



**THE EFFECTS OF  
DIABETES ILLNESS TO  
SOCIO-CULTURAL LIFE  
OF PEOPLE IN  
NORTHERN NIGERIA: A STUDY OF  
PATIENTS IN ATBU TEACHING  
HOSPITAL, BAUCHI STATE**

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**Abstract**

**D**iabetes is seen as a lifelong chronic disease in which a person has high blood sugar, either because the pancreas does not produce enough insulin or the body cannot effectively use insulin. Nigeria is a country with significant socio-cultural and economic divisions. Access to health-care in some parts is adversely affected by socio-economic as well as infrastructural development. The management of diabetes is largely dependent on the attitudes of the people and members of their family towards the disease. The study examined the effects of diabetes to socio-cultural life of diabetes patients in ATBU Teaching Hospital, Bauchi. The study objectives were to find out the effects of diabetes on eating habits of people in Bauchi, it also examine the effects of diabetes on sexual

performance on people of Bauchi. Health belief model and sick-role behavior theories were reviewed and adopted as the theoretical

**KEYWORDS:**

Northern,  
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framework for the study this is because of their relevant in explaining social factors and diseases. Purposive sampling technique was used to select 200 diabetes patients receiving related treatments in the hospital, the sampled will help to obtain a quantitative data (questionnaire) for the study. The data were analyzed using SPSS and

hypotheses were tested using chi-square. Result showed that majority of the diabetes patients were of the belief that the major cause of diabetes was genetic inheritance; on effects of diabetes to eating habits the result showed that majority of them find it difficult to adhere to proper diabetes nutritional foods, because majority are low level income earners with a low level knowledge of western education; on influence of diabetes to sexual performance it indicated that a high proportion of the patients had reported sexual problems in older age which means that diabetes has affected their sexual performance, which leads them to sexual dysfunctions. It was recommended that adhering to a recommended lifestyle can delay or prevent the progression of the complications associated with it, also long-term diabetes management involves key health behaviors, such as physical activity, healthy eating and weight management should be encourage. Lastly, providing intensive

long-term diabetes management support in times of diabetes care should be encourage. Also in a matter of urgency Government should intervene to provide free medical support and nutritional dietary foods for diabetic patients, including tools for monitoring lifestyle changes, goal-setting and frequent contact, for people with newly diagnosed diabetes may help them to achieve and maintain positive lifestyle changes.

## INTRODUCTION

### Background of the Study

Diabetes is seen as a lifelong chronic disease in which a person has high blood sugar, either because the pancreas does not produce enough insulin, or the body cannot effectively use insulin. Thus, the high blood sugar produces the classical symptoms of polyuria (frequent urination), polydipsia (excess thirst) and polyphagia (increased hunger), which could result to serious health problems, such as renal (kidney) failure, heart disease, stroke, and blindness, among others (Azuamah, et al., 2011; Van Belle, et al., 2011 and WHO, 2006)

Nigeria is a country with significant socio-cultural and economic divisions. Access to health-care in some parts is adversely affected by socio-economic

as well as infrastructural development. With the prevalence of more than 4.3%, diabetes a special attention needs to be considered including the psycho-social management. According to World Health Organization (WHO 2016).

In northern Nigeria major challenges of diabetes to the people including public health seeking behavioral, presence of traditional medicine, life-style and diet and lack of adequate information and education was considered to be the main factors influencing the spread of the diseases in the region. Oxford International Diabetes Summit (2002). With this the need to study the effects of diabetes to the socio-cultural life of people in northern Nigeria is paramount. It is against this backdrop that the study is aimed at investigating the effects of diabetes to socio-cultural life of the people.

### **Statement of the Research Problem**

The management of diabetes is largely dependent on the attitudes of the patients and their family members towards the disease. The cause for concern is that most of the patients in ATBU Teaching Hospital are not observing or adapting to the expected lifestyle of diabetic patients. This could be as a result of the sudden change that occur in their lifestyle of leaving a normal life they have been used to be before, and sudden change to a life full of control of what to eat, what to drink, how to live to survived etc, which goes in accordance with diabetes treatment. Since diabetes diseases is not curable, it can only be managed through medication and the expected treatment, this is because ineffective treatment can result to serious health problem such as kidney failure, heart diseases, stroke, blindness etc. (Azumah, et al., 2011; Van Belle, et al., 2011 and WHO, 2006) Therefore, there is the need for every diabetic patients of ATBU teaching Hospital to accept the changes that occur as a result of the disease and act in accordance with the laid down rules and regulations of diabetes lifestyle so as to live a healthy and better life. Diabetes is also a hereditary disease this indicates that one can inherit it from his parent or blood relatives, as such the socio-cultural life of the people played important role in determining the circumstances surrounding the spread of the disease

among members of the same family. Therefore, it is important for an individual to know even when he is still young because diabetes is not only for old aged. These and many more reason why the researcher want to investigate the effects of social factors on the lifestyle of diabetic patient and also to find out whether the changes in social life of people with diabetes illness have influence on the treatment in ATBU Teaching Hospital Bauchi.

Therefore, this study seeks to answer the following research questions:

### **Research Questions**

1. What are the socio-cultural factors that effects diabetes treatment and medication in patients of ATBU Teaching hospital Bauchi?
2. How does diabetes illness change the social lifestyle of the patients attending ATBU teaching hospital Bauchi?
3. How does eating habits effects diabetes patient social life in ATBU Teaching hospital Bauchi?
4. How does diabetes effects sexual performance of patients of ATBU Teaching hospital Bauchi?

### **Aim and Objectives**

The main aim of this study is to investigate the influence of socio-cultural factors on the life of diabetic patients of ATBU Teaching hospital Bauchi State. The specific objectives of the study are stated below:

1. To examine the influence of socio-cultural factors on the lifestyle of diabetic patients of ATBU teaching hospital Bauchi.
2. To examine whether diabetes illness effects social life of diabetic patients of ATBU teaching hospital Bauchi
3. To examine whether eating habits has influence on the lifestyle of diabetic patients of ATBU teaching hospital Bauchi
4. To examine the influence of diabetes on sexual performance on diabetes patients of ATBU teaching hospital Bauchi.

### **Research Hypotheses**

The following hypotheses are formulated for the study based on the research objective:-

1. There is significant association between socio-cultural factors of diabetes patients and treatment and medication of diabetes.
2. There is significant association between diabetes illness and his social life.
3. There is significant relationship between eating habits and its social life.
4. There is significant relationship between sexual performance and diabetes illness.

### **Scope of the Study**

This study is an investigation of the influence of social factors on the lifestyle of diabetes ATBU Teaching Hospital Bauchi. The scope of the research will be limited to all diabetes patients, doctors and nurses of the Hospital. Thus, patients suffering from other forms of illness other than diabetes related will not be part of the study.

