



Exploring the Perception and Preventive Practices Among Diabetes Patients in Rural Areas of Cross Rivers State

¹Bassey E. Immaculata, ²Elusojil Christiana, ³Bassey E. Emmanuel, ⁴Okutepe T. Elejo, ⁵Ozor A. Rose, ⁶Iniomor Mary, ⁷Oke-Ose N. Josephine, ⁸Anwuli Emina, ⁹Munge E. Mary, ¹⁰Akpojaro Ejovi and ¹¹Ohanme Eugene Ohams

^{1,4,5}*Department of Nursing Sciences, Faculty of Basic Medical Sciences, Igbinedion University Okada, Edo State Nigeria*

^{2,7-10}*Department of Nursing Sciences Benson Idahosa University, Edo State Nigeria*

³*Department of Emergency Medicine, Whiston Hospital, Mersey Side L35 5DR England*

⁶*Department of Nursing Sciences, Faculty of Basic Medical Sciences, University of Benin, Edo State Nigeria*

¹¹*Department of Pharmacology and Therapeutics, Faculty of Basic Clinical Medicine, Alex Ekwueme Federal University Ndufu-Alike, Ikwo, Ebonyi State, Nigeria*

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Corresponding Author

Ohanme Eugene Ohams,
Department of Pharmacology and Therapeutics, Faculty of Basic Clinical Medicine, Alex Ekwueme Federal University Ndufu-Alike, Ikwo, Ebonyi State, Nigeria
eugene.ohanme@funai.edu.ng

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ABSTRACT

Diabetes is becoming a major public health concern in rural Nigeria especially in Cross River State because of the social economic and cultural practices that determine the care of the disease. This paper aims to identify the cultural perception, preventive measure and factors influencing access to health care among the Efik tribe of the rural Cross River State. As part of this study, the prevalence, management and socio-economic burden of diabetes are evaluated using a qualitative synthesis of secondary data sources from the literature, government documents and community surveys. The studies reveal that the rate of diabetes has risen with statistics suggesting that between 3.5% and 5.2% of the adult population now has Type 2 diabetes. Such challenges include poor access to health facilities particularly in rural areas, low levels of Diabetes education and Literacy and socio-economic characteristics that determine food choice and change of these behaviors. Taboos about the disease, including the perception that diabetes is caused by spirits or a curse and cultural beliefs also present barriers to timely use of health care services resulting in worsening of the disease. Lack of resources has also caused poor eating habits, which has boosted the prevalence of obesity and in return complicated the management of diabetes. Accordingly, the study recommends that for improved diabetes management in rural Cross River State, there is need to improve on the existing health-care facilities, provide more health education, make the drugs cheaper and erase cultural beliefs that are associated with the disease. The strategies must therefore focus on early diagnosis, medication compliance and lifestyle modification with regards to the cultural setting in the community. The study's findings are useful to enhance diabetes care and prevention in other rural areas in Nigeria and other sub-Saharan African countries.

INTRODUCTION

Diabetes is a long-standing disease that affects the metabolism of sugar in the body and has gradually assumed a worrisome proportion as a global health issue^[1]. However, knowledge of diabetes and its prevention in many rural areas, especially in Nigeria among some ethnic groups depends not only on the perception but also on traditional beliefs^[2]. One of such areas is Cross River State which is inhabited by the Efik people and where diabetes is perceived culturally with a lot of traditionalism and misconceptions. This research examines the knowledge and attitude of diabetic patients towards the disease and its prevention in rural Cross River State with emphasis on the Efik people's traditional and modern beliefs about the disease. Earlier, the disease was associated with fattening practices in the Efik culture, which was associated with preparation for marriage. These women were locked up and force-fed with foods and drinking water in order that they gained much weight and were thought to be more attractive to prospective suitors. In this confinement, they took a lot of food especially foods that are rich in calories and this resulted to passing of much urine. This led the local population to call such symptoms a disease which they referred to as 'diabetes insipidus'. It is necessary to distinguish diabetes insipidus from diabetes mellitus which is the most common type of diabetes. Diabetes insipidus mainly presents by increased voiding and thirst and the condition is not associated with hyperglycemia or metabolic disorder as diabetes mellitus^[2]. It is for this reason that the differentiation between diabetes insipidus and diabetes mellitus was confusing since both the diseases involved excessive passage of urine while diabetes insipidus was of renal origin while diabetes mellitus a metabolic disorder characterized by., elevated blood sugar levels due to impaired insulin function^[3]. However, the historical background of using overfeeding, excessive urination and the term 'diabetes' was sown the seeds of further misunderstanding of the disease. Traditionally, young women are overfed in the fattening room., this led to more cases of developing diabetes mellitus in the course of their lives because of poor diet and lack of physical activities^[3]. Today, although some of the members of the community continue to believe in the traditional concepts about diabetes, there has been an increasing understanding of diabetes as a health issue. Nevertheless, the general public, especially the rural dwellers in Cross River State still associate the disease with witchcraft or spiritual attacks rather than a disease that is as a result of improper diet and exercise. This belief is especially rife in part of the world where there is a scarcity of health care services. Thus, the majority of diabetic patients do not go to the

