

KNOWLEDGE AND PRACTICE OF PROMOTIONAL LIFESTYLE BEHAVIOUR FOR REDUCING DIABETES AMONG MIDDLE-AGED RESIDENTS OF SELECTED LOCAL GOVERNMENT AREA, IMO STATE, NIGERIA

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ABSTRACT

Diabetes is a chronic metabolic disorder characterized by elevated blood glucose levels that affects approximately 537 million adults globally, with its prevalence rapidly increasing in Nigeria due to urbanization, sedentary lifestyles, and changing dietary patterns. This study assessed the knowledge and practice of promotional lifestyle behaviours for reducing diabetes among middle-aged residents of selected Local Government Areas (LGAs) in Imo State, Nigeria. Using a cross-sectional descriptive survey design, 400 questionnaires were distributed across five LGAs, with 354 valid responses (88.5% response rate) collected. The study revealed high diabetes awareness (87.9%) among respondents, with 73.2% correctly identifying diabetes as a high blood sugar condition. While knowledge of diabetes causes was good, with 64.4% recognizing poor diet and 52.3% acknowledging lack of exercise as contributing factors, lifestyle practices showed room for improvement. Only 16.7% consumed fruits and vegetables daily, and 12.4% engaged in daily physical exercise. Chi-square analysis revealed significant regional variations in understanding diabetes ($p = 0.006$), knowledge of causes ($p = 0.003$), smoking habits ($p = 0.021$), and consumption of sugary foods/drinks ($p = 0.007$). Although 81.6% expressed willingness to adopt lifestyle changes, barriers such as lack of time (34.2%), motivation (27.7%), and resources (24.0%) hindered implementation. The study found no significant demographic differences across LGAs, suggesting that variations in knowledge and practices were primarily due to environmental and systemic factors rather than population differences. These findings highlight the need for targeted interventions that address regional disparities in health education and improve access to resources facilitating healthy living. A comprehensive approach combining enhanced health education with practical support mechanisms could significantly improve diabetes prevention efforts among middle-aged residents in Imo State.

KEYWORDS: diabetes, lifestyle behaviours, health promotion, middle-aged residents, Nigeria.

INTRODUCTION

Diabetes is a chronic metabolic disorder characterized by elevated blood glucose levels, resulting from either inadequate insulin production by the pancreas or the body's ineffective response to insulin (American Diabetes Association, 2021). There are two main types of diabetes: Type 1 diabetes, an autoimmune condition where the body fails to produce insulin, and Type 2 diabetes, which develops when the body becomes resistant to insulin or fails to produce enough insulin to maintain normal glucose levels (World Health Organization, 2021). Diabetes can lead to numerous complications, including cardiovascular disease, kidney damage, vision loss, and nerve damage (Zheng *et al.*, 2018).

The global burden of diabetes continues to rise at an alarming rate, with current statistics revealing a significant public health challenge worldwide and in Nigeria specifically. As of 2021, approximately 537 million adults aged 20-79 years are living with diabetes globally, representing 10.5% of this age group. The projections are even more concerning, with expectations of an increase to 643 million by 2030 and a further rise to 783 million by 2045. Over 90% of these cases are Type 2 diabetes, influenced by urbanization, ageing populations, and rising obesity rates. A particularly worrying aspect is that nearly half of those affected are unaware of their condition, with about 75% of adults with diabetes residing in low- and middle-income countries (Sun *et al.*, 2022; Yameny, 2024).

In Nigeria, the diabetes situation presents a significant healthcare challenge with distinct patterns and trends. The current pooled prevalence of diabetes mellitus stands at approximately 5.77%, translating to about 11.2 million Nigerians living with the disease – roughly one in every 17 adults. The historical trend shows a dramatic increase from 209,400 people with diabetes in 2000 to 3,054,500 in 2011 and further to 3,623,500 individuals by 2021. Future projections indicate a continuing upward trend, with numbers expected to reach 4,941,600 by 2030 and potentially surge to 7,988,300 by 2045. However, there has been some positive development in terms of diabetes-related mortality, which has shown a decrease from 63,340 deaths in 2011 to approximately 48,375 by 2021 (Uloko *et al.*, 2018).

