# Understanding Self-Management Patterns of Type-2 Diabetes: Evidence from Socioeconomic and Demographic Characteristics of Patients Utilizing Healthcare Facilities in Ondo Town

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## ABSTRACT

*Diabetes mellitus is an issue of significant global public health concern. Despite increasing research on prevalence and management practices of diabetes in Nigeria, there remains critical gaps in understanding how demographic and socioeconomic factors mutually influence self-management, particularly within urban facility-based contexts in Nigeria. This study was cross-sectional descriptive survey that adopted multistage sampling technique. Using the $k^{th}$ systematical sampling method, 150 participants were recruited. The study population was adult living with type-2 diabetes, and utilizing health care facilities in Ondo town. The outcome variable was diabetes management patterns. The dependent variables were demographic and socioeconomic characteristics of the participants. Stata version 17 was employed and statistical significance was established at $p<0.05$. Results showed that level of diabetes self-management among the participants was found to be moderate (22.75±5.22 out of a possible 36), while 48% of the participants practiced poor self-management patterns. The results further showed that demographic and socioeconomic factors, such as age, ethnicity and place of residence, financial constraints, household income and health insurance were significantly associated with self-management patterns among type-2 diabetes participants ($p<0.05$). The study found a moderate overall level of diabetes self-management, which aligns with trends observed in similar low-resource settings. However, self-management was not uniform across all domains. This study concluded that the subsidizing diabetes care, wider access to health insurance and integration of diabetes education into primary healthcare are crucial measures to improving diabetes self-management in Ondo town.*

**Keyword:** Type-2 diabetes, socioeconomic, demographic, self-management

## 1. INTRODUCTION

Diabetes mellitus is a chronic, non-communicable disease characterized by elevated blood glucose levels due to either insulin deficiency, resistance, or both. Globally, diabetes has emerged as a major public health challenge, with significant morbidity and mortality. According to empirical facts emanating from recent studies on the disease, an estimated 537 million adults are living with diabetes worldwide, with Africa accounting for approximately 24 million cases (Abdul-Samed, Jahan, Reichenberger, Peprah, Agyekum, …Agyepong, 2025). In this regard, Nigeria, the most populous country on the continent, has experienced a sharp increase in diabetes prevalence, primarily due to urbanization, sedentary lifestyles, poor dietary patterns, and aging populations (Balogun, Akinyemi, Olamoyegun, Olamoyegun, Olopade, … Soyoye (2024).

Diabetes mellitus is an issue of significant international health concern (Johnson, Jarvis & Chipps, 2025; Xie, Agiro, Bowman & DeVries, 2017). It is increasing more rapidly in low- and middle-income countries due to the ineffective health systems and inaccessibility to long-term care due to social inequalities (International Diabetes Federation (IDF), 2021; World Health Organization (WHO)). In Nigeria, the problem of type 2 diabetes is associated with the high rate of urbanization, unhealthy food, and lack of exercise (Owolabi & Ajayi, 2024; Oyetunde & Famakinwa, 2020). Most patients fail to adhere to the prescribed self-management strategies, including glucose monitoring, eating well, and foot management, despite having a high awareness of the disease (Okafor Okonkwo, Ani, Onuora, Nwokike, …Tumusiime, 2024).

Diabetes self-management refers to the range of daily activities undertaken by individuals to control their blood glucose levels and prevent complications associated with the disease. These activities include consistent use of prescribed medications, dietary regulation, physical activity, glucose monitoring, foot care, and regular health check-ups. In Nigeria, particularly in urban communities such as Ondo Town, self-management patterns vary widely due to differences in health literacy, socioeconomic status, access to care, and cultural beliefs (Okafor et al., 2024). Medication adherence is one of the most emphasized aspects of diabetes self-care. It involves taking oral hypoglycemics or insulin as prescribed, without missing doses. Studies have shown that many Nigerian diabetic patients are irregular with medication intake, either due to forgetfulness, cost, or delusions about long-term drug use (Ifedayo, 2023; Iregbu, Okwuonu & Eke, 2022).

Contemporary studies suggest that the prevalence of diabetes in Nigeria ranges between 3% and 10%, depending on region and methodology (Okafor et al., 2024; Taiwo, Adebanjo & Ogunyemi, 2025; Iregbu et al., 2022; Okeya, 2022; Okoro & Onwubere 2022). Urban areas, in particular, have witnessed a disproportionate rise in diabetes cases due to increased consumption of refined carbohydrates, decreased physical activity, and obesity (Adebobola, Attoye, Akinwumi, Ewedairo & Adebobola, 2023). The Southwest geopolitical zone, which includes Ondo State, has consistently reported higher rates of diabetes compared to more rural or agrarian regions (Adeloye, Ige-Elegbede, Ezeigwe, Oyeyemi & Ojo, 2017). This urban–rural disparity

has been attributed to the epidemiological transition associated with lifestyle changes and environmental influences. Ondo Town, an urban settlement in Ondo State, reflects many of these risk-enhancing characteristics. Local studies show that urban residents in Ondo State are more likely to develop Type 2 diabetes, especially those aged above 40, with poor dietary habits, a family history of diabetes, and limited access to consistent medical care (Abdul-Samed et al., 2025; Abiodun, Ehwarieme & Agofure, 2024; Xie et al., 2017).