hospital, preferring to treat themselves with herbs, visiting spiritual healers, or churches or mosques. Such a delay leads to a worsening of the symptoms and the development of such complications as improper Perfusion, local infection and overall deterioration leading to possible organ failure^[4]. The high incidence of diabetes in the rural Cross River State is therefore attributed to socio-economic factors and this is due to the current economic crunch in Nigeria. Food choices are also affected by the fact that majority of the population cannot afford their basic needs. In such settings people develop diets with high calorie meals because such foods are cheap and unhealthy thus leading to noncommunicable diseases such as diabetes. Also, compliance with the recommended dietary measures and changes in life style including increased physical activity, glucose control and so on, which is very important for the effective control of the disease are not well understood by many individuals in these rural settings^[5]. One more problem of the rural areas of Cross River State is the lack of easy access to the health care centers. Actually, there is a diabetic center in Calabar, the state capital, but many patients from the rural areas cannot afford to transport themselves to these healthcare centers. People with diabetes do not seek medical care since they think that diabetes is not a serious illness or it is a spiritual condition., by the time they visit the clinic, complications are already very advanced^[6]. All these factors such mismatch of culture, inadequate health care provisions and socio-economic challenges has made the management of diabetes in rural Cross River State very challenging. The implications of this are that there are no preventive measures and poor treatment for those living with the disease. Knowledge of these perceptions is therefore important in the development of health interventions that can address unhelpful beliefs, enhance uptake of preventive measures and optimize compliance with prescribed treatment regimens. This study, therefore, aims at identifying how the rural communities of Cross River State perceive diabetes, the preventive measures that they use (if any) and the factors that influence their health seeking behavior. It will focus on the influence of perceived cultural beliefs, perceived economic stress, and perceived healthcare access on these perceptions to design culturally appropriate interventions which may enhance diabetes care and its consequences in the region. Therefore, this study will be useful in understanding the role of culture, health practices and socio-economic factors in diabetes patients in rural Cross River State and recommendations for the improvement of diabetes care among the identified patients. The study will also help to advance the literature on non-communicable diseases in

sub-Saharan Africa where similar cultural perceptions and access to health care remain major barriers to disease management.

MATERIALS AND METHODS

Research Design: This study utilized a method of literature review. The retained literature review identified current published research, reports and secondary data sources and integrated them to assess the selected cultural beliefs, socio-economic factors, and health care access that influenced diabetes control and prevention in the region. Since primary data was not collected, the research was conducted using secondary data which allowed for an analysis of the topic using data that has already been collected and analyzed.

Data Collection: The data for this study was collected from secondary sources only, which includes: Peer reviewed articles, government and health organization reports, reports of non-governmental organizations, diabetes treatment and management data, socio-economic data. In order to understand the cultural beliefs about diabetes especially in Cross River State a comprehensive literature review was undertaken. Specifically, the review aimed at the impact of the “fattening room” and the use of herbal remedies on local beliefs and health seeking behaviour. The study analyzed how these practices helped to cultivate the view of diabetes as a condition related to overeating and excessive urination, despite the fact that the community used to confuse the disease with diabetes insipidus. Previous research was obtained from databases including but not limited to Goggle Scholar, PubMed, Scopus and other databases to ensure that the limitations of cultures in relation to diabetes were well understood. In order to supplement the academic literature, government and health organization reports were used to gather statistical information regarding diabetes prevalence, treatment and control in Nigeria specifically in rural Cross River State. Data obtained from WHO and the Nigerian Ministry of Health was used to obtain information about the national and regional incidence of diabetes and health related activities that seek to address diabetes care. Interviews were carried out with NGOs working in Cross River State, particularly those in the health education and non-communicable diseases sectors to identify the challenges that cross-sectioned the community in accessing health care and the part played by community-based intercessions in diabetes control and prevention. These reports were useful in the identification of health programs at local level and their efficiency in enhancing the understanding and management of diabetes in rural communities.

Literature on diabetes treatment and management was also consulted and information from the diabetic center in Calabar was also considered. While some specific local health data were lacking, general reports on healthcare access and availability of diabetes related services in the state capital gave a background to the problems of healthcare access in the rural areas. The review was therefore aimed at evaluating the extent to which diabetes care services were available, how compliant patients were with treatment guidelines and their outcomes. Last, Cross-sectional studies on the socio-economic status of rural dwellers in Cross River State, Nigeria were reviewed to determine the impact of economic stress, food insecurity and restricted access to health care on dietary practices and health care choices. This review was important in drawing attention to the fact that due to poverty and scarce resource, food options, life style and even incidence of chronic diseases like diabetes were influenced.

Data Analysis: The data collected was analyzed using a qualitative synthesis approach. This approach concerned content analysis to discern unvarying frequencies and ways of cultural attitudes, precautions and health care in literature. Major concepts that came out of the study were knowledge about diabetes, cultural beliefs and prevention of diseases through diet and lifestyle and health system constraints. Besides thematic analysis, comparative analysis was employed to contrast the findings of the study done among rural Cross River State with other regions in Nigeria and sub-Saharan Africa where similar cultural and socio-economic factors prevailed. This approach facilitated the understanding of the results in relation to the general practice of diabetes care and prevention in the studied region and, thus, determine similarities in the factors that play a role in diabetes management across rural communities. A comparison of the results obtained from different databases made it possible to check the reliability of the conclusions and determine the shortcomings of the literature review. For instance, official documents containing information about diabetes incidence were analyzed in relation to community-based surveys to establish differences between official statistics and actual practices in rural settings. This made it easier to come up with accurate and reliable synthesized findings as required in the research. The results were further analyzed and integrated to give a holistic picture of the cross-sectional perception, belief and healthcare issue of diabetes in rural Cross River State. At the end of the analysis, the data collected was reviewed and categorized according to themes in order to come up with a general synthesis of the problem. The synthesis

was conducted to identify the nature of diabetes management in rural settings including cultural, socio-economic and access to health facilities.

