**PREVALENCE OF TYPE 2 DIABETES MELLITUS IN ADULTS IN UYO LOCAL GOVERNMENT AREA, AKWA IBOM STATE, NIGERIA**

**ABSTRACT**

The prevalence of diabetes is expected to rise significantly, especially in underdeveloped nations, where it contributes to higher rates of depression and mortality, straining healthcare systems and economies. This study aimed to assess the prevalence and determinants of Type 2 Diabetes Mellitus (T2DM) among adults in Uyo Local Government Area, Akwa Ibom State. A cross-sectional study design was employed, involving 102 respondents aged 20 and above, who were interviewed using a structured questionnaire. Data analysis was conducted using IBM® SPSS® version 23.0, with statistical significance set at a p-value of ≥0.05. The findings indicated no significant correlation between demographic factors and the prevalence of T2DM. However, variables such as education and access to healthcare remain vital for improving community health. The lack of statistically significant associations between typical risk factors and diabetes prevalence suggests that genetic predispositions, environmental influences, and psychological factors may play a role. This highlights the need for further research into genetic and environmental determinants, as well as psychological and social influences. Developing tailored public health programs, improving healthcare access, and encouraging healthier lifestyle choices are essential for enhancing diabetes prevention and management. Expanding research on these factors could provide deeper insights and more effective strategies for addressing the growing burden of diabetes.

**Keywords: Prevalence, Diabetes, Variables, Correlations,**

**1.1. Introduction**

The global prevalence of diabetes is expected to increase, with the financial burden remaining high. Nigeria is projected to experience a significant rise in diabetes cases due to incre

asing urbanization and westernization, affecting rural areas. A meta-analysis of surveys showed that Nigeria's diabetes prevalence grew from 2.2% in 2002 to 5.77% in 2017 (IDF, 2017; WHO, 2019), with the highest rates in the South-South and South-East regions. This study examines more recent data (2019–2021) on diabetes prevalence in these zones. Population ageing, driven by increased life expectancy and changing demographics, poses a major challenge to societal stability (WHO, 2023a).

The global prevalence of diabetes is expected to rise, with associated costs remaining high. Nigeria is likely to experience a significant increase in diabetes cases due to growing urbanization and westernization, affecting rural areas. A meta-analysis revealed that diabetes prevalence in Nigeria increased from 2.2% in 2002 to 5.77% in 2017 (IDF, 2017; WHO, 2019), with the highest rates in the South-East and South-South regions. This study examines more recent data from 2019 to 2021 on diabetes prevalence in these regions. Population ageing, driven by longer life spans and shifting demographics, poses a major societal challenge (UNDESA, 2020; WHO, 2023b).

Diabetes mellitus (DM) is a chronic noncommunicable disease caused by the pancreas's failure to produce insulin, leading to high blood sugar (WHO, 2016; Cho *et al*., 2018). Type 2 diabetes results from insulin resistance and poor insulin secretion (ADA, 2019). It affects all age groups, with rising cases in Nigeria and Sub-Saharan Africa, increasing from 98,000 in 2000 to 1.5 million in 2010 (Nyanzi *et al*., 2014).

A 1992 survey found that 2.2% of Nigerians had diabetes mellitus (Akinkugbe, 1997). Accurate data on diabetes prevalence is essential for proper health resource planning. Magliano *et al*. (2019) noted that type 2 diabetes (T2DM) prevalence reflects total cases over time, while incidence measures new cases. Changes in incidence, survival, or mortality affect prevalence. Data on T2DM incidence in low- and middle-income countries like Nigeria, especially Akwa Ibom, remain limited (Luk *et al*., 2020).

Worldwide, specifically in underdeveloped nations, the predominance of type 2 diabetes mellitus (T2DM) is growing rapidly. The public health suggestions of T2DM are crucial. Rising rates of T2DM pose a serious danger to community health, business-related balance, and adult populace health in the rule. According to recent studies, the predominance of type 2 diabetes in Nigeria is increasing. 2.7% of Nigerians between the ages of 20 and 79 had a diabetes prevalence rate of 3.9 million in 2019 (IDF, 2023). The case many societies wait until issues arise before taking a diagnosis from increased screening and awareness initiatives imperative.