### **Significance of the Study**

This research is importance not only to the individuals suffering from the diabetes related illness, but also to government, non-governmental organizations, and general public. Thus, it may help diabetic patients with information regarding the cause, effects and management of diabetes. It may also provide guide for diabetic patients on the important of controlling their lifestyle, such as smoking, alcohol consumption, poor diet, and most importantly, activity that are related to the development of diabetes illness. It can also provide intellectual insight to medical doctors, nurses and laboratory scientist who are treating diabetes patients that, beside medical treatment, there are other factors that can be attributed to the courses, effect and management of diabetes illness. To the public, the study may provide a broad framework, about understanding how social factors influence people's health condition, especially as it relate to diabetes illness. It may also help the government and non-governmental organizations to map out policies and strategies aimed at reducing the wide spread of diabetes.

### Operationalization of Key Concepts

The following key concepts are operationalized for the purpose of this study:

**Diabetes:** This refers to a metabolic disorder of multiple etiologies characterized by chronic hyperglycemia with disturbances of carbohydrate, fat and protein metabolism resulting from defects in insulin secretion or insulin action or both.

**Diabetes Patients:** This refers to the individuals suffering from diabetes related illness. They may be hospitalized or visiting the hospital for treatments.

**Lifestyle:** This refers to attitude of a person formulated through the process of socialization

**Sub-Saharan African: (SSA)** Sub-Saharan Africa is, geographically, the area of the continent of Africa that lies south of the Sahara desert. According to the UN, it consists of all African countries that are fully or partially located south of the Sahara. They include countries like Angola, Benin, Botswana, Burkina, Faso, Burundi, Cameroon, Nigeria, etc.

**Non communicable Diseases: (NCDs)** Non-communicable disease (NCD) is a medical condition or disease that is non-infectious or non-transmissible. NCDs can refer to chronic diseases which last for long periods of time and progress slowly. These including heart disease, stroke, cancer, diabetes and chronic lung disease.

**Social factors: (SF)** Social factors constitutes the ethnic, religious, racial, linguistic or other socio economic factors and values that shape an individual's upbringing.

**Type 1 Diabetes (T1D):** This refers to diabetes secondary to autoimmune destruction of  $\beta$ -cells resulting in absolute (complete or near complete) insulin deficiency and requiring insulin injections for management.

**Type 2 Diabetes (T2D):** This occurs when hyperglycemia is secondary to insulin resistance accompanied by impaired  $\beta$ -cell function resulting in inadequate insulin production to compensate for the degree of insulin resistance.

## **LITERATURE REVIEW AND THEORETICAL FRAMEWORK**

### **Introduction**

This chapter is divided into two parts. The first part contains the literature review in relation to the research objectives and the second part deals with the theoretical framework for the study.

### **The Concept of Diabetes Mellitus**

Diabetes is the most prevalent disease caused by metabolic disorders. In other words, it is the most prevalent endocrine disease (Azizi, et al., 2000). Nowadays, diabetes is the fifth leading cause of mortality in western societies and the fourth reason of visiting doctors. Diabetes is a growing threat to world health so that World Health Organization (WHO) has called all countries to fight the disease as far back as 1993 (Spinaci, et al., 2006). Serious disabilities like cardiovascular, ocular and renal diseases are among the complications of uncontrolled diabetes. Nevertheless, according to the latest reports by WHO, it is predicted that population of patients with diabetes will increase by 122% in 2025. In developing countries, the number of patients has increased from 84 million to 228 million people which shows a 170% increase (Diabetes Atlas, 2006).

### **Socio-economic Status as a factor that influences the lifestyle of Diabetes patients of ATBU Teaching Hospital Bauchi**

The concept of socio-economic status (SES) is known as the combination of income, education and occupation. Usually refers to as social standard, the person SES in the family or society determines a range of things like level of education, income, occupation purchasing power etc. Simply put, high SES people are at advantage in the community than low SES people. Those with low SES have low education, poverty and poor health. As noted children from low SES households develop academic skills more slowly compared to children from higher SES (Morgan, et al., 2009).

SES created inequality persons or families as they have low financial capabilities to take care of their body and illness. For example, households with low SES might even find it difficult to sanitize and have good hygiene

practices because they cannot even have the good knowledge and affordability to have the required sanitation and hygiene facilities. Education provides opportunities for upward economic mobility and gender equality, and economic opportunity has been associated with a range of social and economic advantages, has been observed by Beaman, et al. (2009).

Type II diabetes was found to disproportionately affect socio-economic status (SES). The main factor contributing to Type II mellitus in lower status are nutrition, education and physical inactivity. The socially and economically disadvantaged are also at elevated risk for diabetes (Jacobs and Johnson, 2001). In addition, whereas the majority of individuals with type 2 diabetes are employed, a sizeable proportion is unemployed. Among adults aged 45 to 64 years, for example, 49% of diabetics are unemployed, compared with only 28% of non-diabetics (Krishnam, et al., 2009).

Socioeconomic inequalities in health have been attributed to a variety of mechanisms that may act as intermediate risk factors for diabetes. These include poor nutrition, overweight, increased rates of poor health behaviors such as smoking and alcohol consumption, stress, and limited access to health care, particularly in middle age when many individuals are at highest risk for developing diabetes (Wolf and Colditz, 1998). Access to adequate health care plays an even stronger role in controlling diabetes, preventing the development of complications, and avoiding diabetes-related mortality. Low socioeconomic status may also influence the development of diabetes as a result of inadequate maternal nutrition during and even prior to pregnancy (Krishnam, et al., 2009).

### **Gender as a factor that influences the lifestyle of Diabetes patients of ATBU Teaching Hospital Bauchi**

It is thought that much of this difference between the genders or sexes results from varying rates of obesity, physical activity, and hormone action among women. In addition, certain socio - cultural factors, such as the role that women play in the family, may affect women's vulnerability to diabetes. Women are often the keepers of culture, the family members who

pass on cultural practices, such as what foods are served for holiday celebrations or what activities family members are encouraged to engage in. This responsibility to maintain cultural practices and pass them on to younger generations can make it difficult for a mother or grandmother to successfully make lifestyle changes (Erika, 2011).

Women also suffer from gestational diabetes, or glucose intolerance that begins during pregnancy. Gestational diabetes complicates about 5% of all pregnancies, but the rate of occurrence can range up to 14% depending on the population subgroup. When left untreated, gestational diabetes harm both the mother and infant, often resulting in chronic hypertension as well as prenatal morbidity and mortality. Gestational diabetes is most likely to occur among women older than 25 years, those who are obese, those with a family history of diabetes, and those who are members of the ethnic groups at higher risk for diabetes in general-African Americans, Native Americans, Mexican Americans, Asian Americans, and Pacific Islanders. Although most women with gestational diabetes regain their normal health in the months following delivery, they remain at elevated risk for developing type 2 diabetes later in adulthood. Only about 5% of women with gestational diabetes develop type 2 diabetes within 6 months of delivery; however, 40% to 50% develop diabetes after 15 years, particularly among non-White women and many of the risk factors for diabetes have a greater impact among women than among men (Erika, 2011).