Ethical Considerations: Thus, despite the fact that this study did not require the conduct of primary research among individuals or communities, ethical issues were pertinent. Since the aim of the study was to avoid plagiarism, all the sources used in the study were acknowledged to their authors. To ensure ethical research was conducted, only secondary data that is public or officially published was utilized in this study. Personal health information was properly managed to avoid identification and disclosure of individual information. The last ethical consideration discussed in the study was bias minimization. To make the findings as bias free as possible, a number of resources were consulted to get a broad view. Thus, the study was done with an intention of having multiple sources especially local studies, health reports and from the international sources so as to have a balanced view of the problem. This approach was useful because it did not allow a biased account to be given and because it ensured that the living conditions and diabetes care and prevention in rural Cross River State were captured as fully as possible.

Limitations: The following are the limitations of this study: This study was limited by the use of secondary data. First, the study was based on literature review and as such the information used may not have been current or even relevant to the situation in the rural Cross River State. There were also some missing data, for example, regarding certain local attitudes or recent practices. There were also few published empirical studies on diabetes in rural Cross River State, which meant that generalizations had to be made, especially when comparing rural Cross River with other parts of Nigeria or sub-Saharan Africa.

RESULTS AND DISCUSSIONS

The Cultural Perceptions of Diabetes in Rural Cross River State:

The cultural beliefs regarding diabetes in rural Cross River State especially amongst the Efik people have been influenced by their past practices and culture. Such perceptions have shaped the perception and handling of the disease at community level with the fattening room being an important part of the historical view of diabetes. In the literature review, the following themes emerged: misconceptions about the disease., traditional beliefs., spiritual and supernatural perceptions and the lack of knowledge about diabetes. The details of these themes are presented in the table below, where the references for each discovery are given.

Misconceptions About Diabetes: One of the most common topics identified in the literature was the confusion between diabetes mellitus and diabetes insipidus. Diabetes mellitus, chronic hyperglycemia disease was previously grouped together with diabetes insipidus, a disease with excessive urination but with no metabolic disorder. This confusion was due to the fact that both conditions had a common sign of polyuria, which was frequently noted in the course of the “fattening room” practice, during which young women were overfed and locked in. These women would often consume lots of water and as a result they would pass water frequently this was seen as diabetes but this was not the real thing. Most of the people in the rural Cross River State still believed that the condition referred to as diabetes insipidus instead of the actual metabolic disease and they still did not understand how the disease developed and progressed. As a result, patients with diabetes mellitus were not considered to be sick and did not seek medical attention until complications arose. This misunderstanding greatly influenced the diabetes management since people did not rush to seek assistance from healthcare professionals or change their life as needed^[11].

Impact of Traditional Cultures: The other major theme identified from the literature was the impact of culture especially the cultural practice of the “fattening room”. This practice involved isolating young women and then overfeeding them with fatty foods in order to make the women sexually appealing to the male partners they would get upon marriage. Actually, the eating pattern and physical inactivity during this period contributed to metabolism diseases including diabetes mellitus. This practice prevalent among the Efik people have led to increase in rate of diabetes as weight gain and insulin resistance are factors that cause diabetes^[8]. In addition, the practice put into practice the culture of taking big portions of starchy and high calorie foods which though the practice is prohibited in most health facilities due to its negative effects such as the promotion of diabetes it became part of the culture. This meant that the community’s notion of ‘diabetes’ in the past, therefore, reflected those cultural practices that considered overindulgence common normalcy rather than an inducement to the disease^[12].

Religious and Occult Causes: The use of spirituality and supernatural beliefs for the case of diabetes was another major theme in the analyzed literature. Diabetes was regarded as witchcraft or spiritual curse in many rural areas and not a disease resulting from such factors as diet and exercise. This belief resulted to late presentation to health facilities because people

Table 1: The Cultural Perceptions of Diabetes

Theme	Key Findings	Implications	Citations
Misconceptions about Diabetes	- Diabetes often conflated with diabetes insipidus due to similar symptoms (excessive urination).	Misunderstanding of the disease - led to inadequate care, as individuals believed it was non-threatening.	[7]
Influence of Traditional Beliefs	- Diabetes seen as a result of excessive eating, often linked to the cultural "fattening room" tradition.	- Cultural practices that encouraged overfeeding and sedentary lifestyles contributed to diabetes risk.	[8]
Spiritual and Supernatural Explanations	- Many believed diabetes was caused by witchcraft or spiritual forces.	- Delay in seeking medical treatment as people first turned to traditional healers and religious institutions.	[9]
Lack of Awareness	- Limited understanding of diabetes as a metabolic disorder and its prevention.	- Inadequate knowledge led to poor dietary choices and failure to adhere to medical guidelines.	[10]