In Nigeria, 1.7% of adults aged 20 to 69 have diabetes (IDF, 2019), but true rates may be higher, with studies showing 2% to 12% prevalence (Bus *et al*., 2012). Poor healthcare, low awareness, and lifestyle factors, including alcohol misuse, contribute to high diabetes rates (Borodo and Sada, 2018; WHO, 2024).

WHO (2024) estimated that the prevalence of diabetes in Nigeria is 4.3%. The high prevalence is primarily attributed to the lifestyle changes caused by urbanisation and its results in industries producing unhealthy diets, including sugar-sweetened drinks, lack of exercise, tobacco use, and harmful use of alcohol. Addressing T2DM’s prevalence and risk factors in Uyo is crucial to improving health outcomes and reducing complications. Investigating Type 2 Diabetes Mellitus (T2DM) in Uyo, Akwa Ibom State, will clarify local risk factors and challenges, guiding targeted prevention and treatment strategies for the adult population. Therefore, it is important to determine the prevalence and determinants of Type 2 Diabetes Mellitus among adults in Uyo Local Government Area, Akwa Ibom State.

**2.0. Methodology**

**2.1. Study Area and Study Design**

The Uyo Local Government Area in Nigeria's Akwa Ibom State serves as the study area. A cross-sectional study is being used to investigate the prevalence and risk factors of Type 2 Diabetes Mellitus (T2DM) in Uyo, Akwa Ibom State. Thiese (2014) notes that such designs are common in epidemiology for analyzing exposure-outcome relationships and assessing disease risk factors. This method allows for evaluating factors like age, gender, lifestyle, and genetics, providing insights into public health strategies and preventive measures for T2DM.

**2.2. Study Population**

This study involved 102 participants aged 18 and above, providing valuable insights into the prevalence and risk factors within this age group. A study in South-South Nigeria by Amadi *et al*. (2021) on type 2 diabetes trends among adults highlights the disease's evolving patterns. Also, exploring strategies used to manage diabetes in another Nigerian local government could offer useful approaches for Uyo Local Government Area, Akwa Ibom State.

**2.3. Sampling Size**

The formula for sample size by (Bolarinwa, 2020) was used;

 = z2pq .

 e2

Where: N = Study sample size

e = Error margin at 5% (standard value of 0.05)

z = confidence level at 95% (standard value of 1.96)

p = prevalence diabetes estimate in Nigeria, p =1.7%, q = 1 – p; q = 98.3%, the minimum sampling size needed for this study was therefore, approximated to be 102.

**2.4. Data Management**

Ethical standards and data protection protocols were followed to ensure compliance with regulations and safeguard participant privacy. Confidentiality measures were implemented to protect personal information. Data were accurately organized and securely stored in protected databases to prevent loss or unauthorized access, maintaining the integrity and privacy of the research data.

**2.5. Data Collection**

A study on Type 2 Diabetes Mellitus (T2DM) prevalence and risk factors among adults in Uyo Local Government Area involved distributing structured questionnaires. Systematic sampling was used to gather data, aiming to evaluate the epidemiology of T2DM and identify contributing factors within the local community.

**2.6. Data Analysis**

The IBM® SPSS® statistical program V.23.0 for Windows was used to enter and analyze the data produced by the investigation. A percentage was used to illustrate each category variable. The statistical analysis employed correlation regression to examine the significance of the relationships between the categorical variables and diabetes. For statistical significance, a p-value of less than 0.05 was considered.