Health facility-based studies and short-term educational interventions conducted in Ondo State, and in Ondo Town, in particular, signify the evolution of patient knowledge and some self-care behaviors (Owolabi et al., 2024; Taiwo et al., 2025). However, these studies are narrow in scope and short-lived, or look at individual factors like knowledge or demographic variables leaving gaps in the knowledge of the relationship between demographic, socioeconomic and sociocultural factors in interactions with each other to cause self-management behaviors in real life situations.

As the prevalence of diabetes continues to rise in Nigeria, effective self-management remains essential to prevent complications and reduce healthcare costs (Okafor et al., 2024; Iregbu et al., 2022; Okeya, 2022). However, self-care adherence remains low due to factors that go beyond clinical guidance (Abiodun et al., 2024; Ojewale, 2019). By examining these factors within the specific context of health facility users in Ondo Town, the study provides evidence-based insights that can guide healthcare providers in tailoring interventions to the unique needs of their patients. It also equips policymakers and health educators with data necessary for designing sociocultural sensitive and economically accessible programs aimed at improving self-care behaviors.

This study aims to address a critical gap in understanding how demographic, socioeconomic, and related contexts influence diabetes self-management practices in Ondo Town. The study is thus necessitated by the fact that it seeks to fill these dire gaps by researching on the self-management behaviors of patients in facility based in Ondo Town bearing in mind the interrelationship that exist between demographic features and socioeconomic factors. to provide a structured inquiry into the self-management patterns adopted by type 2 diabetic patients in Ondo town.

**Research Questions**

i. What are the self-management patterns of diabetes adopted by patients utilizing health facilities in Ondo town?

ii. What demographic and socioeconomic factors are associated with the self-management patterns adopted by type 2 diabetic patients utilizing health facilities in Ondo town?

**Research Objectives**

i. $H_{01}$: Demographic characteristics of type 2 diabetes patients utilizing health facility in Ondo town are not statistically significant with their management patterns of the disease.

**ii.** $H_{02}$: Socioeconomic factors are not statistically significant with the management patterns of diabetes with type 2 adult patients utilizing health facility in Ondo town.

## 2. LITERATURE REVIEW

### 2.1 Influence of Demographic Factors on Diabetes Self-Management

Demographic factors significantly shape how individuals perceive, engage with, and sustain diabetes self-management practices. In Nigeria, variables such as age, gender, marital status, educational attainment, and employment status have all been reported to influence diabetic patients' ability to adhere to recommended self-care behaviors (Okafor et al., 2024).

Age plays a particularly central role. Studies indicate that older adults are more likely to suffer complications due to their tendency to underperform in areas like physical activity and blood glucose monitoring. Balogun et al. (2020) observed that adults aged 60 years and above were less likely to engage in self-monitoring of blood glucose and structured physical exercise, often due to physical limitations or a lack of caregiver support. Conversely, younger diabetic patients, especially those in the 30–45 age range, were more engaged with mobile health tools and better informed on diet and medication adherence, although they too sometimes struggled with long-term discipline (Taiwo et al., 2025).

Gender differences in self-management are also prominent. In a study conducted in Ondo State health facilities, Abiodun et al. (2024) found that female patients demonstrated higher levels of adherence to dietary guidelines and medication routines compared to their male counterparts. This was attributed to women's increased interaction with the healthcare system, greater concern for health, and more frequent participation in group education programs. However, men were more likely to engage in physical activity, particularly those involved in manual labor or outdoor occupations.

Educational level is consistently reported as one of the strongest predictors of effective diabetes self-management. Patients with secondary and tertiary education are generally more likely to understand their condition, comply with treatment guidelines, and make informed lifestyle changes. In a survey of diabetes patients in urban health facilities, Okoro et al. (2022) found that those with formal education above secondary level had significantly higher self-care scores across all measured domains, including diet, medication, and glucose monitoring. Patients with little or no formal education often misinterpreted symptoms or adhered to traditional remedies, believing they offered more immediate relief.