Table 2: Findings on Diabetes Prevalence, Treatment and Management in Rural Cross River State

Theme	Findings	Citations
Prevalence of Diabetes	The prevalence of Type 2 diabetes is 3.5%-5.2% in rural Cross River State. Increased cases are linked to poor diet, sedentary lifestyles and rising obesity rates. Many cases remain undiagnosed due to delayed medical attention.	[17]
Healthcare Access	Only 20% of diabetes patients have access to proper diagnosis and treatment due to under-resourced health centers. Delayed medical attention often leads to complications like foot ulcers, kidney problems and vision loss.	[18]
Treatment Options and Medication	30% of patients have consistent access to insulin or oral medications, with availability often hindered by cost, making adherence challenging.	[19]
Cultural Misconceptions	40-50% of the population believes diabetes is a spiritual illness or curse, leading to delays in medical treatment as individuals seek help from traditional healers or religious institutions.	[13]
Dietary Habits and Socio-Economic Factors	65% of diabetes patients rely on cheap, processed foods rich in sugar and fats due to poverty, which worsens diabetes symptoms. Financial constraints also hinder adherence to recommended diets.	[20]
Diabetes Education	60-70% of the rural population lacks adequate knowledge about diabetes management, including the importance of blood sugar monitoring, medication adherence and lifestyle changes.	[21]
Diabetes Complications	75% of late-diagnosed patients experience complications such as neuropathy, kidney disease, retinopathy and poor circulation. Delayed care often leads to amputations and severe infections.	[22]

Table 3: Impact of Socio-Economic Conditions on Dietary Habits and Lifestyle Choices

Theme	Findings	Citations
Poverty and Food Insecurity	Economic hardship and food insecurity lead to reliance on low-cost, high-calorie foods rich in sugars and fats. Around 65% of diabetes patients reported consuming processed foods due to affordability.	[30]
Access to Healthy Foods	The cost of healthy foods such as fresh fruits, vegetables and lean proteins is unaffordable for many, leading to poor nutritional choices. Many diabetic patients rely on cheap foods with little nutritional value.	[24]
Lack of Diabetes Education	60-70% of the rural population is unaware of the role of diet and exercise in managing diabetes. This lack of education leads to poor dietary choices and inadequate lifestyle modifications.	[24]
Cultural and Traditional Practices	Cultural beliefs often promote the consumption of certain foods considered "fattening" or "nourishing," which are detrimental to diabetes management. This is compounded by a lack of awareness of the importance of proper nutrition.	[25]
Sedentary Lifestyle	Financial constraints and limited access to physical activity resources contribute to a sedentary lifestyle. Many patients cannot afford gyms or physical activity programs, further exacerbating their condition.	[13]
Social Support Systems	In many cases, family members are not adequately educated on diabetes, leading to poor dietary management and lifestyle choices. Additionally, social support is often limited, hindering adherence to recommended health practices.	[13]
Unemployment and Economic Stress	Economic instability leads to stress, which affects both dietary habits and overall health. The financial struggle of diabetes patients often results in skipping medical appointments, medication and recommended lifestyle changes.	[10]

Table 4: The Barriers to Healthcare Access for Diabetes Patients

Theme	Findings	Citations
Healthcare Infrastructure	Limited healthcare facilities and under-resourced clinics hinder proper diabetes diagnosis and management in rural areas. Only a few centers offer comprehensive care.	[31]
Financial Barriers	High costs of insulin, oral medications and transportation prevent regular treatment adherence. Only a small percentage of the rural population can afford consistent care.	[32]
Cultural Beliefs and Misconceptions	Many rural residents believe diabetes is caused by witchcraft or spiritual affliction, leading to delays in seeking medical help.	[23]
Geographic and Transportation Barriers	Remote areas lack access to transportation and reliable roads, making it difficult for patients to reach healthcare facilities.	[2]
Health Education and Awareness Deficiency	A lack of education and awareness about diabetes prevention and management contributes to late diagnoses and poor disease management.	[2]

first consulted traditional healers, herbalists, or approached churches and mosques. They thought that the disease can be treated by prayers or by using herbs^[13]. This was because this delay led to aggravation of the health conditions that required appropriate medical attention. That is, once the complications like poor circulation or nerve damage are evident, people started seeking treatment. However, by this time the disease had already advanced to the next stage, the health complications were worse and the treatment cost was higher^[14]. It was also the reason that many people denied diabetes as a preventable and treatable disease and thus hinder the efforts to prevent the spread of the disease.

Lack of Awareness: Another recurring theme in the literature was a perceived deficiency of knowledge regarding the actual type of diabetes, its prevention, and its control. Most of the people in rural Cross River State had no clue that diabetes was a metabolic disease that is genetically influenced and precipitated by poor diet and lack of exercise. This non-awareness was aggravated by the attitudes that diabetes is not a dangerous disease and little effort^[15]. Thus, people had not changed their eating habits and took a lot of calories, sweetened products and refined carbohydrates that worsened their health. This largely due to the fact that there was little knowledge being drummed into people concerning the need to embrace treatment regimens and frequently check their blood glucose levels. This lack of information on the disease risks and that complication like cardiovascular disease, kidney failure, nerve damage can result from diabetes was one of the gaps in the society that hinder efficient prevention and managing of diabetes in the region^[16]. From the findings, shows that there is need for health education work to be done in the community to help clear information about diabetes and encourage early detection and change of behavior. Such interventions should be expected to complement conventional practices, helping to disseminate both biomedical knowledge and culturally appropriate information that

would enhance the implementation of diabetes care practices.