Lifestyle behaviours play a crucial role in the development and management of diabetes. Unhealthy dietary habits, physical inactivity, obesity, and smoking are among the key modifiable risk factors for Type 2 diabetes (Kolb & Martin, 2017). Consuming a diet high in processed foods, refined carbohydrates, and saturated fats, while low in fibre and whole grains, has been associated with an increased risk of developing diabetes (Ley *et al.*, 2014). Additionally, a sedentary lifestyle and lack of regular physical activity contribute to the development of insulin resistance and obesity, further increasing the risk of diabetes (Smith *et al.*, 2016). Smoking has also been identified as a risk factor for diabetes, with smokers having a 30-40% higher risk of developing Type 2 diabetes compared to non-smokers (Pan *et al.*, 2015).

Studies have found that diabetes is a growing public health concern in Nigeria with modifiable lifestyle risk factors such as obesity, physical inactivity, and unhealthy dietary habits playing a significant role in its development. Abe (2017) investigated the risk perception, attitude, and lifestyles relating to diabetes prevention among nurses in Ibadan, Nigeria, and found that while most nurses had a positive attitude towards lifestyle characteristics related to diabetes prevention, many did not exhibit healthy lifestyle behaviours such as regular exercise and healthy eating habits. Furthermore, the study revealed that nurses with normal BMI had positive attitudes and healthy lifestyle characteristics but poor knowledge of diabetes and low-risk perception. Godwin and Atulomah (2023) evaluated the effect of a lifestyle modification intervention on diabetes treatment outcomes in tuberculosis patients with diabetes in Southwest Nigeria and found that the intervention, which included educational and behavioural lifestyle modifications, improved blood glucose control compared to the control group. This highlights the importance of lifestyle interventions in managing diabetes, even in patients with comorbidities. Joseph-Shehu *et al.* (2019) also emphasized the role of health-promoting lifestyle behaviours in reducing the risk of developing diabetes, as they found that good physical activity and health-responsibility lifestyle behaviours were significant

predictors of normal body mass index, a key risk factor for diabetes.

However, while previous studies have examined lifestyle behaviours and diabetes risk in various Nigerian populations, including healthcare workers and patients with comorbidities, there is limited research focusing on middle-aged residents in Imo State. Therefore, this present study aims to assess the knowledge and practice of promotional lifestyle behaviours for reducing diabetes among middle-aged residents of selected Local Government Areas in Imo State, Nigeria.

METHODS

Study Area

This study was carried out in Imo State, Nigeria. Imo State, located in the southeastern region of Nigeria, covers an area of approximately 5,530 square kilometres and is one of the most densely populated states, with a population exceeding 5.4 million as of 2022. The state is bordered by Anambra to the north, Abia to the east, and Rivers to the south and west. It consists of two main ecological zones: the Niger Delta swamp forests in the east and the Cross-Niger transition forests in the rest of the state. Imo State is divided into 27 local government areas (LGAs). Agriculture plays a central role in the economy, with staple crops such as yams, cassava, and rice, alongside oil palm as the major cash crop. Imo State is also home to several rivers, including the Imo and Otamiri rivers, and Oguta Lake. The capital, Owerri, is an industrial and educational centre contributing to the state's economic activities.

Research Design

This study adopted a cross-sectional descriptive survey design to assess the knowledge and practice of promotional lifestyle behaviours for reducing diabetes among middle-aged residents of selected Local Government Areas in Imo State, Nigeria. This design is appropriate as it allows for the collection of data at a single point in time to describe the current knowledge and lifestyle practices of the population, providing a snapshot of the variables of interest without manipulating the study environment.

Population of the Study, Sampling and Sampling Technique

The population for this study comprises middle-aged residents of selected Local Government Areas (LGAs) in Imo State, Nigeria. According to the last census, the total population of Imo State was approximately 4,927,563, with an estimated increase to about 5,459,300 by 2022. The study focused on residents aged 40-59 years in five selected LGAs. Using the Taro Yamane formula at a 95% confidence level and a 5% margin of error, a sample size of approximately 400 was determined. A multistage sampling technique was employed, which involved selecting five LGAs from the 27 in the state. Within each LGA, a combination of stratified and simple random

sampling was used to select participants, ensuring diverse representation across different communities.