Employment status and type of occupation also affect the ability of diabetic patients to practice consistent self-care. Salaried workers and retirees tend to maintain better routines due to more predictable schedules and stable income. In

contrast, individuals engaged in informal trading or daily labor often prioritize income generation over health routines. Olamoyegun et al., (2024) observed that patients with irregular income sources often delayed medication purchases, skipped medical reviews, or adopted cheaper traditional alternatives during financially difficult periods. \

The role of religion, often embedded in a patient's demographic profile, cannot be overlooked. Abiodun et al. (2024) found that certain religious teachings influenced patients' willingness to use insulin therapy or participate in regular glucose monitoring. In some cases, faith-based fasting practices among Christians and Muslims inadvertently disrupted diet and medication routines, particularly during religious observances. These observations confirm that demographic variables do not operate in isolation but rather intersect to shape individual capacities and tendencies toward self-care (Olamoyegun et al., 2024; Okafor et al., 2024)

**2.2 Socioeconomic Factors Influencing Diabetes Self-Management**

Socioeconomic factors, such as income, occupation, housing condition, and access to health insurance, play a defining role in how diabetic patients adopt and sustain self-management practices. In Nigeria, the cost of diabetes care is largely borne out-of-pocket, making economic status a major determinant of access to medications, monitoring tools, and recommended diets (Okoro et al., 2022). These financial burdens often influence whether patients follow medical advice or default to alternative therapies that are more affordable. Income level directly affects patients' ability to purchase essential items for diabetes control, including glucose meters, test strips, insulin, and quality food. According to Taiwo et al. (2025), patients in low-income brackets admitted to skipping medications or reducing dosage to make supplies last longer. Many also rely on herbal mixtures, not necessarily out of belief, but because of their lower cost and availability.

Employment status contributes to this dynamic. Salaried individuals often have structured work schedules, allowing for routine checkups, regular meals, and consistent medication use. Conversely, informal workers, who constitute a large portion of Ondo's urban labor force, struggle to prioritize health over daily income. Abiodun et al. (2024) reported that diabetic traders and artisans were more likely to miss appointments and had less consistent adherence to medication and exercise regimens.

Access to health insurance or subsidized healthcare is limited. The National Health Insurance Scheme (NHIS) covers a small percentage of Nigerians, mostly formal sector employees. For the unemployed, self-employed, or retirees in Ondo Town, care is often paid for directly. Oyetunde et al., (2020) noted that a lack of financial coverage discouraged routine laboratory investigations, which are critical for monitoring complications. Living conditions, including housing and family support, further shape diabetes self-care. Patients in overcrowded or food-insecure households find it difficult to maintain dietary plans or store insulin properly. Iregbu et al. (2022) observed that low-income households with competing health needs

prioritized short-term relief over sustained care, leading to frequent treatment interruptions. These socioeconomic factors not only limit access to care but also reduce the ability of patients to follow through with healthcare providers' instructions, highlighting the need for facility-based support systems that consider patients' financial and social realities.

## 3. METHODS

This study adopts a **descriptive cross-sectional survey design** to examine the demographic and socioeconomic factors that are associated with self-management patterns among adults with type 2 diabetes. The cross-sectional design was suitable because it allows the researcher to collect data at a single point in time and to describe existing conditions without manipulating any variables. It is particularly appropriate for identifying links between patient characteristics and self-management behaviors in real-world healthcare settings (Ojewale, 2019; Umoke, Uro-Chukwu & Eze, 2020).

The study population for this research consist of adult diabetic patients receiving care at selected health facilities in Ondo Town, Ondo State, Nigeria. Focusing on this group allowed the researchers to effectively assess how demographic and socioeconomic factors associated with diabetes self-management practice exist within a structured health service environment.

Since the total outpatient diabetic population is large and unknown, the standard Cochran's formula was adopted for this study under the assumption of an infinite population. This method is widely accepted in epidemiological studies when the objective is to estimate a proportion or prevalence. A finite population correction (FPC) is considered when exact data on clinic attendance are available**:**

$$n_0 = \frac{Z^2 \times p \times (1-p)}{e^2}$$

$n_0$= Required sample size

Z = Z-score for the desired confidence level (1.96 for 95%)

p = Estimated prevalence of diabetes in a similar study, Ifedayo et al., 2023 (9.1%)

e = Desired level of precision or margin of error (5% or 0.05).

Substituting the Values:

$$n_0 = \frac{(1.96)^2 \cdot 0.091 \cdot (1 - 0.091)}{(0.05)^2}$$

$$n_0 = \frac{3.8416 \cdot 0.091 \cdot (1 - 0.091)}{(0.05)^2}$$

$$n_0 = \frac{0.3176}{0.0025} \approx 127$$

Hence, a minimum of 127 participants is statistically required. To account for non-response, attrition, or data incompleteness, an additional 15:20% is added: n = $n_0$ +15%=127+0.15(127) ≈146

**Multi-Stage Sampling (Quantitative Component)**

A multistage sampling technique was adopted. This method ensured that both urban and rural populations are adequately represented, while also ensuring that healthcare facilities differ in size, service type (public/private), and geographical accessibility. The sampling process includes the following stages:

**Stage 1: Selection of Health Facilities**

Secondary healthcare facilities (general hospitals and private clinics) were purposively selected from urban and rural regions of Ondo State.