### **Age as a factor that influence the lifestyle of Diabetes patients of ATBU Teaching Hospital Bauchi**

According to Azuamah, et al. (2013), the prevalence of diabetes rises steeply with age. The diagnosis of diabetes may be delayed in older people, with symptoms of diabetes being wrongly attributed to ageing. Older people may experience discrimination in the degree of active management offered compared with younger people. Older people with complex needs require multidisciplinary care, which is well co-ordinate across primary, secondary and residential care and social services. Given the relatively high use of hospital services by older people, hospitals can offer an effective

intervention point for earlier diagnosis and better management of diabetes in older people. Information, education and support should be provided for older people to help them to manage their diabetes. A significant proportion of older people with diabetes in residential and nursing care will have diabetes.

### **Education as a factor that influence the lifestyle of Diabetes patients of ATBU Teaching Hospital Bauchi**

Education creates public awareness on the implications of having diabetes and the need to take control measures. Improvement in patient's knowledge on diabetes and its management are crucial for effective prevention of diabetes-related complications (Sabo, et al., 2015). Increased patients' education is something in which health plans, physicians and diabetes educators should all have a vested interest in helping members to make the behavioral changes that can lead to better health outcomes in a mission and commitment. The diabetes epidemic gives one an overview of the demographic and socio-economic aspects of the Type II diabetes. It is believed that the suffering and economic burden of this disease can be reduced by training persons with diabetes extensively in proper self-care and that diabetes will eventually become a model for other chronic (Anonymous, 2012) diseases in demonstrating the cost effectiveness of preventive intervention. Globally, self-management education is recognized as an important component for the management of Type II diabetes (Cooper, et al., 2003).

### **Marital Obligations as a factor that influence the lifestyle of Diabetes patients of ATBU Teaching Hospital Bauchi**

Having Type II diabetes changes life and can certainly affect relationship, whether dating or married. Diabetes management requires a lot of attention and focus which may be hard for a partner unfamiliar with the disease to understand. When one is not careful about managing the disease, the partner may also be affected, a recent study of people whose partner had type II diabetes found that those who tried to exert control over their

partner's dietary behavior felt particularly stressed and burdened (Cornelis, et al., 2013). Not only is the emotional aspect of diabetes a real roller coaster but there is also a physical impact on sexual function, the emotional strain of dealing with diabetes can cause stress and anxiety as well as communication difficulties that can lead to sexual dysfunction in relationship.

### **Religion as a factor that influence the lifestyle of Diabetes patients of ATBU Teaching Hospital Bauchi**

Religious activity has been defined as the degree of participation in and adherence to the teaching and the organized activity of a particular religion. Religious belief on the other hand, is the fundamental belief system that could influence our ideas, values in life and ways of living. Many patients recognize the importance of religion in their health care management. Specific religious observance e.g. Ramadan and Specific food avoidance may have potential adverse effects on diabetes control. Many religions require a form of food avoidance or fast as part of their observance i.e. fundamental Christian sects, Sikhism, Hinduism, Islam, Judaism, etc. For many, the diabetes conditions would be grounds for exemption but if a patient still wants to fast, advice on timing and dose of medications may be required to prevent blood glucose level. People with diabetes can be exempted but many still insist on full observance. Safety is further compromised if patients also insist on avoidance of blood glucose monitoring during daylight hours. The impact of large amount of fatty acids and sugar food when the daily fast is broken also needed to be considered issues need to be observed before fasting. Since the beginning of time, dietary practices have been incorporated into the religious practices of people around the world. Some religious sect abstain or are forbidden from consuming certain food and drinks, others restrict foods and drinks during their holy days, while others associate dietary and food preparation practices with rituals of the faith. Some studies have shown that more religious people had lower pressure, less hypertension, more compliance in treatment and follow-up and lower utilization of healthcare. A study in

Leeds, UK, showed that Kashmiri Moslem men with diabetes mellitus had poor diabetes control because their overall attitude was to enjoy life and leave the rest to Allah (Naeem, 2003). It is important for primary healthcare physicians to understand potential effect of religion and religiosity on glycaemia control to facilitate care in these patients

### **Lifestyle of Diabetes patient as a factor that influence the effectiveness of the treatment of Diabetes patients of ATBU Teaching Hospital Bauchi**

The risk of developing type 2 diabetes also increases with body weight and sedentary lifestyle. The majority of type 2 diabetics are obese and physically inactive. More than 45% of adults with type 2 diabetes have a body mass index of at least. Obesity itself causes some level of insulin resistance, and even many diabetics who are not obese have an increased percentage of abdominal fat. This is a particular problem for many non-White adults. Lifestyle factors that are related to the development of diabetes include smoking, alcohol consumption, poor diet, and, most important, inactivity (Klein, 2011).

Inadequate physical activity or exercise is well recognized as a risk factor for diabetes. In addition to contributing to the development of obesity, a sedentary lifestyle worsens insulin sensitivity and results in elevated blood glucose levels. Exercise not only improves glycemic control among diabetics; it can also help to prevent many of the complications of the disease, including cardiovascular disease, hypertension, and hyperlipidemia (Anonymous, 2012). Women are at greater risk for inactivity, particularly as they age. African American and Mexican American women are also more likely than non-Hispanic White women to be physically inactive (Miranda, 2006).

### **Heredity as a factor that influence the lifestyle of Diabetes patients of ATBU Teaching Hospital Bauchi**

First degree relatives have a higher risk of developing Type 1 diabetes (T1D) than unrelated individuals from the general population. These data suggest that genetic factors are involved with the development of the disease. At

present, there is evidence that more than 20 regions of the genome may be involved in genetic susceptibility to T1D. It has long been known that Type 2 diabetes (T2D) is, in part, inherited. Family studies have revealed that first degree relatives of individuals with T2D are about 3 times more likely to develop the disease than individuals without a positive family history of the disease. It has also been shown that concordance rates for monozygotic twins, which have ranged from 60-90%, are significantly higher than those for dizygotic twins. Thus, it is clear that T2D has a strong genetic component (Grunnet, 2008). One approach that is used to identify disease susceptibility genes is based on the identification of candidate genes. Candidate genes are selected because they are thought to be involved in pancreatic  $\beta$  cell function, insulin action / glucose metabolism, or other metabolic conditions that increase T2D risk (e.g., energy intake / expenditure, lipid metabolism). To date, more than 50 candidate genes for T2D have been studied in various populations worldwide. However, results for essentially all candidate genes have been conflicting. Possible explanations for the divergent findings include small sample sizes, differences in T2D susceptibility across ethnic groups, variation in environmental exposures, and gene-environmental interactions (Grunnet, 2008).