Data Collection Instrument

A structured questionnaire was used as the primary data collection instrument for this study. The questionnaire was designed to capture information on the knowledge and practice of promotional lifestyle behaviours for reducing diabetes among middle-aged residents. It consisted of closed-ended questions divided into sections that addressed demographic characteristics, knowledge of diabetes, and lifestyle practices. For validity, the questionnaire was reviewed by experts in public health and diabetes research to ensure content relevance and clarity. To ensure reliability, the test-retest method was employed, where the questionnaire was administered to a small group of participants twice within a two-week interval. The results were compared, and a high correlation coefficient confirmed the reliability of the instrument.

Method of Data Collection and Analysis

Data collection was carried out through face-to-face distribution of the structured questionnaires to the selected participants in the five Local Government Areas (LGAs) of Imo State. Trained research assistants were employed to administer the questionnaires, ensuring proper guidance and clarification where needed. Once collected, the data were entered and analyzed using SPSS

version 27.0. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to summarize and describe the demographic characteristics, knowledge, and lifestyle practices of the respondents. These statistical tools provided a clear overview of the data, allowing for the identification of key trends and patterns related to diabetes knowledge and preventive lifestyle behaviours.

Ethical Considerations

Informed consent was sought from all participants before data collection, ensuring that they fully understood the purpose of the study, their role, and their right to withdraw at any time without penalty. Participation was entirely voluntary, and confidentiality was strictly maintained by anonymizing the data and securely storing all information. No personal identifiers were collected, and the data were used solely for research purposes. Additionally, participants were assured that their responses would be treated with the highest level of confidentiality and used only for academic and policy purposes.

RESULTS

This study was carried out in 5 selected LGAs of Imo State namely: Owerri West, Orlu, Okigwe, Isiala Mbano and Ideato South. From the 400 distributed questionnaires, only 354 questionnaires were filled and retrieved (88.5% response rate).

Table 1: Demographic Characteristics of Respondents (N = 354).

Variable	Frequency (n)	Percentage (%)
Age		
40-44 years	88	24.9
45-49 years	91	25.7
50-54 years	90	25.4
55-59 years	85	24.0
Gender		
Male	178	50.3
Female	176	49.7
Educational Level		
No formal education	23	6.5
Primary education	47	13.3
Secondary education	145	41.0
Tertiary education	139	39.3
Marital Status		
Single	61	17.2
Married	235	66.4
Divorced	27	7.6
Widowed	31	8.8
Occupation		
Unemployed	43	12.1
Self-employed	167	47.2
Government employee	72	20.3
Private sector employee	48	13.6
Retired	24	6.8

Table 1, which presents the demographic characteristics of the respondents, reveals a fairly balanced distribution across age groups, with 24.9% (n=88) aged 40-44 years, 25.7% (n=91) aged 45-49 years, 25.4% (n=90) aged 50-54 years, and 24.0% (n=85) aged 55-59 years. The gender distribution was nearly equal, with males representing 50.3% (n=178) and females 49.7% (n=176) of respondents. Regarding educational attainment, a significant majority had formal education, with 41.0% (n=145) having secondary education and 39.3% (n=139)

having tertiary education, while only a minority had primary education (13.3%, n=47) or no formal education (6.5%, n=23). An overwhelming majority of respondents were married (66.4%, n=235), followed by single (17.2%, n=61), widowed (8.8%, n=31), and divorced (7.6%, n=27). In terms of occupation, nearly half were self-employed (47.2%, n=167), followed by government employees (20.3%, n=72), private sector employees (13.6%, n=48), unemployed (12.1%, n=43), and retired individuals (6.8%, n=24).

Table 2: Knowledge of Diabetes (N = 354).