Selection criteria included: provision of diabetes management services (including drug therapy, and routine glycemic monitoring), presence of outpatient clinics, high patient attendance rates, and availability of trained healthcare professionals.

A minimum of 6:8 health facilities were selected across different senatorial districts to ensure spatial diversity and contextual representativeness.

**Stage 2: Selection of Participants from Facility Registers**

A systematic random sampling technique was applied to diabetic outpatient registers from the selected facilities. Sampling frame: The total list of diabetic patients scheduled for routine follow-up or clinical visits. Sampling interval (k) was determined by:

$$k = \frac{N}{n}$$

where,

N = Estimated number of diabetic patients attending each facility

n = Sample size per facility (derived by dividing total sample size by number of facilities)

A random starting point was chosen, and every patient on the list was recruited. Inclusion was continued until the required sample for that facility was reached. This method ensures reduced bias and equal opportunity for selection among patients.

**Pilot Study**

The pre-testing of instruments was carried out in a nearby community with similar characteristics of targeted population. This was carried out with a view of validating and testing the consistency of the reliability co-efficient of the research instrument. The pre-test was carried out prior the conduction of the main study. While the validity test was done by individuals with expertise in instrumentation of diabetes

studies, the reliability test was performed by the authors with strong quantitative analytics evaluated by professionals in the fields of public health, nursing science, and health education for relevance, clarity, and alignment with the study objectives. Their feedback was used to revise ambiguous or irrelevant items, improve wording, and ensure that all relevant domains, demographic factors, socioeconomic variables, and self-management behaviors were adequately covered. In addition, the questionnaire items were adapted from standardized and widely used tools such as the Summary of Diabetes Self-Care Activities (SDSCA) to enhance construct validity. Using the Cronbach Alpha, a reliability co-efficient score of 0.79 was obtained, and this was relatively higher than the conventional acceptable score of 0.7.

**Data Collection and Statistical Analysis**

Data was collected using a researcher-administered structured questionnaire. The recruited research assistants engaged in data collection trained on ethical considerations, and how to administer the questionnaire effectively. The use of interviewer-administered questionnaires is intended to minimize misunderstandings, ensure completeness of responses, and assist participants who may have low literacy levels. Data collected from the field was coded and entered into the Excel spreadsheet, and transferred into the Stata version 17 for statistical analysis of data at descriptive and inferential level of analyses. Prior to the main analysis, the data cleaning and verification procedures were done, so as to ensure accuracy, consistency, and completeness. Statistical significance was established at $p < .05$.

## 4. RESULTS

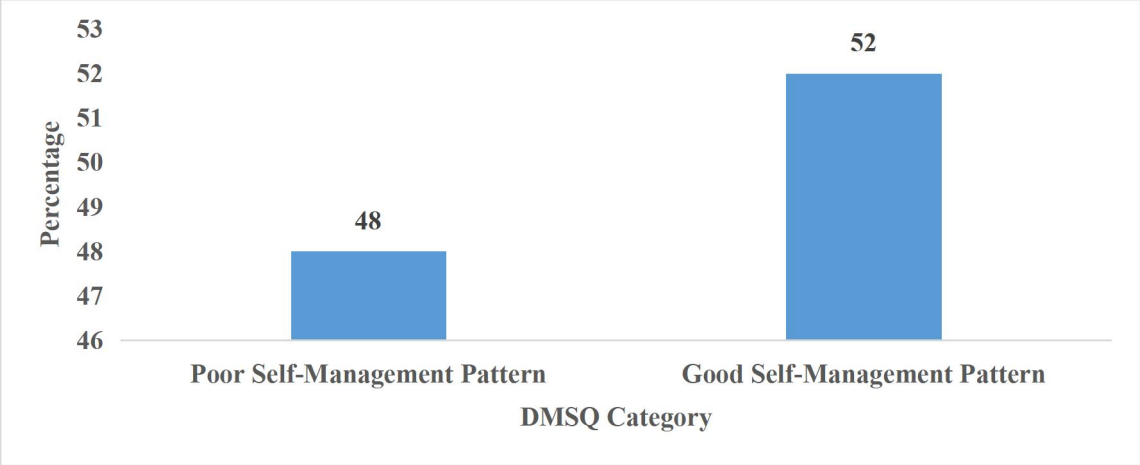


***Figure 1: Categorized Self-Management Patterns***

Figure 1 shows the categorized self-management patterns among the respondents. More than half (52.0%) of the respondents were found to have good self-management patterns compared to 48.0% who had poor self-management patterns.