### **Obesity as a factor that influence the lifestyle of Diabetes patients of ATBU Teaching Hospital Bauchi**

Obesity is also more of a problem for women than for men. For adults 25 years and older, the prevalence of obesity is 21% among men and 27% among women. Among the non-White culturally diverse groups, the prevalence of obesity is 13% higher among African American women than among African American men and 18% higher among Mexican American women than among Mexican American men. Obesity is also strongly related to a striking new epidemic of juvenile onset of type 2 diabetes, particularly among non-White culturally diverse groups. Type 2 diabetes has generally been diagnosed in adults 45 years or older; however, it is being seen increasingly in younger adults and children, a direct result of increasing rates of obesity and physical inactivity (Favret and Pollock, 2012). Over nutrition in many

countries has led to an epidemic of type 2 diabetes. Newly diagnosed type 2 diabetics tend to have one thing in common: obesity. Exactly how diet and obesity trigger diabetes has long been the subject of intense scientific research.

### **Alcohol as a factor that influence the lifestyle of Diabetes patients of ATBU Teaching Hospital Bauchi**

Alcohol is processed in the body very similarly to the way fat is processed, and alcohol provides almost as many calories (Emanuelle, et al., 1998). Therefore, drinking alcohol in people with diabetes can cause your blood sugar to rise. While moderate amounts of alcohol can cause blood sugar to rise, excess alcohol can actually decrease your blood sugar level sometimes causing it to drop into dangerous levels. Beer and sweet wine contain carbohydrates and may raise blood sugar. Alcohol stimulates appetite, which can cause you to overeat and may affect your blood sugar control. Alcohol can also interfere with the positive effects of oral diabetes medicines or insulin (Buddy, 2006 and Emanuelle, et al., 1998).

### **Theoretical Framework**

This subsection of the study deals with the theoretical framework for the study. Thus, two theories are reviewed in relation to the research topic. These include health belief model and sick-role behavior theory. And the two theories were adopted as the theoretical framework for the study because they best explain the way diabetes patients and health professionals should behave and how the interplay of their behaviors could enhance a health and functional individuals in the study area.

### **Health Belief Model**

Health belief model (HBM) is cognitive model of health behavior and was developed by Rosenstock(1966). The basic assumption of the health belief model is that people's action towards health measures are based on their beliefs and attitudes. It acknowledges that beliefs and attitudes of individuals are not impulsive; rather they are a function of the professional

experience of the individuals. The HBM argues that an individual's attitudes and beliefs direct his/her line of action in health seeking both preventive and curative diseases. The model focuses on the factors and variables that are considered in the decision to seek or not to seek health care and from what sources to seek for it.

However, the model does not only look at the individual as a unit of analysis, but considers the socio-cultural environment which conditions the individual to adhere to certain beliefs and predisposes the person towards behaving in a definite and culturally prescribed manner. Thus, diabetes patients may hold beliefs that do not fit the medical view of diabetes and that these beliefs are robust and proximal determinants of patients' emotional well-being and self-care behavior (Parkin and Skinner, 2002 and Hampson, 1997). Individuals often have relatives or know people who have diabetes, and also have seen media portraying people with diabetes illness, and have heard about some of the complications of diabetes diseases. This shows that the individual's diabetes patients may already have personal beliefs of diabetes, which are not necessarily accurate, up-to-date, knowledge. Skinner, et al. (2000) exert that there could be misunderstandings and misconceptions on the part of patients. For instance, patients who have not been aware of any symptoms of diabetes recognize retrospectively that they have been experiencing the same symptoms without attributing it to their diagnosis of diabetes. The exercise has also revealed that some diabetes patients hold very interesting beliefs about their illness, such as the woman who said, I don't think it is diabetes. I just think the walls of my womb are falling in because I am peeing so much of the time (Skinner, et al., 2000).

### **Criticism of HBM**

The health belief model attempts to predict health-related behaviors by accounting for individual differences in beliefs and attitudes. However, it does not account for other factors that influence health behaviors. For instance, habitual health-related behaviors (e.g., smoking, seatbelt buckling) may become relatively independent of conscious health-related

decision making processes. Additionally, individuals engage in some health-related behaviors for reasons unrelated to health (e.g., exercising for aesthetic reasons). Environmental factors outside an individual's control may prevent engagement in desired behaviors. For example, an individual living in a dangerous neighborhood may be unable to go for a jog outdoors due to safety concerns. Furthermore, the health belief model does not consider the impact of emotions on health-related behavior. Evidence suggests that fear may be a key factor in predicting health-related behavior.

### **Sick-Role Behavior Theory**

The sociological explanation of illness originated from the work of Parsons (1951) sick-role behavior theory. He used the term 'sick-role' to explain how sick individuals are expected to act and be treated by others while sick. As a structural-functionalist, he expanded the works of Auguste Comte, Emile Durkheim and Herbert Spencer and argued that social practices should be seen in terms of their functions in maintaining order or structure in the society. Therefore, like any deviant act, illness needs to be controlled, in some way and the sick person should be helped and forced into performing his/her social roles again.

According to Parsons, basically the sick - role has four characteristics; firstly, the sick person is exempted from carrying out his/her normal social roles. The severe the illness, the more one is freed from carrying out his expected social roles. Secondly, person in the sick - role is not directly responsible for his or her plight. Thirdly, the sick person needs to try and get well soon so as to continue with his normal social roles, this is because the sick - role is regarded as a temporary stage of deviance that should not be prolonged if at all possible. Lastly, the sick person is obligated to seek competent help and most cooperate with medical care to get well (Parsons, 1951). He further argued that noncompliance with these role requirements will result in social disapproval, charges of malingering and the use of sanctions against the sick person. Human well-being is critical to the development of any organization. For instance, an individual who is employed in an organization would have

to miss working days in order to care for his/her diabetes illness and this invariable affect the normal functioning of the organization.

Parsons provided the role of the medical profession using four major attributes or his pattern variables. They include:

- That the medical professional role is functionally specific. That is as a specialist in health and disease, a doctor is expected to apply his knowledge and skills to problems of illness and promotion of health and to restrict his professional concern to the area.
- That the medical professional role is "affectively neutral". Meaning, the doctor is expected to be objectively and emotionally detached in his interaction with his patients.
- That professional medical role is "collective-oriented" rather than "self-oriented." This means that the doctor is expected to treat his patient according to health requirement and community expectations rather than in the personal interests and needs of the doctor.
- That the professional medical role is universalistic. The doctor's actions are governed by universal rules of the profession rather than the requirements of unique, personal relationship with the patient.

