samples. On the other hand, disease specific instruments focus on a population with a specific disease and are expected to be more sensitive to treatment effects and changes over time than generic instruments. Some authors have agreed that combining a generic QOL instrument along with disease specific questionnaire will ensure comparability of QOL outcome across different patient groups (Hart et al., 2018). The common generic Instruments Include: World Health Organization Quality of life (WHOQOL) scale, Sickness impact profile (SIP), Short form – 36 health survey. Diabetes specific QOL measures include: Problem areas in Diabetes (PAID) scale. The diabetes health Profile (DHP), The Diabetes Care Profile (DCP), The Diabetes 39, The Diabetes Symptoms checklist type 2(DSC-2), The Audit of Diabetes Dependent QOL (ADDQOL) and Questionnaire on street in patients with Diabetes Revised (QSD-R).

Huang et al., (2017), opined that generic and disease specific instruments are complementary to each other and may be the best strategy for measurement of HRQOL in diabetics; the researcher adopted the World Health Organization Quality of Life (WHOQOL) scale, which is a generic instrument for the present study because it can be used for assessment of overall satisfaction with quality of life, overall satisfaction with health, physical quality of life, psychological quality of life, social quality of life and environmental quality of life. The WHOQOL-BREF has excellent psychometric properties of reliability and validity. The instrument has been used by other researchers in Nigeria (Issa et al., 2016) to assess the HRQOL of diabetic patients. The researcher tried to get the disease specific instrument but was not successful.

The WHOQOL-100 is a 100 item, multi-dimensional tool that measures six broad domains of quality of life including: physical health; psychological health; level of independence; social relations; environment; spirituality/religion/personal feelings. The development was initiated in 1991. The main aim was to develop an international cross-culturally comparable quality of life assessment instrument. It assesses the individual's perceptions in the context of culture and value systems and their personal goals, standards and concerns (WHO, 2016). The WHOQOL-BREF was created in 1998 by the WHOQOL Group (World Health Organization Quality of life Group). It is a modification of the WHOQOL-100 item. The first part of the instrument has questions on how the patient self-rating of their quality of life and how satisfied they are with their health and the next part has questions that will be used to calculate the four domain scores. The WHOQOL-BREF has 4 domains and a socio-demographic sector.

2.2 Theoretical Review

Model of the study: the WHOQOL-BREF Model

The study instrument used to collect data from patients was a pretested structured questionnaire produced after extensive review of previous literature and discussion with experts. The questionnaire consisted of sociodemographic information, diabetes-related information, comorbidities, complications, investigations, and QoL assessment. The 26-item World Health Organization (WHO)-endorsed QoL questionnaire (brief version), known as WHOQOL-BREF, was adapted for the QoL part. The sociodemographic section of the questionnaire obtained information on patients' age, sex, education, employment, monthly family income and other factors (Skevington et al., 2018).

The WHOQOL-BREF to measure the QoL of diabetes mellitus patients used in this study is a validated short version of the WHOQOL-100 quality of life assessment instrument. It is a generic instrument that can be applied cross-culturally. The questionnaire assesses QoL in four domains, namely, the physical health, psychological, social relationships, and environment domains, and thus covers the whole range of QoL deficits. It has a simple response format and allows fine-grained discrimination of QoL across individuals. Considering the points to be noted during a cross-sectional assessment of QoL, we found that WHOQOL-BREF best fits our purpose (Skevington et al., 2018).

The WHOQOL-BREF, also known as 4-domain confirmatory factor model, is a model that originally has facets that are subsumed within one of six domains of WHOQOL-100. However, factor analysis of the WHOQOL – 100 indicated that Domain 1 could be merged with Domain 3(physical with independence), and Domain 2 with Domain 6 (psychological with spirituality, religion and personal beliefs) thereby creating four domains of quality of life (Skevington et al., 2018).

The four domains including the socio-demographic sector are as follows:

1. Socio-demographic sector: which includes; sex, age, marital status, ethnicity, religion, family type, highest educational level, duration of illness, employment status, if the patient lives alone, comorbidities, nutritional status and alcohol intake.

2. Physical domain – with the following sub-domains: pain, energy, sleep, mobility, activities, medication and work.

3. Psychological domain – with the following sub-domains: positive feelings, cognitions, self-esteem, body-image, negative-feelings, and spirituality.

4.Social relationship domain – with the following sub-domains: personal relations, social support and sex.

5.Environmental domain – with the following sub-domains: safety and security, home environment, finance, health/social care, information, leisure, physical environment and transport.

The variables that impinge on the diabetic patients HRQOL constitute the independent variables of interest, while the outcome measures of their HRQOL are the dependent variables as shown in Figure I. The Figure I represent the researcher's model of the study which is an application of the WHOQOL-BREF. The tested hypotheses were derived from the independent (disease, co-morbidities, etc.) variable effects on the dependent variables (HRQOL scores of diabetics and non-diabetics).

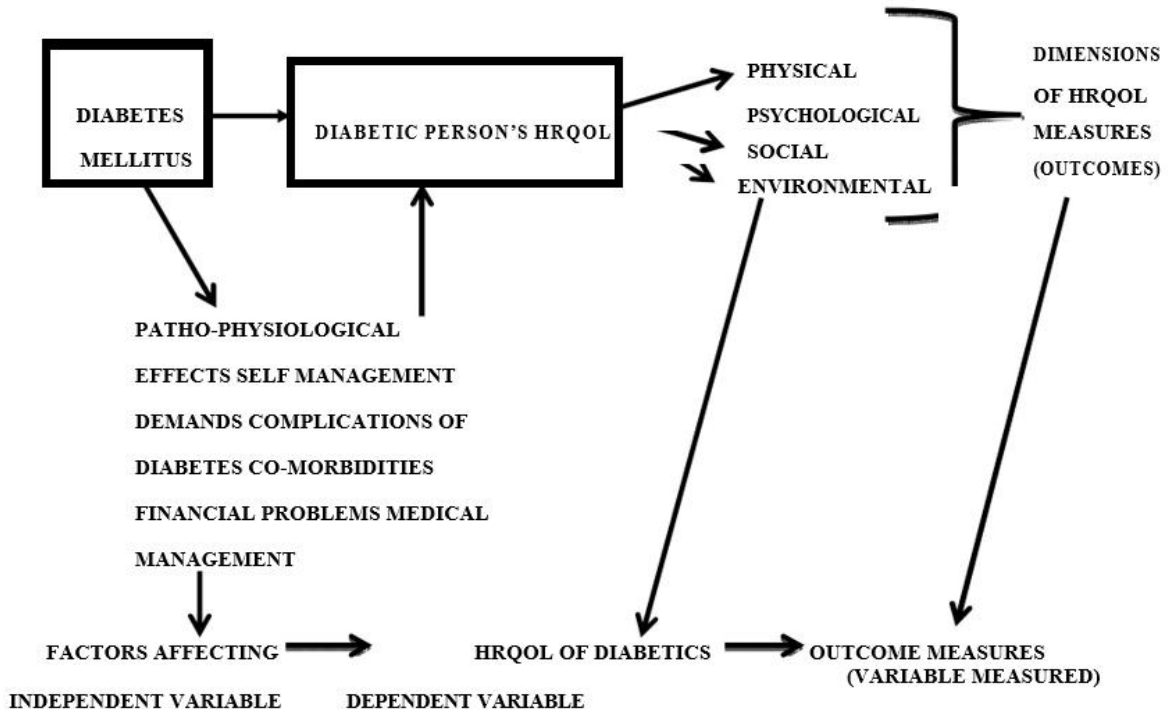


FIG 1 – MODEL OF THE STUDY: An application of WHOQL-BREF

2.3 Empirical Review

Quality of Life of Diabetic Patients

According to Nnachi et al. (2023), on Quality of Life of Type 2 Diabetic Patients attending a Tertiary Hospital in South-South Nigeria; 2 Diabetes mellitus affects the quality of life of individuals and their ability to function. It affects the physical, social and mental well-being of patients with immediate and delayed complications. This study determined the quality of life of type 2 diabetic patients attending a tertiary hospital in south-south Nigeria. This was a descriptive cross-sectional study conducted among type 2 diabetic patients attending the medical outpatient clinic of the University of Port Harcourt Teaching Hospital between September and November 2023. Purposive sampling technique was used to select a total of 347 participants for the study following ethical approval. WHOQOL-BREF questionnaire was used to measure the QoL of the participants. Data were analyzed using SPSS version 23.0. Descriptive data were presented in frequency distribution tables while summary statistics were done using mean and standard deviation for continuous variables and in proportions for categorical variables. Results revealed that majority of the type 2 diabetic patients were females (53.3%) and between the ages of 51-60 years. 27.2% of them had poor overall QoL with the score of <45% while 65.7% had fair overall QoL with a score of 45-65 %. 7.1% had good overall QoL with a score of ≥65%.

According to Nwatu et al. (2019) on Health related quality of life in nigerians with complicated diabetes mellitus – a study from Enugu, South East Nigeria study determined the health-related quality of life among adults with complicated diabetes mellitus seen at the foremost public tertiary hospital in South East Nigeria. Consecutive subjects with complicated diabetes, attending the dedicated out-patient clinic of the University of Nigeria Teaching Hospital were recruited

over twelve weeks. Informed consent, socio-demographic and clinical data were obtained. Quality of life was determined for each patient using the validated WHOQoL-BREF instrument. Data was analyzed using the Statistical Package for Social Sciences (version 23). One hundred and twenty patients (54.2% females) with 42.5% aged 18-45 years were recruited. The overall mean quality of life score was reduced for all patients and especially for the very young (aged 26-35 years). The lowest quality of life score was seen in Domain 1 (physical health). Females had significantly better quality of life scores than males in social relationships domain. Presence of co-morbidities had the worst impact on quality of life across all domains.

According to a study by Dinkes (2015), on Quality of Life among Patients with Type 2 Diabetic Mellitus in Out Patient Department, General Public Hospital, West Java Puspasari, A cross-sectional survey was conducted in a sample of 73 adults diabetes patients under the outpatient department of a general public hospital in West Java. The survey questionnaire included a demographic data and the WHO quality of life in brief version. Results of 73 patients with type 2 diabetic mellitus agreed to join this study, 76.7% were age over 45 years old, and 68% were female. The majority of the patients with type 2 diabetic mellitus were reported had a poor quality of life in 3 domains, physical domain (64.4%), psychological domain (53.4%), and environmental domain (52.1). The only social domain was reported good by 54.8% of patients with type 2 diabetic mellitus.

According to (Uduak & Etiobong, 2022) on Quality of life of patients with diabetes mellitus attending a tertiary hospital in Uyo, South–South Nigeria, This study aims at determining the QoL of patients with DM that presented at the general outpatient clinic (GOPC) of a tertiary hospital in South–South Nigeria. Patients, Materials and Methods: A cross-sectional study of 134

patients suffering from DM who attended either the GOPCs or diabetic clinics of the University of Uyo Teaching Hospital was done between January and March 2018. A semi-structured questionnaire was used to obtain information from the respondents on sociodemographic characteristics, duration of DM, and presence or absence of hypertension. The following assessments were done on the respondents: blood pressure, body mass index, and glycated hemoglobin levels. The assessment of the QoL of patients was done using WHOQoL-Bref instrument. Descriptive statistics of the data was done. Mean and standard deviation (SD) were computed from the continuous variables, while frequency and percentages of categorical variables were also determined. Odds ratio was employed to compare differences in proportions or groups. The level of statistical significance was set at $P < 0.05$. Data analysis was done using Epi Info version 3.5.4. Results: The respondents consisted of 82 females and 52 males (M: F = 1:1.6) with a mean age of 54.79 (±SD 10.53) years. The overall QoL was good (91%). Poor monthly income was associated with poor QoL.