**Table 1: Self-management patterns among the type 2 diabetic patients**

| Variables | Very much (%) | Considerable degree (%) | Some degree (%) | Does not apply (%) |
|---|---|---|---|---|
| Checked blood sugar level with care and attention | 81 (54.0) | 32 (21.3) | 29 (19.3) | 8 (5.3) |
| Keep all doctors' appointments for diabetes treatment | 72 (48.0) | 33 (22.0) | 33 (22.0) | 12 (8.0) |
| Take diabetes medication as prescribed | 75 (50.0) | 40 (26.7) | 22 (14.7) | 13 (8.7) |
| Record blood sugar levels regularly | 65 (43.3) | 44 (29.3) | 26 (17.3) | 15 (10.0) |
| Tend to forget or skip diabetes medication | 28 (18.7) | 26 (17.3) | 50 (33.3) | 46 (30.7) |
| My diabetes self-care is poor | 9 (6.0) | 26 (17.3) | 62 (41.3) | 53 (35.3) |
| Food choices make it easy to achieve optimal blood sugar levels | 44 (29.3) | 40 (26.7) | 55 (36.7) | 11 (7.3) |
| Strictly follow the dietary recommendations from your doctor | 63 (42.0) | 33 (22.0) | 45 (30.0) | 9 (6.0) |
| Occasionally, eat lots of sweets or carbohydrates | 31 (20.7) | 26 (17.3) | 57 (38.0) | 36 (24.0) |
| Sometimes have real 'food binges' (not due to low sugar) | 31 (20.7) | 48 (32.0) | 54 (36.0) | 17 (11.3) |
| Do regular physical activity for optimal blood sugar | 48 (32.0) | 44 (29.3) | 45 (30.0) | 13 (8.7) |
| Tend to skip planned physical activity | 22 (14.7) | 34 (22.7) | 63 (42.0) | 31 (20.7) |

Table 1 describes the self-management practices reported by the respondents. The majority of the respondents reported checking their blood sugar level with a high degree of care (54.0% 'Very much'), and half (50.0%) took their diabetes medication as prescribed 'Very much'. Similarly, 48.0% reported keeping all doctors' appointments to a 'Very much' degree. However, dietary and physical activity practices showed more variation. While a combined 64.0% followed their doctor's dietary recommendations to a 'Very much' or 'Considerable' degree, a notable portion also reported lapses. Over half of the respondents (58.0%) admitted to occasionally eating lots of sweets or carbohydrates to some degree or more, and a majority (72.7%) experienced food binges to at least some degree. For physical activity, 61.3% engaged in regular activity for optimal blood sugar to a 'Very much' or 'Considerable' degree, yet a similar proportion (79.4%) reported skipping planned physical activity to at least 'Some degree'. When reflecting on their overall self-care, a positive trend emerged. A combined 76.6% rejected the notion that their diabetes self-care is poor, with 35.3% stating this 'Does not apply' and 41.3% acknowledging it only to 'Some degree'. This is consistent with medication adherence, where a majority (64.0%) reported that forgetting or skipping medication (33.3%).

**Table 2: Mean scores and variability on type 2 diabetes self-management questionnaire (DSMQ) Scales**

| Scale | Possible Range | Mean (M) | Standard Deviation (SD) | Actual Range |
|---|---|---|---|---|
| Glucose Management (GM) | 0-12 | 8.24 | 2.75 | 2 – 12 |
| Dietary Control (DC) | 0-12 | 6.81 | 1.85 | 3 – 12 |
| Physical Activity (PA) | 0-6 | 3.53 | 1.20 | 0 – 6 |
| Health-Care Use (HU) | 0-6 | 4.16 | 1.50 | 0 – 6 |
| Total DSMQ Score | 0-36 | 22.75 | 5.22 | |

The descriptive statistics for the DSMQ scales are presented in Table 2 The mean scores indicate that participants reported the highest level of self-management in the Glucose Management domain (M = 8.24, SD = 2.75) and the lowest in the Physical Activity domain (M = 3.53, SD = 1.20). The overall level of diabetes self-management, as measured by the Total DSMQ Score, was moderate (M = 22.75, SD = 5.22 out of a possible 36)."