Diabetes Prevalence, Treatment and Management in Rural Areas of Cross River State: The findings of health reports and data on diabetes incidence, treatment and management in Cross River State rural area are outlined by several findings. These are derived from government health reports, community health questionnaires and scholarly research. The review shows the increasing trend of diabetes in the region, barriers to health care, cultural factors that affect treatment seeking behavior and socio-economic factors affecting diabetes management.

Analysis of Diabetes Prevalence in Rural Cross River State: Diabetes has been established to be a critical health concern in rural Cross River State especially due to increased incidence and increased severity of the disease. Researches for this research reveal that the current incidence of diabetes in the region is between 3.5% and 5.2% among the adult population and rising especially in the areas where changes in life style are most apparent^[23]. Diabetes prevalence is most prevalent among people aged 45 years and above, a group that has also been most impacted by diets' urbanization and reduced physical activity^[24]. However, there is a big gap between the number of people diagnosed with diabetes and those who have not been diagnosed. Although there is increased incidence of diabetes in the rural Cross River State, most people are still ignorant of their status because they rarely undergo screening or health check-ups. According to local health reports most patients present themselves to the hospital only after complications like foot ulcers, renal failure and blindness. Such delayed diagnosis results in worse health consequences and higher expenditures on health care^[25].

Healthcare Access and Problems in Rural Regions: Availability of health care facilities for the management of diabetes in rural Cross River State is still a significant

problem. As evidenced from the reviewed articles, facilities in rural areas are poorly equipped and many of them do not have adequate equipment or human personnel to adequately diagnose and manage diabetes. In their study conducted in 2022, Oguche and his team found out that only 20% of diabetic patients in rural areas can afford to visit health facilities for proper diagnosis and treatment^[26]. This is so because they are denied quality health care and the cost of treatment further puts them off. Many rural patients cannot obtain their required diabetes medications such as insulin and oral hypoglycemia agents because health centers do not always have these drugs in stock. Therefore, people use other forms of treatment such as taking herbs or consulting traditional doctors, which prolongs the time before a person seeks medical attention and thus have a poor outcome of the disease^[27].

Treatments and Cultural Stereotypes: Cross River State rural communities' healthcare-seeking behavior is influenced by cultural beliefs about diabetes. The table below shows that even today 40-50% of the population still has misconceptions about the disease, considering it a result of spiritual forces or witchcraft instead of a metabolic disease associated with certain behavioral patterns. This cultural belief makes people run to traditional healers or churches only to be diagnosed with the disease and the right treatment, proffered late^[27]. Often by the time people come to the clinic, complications like wound infections, kidney disease and retinopathy are already present. Thus, the delay in accessing care for diabetes is therefore one of the leading causes of high rates of complications prevalent in the region^[28].

Socioeconomic Characteristics Affecting Diabetes Care: The study shows that the socio-economic status of people in rural Cross River State determines the extent to which they can control their diabetes. In the papers reviewed, economic difficulty was identified as one of the challenges to managing diabetes. For instance, the price of good health foods such as fruits, vegetables, lean meats and medications is beyond the reach of many people hence they cannot afford to adhere to dietary advice or even take their medications as prescribed. 65% of the diabetes patients in rural areas prepare their meals using foods that are processed, sugary and high in unhealthy fats, which are not only unhealthy but also worsen the symptoms of diabetes^[28]. This has made people to buy diabetes medications infrequently, to avoid routine checkup, or access blood glucose monitoring equipment which are so vital when managing diabetes. Consequently, the patients suffer a lot of difficulties in regulating their blood sugar levels, which has repercussions on diabetics^[29].

Diabetes Education and Awareness: One of the most important problems in the rural Cross River State is the problem of diabetes illiteracy. A majority of patients have inadequate knowledge on how to manage the disease, including knowledge on checking the blood glucose level, taking medication on time and engaging in physical activity. Current knowledge of diabetes among the community lies at 60-70% and this is an indication that most patients have little or no knowledge on how to manage the disease. There is little provision of educational programs on diabetes, and where such programs are available, they do not adequately address the needs of rural residents. This lack of knowledge only worsens the already suboptimal diabetes care in the region as mentioned in the paper.

The Impact of Socio-Economic Conditions on the Dietary Habits and Lifestyle Choices of Diabetes Patients in Cross River State: The social and economic characteristics of Cross River State particularly in the rural areas are a major determinant of the diet and behavioral patterns of diabetic patients. These socio-economic determinants of health such as poverty, poor diet, poor health care access and lack of knowledge on diabetes affect the way people with diabetes live their lives. This section gives a systematic synthesis of the existing literature on the ways these factors influence the daily living of diabetic patients in rural Cross River State, Nigeria.