According to a study by Abedini et al. (2020), on the quality of life of the patients with diabetes Type 2 using EQ-5D-5 L in Birjand. Health Quality Life Outcomes, a prospective interview-based study was conducted among diabetic outpatients of the endocrinology department in the Warangal region of Telangana between July 2019 and March 2020. The HRQoL of the patients was assessed using the quality-of-life instrument for Indian diabetes patients. Data were analyzed by IBM Statistical Package for Social Science (SPSS) Statistics 26 (IBM Inc., Chicago, IL, USA). In the results out of 402 diabetic patients more males 259 (64.4%), than females were observed 143 (35.6%). Their mean age was 52.39 ± (SD, 11.01). About 26.1% of the patients (n = 105) had good physical HRQoL, while 38.3% (n = 154) reported poor general health. The domains such as diet and treatment satisfaction were found to have 30.8% (n = 124), 33.1% (n =

133) good HRQoL. The HRQoL toward emotional/mental health was reported poorly, only 15.7% (n = 63) of them were found to have good HRQoL.

According to a study by Praizy et al. (2018), on Socio demographic correlates of quality of life of patients with diabetes mellitus, the method used is a cross sectional survey study, that was conducted among 264 patients suffering with type 2 diabetes mellitus. The quality of life was assessed using modified WHO-QOL BREF questionnaire under 4 domains viz. physical health, psychological, social relationship and environment. Our study reported 43.2% individuals had overall poor QOL score. Overall QOLS in different domains varied significantly with age, socioeconomic status, and type of family. Gender and religion were not found to be significantly related to QOL. Psychological domain, social domain came out to be least adversely affected in terms of poor QOLS. Overall QOLS was found adversely affected among middle age and elderly individuals of higher SES with co-morbid conditions. Age, and socioeconomic status came out to be the significant correlates of poor QOL.

As duration of diabetes increased by one year, patients' physical HRQOL increased by 0.034 factor, keeping effect of other variables constant [0.034, 95% CI (0.004 to 0.065)]. In general, age, depression, perceived social stigma, self-employed, having two complications, widowed, insulin and oral anti-diabetic medication affected HRQOL negatively and duration of diabetes in physical domain and university level of education in environmental domain affected HRQOL positively.

According Yassin et al. (2019), on Quality of life of type 2 diabetic patients in Erbil city, this study was conducted to assess the quality of life of diabetic patients in its different domains from the patient's perspective in Erbil city. In this cross-sectional study, 160 diabetic patients were randomly selected from Layla Qassim diabetic health center. The WHO (WHO QOL- BREF)

questionnaire was used as the main tool for data collection, which included26 questions on four domains of health-related quality of life (physical, psychological, social and environmental domains). Around 49% of the patients had checked their blood sugar regularly and had better scores in the social domain (P = 0.036). Diabetic patients of all age groups had low scores in all domains of quality of life, with the lowest mean score in the psychological domain. Females reported significantly higher scores in the environmental domain (P = 0.001). Patients with insufficient monthly family income had lower scores in the social (P = 0.001), psychological (P = 0.031) and environmental (P = 0.039) domains. There was no obvious statistical association between clinical characteristics of the patients and the quality of life domains. However, those with complications had lower scores in the psychological domain, with a higher proportion (P = 0.016) of complications in females. All domains of quality of life are affected by diabetes mellitus, with no clear, consistent statistical association between clinical characteristics of the patients and the quality of life of various domains, which emphasize the need for more multidisciplinary team action for more patient`s education and self-care

The Domains of Quality of Life Mostly Affected by Disease Condition

According to a study by Hiwot et al. (2019), Is HRQOL influenced by diabetic neuropathic pain among type II diabetes mellitus patients in Ethiopia? An institutional-based cross-sectional study design method was conducted on 417 patients through systematic random sampling technique from February 08 to April 08, 2020. WHO HRQOL 26 items were used to measure outcome variable. Face-to-face interview, document review and measurement were implemented to collect data. The data were analyzed by IBM SPSS Statistics version 25 and summarized by using tables. Simple linear regression analysis was done and forwarded to multivariable linear regression analysis at p-value < 0.25. Next multivariable linear regression analysis was done and

variables whose p-value less than 0.05 with unstandardized B-coefficient were declared significant predictor variables. The mean scores of physical domain, psychological domain, environmental domain and social domain were 48± 6.7 (47– 49), 52± 4.2 (50– 52.3), 48.9± 3.4 (48– 50.4) and 49± 4 (48– 50), respectively. As age increased by one year, patients' physical HRQOL decreased by 0.031 factor, keeping effect of other variables constant [− 0.031, 95% CI (− 0.050 to-0.013)].

According to Biruk et al. (2021), on Heath related quality of life and associated factors among diabetes patients in sub-Saharan countries: a systemic review and meta-analysis, A systematic review and meta-analysis estimates the pooled level of HRQoL and their associated factors among diabetic patients in sub-Saharan countries. Electronic databases predominantly PubMed were searched. Databases, such as Google and Google scholar, were searched for gray literature. A funnel plot and Egger's regression test were used to see publication bias. Heterogeneity of the studies was checked by Forest plot and I-squared statistic. Both inverse-variance fixed-effect and DerSimonian and Laird random-effects methods were applied to estimate the pooled level of HRQoL (for both WHO-QoL-BREF and SF-36) and the effect size of associated factors. From a total 776 retrieved studies, 16 studies were included for systematic review and meta-analysis. The pooled mean score of physical health, psychological, social relation and environmental health domain of WHO-QoL-BREF were 43.12, 47.40, 46.60 and 45.59 respectively. Age had a significant association (pooled β = − 0.47), (pooled β = − 0.24), (pooled β = − 0.32) and (pooled β = − 0.03) with physical health, psychological health, social relation and environmental health domains respectively. Being rural residence (pooled β = − 0.32) was inversely associated with environmental health domain of WHO-QoL-BREF. Increased fasting blood sugar had a significant association (pooled β = − 0.08, 95% CI – 0.11, − 0.05), (pooled β = − 0.07) and

(pooled β = − 0.004) with physical health, psychological health and environmental health domains respectively. Having Co-morbidity (pooled β = − 6.25) and diabetes related complication (pooled β = − 5.65) were contrarily related to physical health domain of WHO-QoL-BREF. The pooled mean of physical and environmental domains of HRQOL scores was the least compared to the psychological and social domains.

According to a study by Tariq (2022), on the health-related quality of life of diabetic patients, the study was conducted in a hospital in Hyderabad, Sindh, Pakistan. The study design used is a Descriptive Cross-sectional Study. This study was conducted at the Liaquat University Hospital, Hyderabad, from August 2019 to January 2020.A sample size of 168 was obtained and participants were selected by using Non-probability convenient sampling technique and all Patients between the ages 25 years and 40 years, known cases of type2 diabetes mellitus, belongs to either sex, gave consent of participation, visited the outpatient department of diabetes/ medical clinics at Liaquat University Hospital this information related to etiological factors of disease and its symptoms was collected using written questionnaire. Quality of life in type-II diabetics was evaluated through a World Health Organization D-39 Questionnaire. Data was analyzed using SPSS version. 23. Total 168 type -II diabetic patients were included in the study. Findings of the study were depicting the mean QoL score of type- II diabetics as 52.1. Score of various domains indicating the QoL in type-II diabetics was classified as 55% in physical, 47% in psychological, 55% in social and 50% in environmental domain of QoL. Overall domain wise scoring revealed an average QoL.

A study by Afolalu et al. (2022) on Determinants of quality of life of patients with uncomplicated diabetes mellitus attending endocrinology clinic, UNIOSUN Teaching Hospital, Osogbo, Osun State, A descriptive research survey conducted among one hundred and ten (110)

diabetes patients attending the UNIOSUN Teaching Hospital's endocrinology clinic in Osun State, Nigeria between June and December, 2020. Modified Kessler psychological distress scale and World Health Organization Quality of Life Instrument (WHOQOL-BREF) were used to collect data. Data were analyzed using descriptive statistics of frequencies, percentages and tables, while inferential statistics of chi-square was used to test the stated hypothesis at 0.05 level of significance. The results showed that more than three-fourth of the patients had negative social 83(75.5%) and psychological 79 (71.8%) experiences with diabetic care, though majority 68(61.8%) demonstrated good quality of life. The result also showed a positive relationship between psychological experience and quality of life (x2=9.766; df=1; p-value=0.001) as well as social experiences and quality of life (x2=4.576; df=1; p-value=0.032).

According to Ravi et al., (2016), on Quality of life among type 2 diabetes patients in Udupi taluk: a cross-sectional study, a study of QOL among diabetic patients registered in primary health centers of Udupi taluk, Karnataka. A cross-sectional study was done using, Short-Form (SF) 36 version2 to measure QOL among diabetic patients. Total numbers of participants included 138 subjects with diabetes. Participants were selected from the primary health centers located in the Udupi taluk. Data were analyzed using SPSS, version 15.00. The mean age of the study participants was 57.40 ± 11.10 years and the mean duration of diabetes was 9.29 ± 6.32 years. Physical activity (>30 minutes) per day was followed by 33.3% study participants. The overall SF-36 score was 43.12 ± 7.0; the domains of the SF-36 score were the following: physical functioning with 40.57 ± 6.34, role physical 44.20 ± 9.27, body pain 43.09 ± 7.91, general health 42.48 ± 7.33, vitality 45.13 ± 5.59, social functioning 42.91 ± 6.56, role emotional 38.50 ± 12.08, and mental health 44.68 ± 5.75. The two most affected domains were "physical functioning" and "role emotional" among the study participants. Overall, men had better QOL scores; this was

found to be statistically significant (P = 0.002). QOL were better among the educated group of participants than illiterate group of participants.

According to a study by Luciano et al. (2018), on Quality of life and time since diagnosis of Diabetes Mellitus among the elderly in Brazil, A cross-sectional quantitative study carried out in a Basic Health Unit with 196 elderly persons. For data collection, three instruments were used: one structured (sociodemographic and clinical variables) and the Whoqol-bref and Whoqol-old, with scores ranging from 0 to 100. Descriptive statistical analysis, Student's T-test and Pearson's correlation were performed. Of the 196 diabetic patients, the majority were male (54.6%) with a mean age of 67.5 (±6.5) years. The mean time since diagnosis of Diabetes Mellitus was 9.1 years. The domains of the Whoqol-bref with the highest scores, indicating better quality of life, were Social Relations and Psychological, while a worse quality of life was observed in Environment. The facets of the Whoqol-old with the best scores were: Intimacy and Past, Present and Future Activities, and the worst was Death and Dying. The domains associated with one another were Physical and Psychological, Physical and Social Relations, and Psychological and Environmental. The associated aspects were Past, Present and Future Activities and Social Participation. Elderly persons with more than ten years of Diabetes Mellitus had worse quality of life scores in Physical (p=0.001), Social relations (p=0.002), and in the Autonomy (p=0.0012), Social Participation (p=0.041) and Death and Dying (p=0.001) facets.

Quality of Life and its Predictors with Diabetes Mellitus

According to a study by Nuruljannah et al. (2016), on Predictors of quality of life among hospitalized geriatric patients with diabetes mellitus upon discharge, A total of 110 hospitalized geriatric patients aged 60 years and older were selected using convenience sampling method in a cross-sectional study. Socio demographic data and medical history were obtained from the

medical records. Questionnaires were used during the in-person semi structured interviews, which were conducted in the wards. Linear regression analyses were used to determine the predictors of each domain of quality of life. Multiple regression analysis showed that activities of daily living, depression, and appetite were the determinants of physical health domain of quality of life (R^2=0.633, F(3, 67)=38.462; P<0.001), whereas depression and instrumental activities of daily living contributed to 55.8% of the variability in psychological domain (R^2=0.558, F(2, 68)=42.953; P<0.001). Social support and cognitive status were the determinants of social relationship (R^2=0.539, F(2, 68)=39.763; P<0.001) and also for the environmental domain of the quality of life (R^2=0.496, F(2, 68)=33.403; P<0.001).