**Table 3: Association between type 2 diabetes self-management patterns and selected demographic characteristics of the respondents (n=150)**

| Variables | Self-Management pattern | | Chi-square test |
|---|---|---|---|
| | Poor (n=72) | Good (n=78) | $x^2$,$p$ |
| **Age** | | | |
| 20-44 | 33 (55.9) | 26 (44.1) | $x^2$ = 9.892 |
| 45-64 | 33 (52.4) | 30 (47.6) | $\boldsymbol{p}$ **= 0.007*** |
| 65 and above | 6 (21.4) | 22 (78.6) | |
| **Ethnicity** | | | |
| Hausa | 9 (100.0) | 0 (0.0) | |
| Igbo | 8 (50.0) | 8 (50.0) | $x^2$ = 11.635¶ |
| Others | 1 (33.3) | 2 (66.7) | $\boldsymbol{p}$ **= 0.005*** |
| Yoruba | 54 (44.3) | 68 (55.7) | |
| **Place of residence** | | | |
| Rural | 26 (59.1) | 18 (40.9) | $x^2$ = 6.815 |
| Semi-Urban | 24 (54.5) | 20 (45.5) | $\boldsymbol{p}$ **= 0.033*** |
| Urban | 22 (35.5) | 40 (64.5) | |
| **Education level** | | | |
| No Formal education | 1 (12.5) | 7 (87.5) | $x^2$ = 5.029¶ |
| Primary | 4 (66.7) | 2 (33.3) | $p$ = 0.166 |
| Secondary | 23 (46.9) | 26 (53.1) | |

| | | |
|---|---|---|
| Tertiary | 44 (50.6) | 43 (49.4) |

*¶ Fisher-Freeman-Halton Exact Test*; **Significant at p< .05*

Table 3 presents the analysis of the association between self-management patterns and various demographic factors. The results indicate that self-management was significantly associated with age, ethnicity, place of residence, and type of diabetes. A statistically significant association was found between self-management and age (p=0.007). Notably, the oldest age group (65 and above) demonstrated the best self-management, with 78.6% categorized as having 'Good' practices, compared to only 21.4% with 'Poor' practices. In contrast, the younger age groups (20-44 and 45-64) had a more even split between good and poor self-management. Ethnicity also showed a significant relationship with self-management patterns (p=0.005). A striking finding was that all respondents of Hausa ethnicity (100.0%) fell into the 'Poor' self-management category. Conversely, the Yoruba majority had a higher proportion in the 'Good' management category (55.7%). Place of residence was another significant factor (p=0.033). Respondents in urban areas were found to have substantially 'Good' self-management (64.5%) compared to those in rural (40.9%) or semi-urban (45.5%) areas.

**Table 4: Association between the type 2 diabetes self-management patterns and selected socioeconomic characteristics of the respondents (n=150)**

| Variables | Self-Management pattern | | Chi-square test |
|---|---|---|---|
| | Poor (n=72) | Good (n=78) | $x^2$,$p$ |
| **Approximate household monthly income** | | | |
| 10,000 - 49,999 | 9 (47.4) | 10 (52.6) | $x^2$ = 10.874 |
| 50,000 - 199,999 | 49 (59.0) | 34 (41.0) | $\boldsymbol{p}$ **= 0.004*** |
| 200,000 and above | 14 (29.2) | 34 (70.8) | |
| **House ownership** | | | |
| Living with relatives/friends | 8 (80.0) | 2 (20.0) | |
| No | 12 (46.2) | 14 (53.8) | $x^2$ = 18.456 |
| Rented | 36 (63.2) | 21 (36.8) | $\boldsymbol{p}$ **< 0.001*** |
| Yes | 16 (28.1) | 41 (71.9) | |
| **Experienced financial difficulty in managing diabetes (e.g. paying for medication, tests, transportation)** | | | |
| No | 25 (35.7) | 45 (64.3) | $x^2$ = 7.968 |
| Sometimes | 28 (59.6) | 19 (40.4) | $\boldsymbol{p}$ **= 0.019*** |
| Yes | 19 (57.6) | 14 (42.4) | |
| **Means of transportation used to access healthcare services** | | | |
| Motorcycle | 8 (53.3) | 7 (46.7) | |
| private car | 9 (23.1) | 30 (76.9) | $x^2$ = 13,895 |
| public transport | 50 (58.8) | 35 (41.2) | $\boldsymbol{p}$ **= 0.003*** |
| Walking | 5 (45.5) | 6 (54.5) | |