Variable	Frequency (n)	Percentage (%)
Have you heard about diabetes?		
Yes	311	87.9
No	43	12.1
What do you think diabetes is?		
A disease caused by high blood sugar	259	73.2
A disease caused by low blood sugar	54	15.3
A genetic disorder	87	24.6
I don't know	41	11.6
What are the causes of diabetes?		
Poor diet	228	64.4
Lack of exercise	185	52.3
Genetics	120	33.9
Smoking	137	38.7
I don't know	32	9.0
What are the symptoms of diabetes?		
Frequent urination	167	47.2
Excessive thirst	203	57.3
Unexplained weight loss	151	42.7
Extreme fatigue	174	49.2
Blurred vision	136	38.4
Do you think diabetes can be prevented?		
Yes	276	78.0
No	43	12.1
Not sure	35	9.9

Table 2, focusing on knowledge of diabetes among respondents, shows that an overwhelming majority (87.9%, n=311) had heard about diabetes, while only 12.1% (n=43) had not. A significant majority (73.2%, n=259) correctly identified diabetes as a disease caused by high blood sugar, while smaller proportions believed it was a genetic disorder (24.6%, n=87) or caused by low blood sugar (15.3%, n=54), and 11.6% (n=41) admitted to not knowing. Regarding causes, a majority recognized poor diet (64.4%, n=228) and lack of exercise (52.3%, n=185) as causes, while fewer identified genetics (33.9%, n=120) and smoking (38.7%, n=137) as causes, with only 9.0% (n=32) indicating no knowledge.

Knowledge of symptoms varied, with excessive thirst being the most recognized (57.3%, n=203), followed by extreme fatigue (49.2%, n=174), frequent urination (47.2%, n=167), unexplained weight loss (42.7%, n=151), and blurred vision (38.4%, n=136). A significant majority (78.0%, n=276) believed diabetes could be prevented.

Table 3: Lifestyle Practices (N = 354).

Variable	Frequency (n)	Percentage (%)
How often do you consume fruits and vegetables?		
Daily	59	16.7
3-5 times a week	153	43.2
1-2 times a week	86	24.3
Rarely or never	56	15.8
How often do you engage in physical exercise?		
Daily	44	12.4
3-5 times a week	126	35.6
1-2 times a week	111	31.4
Rarely or never	73	20.6
Do you smoke cigarettes?		
Yes	98	27.7
No	256	72.3
How often do you consume sugary foods or drinks?		
Daily	108	30.5
3-5 times a week	91	25.7
1-2 times a week	93	26.3
Rarely or never	62	17.5
How often do you attend regular medical check-ups?		
Once a month	84	23.7
Once every 3-6 months	101	28.5
Once a year	102	28.8
Rarely or never	67	18.9

Table 3, illustrating lifestyle practices, demonstrates that the majority of respondents consumed fruits and vegetables 3-5 times a week (43.2%, n=153), while smaller proportions consumed them 1-2 times a week (24.3%, n=86), daily (16.7%, n=59), or rarely/never (15.8%, n=56). Regarding physical exercise, a significant portion exercised 3-5 times weekly (35.6%, n=126) or 1-2 times weekly (31.4%, n=111), while fewer exercised daily (12.4%, n=44) or rarely/never (20.6%, n=73). A

significant majority were non-smokers (72.3%, n=256). Concerning sugary foods/drinks consumption, 30.5% (n=108) consumed them daily, with similar proportions consuming them 3-5 times weekly (25.7%, n=91) or 1-2 times weekly (26.3%, n=93). Medical check-up frequency was fairly distributed among once yearly (28.8%, n=102), every 3-6 months (28.5%, n=101), monthly (23.7%, n=84), and rarely/never (18.9%, n=67).

Table 4: Attitudes and Beliefs (N = 354).

Variable	Frequency (n)	Percentage (%)
Do you believe that lifestyle changes can prevent diabetes?		
Yes	266	75.1
No	48	13.6
Not sure	40	11.3
Are you willing to adopt lifestyle changes to reduce your risk of diabetes?		
Yes	289	81.6
No	37	10.5
Not sure	28	7.9
What challenges do you face in maintaining a healthy lifestyle?		
Lack of time	121	34.2
Lack of motivation	98	27.7
Lack of resources (e.g., access to healthy food, exercise facilities)	85	24.0
Lack of knowledge	50	14.1
None	68	19.2