According to Saneh (2019), Demographic and clinical predictors of health-related quality of life among people with type 2 diabetes mellitus living in northern Thailand: A cross-sectional study, the aim of the present study was to determine the demographic and clinical predictors of health-related quality of life among people with type 2 diabetes mellitus (T2DM) in Northern Thailand. A cross-sectional study of people with T2DM at a large teaching hospital in Northern Thailand was conducted. The HRQOL was evaluated using the Thai version of Diabetes-39. Descriptive analysis was used to summarize the demographic and HRQOL scores. Multiple regression analysis was used to determine the predictors of overall HRQOL and the predictors of each D-39 dimension. A total of 502 people with T2DM were recruited. Forty-one were identified as having diabetic foot ulcers. The mean score for perception of overall HRQOL was 61.18 (SD 18.74). Scores in the D-39 questionnaire showed a poor HRQOL among people with T2DM. The predictors of demographic and clinical characteristics of people with T2DM were calculated for overall HRQOL and all six domains. These results demonstrate that people with T2DM have a poor HRQOL. The presence of diabetic foot ulcers and smoking status were identified as

significant predictors of low HRQOL in the domains relating to diabetes control, social burden and energy and mobility presence of obesity, receiving insulin injection or a combination of insulin and oral medication were predictors of poor HRQOL in the domain of other health problems and diabetes complications.

According to a study by Xiaosu et al. (2017), on The association between insulin therapy and depression in patients with type 2 diabetes mellitus, a meta-analysis was performed to evaluate the association of insulin therapy and depression. A systematic method search of PubMed, PsycINFO, Embase and the Cochrane Library from their inception to April 2017 was conducted in China. Epidemiological studies comparing the prevalence of depression between insulin users and non-insulin users were included. A random-effects model was used for meta-analysis. The adjusted and crude data were analyzed. Twenty-eight studies were included. Of these, 12 studies presented with adjusted ORs. Insulin therapy was significantly associated with increased risk of depression (OR=1.41, 95% CI 1.13 to 1.76, p=0.003). Twenty-four studies provided crude data. Insulin therapy was also associated with an odd for developing depression (OR=1.59, 95% CI 1.41 to 1.80, p<0.001). When comparing insulin therapy with oral antidiabetic drugs, significant association was observed for adjusted (OR=1.42, 95% CI 1.08 to 1.86, p=0.008) and crude (OR=1.61, 95% CI 1.35 to 1.93, p<0.001) data. Several patients with type 2 diabetes mellitus (T2DM) have depressive disorders. Whether insulin treatment was associated with increased risk of depression remains controversial.

According to a study by Mihyun-Jeong (2020), on Predictors of Health-Related Quality of Life in Korean Adults with Diabetes Mellitus, This was a cross-sectional study with a stratified multistage probability sampling design that collected data from 1228 participants aged 30–80 years diagnosed with DM. HRQoL was measured using the Euro Quality of Life Five Dimension

(EQ-5D) questionnaire. Analyses consisted of one-way analysis of variance, t-tests, chi-squared tests, and general linear regression analyses with complex sampling designs. The results demonstrated that low HRQoL was associated with older age (β = −0.002, 95% CI: −0.003 to −0.001), having elementary school education or less (β = −0.037, 95% CI: −0.061 to −0.014), being unmarried (β = −0.060, 95% CI: −0.078 to −0.040), poor subjective health status (β = −0.074, 95% CI: −0.094 to −0.055), perceived high stress (β = −0.047, 95% CI: −0.066 to −0.028), limited activity (β = −0.105, 95% CI: −0.131 to −0.079), being overweight (β = −0.021, 95% CI: −0.038 to −0.002), or obese (β = −0.016, 95% CI: −0.032 to −0.001), and three or more comorbidities (β = −0.044, 95% CI: −0.085 to −0.001). Comprehensive health care programs to manage these predictors should be provided to improve health-related quality of life of patients with DM.

According to a study by Zaleha et al. (2018), on Clinical and Socio-demographic Predictors of the Quality of Life among Patients with Type 2 Diabetes Mellitus on the East Coast of Peninsular Malaysia, This cross-sectional study involved 180 randomly sampled patients at a primary care clinic on the East Coast of Peninsular Malaysia. A self-administered questionnaire containing the Audit of Diabetes Dependent Quality of Life-18 (ADDQoL-18) was used. Most of the respondents (96.7%) were Malay, with a median (interquartile range, IQR) age of 54.0 (14.0) years old. The majority of them were females (60.0%), married (81.1%) and from low-income families (63.3%), who attained a secondary education or lower (75.6%). Only 49.4% of them were employed. The mean (standard deviation, SD) ADDQoL-18 average weighted impact score was -4.58 (2.21) and all 18 domains were negatively affected, particularly the living condition, family life and working life. The multiple linear regression analysis showed that the

age (adjusted B = 0.05,P= 0.004) and insulin use (adjusted B = -0.84,P= 0.011) were QoL predictors.

According to a study Melaku et al. (2022), on Incidence and predictor of diabetic foot ulcer and its association with change in fasting blood sugar among diabetes mellitus patients at referral hospitals in Northwest Ethiopia, 2021, A multicenter retrospective follow-up study was conducted at a referral hospital in Northwest Ethiopia. A total of 539 newly diagnosed DM patients who had follow-up from 2010 to 2020 were selected using a computer-generated simple random sampling technique. Data was entered using Epi-Data 4.6 and analyzed in R software version 4.1. A Cox proportional hazard with a linear mixed effect model was jointly modeled and 95% Cl was used to select significant variables. AIC and BIC were used for model comparison. A total of 539 diabetes patients were followed for a total of 28727.53 person-month observations. Overall, 65 (12.1%) patients developed diabetic foot ulcers with incidence rate of 2.26/1000-person month observation with a 95% CI of [1.77, 2.88]. Being rural (AHR = 2.30, 95%CI: [1.23, 4.29]), being a DM patient with Diabetic Neuropathy (AHR = 2.61, 95%CI: [1.12, 6.06]), and having peripheral arterial disease(PAD) (AHR = 2.96, 95%CI: [1.37, 6.40]) were significant predictors of DFU. The time-dependent lagged value of fasting blood sugar change was significantly associated to the incident of DFU ($\alpha = 1.85$, AHR = 6.35, 95%CI [2.40, 16.79]).

According to a study Shailendra et al. (2022), on Prevalence and Predictors of Metabolic Syndrome and It's Association with Vitamin D Deficiency in Patients with Newly Onset Type 2 Diabetes Mellitus: A Cross Sectional Study, this study was designed in order to know the prevalence and predictors of MS and it’s association with VDD from this area. Materials and Methods: A cross sectional study was conducted at Varanasi. Data was collected from newly

onset diabetic patients over a period of one year. Among 309 diabetic patients, 71.84%, 73.79%, 77.02% and 83.17% were found to have MS by different criteria. Central obesity was the highest predictor of MS. This is followed by raised triglyceride, low high density lipoprotein cholesterol and hypertension. VDD was found in 59.09% and 70.21% of male and female patients respectively. VDD was more prevalent in MS patients.

According to Priya et al. (2023), Quality of life among type 2 diabetes patients aged 30–64 years attending diabetes clinic in a tertiary care hospital in East Delhi, India A cross-sectional study was done in a tertiary care hospital in Delhi, India. Using interview-based method, the investigator collected information from 150 type 2 diabetes patients. The tool used was QOLID, i.e., Quality of Life Questionnaire for Indian Diabetes patients with scores ranging from 34 to 170. Data was analyzed using software SPSS 23.0 version, and both descriptive and inferential statistics were calculated. The mean QOL score in our study was 142 ± 12.2 with a median of 145 (IQR = 135–150.7). The most affected domains of QOL were general health, treatment satisfaction, and diet satisfaction. The factors which were significantly associated with QOL were age ($p = 0.002$), gender ($p = 0.004$), duration of diabetes ($p < 0.001$), current treatment of patient ($p < 0.01$), absence of complications ($p = 0.002$), co-morbidities (0.006), and regular exercise ($p = 0.01$). Patient's current on-going treatment and regular exercise were identified as determinants of QOL.

Respondents perceived Intervention to Improve Quality of Life

According to a study by Asiyeh et al. (2023), on Prediction of self-care behaviors among diabetic patients based on social cognitive theory, the study was conducted with the aim of predicting the factors of self-care behaviors based on social cognitive theory in diabetic patients referred to comprehensive health service centers in Fasa. This cross-sectional research comprised

106 type 2 diabetes patients who were referred to Fasa service providers to determine the optimal solution. Outcomes were assessed using an existing demographic questionnaire, the diabetic self-care questionnaire, and a unique questionnaire to assess social cognitive theory, the validity and reliability of which were estimated. SPSS21 software with a Chi license was used for data analysis, and Spearman correlations, independent t-tests, and one-way ANOVA were performed. The age range of patients was between 33 and 67 years. There was a significant relationship between gender, education, and type of treatment with self-care. According to the findings, the variables of self-efficacy (r = 0.200), self-efficacy of overcoming obstacles (r = 0.285), environmental factors (r = 0.334), observational learning ability (r = 0.148), situational perception (r = 0.297), emotional adaptation (r = 0.051), outcome assessment (r = 0.114) and outcome expectation (r = 0.082) had a positive and significant correlation with self-care behaviors. Also, the self-efficacy variable (Beta coefficient = 0.340) had the highest predictive value.

According to a study by Rosaliana et al. (2022), on the health-related quality of life of diabetic patients, chronic complication can cause a decrease in the quality of life of DM patients in Saudi Arabia. There are several factors that affect the quality of life of people with diabetes. Religiosity, self-care, and coping mechanisms together affect the quality of life. Religiosity is very important for patients to have as a foundation for maintaining quality of life. Self-care is a basic effort to control and prevent complications arising from DM. coping mechanisms are problem-solving efforts and defense mechanisms used to protect themselves from DM problems. This study aims to determine the effect of religiosity, self-care, and coping mechanisms on the quality of life of DM sufferers. This study uses a quantitative research design and a cross-sectional approach

involving 130 respondents, using a total sampling technique. Data was collected using various questionnaires, including a Centrality Religiosity Scale (CRS) questionnaire, Summary of Diabetes Self-Care Activity (SDSCA), Coping Orientation to Problem Experienced (COPE), and Diabetes Quality of Life (DQOL). Inclusion criteria were patients with type 2 diabetes mellitus with blood glucose levels 200 mg/dl and patients with type 2 diabetes who had diabetes > 1 year or more. Path Analysis is used to analyze data. The religiosity of patients with type 2 diabetes has a mean of 49.47, a mean of 42.59 for self-care, a mean of 85.29 for coping mechanisms, and a mean of 42.56 for quality of life. There is an effect of religiosity ($p = 0.000$), coping mechanisms ($p = 0.001$), and self-care ($p = 0.000$) on the quality of life.

According to Jansirani Natarajan (2020), on Diabetic quality of life from the Indian patients' perspectives, study explored the perception of diabetic HRQOL of south-Indian diabetic patients and to develop strategies to improve their HRQOL based on the findings. It was a cross-sectional descriptive quantitative study to describe the perception of HRQOL of south Indian diabetic patients in a tertiary care hospital in Chennai. Using simple random sampling method, data was collected from 352 diabetic patients during June to August 2017 based on the inclusion criteria. Data was collected with the help of Diabetes-39 questionnaire which is a valid and reliable tool to assess HRQOL. Findings of the study revealed that South Indian diabetic patients perceived a poor HRQOL. The mean and SD and the median of the five domains of D39 were as follows; energy and mobility domain as perceived by the diabetic patients were 72.25 ± 9.943, Md=73.63, diabetes control domain 71.05 ± 9.863, Md=71.40, anxiety and worry domain 71.87 ± 11.405, Md=71.40, social burden domain 68.74 ± 11.048, Md=67.21, and sexual functioning domain 63.80 ± 14.920, Md=59.50. And the mean and SD of the total HRQOL scores of the participants were 69.49 ± 9.382, Md=70.01. Female gender, increasing age, lower educational level, non-

vegetarian dietary behaviors, uncontrolled hypertension and blood glucose levels were associated with the perception of lower levels of HRQOL of diabetic patients.