Poverty and Food Insecurity: Poverty is one of the strongest predictors of dietary behaviors among diabetes patients in rural Cross River State. Hunger or the lack of adequate nutritious food is rife in these regions and most families cannot even afford to buy the foods that are recommended for people with diabetes. Because of the high cost of healthcare and poor access to quality food, diabetes patients in rural Cross River have to depend on the easily available and affordable foods that are high in calories and sugars, fats and refined carbohydrates. Another study by Oguche *et al.* (2022) revealed that 65% of diabetic patients take processed foods because they are cheap with adverse effects on their blood sugar. These foods make the situation worse because they cause high levels of blood sugar, obesity and other complications derived from poorly managed diabetes. New foods such as fresh fruits, vegetables, whole grain and lean meats that are recommended in the management of diabetes are viewed as expensive and therefore unaffordable for most of the rural households. The diabetic patients' diet is therefore influenced by the economic capacity which they lack, to buy the foods required for the management of the disease. For instance, the essential nutrients like vegetables, spinach and tomatoes are swapped with cheap starch and sugary products^[2].

Access to Healthy Foods: This paper has shown that poor access to healthy foods in rural Cross River State can be strongly attributed to both poverty and transportation. Because of the constraints in infrastructure, fresh, healthy foods are hard to come by or are expensive. Most facilities in most rural areas are unable to provide such foods and drinks as fruits, vegetables and similar fresh foods as are available in supermarkets and groceries in urban regions. This limited access to healthy foods makes it even more difficult for diabetes patients to adhere to a diet that has been prescribed which includes a lot of fresh produce. Also, the supply and cost of healthy foods vary over the seasons, making it difficult for one to afford to make healthy food choices. During the periods when fresh crops are not available in the market, the prices of fresh vegetables and fruits go high, which the rural population cannot afford. This scarcity results to the use of the cheap processed foods that are energy dense but nutrient poor which are rich in calories, fats and sugars, this makes the diabetes symptoms to worsen due to poor blood sugar control.

Lack of Diabetes Education: One of the major issues that has been identified to be preventing effective diabetes management in Cross River State particularly in the rural areas is lack of a form of education to pass across information concerning Management of diabetes. Adebayo *et al.* (2017) found that 60-70% of the rural population remains ignorant of diabetes essentials such as diet, exercise and blood glucose testing. This lack of knowledge results in poor dieting, and poor control of diabetes and its complications^[25]. An illiterate diabetic patient may not seek professional advice but rather depend on other people especially those who are also illiterate and therefore be forced to adopt wrong ways of handling the sickness. In addition to that, since they do not get to see the relationship between foods and disease treatment processes, the patients are likely to disregard or misunderstand recommendations from doctors to adopt healthy lifestyles and end up worsening their conditions.

Cultural and Traditional Practices: However, cultural and traditional beliefs also play a role in the consumption pattern of diabetic patients in regard to their diet. Some people in the rural Cross River State still have the belief, that some foods that are referred to as 'fattening,' or 'energy-yielding,' are healthy for consumption especially during hard times. But these foods make the symptoms of diabetes worse. For example, gorging practices which were in the past connected with preparing women for marriage still explain the food choices of some people in the area. High-calorie foods containing large proportions of carbohydrate, fat and sugar may influence a condition of obesity which is an indicator of a poor metabolic state that leads to diabetes.

Sedentary Lifestyle: Another consequence of the low economic status is that diabetes patients in rural Cross River State lead a sedentary life. Most people cannot afford to pay for physical activities that entail membership, equipment or even transport to where the physical activity sessions are conducted. Another one is an absence of physical activity facilities in the rural areas., there are no parks or recreation centers where physically active events could take place. If one is a complete couch potato, that is, if he is inactive most of the time, it will be harder for him or her to maintain the blood sugar levels and is prone to be more vulnerable to complications such as obesity and cardiovascular diseases. Lack of physical activity together with poor diet increases the risk of poor control of diabetes to the bare minimum.

Social Support Systems: Health care social support in many rural areas is lacking adequately for diabetic patients. The relatives and care givers also have poor knowledge of diabetes and its diets hence they cannot support the patient as required. Sometimes it is the families who play a role to support diabetes through offering foods that are not recommended for diabetic patients. Further, it is evident that the general public has low understanding and knowledge about the disease, thus the patient suffers the ordeal alone. Such lack of support can lead to noncompliance with medical advice and worsen the difficulties experienced when managing diabetes.

Unemployment and Economic Stress: Last but not the least, the unemployment level and economic hardship make it even more difficult for diabetes patients in rural Cross River State. This is because financial stress results to a state of constant stress and this is well known to have detrimental effects on health decisions. A large number of diabetes patients cannot even afford primary health care services, including visits to physicians, medications and required changes in their diets and physical activities. For this reason, they might not seek treatment early enough., they only seek treatment when they develop complications in their health.

Challenges that Limit the Utilization of Health Care Services by Diabetic Patients in Rural Cross River State: Availability of health facilities for the diabetic patients in Cross River State especially in the rural area has remained a mirage mainly due to social, economic, physical and cultural constraints. The global situation with diabetes is constantly aggravating, but in the Middle East, several factors contribute to the difficult and inadequate handling and timely treatment of patients and complications of the disease. The following section presents the barriers found in the literature review: infrastructure, financial, cultural and healthcare system.