These roles of the sick person and that of the doctor are in Parsons' formulation complementary, in other words, if both the sick person and the doctor conform to their roles, a reciprocal relationship is established. There is a further implication that the partnership is a consensual one, meaning, both the doctor and the patient are in agreement about the means and expected outcome.

However, some scholars are of the view that there are theoretical issues which needs to be clear in order to understand this relationship between the doctor and his patient. One paramount issue is that of the differential power of the participants in the relationship. According to these view, the superior power of the medical practitioners, in terms of their technical expertise and status, will effectively induce the patient towards a positive health outcome. Indeed, it is this superior power that helps make possible

the painful procedures to which the patient concedes. The function of the medical practitioners is therefore, seen to be one of social control, the "Medicalization of the society" (McQueen, 2011 and Comrade and Schneider, 1992).

Accordingly, diabetes patients must submit to the control of the medical practitioner since they are inferior (in terms of knowledge and technical expertise's) in the relationship and they are as well required by virtue of this expected roles as a member of the society to try and get well as soon as possible. Thus, diabetes patients' personal effort to seek for medical health care is considered a necessity, not consensual, because by performing this role, they must adhere to medical professional prescriptions or recommendations, treatments and diets if they want to manage or control their diabetes and live for long-life and contribute to the social system. However, the theory has three main limitations:

### **Criticism of the Sick Role Theory**

First the theory failed to take into account social stratification and social differences in societies and their implications for health and illness experience, and for access to the health care system;

Secondly, the theory is historical and thus, does not allow for the consideration of variations in the development of health care institutions from one society to another, having based his study on industrial societies; and

Lastly, propounded of the theory has an idealized picture of the doctor-patient relationship which may not necessarily accord with reality.

### **The Theory Adopted for the Study and Its Justification**

A combination of health belief model and the sick-role behavior theory was adopted as the theoretical framework for the study, as they both provide detailed and direct explanations on diabetes, the way patients of chronic diseases like diabetes tend to behave and some of the sociological factors that may influence their behaviors. Thus, the development of diabetes patient's sense of self-efficacy through societal disposition and cultural

beliefs or education (a component of sociological factors on diabetes patients) is pivotal for improving health. The explanations provided by the sick-role theory show the social interplay between the health care professionals and seekers to create a healthy and functional society, as Bauchi State is a cosmopolitan state. In view of the above justification, the theories seem to best explain the influence of the sociological factors on diabetes patients for the purpose of this research.

## **METHODOLOGY**

### **Introduction**

This chapter entails the methodological issues that was used for the study. It consist of the history of the study area, research design, population of the study, sample size, sampling methods, methods of data collection and methods of data analyses.

### **Research Design**

Descriptive survey design was used with a view of getting a picture of the social and demographic factors affecting diabetes patients in ATBU Teaching Hospital Bauchi. Quantitative and qualitative research will be used to collect data from the respondents.

### **History of the Study Area**

Abubakar Tafawa Balewa University Teaching Hospital is a major health facility in Bauchi State. Initially, the hospital was established as a leprosarium in 1918. Subsequently, it became a General Hospital in 1966 and a specialist Hospital in 1978, respectively. The hospital became the 18<sup>th</sup> Teaching Hospital in the North-East geopolitical zone in 2010, after a memorandum of understanding was signed between the Federal Government of Nigeria and the Bauchi State Government in 2008. The hospital has a capacity of accommodating 700 beds with 21 wards and offers full services of a teaching hospital, such as health care services, research and training. It is the only government designated health facility for the treatment of diabetes related illness (Sabo, et al., 2015).

Bauchi is a cosmopolitan state and lies on the railroad from Maiduguri to Kafanchan (where it joins the line to Port Harcourt) and has road connections to Jos, Kano and Maiduguri. The Abubakar Tafawa Balewa University and Federal Polytechnic College are the main tertiary institution in the state.

### **Target Population**

The study focus on target population which comprises all the diabetes patients who have been enrolled in the hospital for care and treatment in diabetes clinic. However, the study also focuses on health professionals, such as doctors, nurses, neurologists, pharmacists, nutritionists and health educators, among other staff of the hospital. The population of diabetes patients receiving diabetes related treatments either visiting the hospital or hospitalized were put at one thousand and eighty-seven (1087) based on the information accessed on 27 March, 2016 in the hospital.

### **Sample size and Sampling Techniques**

According to Bartlett, et al. (2001) the sample size of a population between one thousand to one thousand four hundred and ninety-nine (1000 to 1499) is two hundred and sixteen (216) which was considered as the total sample size for the study. This comprises of two hundred (200) patients receiving diabetes related treatments in the hospital that will be sampled to obtain a miss-method of quantitative and qualitative data (questionnaire and in-depth interviews), sixteen (16) of the respondents will comprises the health care professionals, which include five doctors, five nurses, two pharmacist, two nutritionists, two health educators between the aged of twenty and above for all sex will be examine using quantitative methods.

The sampling technique that will be used is purposive sampling. This technique is appropriate in my study because it is recommended on small number of population. I also selected participants for the study on the basis of them having the relevant characteristics for the study. Therefore any patient attending the clinic at the time of data collection with a diagnosis of

diabetes was selected for the study. Purposive sampling was also employed in selecting the key informants due to their expertise in the study area.

### **Methods of Data Collection**

The research instrument includes questionnaires and in-depth interview (IDI). And was supplemented with the secondary data obtained from text books, journals and other relevant materials obtained from the study area (ATBUTH). The questionnaire was divided into two sections. Section one comprised the demographic and socio-cultural characteristics of the respondents, such as gender, age, education income, religion and marital status, among others. Section two focus on the research questions. The questionnaire will contain both open ended and closed ended questions. This was done so as to give the respondents the opportunity to further express their feelings rather than restricting them to specific options.

In the case of the IDI, it will be conducted using interview-guide to obtain responses from the diabetes patients of ATBU Teaching Hospitals. The interview was conducted in a place where every participants deemed fit. Tape recorder was used to capture the voice of the participants based on their permission, and where not permitted, a note is taken as they give information.

### **Methods of Data Analysis**

Descriptive statistical technique was used to analyze the data. Initial analysis involving the generation of frequencies and percentages of the quantitative data that was obtained through the use of the computer software known as Statistical Package for Social Sciences (SPSS) and was presented in tabular form. While further analysis involving cross-tabulation of some selected tables was made to explore statistical relationships between the variables. The data was subjected to chi-square analysis and logistic regression analysis. The qualitative data that was gathered through the use of in-depth interview which was transcribed reported and discussed to compliment and support the quantitative data.

## DATA PRESENTATION AND ANALYSIS

### Introduction

This chapter deals with the presentation of data analysis and interpretation of data collected. The data was collected through the use of questionnaire and oral interview while the analysis was based on the research questions slated earlier in chapter one of this study. The data was presented in tabular form which started with the socio-demographic data of the respondent and followed by the research questions.