According to a study by Abraham and Lakew (2017), on The effect of psychometric variables in predicting physical activity behavior among diabetes mellitus type-2 patients. A facility-based cross-sectional study was conducted in 2013 at JUSH, Southwest Ethiopia. A systematic random sampling technique was employed to select 322 diabetes patients. Data were collected using a structured questionnaire on interviewer-administered basis. A summary of descriptive statistics, and binary and multiple logistic regression analysis were computed to identify potential predictors of physical activity among diabetes mellitus patients. Among the 319, 70 (21%) engaged in the recommended physical activity (such as running, jogging, going to the gym, or brisk walking). Two hundred seventy-nine (87.5) of the respondents had adequate general knowledge of diabetes and 31.7% of the respondents had adequate general knowledge of physical activity. The likelihood of engaging in the recommended physical activity was associated with perceived barrier (odds ratio [OR]=0.58, 95% confidence interval, CI [0.56, 0.67]; p<0.000), perceived self-efficacy (OR=1.33, 95% CI [1.12, 1.57] p<0.001) and perceived benefit (OR=1.16 (95% CI [1.03, 1.29] p<0.000). This study illustrated that practicing the recommended physical activities among DMT-2 patients was insufficient. Perceived barrier, perceived benefit and perceived self-efficacy became potential predictors of physical activity of DMT-2 patients. None of the socio-demographic factors affect the physical activity behavior of these groups. Diabetes intervention messages should focus on building individual self-efficacy to overcome those barriers with a due emphasis to suggested concrete benefit of physical activity.

According to Maureen et al. (2017), on Community program improves quality of life the results of the factor analysis, the biggest influence on the general behavioural intentions of patients was exerted by efforts to increase cooperation with their family doctor (weight 0.912), efforts to increase cooperation with their nurse (weight 0.885), the statement that "I will work harder to follow the family doctor's recommendations on how to promote health" (weight 0.879), and the intention to recommend their family doctor (weight 0.859) or their primary health care institution (weight 0.836) to family and friends. The lowest influence on the general behavioural intentions of patients was exerted by the intention to choose the same health care institution (weight 0.757), the intention to choose the same family doctor (weight 0.734), and the advanced preparation of questions for their family doctor regarding health care (weight 0.699). The expression of behavioural intentions (weakly or strongly expressed intentions) of respondents with type 2 diabetes mellitus statistically significantly depended only on the gender of the respondents (rcr = 0.121, p = 0.006). The perceived emotional, functional, and social values positively and statistically reliably determined the behavioural intentions of patients (R^2 = 0.655). The largest influence on behavioural intentions was exerted by the perceived social value, while the perceived emotional value was the least influential. Regression coefficients indicate that perceived emotional value negatively impacts the satisfaction of patients with type 2 diabetes mellitus, while the biggest positive influence on satisfaction was exerted by the perceived social value (R^2 =0.687).

According to Mohammed et al. (2023), on Awareness of Diabetic Retinopathy Among Diabetic Patients of Chakwal Pakistan Volume 48-Issue 1, a cross-sectional descriptive study was carried out during 2021 among type-II diabetic patients who visited Munawar Memorial Hospital Chakwal in order to seek treatment for their visual problems. 114 diabetics were enrolled in

study through consecutive non-probability sampling. A pretested structured questionnaire was used to gather information about demographic profile, various health aspects of the patients associated with diabetes mellitus and source of information for diabetic retinopathy. Data was analyzed by using Microsoft Excel 2010 and SPSS version 25.0. The association of duration of disease with degree of awareness about diabetic retinopathy was statistically verified by chi-square test. The association of literacy with adequacy of knowledge about diabetic retinopathy was also verified by applying chi-square test. $P < 0.05$ was considered significant. Results: Of the total 114 diabetic patients assessed, 53.5% and 46.4% were females and males respectively. Mean age of the patients was 58.6 ± 22.4 years. About 50.9% of the patients were illiterate and 44% patients were diabetic for less than 5 years. Around 35.1% of the respondents were diagnosed with diabetes at 41-50 years of age and 68.4% were using glucometer for checking blood glucose level. About 40.1% were followed up on monthly basis at diabetic clinic. Perception about blood pressure and glucose control in addition to lifestyle modification in protection from diabetic retinopathy was determined to have statistically significant association with literacy ($P<0.05$). About 57% patients attributed their visual defect to diabetes. Of the 15% patients with diabetic retinopathy, only 9.6% used to have routine checkup. Most (53%) learnt about diabetic retinopathy from physicians. About 51% respondents were adequately aware of diabetic retinopathy.

CHAPTER THREE

RESEARCH METHODS

This chapter presents the following: research design, area of study, population of the study, sample, and sampling technique, instrument for data collection, instrument validation, and reliability of instrument, ethical consideration, and procedure for data collection and methods of data analysis.

3.1 Research Design

This study adopted a descriptive cross-sectional survey and it involves the description of the summary of characteristics from a given population (to observe, describe and document) and to show the need for change. The descriptive survey allows one to describe things as they exist in their natural setting. This is considered suitable for the phenomenon being studied.

3.2 Research Setting

The area of study is Benin City, Edo State. Edo State is located in the south-south geopolitical region and it is one of the 36 States of Nigeria. It has a population of 8,000,000 with Benin City (its capital) having a population of 1,841,000 (National Population Commission, Population Census of Nigeria, 2006). Inhabitants are Nigerians and expatriates. Edo State is highly industrialized. It has a federal teaching hospital and other state hospitals.

The study was conducted at the Diabetic In-Patients and out patients coming to the clinic every Wednesday in the University of Benin Teaching Hospital, Benin City. The hospital is a tertiary teaching hospital situated in the Edo State of Nigeria. The hospital was established in 1973, and at present it has 910 beds. It is one of the tertiary hospital in the State. It serves as a referral centre to other hospitals in the State and neighbouring states such as Delta State. Expatriates working in many industries in Edo State also use the hospital and increase the population of patients/clients. University of Benin Teaching Hospital is also a research centre. The hospital was chosen because it is situated in a cosmopolitan city with a large population. Also a fair representation of different strata of the society lives in Benin City and use the hospital. Sampling will be easier. We are also making use of Central Hospital.

3.3 Target Population

The target population for this study consists of people with diabetes mellitus receiving treatments in the following wards; (Male medical ward, Female medical ward, female surgical ward) and patients attending out-patient clinic every Wednesday in University of Benin Teaching Hospital, Benin city, Edo State. In the male (A1) ward we have 20 patients, in female medical (A3) 10 patients, in female (A4) we have 5 patients making it 35 In-Patients and 165 out-patients. The target population was chosen because they meet the criteria to be subjects of the research study.

Wards	A1	A3	A4 (female surgical ward)	Out-patients	Total
No of patients	20	10	5	165	200

After adding up all the patients we had 200 diabetes mellitus patients attending University of Benin teaching hospital.

3.4 Sample Size

The target population was too small therefore we used a census sampling technique. The sampling size was the numbers of respondents required and to which the study findings was generalized. That is the number of respondents stated in the target population above (200) attending University of Benin Teaching Hospital.

3.5 Sampling Technique

The researcher used a convenient sampling technique in selecting the respondent into the study among diabetes mellitus patients receiving treatment in University of Benin Teaching Hospital, Edo State. Convenient sampling technique is a non-probability method in which the researcher is at will to choose the most conveniently and economically available persons or objects as sample for the study, that is, according to who is available in no particular order. The researcher chose this method because the respondents are always not available at the same time, therefore the instruments was conveniently distributed to the available respondents. The researcher selected

whosoever was closest and easiest. The sample size was selected among diabetes mellitus patients receiving treatment as in-patients and also their out-patient clinic, in University of Benin Teaching Hospital Benin city, Edo State (Ary et al., 2019).

3.6 Instruments for Data Collection

A well-structured standardized questionnaire was adapted for this study, it was used to source for information from the respondents. The instrument for data collection for this research consists of questionnaire on socio-demographic data, clinical history and the WHOQOL-BREF. The socio-demographic data and clinical history included age, sex, marital status, educational level, occupation, ethnicity, and duration of diabetes, level of income, religion, complication and co-morbidities. The WHOQOL-BREF is made in two parts. The first part of the questionnaire comprises of 14-items socio-demographic questions. While the second part deals with the different domains of the patient's life and how they are affected. (Issa & Baiyewa 2019), stated that the instrument was developed in a wide range of languages for use in different cultural settings (including Sub Saharan Africa), and yielded comparable scores across cultures. The instrument was made up of domains and sub-domains.

The domains are broad grouping that included:

a. Socio-demographic factors: which has questions like; age, ethnicity, religion, level of education, income, sex, religion, family type, employment status, nutrition etc.

b. Physical health: which has sub-domains like-the presence of pain and discomfort, dependence on medical treatments; energy and fatigue; mobility, sleep and rest; activity of daily living; perceived working capacity.

c. Psychological health-has eight sub-domain assessing-affect, cognitive functions; body image and appearance; self-esteem; negative effects; and spirituality.

d. Social relationship: has three sub-domains including personal relationship, social support, sexual activity; and

e. Environmental – with eight sub-domains such as physical safety and security; physical environment e.g., pollution; noise; traffic; climates; financial resources; opportunities for

acquiring new information and skills; participation in and opportunities for recreation/leisure activities, home environment; health and social care; accessibility and quality; transportation. Furthermore, other sections were coined out;

f. Perceived interventions to improve quality of life: assessing strategies done by the patients to improve their quality of life.
g. Also the predicators that influences their quality of life/

3.7 Validity of the Instrument

Validity refers to the degree to which a research instrument measures what it intends to measure (Jesse, 2012). The questionnaire adopted was properly organized, structured and simplified by the researcher under the guidance of the supervisor. The WHOQOL-BREF is a generic instrument with cross cultural application and has been used as a measure of health-related quality of life for other chronic illness in Nigeria (Olusina & Ohaeri, 2019). Psychometric properties and results of the international field trial", reported that 'Analysis of internal consistency, item-total correlations, discriminant validity and construct validity through confirmatory factor analysis, indicate that the WHOQOL-BREF has good to excellent psychometric properties of reliability and performs well in preliminary tests of validity' (Skevington et al., 2019). This instrument measured what it was supposed to measure because the different domains were found to be significantly positively correlated with overall quality of life and satisfaction with health.

3.8 Reliability of Instruments

Reliability refers to the degree to which assessment tool produces stable and consistent result (Davidson, 2011). According to Jesse (2012), the reliability of a measuring tool can be assessed in various ways. A reliable instrument is one that can produce the same results if behaviour is measured again by the same scale (Davidson, 2011).

A pilot study was carried out and then tested to test the reliability of the questions by administering same questionnaire to 20 (10% of the total sample size) diabetes mellitus patients receiving treatment in endocrinology ward, central hospital, Edo state. The Cronbach Alpha reliability technique was employed in this study. Reliability was upheld by Using the same

instrument to collect data from the respondents and clarifications was done so that they did not misunderstand the items in the questionnaire. In this study, the reliability testing was carried out such that 20 questionnaires were distributed to endocrinology ward, central hospital was not selected for this study and their responses were analyzed for reliability. The Cronbach Alpha value greater than 0.6 was considered reliable. The coefficient of reliability obtained were: physical domain 0.72, psychological domain 0.71, social domain 0.69 and environmental domain 0.72. The data were analyzed using SPSS version 16. Previous researchers found: physical domain 0.82, psychological domain 0.81, social domain 0.68, and environmental domain 0.80 (Lotfy et al., 2018).