How confident are you in your ability to make lifestyle changes to reduce the risk of diabetes?		
Very confident	134	37.9
Somewhat confident	169	47.7
Not confident	51	14.4

Table 4, examining attitudes and beliefs regarding diabetes prevention, reveals that a significant majority (75.1%, n=266) believed lifestyle changes could prevent diabetes, and an even larger proportion (81.6%, n=289) expressed willingness to adopt such changes. The primary challenges to maintaining a healthy lifestyle were lack of time (34.2%, n=121), lack of motivation

(27.7%, n=98), lack of resources (24.0%, n=85), and lack of knowledge (14.1%, n=50), while 19.2% (n=68) reported no challenges. Regarding confidence in making lifestyle changes, a combined majority were either somewhat confident (47.7%, n=169) or very confident (37.9%, n=134), with only a minority (14.4%, n=51) expressing no confidence.

Table 5: Chi-Square Test Results Across the Five LGAs.

Section	Variable	Chi-Square (χ^2)	df	p-value	Significant (p < 0.05)?
Demographic Information	Age	8.374	12	0.758	No
	Gender	4.357	4	0.360	No
	Educational Level	10.751	12	0.552	No
	Marital Status	3.823	9	0.923	No
	Occupation	6.784	16	0.964	No
Knowledge of Diabetes	Have you heard about diabetes?	0.925	4	0.921	No
	What do you think diabetes is?	12.340	8	0.006	Yes
	What are the symptoms of diabetes?	9.470	4	0.051	No
	What are the causes of diabetes?	15.620	4	0.003	Yes
	Do you think diabetes can be prevented?	4.785	8	0.784	No
Lifestyle Practices	How often do you consume fruits and vegetables?	6.381	12	0.893	No
	How often do you engage in physical exercise?	2.732	12	0.998	No
	Do you smoke cigarettes?	11.475	4	0.021	Yes
	How often do you consume sugary foods/drinks?	14.123	4	0.007	Yes
Attitudes and Beliefs	Do you believe lifestyle changes can prevent diabetes?	7.458	8	0.488	No
	Are you willing to adopt lifestyle changes?	7.110	4	0.029	Yes
	What challenges do you face in maintaining a healthy lifestyle?	10.250	4	0.036	Yes
	How confident are you in your ability to make lifestyle changes?	5.670	4	0.059	No

Table 5, which presents the Chi-Square test results comparing responses across the five Local Government Areas (LGAs), reveals several significant associations and numerous non-significant relationships. In the demographic section, none of the variables showed significant differences across LGAs ($p > 0.05$), indicating demographic homogeneity across the regions for age ($\chi^2 = 8.374$, $p = 0.758$), gender ($\chi^2 = 4.357$, $p = 0.360$), educational level ($\chi^2 = 10.751$, $p = 0.552$), marital status ($\chi^2 = 3.823$, $p = 0.923$), and occupation ($\chi^2 = 6.784$, $p = 0.964$).

Regarding knowledge of diabetes, significant differences were found across LGAs in understanding what diabetes is ($\chi^2 = 12.340$, $p = 0.006$) and knowledge of diabetes causes ($\chi^2 = 15.620$, $p = 0.003$). However, other

knowledge variables showed no significant regional differences, including awareness of diabetes ($\chi^2 = 0.925$, $p = 0.921$), symptoms recognition ($\chi^2 = 9.470$, $p = 0.051$), and beliefs about prevention ($\chi^2 = 4.785$, $p = 0.784$).

In terms of lifestyle practices, significant regional variations were observed in smoking habits ($\chi^2 = 11.475$, $p = 0.021$) and consumption of sugary foods/drinks ($\chi^2 = 14.123$, $p = 0.007$). However, consumption of fruits and vegetables ($\chi^2 = 6.381$, $p = 0.893$) and physical exercise patterns ($\chi^2 = 2.732$, $p = 0.998$) showed no significant differences across LGAs.

Regarding attitudes and beliefs, significant regional differences were found in willingness to adopt lifestyle

changes ($\chi^2 = 7.110$, $p = 0.029$) and challenges faced in maintaining a healthy lifestyle ($\chi^2 = 10.250$, $p = 0.036$). However, beliefs about lifestyle changes preventing diabetes ($\chi^2 = 7.458$, $p = 0.488$) and confidence in making lifestyle changes ($\chi^2 = 5.670$, $p = 0.059$) showed no significant regional variations.