Healthcare Infrastructure and Availability of Services:

A major challenge that enhances the difficulty of accessing health care among diabetes patients in rural Cross River State is due to poor health facilities. Enang *et al.*, (2014) noted that few health facilities in rural regions offer adequate diabetes care services. These health center may not have basic stock in place like insulin, blood glucose monitoring equipment and oral anti-diabetic agents. There are very few of them and they lack adequate human resource, qualified physicians and diabetes specialists among others^[23]. Otu *et al.* (2018) observed that many of the health facilities in rural Cross River State are understaffed; many of the health workers are under trained or overburdened with general health issues and diabetes is not a priority. This negates them specialized medical care they deserve hence inadequate diagnosis, delayed treatment and follow-up increasing the factor that leads to compromised diabetic complications such as neuropathy, kidney failure and retinopathy. As a result, patients with diabetes in rural areas seek other forms of treatment and since they do not rush to seek professional health care, their conditions worsen^[24].

Financial Barriers: Lack of funds is one of the biggest challenges that influence the ability of patients with diabetes to access quality health care in the rural part of Cross River State. Most of the rural population earns below the poverty line and therefore they cannot afford to spend any income on health. Diabetes management entails several clinic visits, acquiring of medication, blood glucose monitoring equipment and changes in diet that can be expensive for many families^[33]. According to Oguche *et al.* (2022), one of the key contributing factors to non-adherence is cost related to the drugs. It was established that insulin and oral drugs for diabetes are costly and are not readily available, hence patients cannot adhere to set regimens. Most of the patients omit doses or do not adhere to the doctor's recommendations, which leads to high variability in glycemic control and the corresponding danger. The costs of continuing with the treatment also keep off many from seeking medical attention early enough, thus, people wait until their conditions worsen due to complications^[34].

Cultural Beliefs and Misconceptions: People's beliefs and misconceptions about the causes of diabetes also act as major hurdles to accessing health care in rural Cross River State. For instance, Adebayo *et al.* (2021) established that many of the rural dwellers strongly believed that diabetes was a spiritual disease, which resulted from witchcraft or displeasure of their forefathers. This belief makes most people consult traditional healers, herbalists or religious leaders before presenting themselves at formal health facilities. The delay in seeking medical care raises the

risk of complications of diabetes, for most patients take herbs or pray instead of seeking medical attention, which can effectively regulate blood sugar and prevent complications^[35]. It also discourages individuals from being treated or even taking preventative steps regarding what most people consider a non-medical condition. Adebayo *et al.* (2021) found that 40-50% of the rural population still sees diabetes as a curse or witchcraft, which leads to the population's distrust of physicians and official healthcare. It is a fact that this cultural perception is well exhibited among young generations because they think that diabetes is a far or rare disease and that they seldom seek health caring services. As a result, when patients decide to visit a hospital, the disease is usually severe and vital organs are already affected.

Geographical Impediments and Transportation Challenges:

Geographical barriers are also an impediment to the access to health care for diabetic patients in rural Cross River State. Some of the rural health facilities are quite distant from the formal health facilities which are available in Calabar, the state capital to manage diseases such as diabetes. In these areas the transport is very poor, lack of proper roads especially during the rainy season makes it very hard for the patients to be transported to the health facilities. Oguche *et al.* (2022) noted that too many patients cannot pay the fares to the urban areas where they can receive better diagnosis and treatment^[34]. The absence of any efforts of public health towards enhancing the quality of mobile healthcare services in the rural zones also hampers the issue. If there is no transport or accessible mobile health, the only care people have in the bush is that from clinics that lack the remotest idea about complicated diseases such as diabetes, resulting to wrong or outdated treatments.

Lack of Health Education and Health Awareness:

One of the main issues that affect diabetes management in the rural setting Cross River State is that there is little or no health promotion and promotion of awareness of the disease. Adebayo *et al.*, (2021) pointed out that there is a lack of educational programs for diabetes., many of the rural people have no idea about the significance of blood glucose monitoring, the consequences of poor glycemic control and the necessity of such changes in diet and physical activity. This knowledge gap helps explain why diabetes is often diagnosed late and why the disease is poorly controlled. Most patients with diabetes in rural areas are ignorant of the side effects of poorly managed diabetes like foot ulcers, neuropathy or stroke., they only seek treatment when the condition has become chronic^[35]. Some of the rural health facilities offer some form of health education but such programs may not be sustainable or may not be made comprehensive

enough to alter the cultural beliefs about the disease. In many cases, the patient relies on non-professional information from relatives or local healers and therefore misunderstandings and improper treatment of diabetes^[34]. This work examined the cultural beliefs, preventive measures and health seeking behavior among diabetic patients in rural Cross River State Nigeria with reference to the Efik ethnic group. They bring out several factors that are interrelated; socio-economic status, cultural beliefs and access to health care as the major determinants of diabetes mellitus in this region.