3.9 Method of Data Collection

The Researcher self-administered 200 well-structured questionnaires containing questions relating to this research study to sample survey University of Benin Teaching Hospital, Edo state, while responses (data) being filled out in the questionnaire was formally and immediately gathered as the respondents was guided on how to answer the questions. Due explanation of the purpose of research were given to the respondents. The respondents were assured of confidentiality of any information given and freedom to withdraw from the study at any time without being denied of standard care. The distribution and collection of filled questionnaires from the respondents took place from March to May, 2023.

3.10 Method of Data Analysis

Data collected was entered into Microsoft Excel and analyzed using descriptive and inferential statistics with the aid of Statistical Package for Social Sciences (SPSS) version 26.0 spread sheet. Demographic data were analyzed using frequency Tables and percentages with Chi-square test for the comparison of the two groups. Frequency distribution Table will be used to describe characteristics of a particular group, while t-test and Analysis of Variance (ANOVA) were used for the comparison of mean values of the two groups and a particular group with different socio-demographic variables. Inferences drawn in this study were considered significant at p-value less than 0.05. Total number of respondents for data analysis was 200.

3.11 Ethical Consideration

With an introduction letter from the Department of Nursing Sciences, University of Benin, Ugbowo Campus, the researcher applied for and obtained approval for the study from the Research Ethics Committee of the University of Benin Teaching Hospital. Administrative permit of the Consultant Physician/Endocrinologist and Nursing Staff in-charge of the patients were also obtained.

CHAPTER FOUR

RESULTS

4.0 Introduction

This chapter is on the presentation and interpretation of results from questionnaires administered to 200 diabetes mellitus patients receiving treatments at the Diabetic In-Patients and Out-patients clinic in University of Benin Teaching Hospital, Benin city, Edo State. In this chapter of the study, four research questions were answered while three stated hypotheses were tested based on responses obtained from the administered questionnaires.

4.1 Socio-demographic characteristics of respondents

Table 4.1 contains the socio-demographic distribution of the respondents with respect to variables such as sex, age, marital status, ethnicity, religion, family type, education qualification, duration of illness, employment status, living alone, participation in activities, harmful habits, level of income, co-morbidities, and nutritional status.

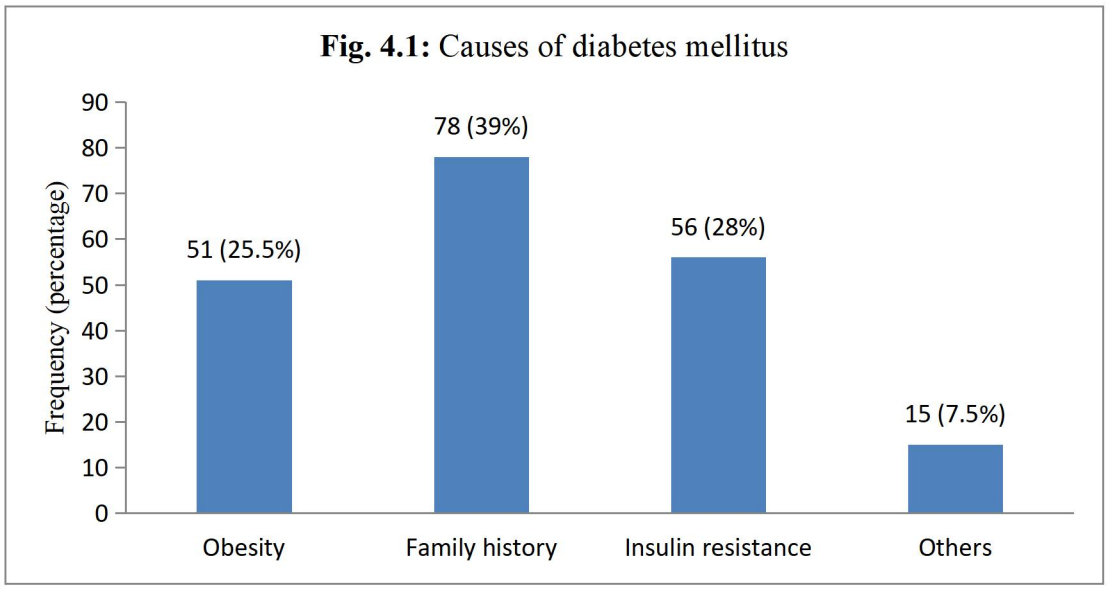
Table 4.1: Socio-demographic characteristics of study population

	Frequency	Percentage
Sex		
Male	100	50.0
Female	100	50.0
Age (Years)		

21-30	50	25.0
31-40	30	15.0
41-50	80	40.0
51-60	30	15.0
61-70	10	5.0
	Mean ± St.D = 45.50 ± 14.15	
Marital Status	**Frequency**	**Percentage**
Single	50	25.0
Married	150	75.0
Ethnicity		
Yoruba	50	25.0
Hausa	10	5.0
Igbo	30	15.0
Others	110	55.0
Religion		
Christian	190	95.0
Muslim	10	5.0
Family type		
Monogamous	190	95.0
Polygamous	10	5.0
Highest Educational Qualification		
No formal education	18	9.0
Diploma	115	57.5
Bachelor Degree	67	33.5
Duration of illness (in years)		
1-5	70	35.0
6-10	123	61.5
11 years & above	7	3.5
Employment Status		
Full time	55	27.5
Part time	91	45.5
Self-employed	54	27.0
Do you live alone?		
Yes	42	21.0
No	158	79.0
Do you participate in any activities?		
Yes	73	36.5
No	127	63.5
Do you have any habits such as smoking, drinking, alcohol?		

Yes	66	33.0
No	134	67.0
Level of income (in Naira)		
Less than 50,000	50	25.0
50,000 – 100,000	84	42.0
More than 100,000	66	33.0
Co-morbidities		
1	82	41.0
2	106	53.0
>3	12	6.0
Nutritional Status		
Good	97	48.5
Moderate	82	41.0
Malnourished	21	10.5

Table 4.1 showed the demographic data of respondents. 100(50%) were males, 100(50%) were females, most respondents 80 (40%) were 41-50 years, majority 150(75%) were married, 110(55%) were from minor ethnic groups, 190(95%) were Christians, 190(95%) were from monogamous homes, 115(75.5%) had diploma has their highest form of education, 123(61.5%) has had diabetes for 6-10 years, 91(45.5%) worked part time, 158(79%) live alone, 127(63.5%) said yes to participating in different activities, 134(67%) do not smoke or drink alcohol, 106(53%) had 2 co-morbidities, 84(42%) had a level of income of more than 100,000, and 97(48.5%) had good nutritional status.



Data represented using bar charts in figure 4.1 showed that 51 (25.5%) of the respondents indicated that obesity is a major cause of diabetes mellitus, 78 (39%) indicated that family history is the major cause, 56 (28%) indicated that insulin resistance was the cause while 15 (7.5%) of the cases of diabetes mellitus among the respondents was as a result of other causes.

4.2 Answer to Research Questions

Research Question One: What is the quality of life among diabetic patients attending University of Benin Teaching Hospital, Benin city?

Table 4.2A: Quality of Life of Diabetic Patients

S/N	ITEMS	1	2	3	4	5	Mean	S.D	Remark
1	How would you rate your quality of life?	50 (25%)	50 (25%)	40 (20%)	40 (20%)	20 (10%)	2.65	0.90	Poor
2	To what extent do you have the opportunity for leisure activities?	30 (15%)	30 (15%)	30 (15%)	60 (30%)	50 (25%)	3.35	1.03	Good
3	Does your treatment affect your daily life/traveling?	10 (5%)	30 (15%)	70 (35%)	60 (30%)	30 (15%)	3.34	0.91	Good
4	How satisfied are you with your sleep?	50 (25%)	50 (25%)	40 (20%)	30 (15%)	30 (15%)	2.70	0.93	Poor
5	Does disease condition affect your work?	30 (15%)	30 (15%)	40 (20%)	50 (25%)	50 (25%)	3.30	1.00	Good
6	Do you get tired easily?	30	30	40	50	50	3.30	0.97	Good

7	How satisfied are you with your sleep?	(15%) 110 (55%)	(15%) 40 (20%)	(20%) 30 (15%)	(25%) 10 (5%)	(25%) 10 (5%)	1.85	0.88	Poor
	GRAND MEAN						**2.93**	**0.95**	**Poor**

NB: 1 = Poor; 2 = Fair; 3 = Good; 4 = Very good; 5 = Excellent
Remark: Good ≥ 3.00; Poor < 3.00

Responses to the 7 items in table 4.2A showed that the mean response to items 1, 4, and 7 in the table had mean scores that were less than 3.00, thus indicative that these three items measuring quality of life were considered as poor for the quality of life of diabetic patients. Also, mean response to items 2, 3, 5, and 7 in table 4.2A showed that the mean scores were greater than the decision point of 3.00. However, the computed grand mean showed that the grand mean score for all seven items in table 4.2A was 2.93 with a standard deviation of 0.95.

Table 4.2B: Classification of Level of Quality of Life among Diabetic Patients

Level of Quality of Life	Decision	Frequency	Percentage
Poor	0.00-1.99	26	13.0
Fair	2.00-2.99	97	48.5
Good	3.00-3.99	51	25.5
Very Good	4.00-4.99	24	12.0
Excellent	5.00	2	1.0

Table 4.2B showed the classification of level of quality of life among diabetic patients in the study. Twenty-six (13.0%) of the respondents have poor quality of life, 97 (48.5%) have fair quality of life, 51 (25.5%) of the respondents' quality of life was good, 24 (12.0%) of the respondents have very good quality of life, while the quality of life for only 2 (1%) of the respondents was excellent. Hence, majority (48.5%) of the diabetic patients in this study have fair quality of life.

Research Question Two: What domains of patient's life is mostly affected by diabetes mellitus

among diabetic patients in University of Benin Teaching Hospital, Benin city?

In this study, four domains of quality of life that are affected by diabetes mellitus were assessed, namely; physical, psychological, social and environmental domains. Patients were found to have a poor quality of life in their physical and environmental domains, were as their social and psychological domains were good.

Table 4.3.1A Physical domains of patient's life that are mostly affected by disease conditions

S/N	ITEMS	1	2	3	4	5	Mean	S.D	Remark
1	How would you rate your quality of life	50 (25%)	50 (25%)	30 (15%)	30 (15%)	40 (20%)	2.80	1.01	Poor
2	How satisfied are you with your health	70 (35%)	50 (25%)	30 (15%)	30 (15%)	20 (10%)	2.40	0.85	Poor
3	To what extent do you feel that physical pain prevents you from doing what you do	10 (5%)	30 (15%)	70 (35%)	60 (30%)	30 (15%)	3.34	0.91	Good
4	How much do you need any medical treatment to function in your daily life	50 (25%)	50 (25%)	40 (20%)	30 (15%)	30 (15%)	2.70	0.93	Poor
5	Have you enough money to meet your needs?	60 (30%)	50 (25%)	30 (15%)	30 (15%)	30 (15%)	2.60	0.99	Poor
	GRAND MEAN						**2.77**	**0.94**	**Poor**

NB: 1 = Poor; 2 = Fair; 3 = Good; 4 = Very good; 5 = Excellent
Remark: Good ≥ 3.00; Poor < 3.00

Responses to the 5 items in table 4.3.1A showed that the mean response to items 1, 2, 4, and 5 in the table had mean scores that were less than 3.00, thus indicative that these four items measuring physical domains of patient's life were considered as poor for the quality of life of diabetic patients. Meanwhile, only item 3 in table 4.3.1A had a mean score that is greater than the decision point of 3.00. The computed grand mean for the means of all five item statements in table 4.3.1A showed that the grand mean score is 2.77 with a standard deviation of 0.94. This indicates that the physical domains of diabetic patients' quality of life are poor.