DISCUSSION

The high level of diabetes awareness among respondents likely stems from increased public health education initiatives and growing media coverage of non-communicable diseases in Nigeria. This finding aligns with studies by Anyanti *et al.* (2021), who reported similarly high awareness levels in Imo and Kaduna states, and Orok *et al.* (2024), who found high diabetes awareness among university students. However, like Abe's (2017) findings among nurses, despite high awareness, detailed knowledge about diabetes management remained limited.

The understanding of diabetes causes and symptoms varied significantly across Local Government Areas, suggesting disparities in access to health information and educational resources. This geographical variation in knowledge echoes findings from Joseph-Shehu *et al.* (2019), who noted differences in health knowledge among different population segments. Similar to Enikuomehin *et al.* (2021), the study revealed gaps between awareness and detailed understanding of diabetes management.

Regarding lifestyle practices, the low adherence to daily fruit and vegetable consumption and regular physical exercise is concerning but not surprising given cultural and economic factors. This pattern mirrors findings by Oguoma *et al.* (2018), who reported that over half of their participants consumed inadequate fruits and vegetables. Similar lifestyle challenges were documented by Joseph-Shehu *et al.* (2019) among university employees and by Enikuomehin *et al.* (2021) among diabetes patients.

The significant regional variations in smoking habits and consumption of sugary foods likely reflect socioeconomic differences and varying levels of health education across LGAs. This finding corresponds with Oguoma *et al.*'s (2018) observations of lifestyle habits varying by region and socioeconomic status. The pattern of unhealthy dietary choices aligns with findings from Anyanti *et al.* (2021) and Abe (2017), who noted similar challenges in maintaining healthy lifestyle practices.

The high willingness to adopt lifestyle changes among respondents is encouraging and may reflect a growing awareness of diabetes complications. This positive attitude corresponds with findings from Godwin and Atulomah (2023), who demonstrated the effectiveness of lifestyle modification interventions. However, like Abe's (2017) study, there was a gap between positive attitudes and the actual practice of healthy behaviours.

The identified barriers to maintaining healthy lifestyles, particularly lack of time and motivation, reflect common challenges in lifestyle modification. These barriers align with findings from Enikuomehin *et al.* (2021) regarding self-care practices among diabetes patients. Similar challenges were reported by Joseph-Shehu *et al.* (2019) and Orok *et al.* (2024) in their respective studies.

The varying confidence levels in making lifestyle changes across different regions likely reflect differences in access to resources and support systems. This finding parallels Godwin and Atulomah's (2023) observations about the importance of educational and behavioural support in lifestyle modifications. The relationship between confidence and actual behaviour change was similarly noted in studies by Abe (2017) and Enikuomehin *et al.* (2021).

The homogeneity in demographic characteristics across LGAs suggests that regional differences in knowledge and practices are more likely due to environmental and systemic factors rather than population differences. This demographic consistency provides a strong foundation for comparing other variables across regions, similar to the approach taken in studies by Anyanti *et al.* (2021) and Oguoma *et al.* (2018).

CONCLUSION

The findings from this study highlight that while awareness of diabetes is high among middle-aged residents in Imo State, there are significant gaps in detailed knowledge and adoption of healthy lifestyle practices across different Local Government Areas. Despite positive attitudes and willingness to make lifestyle changes, barriers such as lack of time, motivation, and resources hinder the adoption of preventive behaviours. These findings underscore the urgent need for targeted interventions that go beyond raising awareness to focus on practical support for lifestyle modifications, addressing regional disparities in health education, and improving access to resources that facilitate healthy living. A comprehensive approach combining enhanced health education with practical support mechanisms could significantly improve diabetes prevention efforts among middle-aged residents in Imo State.

LIMITATIONS

The cross-sectional nature of the study and reliance on self-reported data may limit the generalizability of findings, while potential recall bias and the exclusion of rural areas in some LGAs could have influenced the results.

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