**Significant at p< .05*

Table 4 explores the association between self-management patterns and socioeconomic factors. The analysis reveals that household income, housing status, financial difficulties, and means of transportation were significantly associated with

self-management outcomes. A statistically significant relationship was found between self-management and household monthly income (p=0.004). Respondents in the highest income bracket (₦200,000 and above) were found to substantially have 'Good' self-management (70.8%), whereas those in the middle-income bracket (₦50,000 - ₦199,999) had the highest proportion of 'Poor' self-management (59.0%). Housing status also demonstrated a significant association (p<0.001). Respondents who owned their residence showed the best self-management, with 71.9% in the 'Good' category. In contrast, those living with relatives or friends (80.0%) and those in rented accommodation (63.2%) had the highest proportions of 'Poor' self-management. Experiencing financial difficulty in managing diabetes was another significant factor (p=0.019). Respondents who reported no financial difficulty had the highest rate of 'Good' self-management (64.3%). As financial challenges increased, whether 'Sometimes' or a consistent 'Yes', the proportion of 'Good' self-management dropped to 40.4% and 42.4% respectively. Furthermore, the means of transportation to healthcare services were significantly associated with self-management (p=0.003). Those who used a private car had the highest rate of 'Good' self-management (76.9%), while a majority of those reliant on public transport (58.8%) were in the 'Poor' self-management category.

**Table 5: Binary Logistic Regression of the outcome variable "self-management of diabetes pattern" and the selected demographic and socioeconomic predictors**

| Variables | Odds-ratio | p-value | 95% confidence interval | |
|---|---|---|---|---|
| | | | Lower | Upper |
| **Age** | | | | |
| 20-44 | 1 | | | |
| 45-64 | 1.76 | 0.303 | 0.600 | 5.169 |
| 65 and above | 26.69 | **0.003*** | 3.159 | 225.462 |
| **Sex** | | | | |
| Female | 1 | | | |
| Male | 0.99 | 0.981 | 0.385 | 2.540 |
| **Had health insurance** | | | | |
| Yes | 1 | | | |
| No | 0.335 | **0.037*** | 0.120 | 0.937 |
| **House ownership** | | | | |
| Living with relative/friend | 1 | | | |
| No | 5.517 | 0.118 | 0.647 | 47.037 |
| Rented | 2.787 | 0.322 | 0.367 | 21.191 |
| Yes | 11.269 | **0.025*** | 1.349 | 94.107 |
| **Self-description of general financial situation** | | | | |
| Comfortable | 1 | | | |
| Managing with difficulty | 2.729 | **0.046*** | 1.016 | 7.329 |
| Struggling | 3.405 | 0.126 | 0.709 | 16.346 |
| Very comfortable | 0.331 | 0.270 | 0.046 | 2.364 |
| **Type of diabetes** | | | | |

| | | | | |
|---|---|---|---|---|
| Don't know | 1 | | | |
| Type 1 | 2.48 | 0.270 | 0.493 | 12.464 |
| Type 2 | 0.74 | 0.697 | 0.161 | 3.386 |

**Significant at p< .05*

Table 5 shows the binary logistic regression of the outcome variable "self-management of diabetes pattern" and the selected socio-demographic predictors. For the variable age, with 20-44 as reference, where 65 and above had a p-value of 0.003 (i.e. p<0.05), odds ratio 26.69 and confidence interval 3.159-225.462. This means that respondents aged 65 and above are 26 times more likely to have good self-management of diabetes.

The outcome further revealed that respondents who have had any health insurance are about three times less likely to have good self-management of diabetes patterns (AOR=0.335, p=0.037, CI=0.120-0.937). In addition, respondents who owned their own house were 11 times more likely to have good self-management patterns (AOR=11.269, p=0.025, CI=1.349-94.107). Those that are managing their general financial situation with difficulty were found to be about three times more likely to have good self-management patterns compared to others that are comfortable or struggling (AOR=2.729, p=0.046, CI=1.016-7.329).

**5. DISCUSSION**

This study documented the self-management patterns and examined demographic and socioeconomic determinants of self-management patterns adopted by type 2 diabetic patients, utilizing health facilities in Ondo town. Our discussion interprets the main findings in relation to the study's specific objectives and situates them within the context of existing literature, integrating both the quantitative survey results and the qualitative insights from healthcare providers. The sample was predominantly middle-aged and older adults, with a mean age of 49 years, and a near-equal sex distribution. This age profile is typical of populations with a high burden of Type 2 diabetes, which was the most frequently reported type in a previous study (Olamoyegun, Alare, Afolabi, Aderinto & Adeyemi, 2024), while the near equal or slightly female-predominant sex ratios are documented in previous literature (Nwafor, Edeogu, Stanley & Ogomegbunam, 2024; Tuobenyiere, Okrah & Owusu-Ansah, 2023). The ethnic composition was predominantly Yoruba, reflecting the ethnic homogeneity of the study setting in Southwestern Nigeria, a finding consistent with other health studies conducted in this geographical region. For instance, studies in Southwestern Nigeria, report a strong predominance of Yoruba among diabetes clinic populations, typically constituting more than half of enrolled participants (Owolabi et al., 2024; Nwafor et al., 2024; Oyetunde et al., 2020). Such ethnic homogeneity in study settings is considered both a reflection of regional population structure and a recurring observation in health research from Yoruba land. However, studies in multi-ethnic urban sites or federal institutions have less ethnic homogeneity, finding a wider mix of Yoruba, Igbo, and Hausa-Fulani patients, especially in urban tertiary care settings (Olamoyegun et al., 2024).