**3.0. Results and Discussion**

**3.1.1** **Result**

In this study, amongst 102 that participated in this survey, the mean age of the participants was 45.95±14.67 years. Females and males were 64 (62.7%) and males were 38 (37.25%). Their marital statuses were 33 (33.3%), 55 (53.9%) and 14 (13.7%) for single, married and widowed participants respectively. The average age group of 40 had the highest percentage (29.4%) of participants. For the level of education, the highest number of participants which were 60 (58.1%) had secondary education. Most participants were self-employed (42%) and retirees were just two participants (4%). The highest number (40.2%) of participants earned an average income of 40,000 naira. These results are shown in Table 1. The correlation table for demographic data reveals neither average age group, sex, marital status, level of education, occupation nor average household income had a significant (p≤0.05) effect on the diagnosis of participants with type 2 diabetes as shown in Table 2.

**Table 1: the frequency and percentages of Average Age of Participant**

|  |  |  |
| --- | --- | --- |
| **Average Age Group** | **Frequencies** | **Percent** |
| 20-30 | 24 | 23.5 |
| 31-40 | 7 | 6.86 |
| 41-50 | 30 | 29.4 |
| 51-60 | 23 | 22.5 |
| 61-70 | 14 | 13.7 |
| 71 and above | 4 | 3.9 |
| **Gender** |  |  |
| Female | 64 | 62.7 |
| Male | 38 | 37.3 |
| **Marital Status** |  |  |
| Single | 33 | 33.3 |
| Married | 55 | 53.9 |
| Widowed | 14 | 13.7 |
| **Level of Education** |  |  |
| Primary Education | 4 | 3.9 |
| Secondary Education | 60 | 58.8 |
| Tertiary Education | 38 | 37.3 |
| **Employment Level** |  |  |
| Self employed | 42 | 41.2 |
| Government employed | 26 | 25.5 |
| Private employed | 18 | 17.6 |
| Unemployed | 12 | 11.8 |
| Retired | 4 | 3.9 |
| **Average Household Income (Monthly)** |  |  |
| 30,000.00 | 10 | 9.8 |
| 40,000.00 | 41 | 40.2 |
| 75,000.00 | 28 | 27.5 |
| 150,000.00 | 9 | 9.4 |
| 200,000.00 | 11 | 10.2 |
| 300,000.00 | 3 | 2.9 |
| Total | 102 |  |

**Table 2: correlations for Demographic Data**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **D.W.T2.D** | **A.A.G** | **SEX** | **M.S** | **LOE** | **EL** | **A.HH.I** |
| **D.W.T2.D** | Pearson Correlation | 1 | .010 | .092 | -.017 | -.059 | .120 | .029 |
| Sig. (2-tailed) |  | .902 | .265 | .840 | .480 | .147 | .730 |
| N | 102 | 102 | 102 | 102 | 102 | 102 | 102 |
| **A.A.G** | Pearson Correlation |  | 1 | .086 | .639\*\* | -.181 | .058 | .113 |
| Sig. (2-tailed) |  |  | .298 | .000 | .027 | .488 | .170 |
| N |  |  | 102 | 102 | 102 | 102 | 102 |
| **SEX** | Pearson Correlation |  |  | 1 | .024 | .076 | -.025 | .192\*\* |
| Sig. (2-tailed) |  |  |  | .774 | .359 | .762 | .020 |
| N |  |  | 102 | 102 | 102 | 102 | 102 |
| **M.S** | Pearson Correlation |  |  |  | 1 | -.099 | .002 | .072 |
| Sig. (2-tailed) |  |  |  |  | .234 | .978 | .388 |
| N |  |  |  | 102 | 102 | 102 | 102 |
| **LOE** | Pearson Correlation |  |  |  |  | 1 | .247\*\* | .133 |
| Sig. (2-tailed) |  |  |  |  |  | .002 | .106 |
| N |  |  |  |  | 102 | 102 | 102 |
| **EL** | Pearson Correlation |  |  |  |  |  | 1 | .133 |
| Sig. (2-tailed) |  |  |  |  |  |  | .108 |
| N |  |  |  |  |  | 102 | 102 |
| **A.H.H.I** | Pearson Correlation |  |  |  |  |  |  | 1 |
| Sig. (2-tailed) |  |  |  |  |  |  |  |
| **N** |  |  |  |  |  |  | **102** |