Table 4.3.1B: Classification of Level of Physical Domains of Patients' Quality of Life

Level of Quality of Life	Decision	Frequency	Percent
Poor	0.00-1.99	92	46

Fair	2.00-2.99	54	27
Good	3.00-3.99	41	20.5
Very Good	4.00-4.99	13	6.5
Excellent	5.00	-	-

Table 4.3.1B showed the classification of level of physical domains of diabetic patients' quality of life in the study. Ninety-two (46.0%) of the respondents have poor physical domains of quality of life, 54 (27.0%) have fair physical domains of quality of life, 41 (20.5%) of the respondents' quality of life in respect to the physical domains was good, 13 (6.5%) of the respondents have very good physical domains of quality of life, while none of the respondents had excellent physical domains of quality of life. Hence, majority (46.0%) of the diabetic patients in this study have poor physical domains of quality of life.

Table 4.3.2A Psychological domains of patient's life that are mostly affected by disease conditions

S/N	ITEMS	1	2	3	4	5	Mean	S.D	Remark
1	To what extent do you feel affected by your disease condition?	40 (20%)	50 (25%)	40 (20%)	20 (10%)	50 (25%)	2.95	0.75	Poor
2	How well are you able to concentrate?	-	-	40 (20%)	60 (30%)	100 (50%)	4.30	0.99	Good
3	How often do you have negative feelings such as blue mood, despair, anxiety depression?	30 (15%)	20 (10%)	30 (15%)	50 (25%)	70 (35%)	3.35	0.90	Good
4	Adherence to my drug regime has improved my wellbeing	10 (5%)	10 (5%)	70 (35%)	70 (35%)	40 (20%)	3.66	0.85	Good
5	Going for regular check-ups to the hospital has helped me live healthier	40 (20%)	30 (15%)	50 (25%)	20 (10%)	60 (30%)	3.15	0.96	Good
6	I have so many complications because of this disease condition	30 (15%)	20 (10%)	30 (15%)	70 (15%)	50 (25%)	3.45	1.00	Good
	GRAND MEAN						**3.00**	**0.91**	**Good**

NB: 1 = Poor; 2 = Fair; 3 = Good; 4 = Very good; 5 = Excellent
Remark: Good ≥ 3.00; Poor < 3.00

Responses to the 6 items in table 4.3.2A showed that the mean response to all items except item 1 in the table had mean scores that were greater than 3.00, thus indicative that these five items

measuring psychological domains of patient's life were considered as good for the quality of life of diabetic patients. The computed grand mean for the means of all six item statements in table 4.3.2A showed that the grand mean score is 3.00 with a standard deviation of 0.91. This indicates that the diabetic patients in this study have good psychological domains of quality of life.

Table 4.3.2B: Classification of Level of Psychological Domains of Patients' Quality of Life

Level of Quality of Life	Decision	Frequency	Percent
Poor	0.00-1.99	15	7.5
Fair	2.00-2.99	22	11
Good	3.00-3.99	87	43.5
Very Good	4.00-4.99	45	22.5
Excellent	5.00	31	15.5

Table 4.3.1B showed the classification of level of psychological domains of diabetic patients' quality of life in the study. Fifteen (7.5%) of the respondents have poor psychological domains of quality of life, 22 (11.0%) have fair psychological domains of quality of life, 87 (43.5%) of the respondents' quality of life in respect to the psychological domains was good, 45 (22.5%) of the respondents have very good psychological domains of quality of life, while 31 (15.5%) of the respondents had excellent psychological domains of quality of life. Hence, majority (43.5%) of the diabetic patients in this study have good psychological domains of quality of life.

Table 4.3.3A Social domains of patient's life that are mostly affected by disease conditions

S/N	ITEMS	1	2	3	4	5	Mean	S.D	Remark
1	How satisfied are you with your personal relationships?	10 (5%)	30 (15%)	30 (15%)	40 (5%)	90 (5%)	3.85	0.88	Good
2	How satisfied are you with your sex life?	40 (20%)	70 (35%)	50 (25%)	30 (15%)	10 (5%)	2.50	0.79	Poor
3	How satisfied are you with the support you get from your friends?	10 (5%)	10 (5%)	30 (15%)	100 (50%)	50 (25%)	3.85	0.81	Good
4	Diabetes mellitus interferes too much in my social life	10 (5%)	10 (5%)	70 (35%)	70 (35%)	40 (20%)	3.60	0.86	Good

GRAND MEAN			**3.45**	**0.84**	**Good**

NB: 1 = Poor; 2 = Fair; 3 = Good; 4 = Very good; 5 = Excellent
Remark: Good ≥ 3.00; Poor < 3.00

Responses to the 4 items in table 4.3.3A showed that the mean response to all items except item 2 in the table had mean scores that were greater than 3.00, thus indicative that these four items measuring social domains of patient's life were considered as good for the quality of life of diabetic patients. The computed grand mean for the means of all four item statements in table 4.3.3A showed that the grand mean score is 3.45 with a standard deviation of 0.84. This indicates that the diabetic patients in this study have good social domains of quality of life.

Table 4.3.3B: Classification of Level of Social Domains of Patients' Quality of Life

Level of Quality of Life	Decision	Frequency	Percent
Poor	0.00-1.99	37	18.5
Fair	2.00-2.99	26	13.0
Good	3.00-3.99	73	36.5
Very Good	4.00-4.99	35	17.5
Excellent	5.00	29	14.5

Table 4.3.3B showed the classification of level of social domains of diabetic patients' quality of life in the study. Thirty-seven (18.5%) of the respondents have poor social domains of quality of life, 26 (13.0%) have fair social domains of quality of life, 73 (36.5%) of the respondents' quality of life in respect to the social domains was good, 35 (17.5%) of the respondents have very good social domains of quality of life, while 29 (14.5%) of the respondents had excellent social domains of quality of life. Hence, majority (43.5%) of the diabetic patients in this study have good social domains of quality of life.

Table 4.3.4A: Environmental domains of patient's life that are mostly affected by disease conditions

S/N	ITEMS	1	2	3	4	5	Mean	S.D	Remark
1	How satisfied are you with the	40	30	50	20	60	3.15	0.81	Good

	condition of your living place?	(20%)	(15%)	(25%)	(10%)	(30%)			
2	How satisfied are you with your transportation?	40 (20%)	70 (35%)	50 (25%)	30 (15%)	10 (5%)	2.50	0.99	Poor
3	How satisfied are you with your health services?	40 (20%)	50 (25%)	40 (20%)	20 (10%)	50 (25%)	2.95	1.01	Poor
4	Have you enough money to meet your needs?	40 (20%)	50 (25%)	40 (20%)	20 (10%)	50 (25%)	2.95	0.95	Poor
5	How available to you is the information you need for your daily life?	110 (55%)	40 (20%)	30 (15%)	10 (5%)	10 (5%)	1.85	0.87	Poor
6	I spent too much time in the hospital	30 (15%)	20 (10%)	30 (15%)	50 (25%)	70 (35%)	3.35	0.78	Good
	GRAND MEAN						**2.79**	**0.90**	**Poor**

NB: 1 = Poor; 2 = Fair; 3 = Good; 4 = Very good; 5 = Excellent
Remark: Good ≥ 3.00; Poor < 3.00

Responses to the 6 items in table 4.3.4A showed that the mean response to all items except items 1 and 6 in the table had mean scores that were less than 3.00, thus indicative that these four items measuring environmental domains of patient's life were considered as poor for the quality of life of diabetic patients. The computed grand mean for the means of all six item statements in table 4.3.4A showed that the grand mean score is 2.79 with a standard deviation of 0.90. This indicates that the diabetic patients in this study have poor environmental domains of quality of life.

Table 4.3.4B: Classification of Level of Environmental Domains of Patients' Quality of Life

Level of Quality of Life	Decision	Frequency	Percent
Poor	0.00-1.99	81	40.5
Fair	2.00-2.99	44	22.0
Good	3.00-3.99	33	16.5
Very Good	4.00-4.99	25	12.5
Excellent	5.00	17	8.5

Table 4.3.4B showed the classification of level of environmental domains of diabetic patients' quality of life in the study. Eighty-one (40.5%) of the respondents have poor environmental domains of quality of life, 44 (22.0%) have fair environmental domains of quality of life, 33

(16.5%) of the respondents' quality of life in respect to the environmental domains was good, 25 (12.5%) of the respondents have very good environmental domains of quality of life, while 17 (8.5%) of the respondents had excellent environmental domains of quality of life. Hence, majority (40.5%) of the diabetic patients in this study have poor environmental domains of quality of life.

Research Question Three: What are the quality of life predictors for diabetes patients attending University of Benin Teaching Hospital, Benin city?

Table 4.4: Predicators affecting the quality of life of diabetic patients

S/N	ITEMS	1	2	3	4	5	Mean	S.D	Remark
1	Adherence to drug	40 (20%)	30 (15%)	50 (25%)	20 (10%)	60 (30%)	3.15	0.96	Agree
2	Activities of daily living	10 (5%)	10 (5%)	30 (15%)	100 (50%)	50 (25%)	3.85	0.81	Agree
3	Level of education	10 (5%)	10 (5%)	70 (35%)	70 (35%)	40 (20%)	3.60	0.86	Agree
4	Having more than one co-morbidities	30 (15%)	30 (15%)	40 (20%)	50 (25%)	50 (25%)	3.30	1.00	Agree
5	Social relationship	30 (15%)	30 (15%)	40 (20%)	50 (25%)	50 (25%)	3.30	0.97	Agree
6	Access to health services	30 (15%)	20 (10%)	30 (15%)	50 (25%)	70 (35%)	3.35	0.90	Agree
7	Level of income	30 (15%)	30 (15%)	30 (15%)	60 (30%)	50 (25%)	3.35	1.03	Agree
8	Going for regular check-ups	10 (5%)	30 (15%)	70 (35%)	60 (30%)	30 (15%)	3.34	0.91	Agree
	GRAND MEAN						**3.41**	**0.93**	

NB: 1 = Strongly Disagree; 2 = Disagree; 3 = Undecided; 4 = Agree; 5 = Strongly Agree
Remark: Agree ≥ 3.00; Disagree < 3.00

Responses to the 8 items in table 4.4 showed that the mean response to all items in the table had mean scores that were above the decision point of 3.00, thus indicative that these items were the quality of life predicators for diabetes patients in the study. From the responses, it can be seen that the predicators affecting the quality of life of diabetic patients include; adherence to drug, activities of daily living, level of education, having more than one co-morbidities, social relationship, access to health services, level of income, and going for regular check-ups.

Research Question Four: What are the patients perceived interventions to improve their quality of life among diabetes patients attending University of Benin Teaching Hospital, Benin city?

Table 4.5: Perceived interventions to improve quality of life among diabetes patients

S/N	ITEMS	1	2	3	4	5	Mean	S.D	Remark
1	Adherence to drug	30 (15%)	30 (15%)	30 (15%)	60 (30%)	50 (25%)	3.35	1.03	Agree
2	Going for regular check-ups	10 (5%)	30 (15%)	70 (35%)	60 (30%)	30 (15%)	3.34	0.91	Agree
3	Eating prescribed meals	30 (15%)	30 (15%)	40 (20%)	50 (25%)	50 (25%)	3.30	0.97	Agree
4	Engaging in exercises	30 (15%)	30 (15%)	40 (20%)	50 (25%)	50 (25%)	3.30	1.00	Agree
	GRAND MEAN						**3.41**	**0.93**	

NB: 1 = Strongly Disagree; 2 = Disagree; 3 = Undecided; 4 = Agree; 5 = Strongly Agree
Remark: Agree ≥ 3.00; Disagree < 3.00

Responses to the 4 items in table 4.5 showed that the mean response to all items in the table had mean scores that were above the decision point of 3.00, thus indicative that these items were perceived as interventions to improve the quality of life among diabetes patients. From the responses, it can be seen that the perceived interventions to improve quality of life among diabetes patients include; adherence to drug, going for regular check-ups, eating prescribed meals, and engaging in exercises.