An important strength of this cohort was the high level of educational attainment, with the majority having tertiary education, a proportion mirrored in

their spouses' education, which is similar to previous studies in Nigeria that reported the majority of their respondents as having higher education (Osonuga, Olufemi, Osonuga & Okoye, 2024; Okoro et al., 2022).

A critical vulnerability was exposed in health financing, as the majority lacked any form of health insurance. This high cost of health insurance s a defining feature of the Nigerian health landscape and has been consistently identified as a major barrier to chronic disease management (Egwim, Kyulo, Danawi & Mendelsohn, 2024). Even though the NHIA reforms have evidently expanded diabetes coverage under the national health insurance package, the enrollment level into the health insurance is still low (Okonofua, Ntoimo, Ogu & Isikhuemen, 2025). The reliance on out-of-pocket spending was further evidenced in this study by the fact that more than half of the respondents experienced financial difficulty in managing their diabetes, leading 40.7% to skip medication or clinic visits due to cost.

Therefore, socioeconomic factors demonstrated a powerful influence on self-management outcomes. Higher household income and homeownership in this study were strongly associated with good self-management, which is in line with another study conducted in Makurdi, Benue State, where it was reported that household income and asset ownership (including housing) significantly predicted quality of life and self-management among persons with Type 2 diabetes. Patients in higher income categories had better adherence to diet and medication, more regular clinic visits, and lower HbA1c values compared to low-income participants (Akinbule, Tor-Anyiin, & Adenusi, 2025). In addition, a national-level analysis confirmed that household income, educational attainment, and type of residential area independently predicted diabetes control and complication prevention. Higher-income individuals demonstrated greater capacity for purchasing medications, accessing tests, and maintaining dietary compliance, confirming the protective role of economic stability (Al-Taani, El-Osta & Alnahar, 2025; Osuchukwu, Amadi & Nwokike, 2024).

## 6. CONCLUSION

The study found a moderate overall level of diabetes self-management, which aligns with trends observed in similar low-resource settings. However, self-management was not uniform across all domains. Participants demonstrated the highest adherence in the core medical aspects of care, specifically Glucose Management. In contrast, significant deficits were identified in Physical Activity and inconsistent practices in Dietary Control, highlighting a critical gap in the adoption of essential lifestyle modifications. The analysis of this study revealed that self-management patterns were significantly influenced by key demographic and socioeconomic factors. Older age (65 and above), urban residence, higher household income, and homeownership were strong predictors of good self-management. Conversely, being of a minority ethnic group (Hausa), experiencing financial difficulties in managing the condition, and relying on public transport were associated with poorer self-management outcomes. This study concludes that while patients in Ondo town are generally adherent to the pharmacological aspects of their diabetes care, their overall self-management is constrained by profound socioeconomic barriers, primarily the high cost of care and lack of comprehensive

health insurance and significant challenges in integrating sustained physical activity and consistent dietary control.

## 7. RECOMMENDATIONS

Based on the findings of this study, the following recommendations are proposed to improve diabetes self-management in Ondo Town and similar contexts:

- Subsidies Diabetes Care and Expand Health Insurance**:** Given the finding that financial difficulty was the single biggest barrier to self-management, leading to skipped medication and clinic visits, the government must take decisive action. We recommend the subsidization of essential diabetes medications, test strips, and glucometers.
- Integrate Structured Diabetes Education into Primary Healthcare: The study found that patients who were unaware of their diabetes type had the poorest self-management, and dietary/activity domains were weak. Therefore, the Ministry of Health could develop and fund a standardized, structured diabetes self-management education and support (DSMES) program for integration into all primary health care centers. This programme should be culturally tailored, available in local languages, and focus on practical skills for meal planning and physical activity, moving beyond basic knowledge transfer.
- Priorities Patient Education on Diabetes Type and Lifestyle: Individual providers must take responsibility for ensuring every patient leaves the consultation understanding their specific type of diabetes and its chronic nature. They should dedicate time during each visit to counsel patients on the importance of physical activity and practical dietary changes, using the "teach-back" method to confirm understanding.
- Actively Encourage and Involve Family Support: Recognizing the positive role of family, providers should make a conscious effort to involve a patient's spouse or children in the education process during clinic visits. Encouraging family members to support with medication reminders, meal preparation, and clinic attendance can leverage this existing support system to significantly improve patient outcomes.

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