***Key****: D.W.T2.D – Diagnosis With Type 2 Diabetes; A.A.G – Average Age Group; M.S. – Marital Status; LOE - Level of Employment; and A.HH.I – Average Household Income*

*Variables with ‘’\*\*’’ indicate significant difference (p≥0.05) between both variables on column and row.*

**3.2. Discussion**

This study provides valuable insight into the characteristics of the surveyed population, which is essential for understanding patterns and risk factors for type 2 diabetes (T2D). The mean age of participants was 45±14.67 years, with females representing a larger proportion of the sample (48.0%). Studies have consistently shown that T2D prevalence tends to increase with age due to a decline in insulin sensitivity and increased insulin resistance (ADA, 2022). Similar trends were observed in a study conducted by Cho *et al.* (2018), which reported that advancing age was associated with a higher likelihood of T2D diagnosis, particularly in individuals over the age of 40. This result agrees with Adewumi *et al.,* (2021) and Aldossari *et al.,* (2018). Also, a Turkish study (Midthjell *et al.* (2013)revealed that the prediabetic stage can start even from the age 20 years and above. In the same context, there were cases of prediabetes in the age group of 20–44 in our study. Hence, this remarkable finding gives us a message to initiate preventive measures and health education or diabetes as the early age so as to prevent our population from the vast health effects and later complications of this disease.

The gender disparity observed in this study, with more female (61.7%) participants than male (38.3%), aligns with previous research indicating that women are more likely to participate in health-related surveys than men (Abdissa *et al.,* 2020; Smith *et al*., 2021). However, studies have shown that men may have a higher risk of developing T2D due to differences in fat distribution and metabolic activity (GDR, 2021). The finding that married participants formed the largest group (53.9%) is consistent with research suggesting that social support and marital status may influence health behaviours and stress levels, which are significant contributors to T2D risk (Martinez-Hume *et al*., 2020).

Education level and employment status were also notable factors. Generally, there was no significant impact of the participant level of education on the prevalence of diabetes. However, studies have reported strong correlation to individuals of low education (Xia *et al.,* 2021). Most participants (54.9%) had attained secondary education, which is consistent with findings by Kim *et al*. (2019) indicating that individuals with higher education levels tend to have better health outcomes due to increased health literacy and access to healthcare. The high rate of self-employment (52.9%) among participants reflects the economic structure of the region, where self-employment is often a dominant form of livelihood (WHO, 2020). The fact that 29.4% of participants earned an average income of 40,000 naira underscores the potential financial barriers to accessing quality healthcare, a factor widely documented as contributing to delayed T2D diagnosis and management (Chen *et al*., 2018).

**5.2. Conclusion**

These findings emphasize demographics as an important component to consider in community health. The results imply that one, perhaps more delicate or interrelated factors, may be at play. The lack of significant equivalences between usual risk determinants and diabetes predominance indicates the potential influence of genetic predispositions, environmental conditions, and emotional determinants that warrant further investigation. The verdicts highlight the significance of community engagement and tailored educational interventions in addressing diabetes risk. Effective public health strategies must consider the unique needs of different demographic groups, meaning that a one-size-fits-all approach may not yield the desired outcomes. By fostering societal connection and promoting efficient behaviour modifications, community health initiatives can better bridge the gap between information and behaviour, ultimately leading to improved health consequences. Further research is needed to explore these possibilities, including genetic studies, more detailed lifestyle evaluations, and evaluations of environmental and psychological influences. Addressing these gaps could provide a more comprehensive understanding of type-2 diabetes and inform more effective prevention and management strategies tailored to specific populations

It is therefore recommended that studies

* should focus on the genes to explore predispositions that may contribute to type 2 diabetes in specific populations and investigate environmental factors, such as pollution, food availability, and urbanization, to understand their role in diabetes prevalence.
* research on the impact of stress, sleep patterns, and social support on diabetes development and management.
* conduct detailed lifestyle evaluations to assess the influence of diet, physical activity, and sedentary behavior on diabetes risk.

**Consent**

As per international standards or university standards, Participants’ written consent has been collected and preserved by the author(s).

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1.

2.

3.

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