**Table.4.1 Socio-demographic characteristics of the respondents on Gender and Marital status**

Variables (N=216)		Frequency	Percentage
<b>Gender</b>			
	Male	88	40.7
	Female	128	59.3
<b>Marital Status</b>			
	Married	174	80.6
	Single	15	6.9
	Divorced	5	2.3
	Widow	22	10.2

The result of the socio-economic characteristics of the respondents is presented in Table 4.1. From the total number of respondents, the gender distribution shows that female were 128 (59.3%) of the respondents, while 88 (40.7%) were male. This indicates that ratio of female is much higher than that of male in ATBUTH Bauchi.

For marital status of the patients, the result showed that those who were married constitute the majority in ATBUTH Bauchi who were (174) 80.6%, single were 15 (6.9%), divorced were 5 (2.3%), while those who respond as widow were 22 (10.2%). Based on the occupation, those who are on private business were the majority interviewed 68 (31.5%), the civil servants were 65 (30.1%), while those who are trader were 64 (29.5%). Those with the lower number are those in category of retirees who were 19 (8.8%).

**Table 4.2 Socio-demographic data on Income and Age of respondents**

Income			
	N 25,000 and below	102	47.2
	N 26,000 - 50,000	76	35.2
	N 51,000 - 75,000	18	8.3
	N 76,000 -100,000	7	3.2
	N Above 100,000	13	6.1
Age			
	Below 20 years	6	2.8
	20-29	30	13.9
	30-39	34	15.7
	40-49	46	21.3
	50 and above	100	46.3

Table 4.2 indicated the respondents' data on age and income distribution, majority of the respondents falls within 50 and above who were 100 (46.3%), followed by 40-49 who were 46 (21.3%), 30-39 were 34 (15.7%), 20-29 were 30 (13.9%) while below 20 were 6 (2.8%). For respondents on income the result shows that N25, 000 and below were 102 (42.2%), N26, 000-N50, 000 were 76 (35.2%), N51, 000-N75, 000 were 18 (8.3%), N76, 000-N100, 000 were 7 (3.2%), while N100, 000 and above were 13 (6.1%). This result revealed that majority of the patient in ATBUTH Bauchi are lower income earners whom fall within the first and second category

**Table 4.3 Socio-demographic data on Level of Education and Ethnicity of respondents**

Level of Education			
	No education	45	20.8
	Primary	44	20.4
	Secondary	34	15.7
	Tertiary	36	16.7
	Islamic	57	26.4

Ethnicity			
	Hausa	86	39.8
	Fulani	73	33.8
	Yoruba	14	6.5
	Igbo	5	2.3
	Others	38	17.6

Table 4.3 result of the distribution of level of education revealed that No education were 45 (20.5%), those in primary education were 44 (20.4%), those have secondary education were 34 (15.7%). Respondents in tertiary education were 36 (16.7%), while those who have Islamic education were 57 (26.4%). The result shows that the respondents of those who have Islamic education have the highest number in the distribution in ATBUTH Bauchi, and those who were in secondary have the lowest number.

For ethnicity, the result shows that hausa have the highest number of respondents who were 86 (39.8%), followed by Fulani who were 73 (33.8%), yaruba were 14 (6.5%), igbo were 5 (2.5%), while those who falls under the category of others were 38 (17.6%).

**Table 4.4 Socio-demographic data on Religion, Weight and Occupation of respondents**

Religion			
	Islam	184	85.2
	Christianity	25	11.6
	Others	7	3.2
Weight			
	30kg and below	17	7.9
	31-60kg	108	50.0
	61-90kg	80	37.0
	91kg and above	11	5.1
Occupation			
	Civil servant	65	30.1
	Trader	64	29.6

	Private business	68	31.5
	Retired	19	8.8

Table 4.4 result of the distribution on religion revealed that Islam has the highest number of respondents in the distribution who were 183 (85.2%), Christianity were 25 (11.6%), while others were 7 (3.2%).

For the respondents' on Weight distribution, majority of the respondents falls within 31kg- 60kg who were 108 (50.9%), followed by 61kg-90kg who were 80 (37.0%), 30kg and below were 17 (7.9%), while 91kg and above has the lowest number of respondents who were 11 (5.1%), the result shows that majority of diabetic patients in ATBUTH Bauchi are not overweight or averagely overweight. %).

Based on the occupation, those who are on private business were the majority interviewed 68 (31.5%), the civil servants were 65 (30.1%), while those who are trader were 64 (29.5%). Those with the lower number are those in category of retirees who were 19 (8.8%). This indicate that most of the diabetic patients attending treatment in ATBUTH Bauchi defend on their private businesses then followed by civil servant.

**Table. 4.5 When were you first diagnosed with diabetes? a. Year**

Valid Year	Frequency	Percentage
1990 – 1999	5	2.3
2000 – 2009	44	20.4
2010 – 2018	167	77.3
<b>Total</b>	216	100.0

Table 4.5 above revealed that the responses on when were you first diagnosed with diabetes in years revealed that in 1990 – 1999 only 5 patients (2.3%), in 2000 – 2009 we have 44 patients (20.4%), in 2010 – 2018 we have 167 patients (77.3%). This outcome indicated that majority of the diabetic patients in ATBUTH Bauchi start their diagnosed between 2010 – 2018.

**Table 4.6 If married are you happy with your partner?**

Valid	Frequency	Percentage
Yes	201	93.1
No	15	6.9
Total	216	100.0

Table 4.6 result of the distribution of whether they are happy with their partner? Revealed that those who say Yes were 201 (93.1%), those who say No were only 15 (6.9%). This indicated that majority of diabetic patients in ATBUTH Bauchi are happy with their partner.

**Table 4.7 Do you go for regular test before the illness?**

Valid	Frequency	Percentage
Yes	145	67.1%
No	71	32.9%
Total	216	100.0%

Table 4.7 result of the distribution of whether they go for regular test before the illness? Revealed that those who say Yes were 145 (67.1%), those who say No were 71 (23.9%). This indicated that majority of diabetic patients in ATBUTH Bauchi do go for regular test before the illness.

**Table 4.7 Cross Tabulation: Education and whether diabetic patients go for regular test before the illness?**

Variable	Education					Total	X <sup>2</sup> .002
	No Education	Primary	Secondary	Tertiary	Islamic		
Agree	23 (63.9%)	24 (72.7%)	37 (78.7%)	57 (96.6%)	31 (75.6%)	145 (67.1%)	
Disagree	13 (36.1%)	9 (27.3%)	10 (21.3%)	2 (3.4%)	10 (24.4%)	71 (32.9%)	
Total	36 (100.0%)	33 (100.0%)	47 (100.0%)	59 (100.0%)	41 (100.0%)	216 (100.0%)	

The data on table 4.7 above establish the relationship between the respondent's level of educational and whether they go for regular test before the illness. It reveal that the diabetic patients do go for regular test before the illness this could be as a result of the level of education of the respondent, because majority of those who agreed have high level of education.