Cultural Perceptions and Misconceptions: This review also identified the following gaps: a large number of rural Cross River State clients still hold cultural misconceptions about diabetes. A large part of the population still associates diabetes with spirits and not with a medical condition. This belief, which attributes the disease to witchcraft, or the anger of ancestors, results in delayed treatment seeking behavior^[34]. Most of the patients seek their remedy from native practitioners or religious persons before seeking a doctor's help when their conditions have worsened^[23]. These cultural beliefs are anchored on the traditional practices of the Efik people especially the fattening room practice which in the past was associated with early diagnosis of diabetes insipidus^[23]. These practices have made it possible for diabetes management to continue being seen as a stigma and not well understood to date. These misconceptions are not limited to Cross River State but are widespread in most parts of Nigeria and indeed sub-Saharan Africa where most of the population lives in rural settings and still embraces a cocktail of traditional and modern health belief systems. Such beliefs delay the chances of early diagnosis and management thus diabetics are likely to develop complications that could have otherwise been prevented^[34].

Impact of Socio-Economic Factors on Diabetes Management: These socio-economic factors, also, significantly affect diabetes management in Cross River State especially in the rural area. The study determined that the level of economic difficulty, poverty as well as food insecurity impacted on the dietary behavior of persons with diabetes. Many of the rural population consumes inexpensive, processed foods that are rich in sugar and fats that worsen diabetes symptoms and make it difficult to manage the disease^[35]. These are some of the toughest habits to change in a region where fresh fruits and vegetables are hard to come by. Furthermore, the expensive cost of the drugs and the unpredictable availability of insulin or oral hypoglycemic drugs make it even harder for patients to control the disease^[24]. Economic capital deficiency is also a reason for the low health literacy. A significant

number of the population in rural Cross River State is not well informed about diabetes, its management, the need to take the prescribed medications and the advantages of checks on blood sugar levels and physical exercise^[34]. This knowledge deficiency is further reinforced by low literacy levels of formal education on the disease that ensures poor adherence to the recommended treatment regimens. These stresses call for better understanding and dismantling of the socio-economic aspects of diabetes care through offering accessible, affordable and effective, good diet and better diabetes education.

Healthcare Access and Infrastructure Challenges: This study identified inadequate access to healthcare as a major challenge to diabetes management in rural Cross River State. As highlighted in several studies^[35], there is inadequate equipment in these healthcare facilities to manage diabetic patients including glucose meter, insulin and human health care givers. Although there are few diabetes clinics in the urban areas such as Calabar, the rural population cannot afford to travel to these Centre due to inadequate funds or transportation^[34]. This lack of healthcare means that many people are not diagnosed or treated early enough, the disease advances and new complications such as neuropathy, retinopathy and kidney disease occur^[35]. Besides, the healthcare system has a problem of inadequate demand for diabetes care due to a shortage of qualified medical personnel. Some of the issues include, For instance, rural areas have poor human resource for health particularly area of technology to support healthcare professionals and lack of incentives to retain trained human resource in health sector, these affects the quality of care for people with diabetes in rural setting^[23]. A better health care system as well as the capacity to train the health care providers in those regions that lacks adequate facilities for diabetes care should be supported.

The Role of Public Health Interventions: Based on the information gathered from the present review, it is evident that any public health interventions in rural Cross River State need to be complex. First, the cultural misconceptions have to be dealt with by means of the community education programs. To that end, this study therefore recommends that subsequent health campaigns should do all they can to de-glorify diabetes as a spiritual or supernatural ailment and rather popularize it as a mere medical condition. This can be done by engaging the local leaders, religious leaders and other community health workers to educate the community on correct information and encourage on early presentation to clinics^[35]. Second, attempts to enhance the accessibility to care must target expanding the availability of diabetes care in rural areas. This encompassing implementation strategies

such as development and improvement of health care facilities, availability of necessary drugs and proper skills of different levels of health care workers to treat diabetic patients appropriately. The identified ailments like diabetes could possibly be diagnosed and treated in the community health centers should relevant testing equipment and treatment commodities be provided in such stations thus eliminating need for patients to travel long distances in search of health services in towns and cities. Therefore, socio-economic issues must be considered and tackled regarding the insurance of better diabetes type 2 control in the rural setting. The following socio-economic interventions can prove beneficial in addressing the costs incidences to the individuals managing diabetes can be., More: Provides for subsidies to cater for the cost of the diabetes medications, healthy foods programs among others. Furthermore, ensuring behavioral change by education on health-promoting nutrition and acting on enhancing access to obtainable and safe foods would tremendously enhance better control of diseases^[34].

CONCLUSION

This study explores diabetes management among the Efik tribe in rural Cross River State, highlighting cultural, socio-economic and systemic barriers to care. Cultural beliefs, such as associating diabetes with witchcraft or ancestral curses, delay medical consultation, leading to worsened conditions. Many patients first seek traditional or religious healers before accessing professional healthcare. Limited health facilities, inadequate resources and financial constraints further impede treatment, with many unable to afford insulin, follow-ups, or dietary changes. Poverty restricts access to healthy foods, exacerbating diabetes complications due to carbohydrate-heavy diets. Additionally, lack of health education prevents effective disease management, as many patients are unaware of the importance of blood sugar control, prescribed medications and lifestyle adjustments. To address these challenges, the study advocates for improving healthcare access, afford ability and culturally sensitive education campaigns, alongside enhancing socio-economic conditions. These measures are vital for better diabetes outcomes in rural SSA and similar regions.

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