4.3 Hypotheses Testing

Hypothesis One: There is no significant relationship between the socio-demographic factors and the patients' quality of life in University of Benin Teaching Hospital.

To test hypothesis one, the multinomial logistics regression statistics was used. In this study, a multinomial logistic regression was used to create a model of the relationship between the predictor variables (that is, patients' social demographic data) and the outcome variable (that is, patients' quality of life).

Table 4.6.1: Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	114.041[a]	.31	.39

a. Estimation terminated at iteration number 4

because parameter estimates changed by less than .001.

Table 4.6.1 contains the Cox & Snell R-Square and Nagelkerke R-Square values, which are both methods of calculating the explained variation. From the results in the table, 31 percent of the variations in patients' quality of life can be explained by their social demographic data according to the Cox & Snell R-Square whereas, according to the Nagelkerke R-Square, about 33% of the changes in patients' quality of life is attributed to their social demographic data.

Table 4.6.2: Hosmer and Lemeshow Test

Step	Chi-square	Df	Sig.
1	10.050	7	.555

The Hosmer & Lemeshow test of the goodness of fit suggests the model is a good fit to the data as p=0.555 (>.05).

Table 4.6.3: Variables in the Equation

	B	S.E.	Wald	Df	Sig.	Exp(B)	95% C.I. for EXP(B)	
							Lower	Upper
Sex	.758	.647	5.102	3	.000	2.034	1.177	3.573
Age	.047	.252	3.064	3	.041	3.111	1.105	4.482
Marital Status	.889	.109	.316	3	.745	.756	.345	.711
Ethnicity	.827	.516	2.573	3	.349	.437	.159	1.202
Religion	.894	.423	4.458	3	.135	1.409	.178	.938
Family type	.086	.560	9.023	3	.000	1.089	0.264	1.364
Educational Qualification	.078	.722	.012	3	.014	2.925	1.225	3.809
Duration of illness	.511	.392	12.457	3	.000	.444	.197	.991
Employment Status	.490	.215	.274	3	.371	.710	.250	.581
Level of income	.021	.287	0.932	3	.000	2.159	1.146	3.172
Co-morbidities	4.271	.330	7.573	3	.000	3.227	1.241	3.515
Nutritional Status	1.021	.415	6.048	3	.001	2.360	1.709	2.393
Constant	.410	.555	.197	3	.741	1.225		

a. Variable(s) entered on step 1: Sex, Age, Marital Status, Ethnicity, Religion, Family type, Educational Qualification, Duration of illness, Employment Status, Level of income, Co-morbidities, and Nutritional Status.

The Parameter Estimates table in table 4.6.3 shows the logistic coefficient (B) for each predictor variable of the outcome variable. The results revealed that marital status, ethnicity, religion, and employment status have no significant impact on patients' quality of life. However, variables

such as sex [OR=2.034, 95% CI (1.177, 3.573)], age [OR=3.111, 95% CI (1.105, 4.482)], family type [OR=1.089, 95% CI (0.264, 1.364)], educational qualification [OR=2.925, 95% CI (1.225, 3.809)], duration of illness [OR=0.444, 95% CI (0.197, 0.991)], level of income [OR=2.159, 95% CI (1.146, 3.172)], co-morbidities [OR=3.227, 95% CI (1.241,3.515)], and nutritional status [OR=2.360, 95% CI (1.709, 2.393)] all have significant impact on patients' quality of life in the model.

From table 4.6.3, the probability of patients' quality of life was predicted based on a one-unit change in an independent variable when all other independent variables are kept constant. For the variable of sex, the odd of patients' quality of life is 2.034 times greater for male patients than for female patients. As for the variable of age, the odd of patients' quality of life is 3.111 times greater for the aged patients than for the young patients. In the case of family type, the odd of patients' quality of life is 1.089 times greater for monogamous family type than for polygamous type. It can be seen that for every unit of increase in patients' level of income, there is an associated increase of 2.159 in the patients' quality of life. As for the variable of co-morbidities, the odd of patients' quality of life is 3.227 times greater for patients with less than 2 co-morbidities than for those with 3 or more co-morbidities. In the case of nutritional status, the odd of patients' quality of life is 2.360 times higher for the well-nourished patients than for the malnourished patients.

Hypothesis Two: There is no significant difference between male and female quality of life of patients in University of Benin Teaching Hospital.

Table 4.7: T-test statistics showing difference in patients' quality of life among male and female patients

	quality of life of diabetes mellitus patients				
	N	**Not good**	**Good**	**χ^2**	**P**
Sex					
Male	100(50.0)	3.152	3.305	5.174	0.011
Female	100(50.0)	3.001	2.954		

NB: Sig at 0.05 level (2-tailed) (Reject Ho)

Result: $\chi^2 = 5.174$, $p < 0.05$.

The test of hypothesis two as presented in table 4.7 reveals the significant difference in patients'

quality of life among male and female patients across UBTH. Results of the t-test statistics showed that the associated p-value with the Chi-square test statistics is less than the significance level of 0.05. The null hypothesis is hereby rejected, hence the study conclude that there is a significant difference between male and female quality of life.

Hypothesis Three: There is no significant difference in the predicators to quality of life between the male and female diabetic patients in University of Benin Teaching Hospital.

Table 4.8: T-test statistics showing difference in the predicators to quality of life between the male and female diabetic patients

Predicators to Quality of Life	Sex	N	Mean	S.D	Df	t-value	p-value	Decision
Adherence to drug	Male	100	3.31	0.5	198	5.111	0.00	Significant
	Female	100	2.52	0.9				
Activities of daily living	Male	100	2.92	0.9	198	7.253	0.00	Significant
	Female	100	2.87	0.7				
Level of education	Male	100	3.00	0.5	198	0.274	0.00	Significant
	Female	100	1.87	0.8				
Having more than one co-morbidities	Male	100	3.31	0.5	198	6.461	0.00	Significant
	Female	100	3.01	0.7				
Social relationship	Male	100	3.00	0.6	198	1.632	0.104	Not significant
	Female	100	2.85	0.9				
Access to health services	Male	100	3.38	1.0	198	2.747	0.001	Significant
	Female	100	3.27	0.8				
Level of income	Male	100	3.31	0.5	198	0.804	0.022	Significant
	Female	100	2.20	0.9				
	Male	100	2.92	0.8				

Going for regular check-ups				198	0.595	0.00 Significant
	Female	100	2.53	1.0		

NB: P-value Significant at 0.05 level (2-tailed) (Reject Hypothesis); S.D: Standard deviation
Df: Degree of freedom

Results of the t-test statistics presented in table 4.8 showed that the p-value is less than the significance level of 0.05 for predicators to quality of life such as adherence to drug, activities of daily living, level of education, having more than one co-morbidities, access to health services, level of income, and going for regular check-ups across male and female patients. The null hypothesis is hereby rejected for these coping strategies only. However, for the other predicators to quality of life such as social relationship, the null hypothesis was accepted since their associated p-values was greater than 0.05.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

This chapter provides the discussion of findings in accordance to the stated objectives and hypotheses, implications for nursing, summary, conclusion, recommendation and suggestion for further studies.

5.1 Discussion of Findings

Objective 1: Quality of Life of Diabetic Patients

Findings of this study shows that most respondents had fair quality of life. 26% (13%) of respondents had a poor quality of life, 48.5% had a fair quality of life, 25.5% had good quality of life, 12% had a very good quality of life, hence majority of patients (48.5%) had a fair quality of life. In relation to this, a study by Nnachi et al., (2023), in South-South Nigeria revealed that about 45% that is (27.2%) of the respondents used had a poor quality of life, while 65.7% had a fair quality of life while 7.1% had overall good quality of life. Meaning patients overall had a fair quality of life having the highest percent of (65.7%). Another study in West Java Puspasari by Dinkes (2015) also discovered that majority of the patients had a poor overall quality of life in these 3 domains: physical domain, psychological domain and environmental domain. The social domain was the only domain that was reported to be good by 54.8%. A study by Uduak and Etiobong (2022), in Uyo Nigeria, respondents here overall quality of life was good having 91% score. However, another study in Warangal Telangana by Abedini et al. (2020), observed 402 diabetic patients about 38.8% had good quality of life. The quality of life towards emotional/mental health was reported poor, only 15.7% of them were found to have good quality of life, this means that their overall quality of life was poor. It was seen that studies with

similarity to this work had same results or the same domains were affected, while those with differences had different results.

Objective 2: Domains of Quality of Life mostly affected by Diabetes Mellitus

Study findings for research objective two reveal that the respondents' physical and environmental domains of quality of life were poor while their psychological and social domains of quality of life were good. Hence, diabetic patients are mostly affected in their physical and environmental domains. In line with a study by Hiwot et al. (2019), The respondents quality of life was still at its lowest in their physical and environmental domains with mean scores of 46 ± 6.7 and 48.9 ± 3.4 respectively, while for the psychological and social domains with good quality of life had mean scores of 52 ± 4.2 and 49 ± 4 respectively. In relation to this thus study another work done by Biruk et al. (2021), also showed that respondents had the poorest level of quality of life in their physical and environmental domains with mean scores of 43.12 and 45.59 respectively, while in their psychological and social domains they had mean scores of 47.40 and 46.60 respectively. However, a study done by Tariq (2022), in Hyberdad, Pakistin shows that respondents had higher mean socres in their physical and social domains (55%) and lower mean scores psychological (47%) and environmental (50%) domains. Another study by Afolalu et al. (2022), in Osogbo, Osun state, Nigeria showed that respondents had a poor social (75.5%) and psychological (71.8%) quality of life.

Objective 3: Quality of Life Predicators for Diabetes Patients

In this study, most of the predicators identified in the study like the adherence to their drug therapy was perceived to improve their health, activities of daily living, level of education, being unmarried, having more than one co-morbidities, social relationship, having a diploma as their highest educational qualification, assess to their health services, their level of income, having

enough money to meet their needs, going for regular check-ups affected their lives positively. All these predicators had a mean score of >3 thus indicative that these items are the quality of life predicators for diabetes mellitus patients in this study. In a similar study by Nurujannah et al. (2016), also supports that activities of daily living, social support, cognitive status are predicators of patients quality of life. However, in another study by Saneh (2019), things like smoking, obesity, receiving insulin injection, foot ulcers were considered as predicators. Although, social burden and energy level were also considered. A study by Xiaosu et al. (2017), conducted a study in China on diabetic patients and concluded that adherence to drugs especially in patients who used insulin was considered one of the greatest predicators because compared to those using oral antidiabetic drugs they had higher cases of depression. A study carried out by Mihyun Jeong (2020), in Korea identified predicators of quality of life as having low educational level, being unmarried, low activity of daily living, having co-morbidities. However, according to Shailendra et al. (2022), central obesity was seen as the highest predicator to low quality of life, followed by raised triglyceride, low high density lipoprotein cholesterol and hypertension.