This could also be supported based on the oral interview conducted to back up the result, which questions were asked whether they have any illness apart from diabetes? Majority answered “Yes” they were diagnose with one or two illnesses before diabetes was discovered. And they were also asked what types of illness do they have before diabetes was discovered? Most of them named “hypotension, lever problem, kidney etc” As such level of education has also contributed to the awareness of diabetic patients of ATBUTH Bauchi to check their status regularly.

**Table 4.8 Do you avoid sugary food?**

Valid	Frequency	Percentage
Yes	153	70.8%
No	63	29.2%
<b>Total</b>	<b>216</b>	<b>100.0%</b>

The result of table 4.8 the responses of the respondents on whether they do avoid sugary food revealed that 191 (88.9%) of them responded “Yes” they do, whereas the remaining 25 (11.6%) responded with “No”, they don't avoid sugary food. This outcome indicated that majority of the respondents avoid taking sugary food as part of strategy of managing the diabetes illness.

**Table 4.8 CT: Ethnicity and whether diabetes patients avoid sugary foods before the illness.**

Variable	Ethnicity					Total	χ <sup>2</sup> .000
	Hausa	Fulani	Yoruba	Igbo	Others		
Agree	4 (80.0%)	1 (7.1%)	54 (74.0%)	62 (72.1%)	32 (84.2%)	153 (70.8%)	

Disagree	24 (27.9%)	19 (26.0%)	13 (92.9%)	1 (20.0%)	6 (15.8%)	63 (29.2%)	
Total	<b>28</b> (100.0%)	<b>20</b> (100.0%)	<b>67</b> (100.0%)	<b>63</b> (100.0%)	<b>38</b> (100.0%)	<b>216</b> (100.0%)	

The data on Table 4.8 above establish the relationship between respondent's ethnic background and the avoidance of surgery foods. It reveals that there is a strong relationship between avoidance of surgery foods and ethnic background of the respondents. The table reveals that Hausa and Fulani, have agreed to have been taken more surgery foods before the illness, which Yoruba, Igbo and Others disagreed to have been taken surgery foods before the illness, other factors such as urban dwelling might have been the cause of their illness.

This result is supported with the work of (Andrew E. Uloko et al. 2018). Their findings reveal that the prevalence of diabetes mellitus in Nigeria was as a result of unhealthy dietary habits older age, physical inactivity and urban dwelling which were the leading factors.

**Table 4.9 Does your family have a history of diabetes?**

Valid	Frequency	Percentage
<b>Yes</b>	141	65.3
<b>No</b>	75	34.7
<b>Total</b>	216	100.0

The result of the table 4.10 above revealed the responses of the respondents on whether their family have a history of diabetes illness? Shows that 141 (65.3%) of them responded "Yes" they have, whereas the remaining 75(34.7%) responded with "No", they don't have a history of diabetes illness in their family. This outcome indicated that majority of the respondents in ATBUTH Bauchi have a family history of diabetes illness.

**Table 4.10 Do you avoid starchy food?**

Valid	Frequency	Percentage
<b>Yes</b>	161	74.5%
<b>No</b>	55	25.5 %

<b>Total</b>	216	100.0%
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The result of the Table 4.10 revealed that the responses of the respondents on whether they do avoid starchy food shows that 161 (74.5%) of them responded “Yes” they do, whereas the remaining 55(25.5%) responded with “No”, they don’t avoid starchy food. This outcome indicated that majority of the respondents avoid starchy food as part of strategy of managing their diabetes illness.

**Table 4.10 CT: Ethnicity and how diabetes patients avoid starchy foods**

Variable	Ethnicity					Total	X <sup>2</sup> .000
	Hausa	Fulani	Yoruba	Igbo	Others		
Agree	69 (80.2%)	52 (71.2%)	9 (64.3%)	4 (80.0%)	27 (71.1%)	161 (74.5%)	
Disagree	17 (19.8%)	21 (28.8%)	5 (35.7%)	1 (20.0%)	11 (28.9%)	55 (25.5%)	
Total	<b>86 (100.0%)</b>	<b>73 (100.0%)</b>	<b>14 (100.0%)</b>	<b>5 (100.0%)</b>	<b>38 (100.0%)</b>	<b>216 (100.0%)</b>	

The data on Table 4.8 above establish the relationship between respondent’s ethnic background and the avoidance of starchy foods. It reveals that there is a strong relationship between avoidance of starchy foods and ethnic background of the respondents. The table reveals that Igbo and Yoruba, have agreed to have been taken starchier foods before the illness, which Hausa, Fulani and Others disagreed to have been taken starchier foods before the illness, other factors such as surgery might have been the cause of their illness as observed above.

This result is supported with the work of (Andrew E. Uloko et al. 2018). Their findings reveal that the prevalence of diabetes mellitus in Nigeria was as a result of unhealthy dietary habits older age, physical inactivity and urban dwelling which were the leading factors.

**Table 4.11. Did diabetes decreased your sexual performance?**

Valid	Frequency	Percentage
<b>Yes</b>	130	60.2
<b>No</b>	86	39.8

Total	216	100.0
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The result of the table 4.11 above revealed the responses of the respondents on whether diabetes illness has reduce their sexual performance? Shows that 130 (60.2%) of them responded “Yes” it has, whereas the remaining 86 (39.8%) responded with “No”, it does not reduce their sexual performance. This outcome indicated that majority of the respondents in ATBUTH Bauchi have a problem with their partner in times of sexual performance because the illness reduces their sexual performance.

**Table 4.11 CT: Age and how has diabetes decreased your sexual performance**

Variable	Age					Total	χ <sup>2</sup> .001
	Below 18	18-30yrs	31-40yrs	41-50yrs	Above 50yrs		
Agree	6 (46.2%)	7 (23.3%)	16 (48.5%)	51 (76.1%)	64 (87.7%)	144 (66.7%)	
Disagree	7 (53.8%)	23 (76.7%)	17 (51.5%)	16 (23.1%)	9 (12.3%)	72 (33.3%)	
Total	13 (100.0%)	30 (100.0%)	33 (100.0%)	67 (100.0%)	73 (100.0%)	216 (100.0%)	

The data on table 4.11 above establish the relationship between the respondent’s level of sexual performance and age. The result reveal that there is significant relationship between age and sexual performance of the respondents, more so (87.7%) of the respondents were above 50 years, also (76.1%) of the respondents were 41 to 50 years this indicates that a high proportion of the patients had reported sexual problems in alder age.