Objective 4: Perceived Interventions to Improve Quality of Life among Diabetes Patients

This study finds out that most respondents feel adherence to their drug regime will improve their quality of life, religion, going for regular check-ups, eating prescribed meals and engaging in exercises will improve their quality of life. However, according to a study by Asiyeh et al. (2023), conducted a study in FASA, said that there is a relationship between type of treatment and quality of life, gender and educational levels. Again, Rosaliana et al. (2022), in Saudi Arabia, stated that the perceived interventions identified by respondents that improved their quality of life were; religiosity, self-care and coping mechanisms. Abraham and Lakew (2017), carried out a study in Southwest Ethiopia, stated that patients perceived interventions in line with this study

were; engaging in physical activity such as jogging, brisk running or going to the gym, however, general level of knowledge of disease condition was added. adequate knowledge of physical activity.

Hypotheses: Study findings for hypothesis one revealed that there is a significant relationship between the diabetes patients' quality of life and their socio-demographic data such as sex, age, family type, educational qualification, duration of illness, level of income, co-morbidities, and nutritional status. In respect to hypothesis two, results revealed that there is a significant difference between the quality of life of male and female diabetic patients. Results of hypothesis three revealed that there is a significant difference in the predicators to quality of life such as adherence to drug, activities of daily living, level of education, having more co-morbidities, access to health services, level of income, and going for regular check-ups across male and female diabetic patients.

5.2 Implication of Findings to Nursing

Diabetes mellitus is a chronic disease that has no cure for now and a complicated disease to manage as it involves asking patient to make a lot of life style modifications for life. Nurses are closer to the patients than any other healthcare team member.

Therefore, nurses should be involved in diabetic education which should address the following: diet and exercise, monitoring glucose levels, implications of smoking, method of administration and storage of insulin; foot, skin and dental care; healthcare system and community resources as well as social support group e.g. Diabetic Association of Nigeria with its different chapters.

Nurses should also be on the lookout for complications.

Patients have confidence in nurses and therefore nurses should get closer and study the lived experiences of these patients as this will help in better management of the patients and

improvement in their quality of life.

5.3 Limitation of the Study

The researcher only used patients in selected wards (A1, A3, Female surgical) and those registered and attending clinic in a tertiary hospital (University of Benin Teaching Hospital) and whose condition is under control. Worse cases might be in the communities and not utilizing health facilities.

Data collection lasted for three months because patients do not attend clinic the same day. They are given appointment for one week, two, four, six or more weeks depending on the patient's condition. This made the data collection to last long and therefore considered as a limitation to the study.

5.4 Summary of the Study

This study assessed the HRQOL of diabetes mellitus patients in Benin City, Edo State, Nigeria. The specific objectives were to: (i) To assess the quality of life of diabetic patients, (ii) To ascertain the domains of quality of life mostly affected by the disease condition, (iii) To assess quality of life predicators for diabetes mellitus patients, (iv) To determine the respondent perceived interventions to improve quality of life.

The study adopted a descriptive cross sectional survey design. It was conducted at the diabetic out- patient clinic and different wards like (female medical, male medical and male surgical) of the University of Benin Teaching Hospital, Benin City. Power analysis was used to determine the minimum sample size of 200. The diabetics who met the inclusion criteria were purposively recruited. A 26 item standardized WHOQOL-BREF questionnaire with known psychometric properties was adopted for this study with 15 additional questions soliciting demographic and clinical data of the respondents. The researcher's supervisor and two experts from the

Department of Nursing Sciences, validated the instrument. The reliability of the instrument was carried out using split-half method and analyzed using Chronbach's alpha, which gave a coefficient of 0.72 for physical domain, 0.71 for psychological domain, 0.69 for social domain and 0.72 for environmental domain. Data were subjected to multiple logistics regression, bivariate and t-test and analysis of variance (ANOVA). Probability value less than 0.05 was considered statistically significant.

5.5 Conclusion

Findings from this study provided empirical evidence that diabetes mellitus impact negatively on the HRQOL of diabetic patients in the four domains of WHOQOL-BREF. In conclusion, the socio-demographic data of diabetes patients must be critically considered when designing intervention programmes for diabetes patients so as to enhance their quality of life.

5.6 Recommendations

1. Based on the findings from this study, the researcher recommends that healthcare personnel should educate diabetics on physical care and prevention of complications that will impact negatively on physical health. Improvement on HRQOL can be achieved through increasing patients' knowledge and giving them diabetic education which among other benefits improve overall health and well-being. Education that will acknowledge cultural background and their ability to understand information on health will improve their ability to follow treatment modalities.
2. Nurses can also make home visits, accompany patients to hospitals and refer patients to support groups such as Diabetic Associations and Non-governmental
3. Organizations that can provide funds.

5.7 Suggestions for Further Studies

Specific diabetic HRQOL instrument should be used to assess patients as it is more sensitive to the disease condition than a generic instrument.

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APPENDIX

DEPARTMENT OF NURSING SCIENCE

SCHOOL OF BASIC MEDICAL SCIENCES

UNIVERSITY OF BENIN,

BENIN CITY, EDO STATE

Dear Respondent,

QUESTIONNAIRE

I am a student in the above named institution. I am carrying out a research study on the topic: **"Health Related Quality of Life among Patients Diabetes Mellitus Patients Attending University of Benin Teaching Hospital, Benin City, Edo State"**. Kindly assist me by indicating your opinion where necessary.

This study is strictly for academic purpose and you are hereby assured that all information supplied will be treated in a strictly confidential manner.

Thank you.

Yours faithfully,

Ibadin Nicolet.

Please thick the correct answer inside the box and give appropriate comment where necessary.

SECTION A: SOCIO-DEMOGRAPHIC DATA

1. Age: 21-30 ( ) 31- 40 ( ) 41-50 ( ) 51-60 ( ) 61- 70 ( )
2. Sex: Female ( ) Male ( )
3. Religion: Christianity ( ) Islam ( ) Traditional Religion ( )
4. Ethnicity: Yoruba ( ) Igbo ( ) Hausa ( ) Others …….
5. Family type: Monogamous ( ) Polygamous ( )
6. Level of Education: Did not go to school ( ) Primary Six ( ) Secondary school ( ) Diploma ( ) Master ( ) PhD ( )
7. Occupation: Farming ( ) Trading ( ) Civil Servant ( ) Self-employed ( ) Unemployed ( )
8. Marital status: Single ( ) Married ( ) Divorced ( ) Separated ( ) Widowed ( )
9. Duration of illness in years: 1-5 ( ) 6-10 ( ) 11 years and avoce ( )
10. Causes of diabetes mellitus: Obesity ( ) Family history ( ) Insulin resistance ( ) others ( )
11. Which of the following disease condition do you have? Thick as many as applies

Diabetes Mellitus ( ) Asthma ( ) Hypertension ( ) Congestive heart failure ( ) Pulmonary tuberculosis ( )

12. Level of income: 50,000 ( ) 100,000 ( ) >100,000 ( )
13. Nutritional status: Good ( ) Moderate ( ) Malnourished ( )
14. What treatment are you on now? Thick as many as are applicable: Diet and exercise ()
15. Oral diabetic drugs ( ) Insulin injection ( ) Oral diabetic drugs and Insulin Injection ( )

WHOQOL-BREF™ (WHOQOL™ – 100)

English Version 1.

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SECTION B: PHYSICAL DOMAIN

The following question asks how you feel about your quality of life, health, or other areas of your life. I will read out each question to you, along with the response options. Please choose the answer; the first response you think of is often the best one.

ITEMS	Poor	Fair	Good	Very good	Excellent
16. How would you rate your quality of life					

17. How satisfied are you with your health					
18. To what extent do you feel that physical pain that prevents you from doing what you do					
19. How much do you need any medical treatment to function in your daily life					
20. Have you enough money to meet your needs?					

SECTION C

PSYCHOLOGICAL DOMAIN

ITEMS	Poor	Fair	Good	Very good	Excellent
21. How well are you able to concentrate?					
22. How satisfied do you feel in your daily life					
23. Are you able to accept your bodily appearance					
24. How available to you is the information you need?					

SOCIAL DOMAIN

ITEMS	Poor	Fair	Good	Very good	Excellent
25. How satisfied are you with yourself?					
26. How satisfied are you with your sex life?					
27. How satisfied are you with your personal relationship?					
28. How satisfied are you with the help you get from friends?					

ENVIRONMENTAL DOMAIN

ITEMS	Poor	Fair	Good	Very good	Excellent
29. How satisfied are you with the					

conditions of your living place?					
30. How satisfied are you with your access to health services?					
30. How satisfied are you with your access to health services?					

SECTION D

PREDICATORS AFFECTING THE QUALITY OF LIFE OF DIABETIC PATIENTS

ITEMS	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
31. Adherence to drug					
32. Activities of daily living					
33. Ignorance					
34. Having more than one co-morbidities					
35. Social relationship					
36. Access to health services					
37. Level of income					
38. Going for regular check-ups					

SECTION E

PERCEIVED INTERVENTIONS TO IMPROVE QUALITY OF LIFE AMONG DIABETES PATIENTS

ITEMS	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
39. Adherence to drug					
40. Going for regular check-ups					
41. Eating prescribed meals					
42. Engaging in exercises					

APPENDIX C

RELIABILITY RESULTS

Section B

Case Processing Summary

		N	%
Cases	Valid	20	100.0
	Excluded[a]	0	.0
	Total	20	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized	N of Items

	Items	
.720	.713	5

Section C

Case Processing Summary

		N	%
Cases	Valid	20	100.0
	Excluded[a]	0	.0
	Total	20	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.710	.702	11

Section D

Case Processing Summary

	N	%

Cases	Valid	20	100.0
	Excluded[a]	0	.0
	Total	20	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.690	.610	8

Section E

Case Processing Summary

		N	%
Cases	Valid	20	100.0
	Excluded[a]	0	.0
	Total	20	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on	N of Items

	Standardized Items	
.720	.711	4

UNIVERSITY OF BENIN TEACHING HOSPITAL

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HEALTH RESEARCH ETHICS COMMITTEE APPROVAL

PROTOCOL NUMBER: ADM/E 22/A/VOL. VII/14935152140

PROPOSAL TITLE: "HEALTH-RELATED QUALITY OF LIFE AMONG DIABETIS MELLITUS PATIENTS ATTENDING UNIVERSITY OF BENIN TEACHING HOSPITAL BENIN CITY, EDO STATE"

PRINCIPAL INVESTIGATOR(S): IBADIN NICOLET

DEPARTMENT/INSTITUTION: DEPARTMENT OF NURSING SCIENCE, SCHOOL OF BASIC MEDICAL SCIENCES, UNIVERSITY OF BENIN, BENIN CITY, NIGERIA

DATE CONSIDERED MARCH 30TH, 2023

DECISION OF THE COMMITTEE: APPROVED

THIS APPROVAL DATES 30/3/2023 TO 29/3/2024. IF THERE IS DELAY IN STARTING THE RESEARCH, PLEASE INFORM THE HREC SO THAT THE DATES OF APPROVAL CAN BE ADJUSTED ACCORDINGLY

REMARK:
CHAIRMAN: PROF. (MRS) A.N. OFILI **SIGNATURE & DATE** A.N. 30/03/2023

UNIVERSITY OF BENIN TEACHING HOSPITAL ETHICS & RESEARCH COMMITTEE Sign..... Date..... BENIN CITY P.M.B. 1111

SUPERVISOR (S): DR T.A. EHWARIEME

DECLARATION BY INVESTIGATOR(S):
PROTOCOL NUMBER (please quote in all enquiries)
Note that no participant accrual or activity related to this research may be conducted outside of these dates. All informed consent forms used in this study must carry the HREC assigned number and duration of HREC approval of the study. In multiyear research, endeavor to submit your annual re-port to the HREC early in order to obtain renewal of your approval and avoid disruption of your research. No changes are permitted in the research without prior approval by the HREC except in circumstances outlined in the Code. The HREC reserves the right to conduct compliance visit your research site without previous notification

Signature & Date..... 02/04/2023