This result is also supported by an oral interview conducted which the patients were asked how they are coping with their spouse in times of sexual satisfaction. The men younger patients answered yes they are using enhancement drugs to satisfy their spouse, while the female young patients agreed not have been using any drugs but are seriously facing challenges in their marital homes but are sougning treatment from the hospital . The older patients both male and female agreed completely to have been using enhancement drugs to aid their sexual desire.

This result is supported by the work of (Geoffrey M. Ungaya Likata, and et al 2012) ‘Sexual Dysfunction among Patients with Diabetes Mellitus’ which they concluded that Sexual dysfunction is prevalent among male and female diabetic patients, though the prevalence is significantly higher in males than in the females.

## **SUMMARY, CONCLUSION AND RECOMMENDATION**

### Introduction

This chapter summarizes the research work by given brief and concise information about the study. Based on the study findings, it drew conclusion out of the study results obtained. The chapter also made some important recommendations based on the study outcome. It also made recommendation for future study.

### **Summary**

This study was conducted on diabetic patients in Abubakar Tafawa Balewa University Teaching Hospital Bauchi (ATBUTH). The socio-demographic characteristics of the respondents show that majority of the respondents were female and married. However, based on occupation of the respondents, the study result shows an even distribution between civil servant, traders and those engage in private business, while only few were retirees. Based on age, the result indicated that majority of the respondents were from fifty years and above, while in terms of educational level, there is no much difference between the various levels of education as the result indicated nearly even distribution. The respondents’ ethnicity shows most of them were Hausa and Fulani, with few Yorubas and Igbos, while distribution based on religion shows majority were Muslims. Majority of the respondents were weighing between 31- 90Kg, however, based on income, most of them earn less.

The study further explores the respondents’ socio-demographic lifestyle which include age, income, occupation, education, regular exercise, eating habits etc of the diabetes patients, and discovered that majority of them were of the believe that major cause of diabetes is from genetic inheritance,

while others believed that is a combination of all major factors (poor eating habit, lack of regular exercise, obesity and the genetic inheritance).The cross tabulation on income and nutritional foods, revealed that majority of them are not able to buy nutritional food regularly, this is because majority of the respondents are low level income earners and also have low level knowledge of western education. Others relied on regular purchase of drugs whereas some adhere strictly to medical advices, and some use to engage in regular exercise.

The study also examine the difference in life style change by diabetic patients based on gender and the result of the study shows that there is significant difference between male in terms of adopting to lifestyle changes compared to their female counterparts. In conclusion, factors influencing life style changes was also examine and the result indicated that age, education, income and weight were all significant predictors of life style change whereas only receiving support from family that was not significant.

### **Conclusion**

Based on the results obtained, certain conclusion would be drawn as follows; since majority of the respondents were female, it can be concluded that most of the diabetic patients receiving treatment at Abubakar Tafawa Balewa University were female. Based on the result of the perception of the respondents about causes of diabetes, it can be deduced that most of the respondents have awareness about the major causes of diabetes and the diabetes predisposing conditions. It explicitly revealed that their perception about the causes of the disease is right. On the coping strategies adopted by the diabetic patients, it can be concluded here that avoiding starchy food and adhering to medical advises tends to receive less attention from the respondents, while most of them tends to adopt regular exercise and taking medications.

Again, important conclusion that can be drawn from the result on the differences based on gender on the changes in life style by the diabetic patients is that, male respondents adopt to changes more than female,

therefore female due to their nature, cultural believe, economic status, and religion tends to adopt less to changes in life style due to the disease compared to male. Lastly, since the multiple regression result indicated that the four socio-demographic variables used in the model (age, income, education and weight) were all significant predictors of life style changes, it can be deduced that these variables (age, education, income and weight) are important in designing any social intervention programs, diabetes management awareness campaign and other forms of public enlightenment for the diabetic patients.

### **Recommendation**

Diabetes is a lifelong disease that can lead to severe complications and increased risk for mortality. It can be recommended that strict lifestyle can delay or prevent the progression of complications associated with diabetes and there is also substantial evidence that leading a healthy lifestyle, including following a healthy diet, achieving modest weight loss, and performing regular physical activity can maintain healthy blood glucose levels and reduce the risk of complications of diabetes.

Based on the outcome of this study on the coping strategies adopted by diabetic patients, it revealed that long-term diabetes management involves key health behaviors such as physical activity, healthy eating, and weight management. Research has shown that regular physical activity can help prevent the onset of diabetes, reduce the risk of complications and improve blood pressure control in people with diabetes. Therefore, since the result of socio-demographic characteristics indicated that majority of the respondents were weighing between 60-90kg, weight management and dietary modification such as adoption of a Mediterranean or low-glycemic index eating pattern have been shown to be effective in improving markers of cardiovascular disease (CVD) risk.

In Nigeria, it is recommended that all people diagnosed with diabetes be referred to structured diabetes patient education programs that are evidence-based, culturally sensitive, and delivered by trained educators either individually or in a group setting. There is strong evidence that

structured diabetes patient education improves patients' knowledge and understanding of their condition and has a positive effect on changing dietary habits. Patient education also may increase the frequency of physical activity and is effective in helping patients, but these effects may only be short term. Therefore, life style change such as physical exercise especially among female diabetic patients should be encouraged.

The present study showed that knowledge was necessary for making lifestyle changes. It has also been suggested previously that general knowledge about treatments and risk factors for chronic conditions correlates with compliance with lifestyle changes and medications. The information apparently reduced the potential risks of the illness. Thus, receiving a diabetes education on management strategies from a health professional may increase a person's awareness of the need for lifestyle changes and can be a motivating factor for making them to adapt to the change.

Lastly, providing intensive long-term diabetes management support, including tools for monitoring lifestyle factors, goal-setting, and frequent contact, for people with newly diagnosed diabetes may help them achieve and maintain positive lifestyle changes.

Recommendation for further studies

This present study like many others is not without limitations. While evaluating the results of the present study, the limitations should not be ignored. One potential limitation of this study is its sample characteristics. All participants were diabetic patients in Abubakar Tafawa Balewa University teaching Hospital Bauchi. Diabetic patients from other tertiary health institutions were not considered, thus this limit the ability for generalizability of the result on diabetic patients. Therefore, it is recommended for future study to carry out cross-sectional study to examine this phenomenon from different hospitals across the country. This will create avenue for generalizability of the result on diabetic patients and also pave way for comparison of the result based cultural and geographical differences.

In addition, the sampling technique used in this present study also calls for question. Considering the drawback associated with purposive sampling, it is recommended that future study should employ probability sampling method in selecting their target respondents. Lastly, long-term studies on the implementation and maintenance of lifestyle changes might highlight how diabetes self-management can be sustained. Furthermore, qualitative studies should be adopted in future research to explore the different stages of change in the process of altering health behaviors/ lifestyle change for those with diabetes.

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