

Lifestyle-Related Chronic Diseases and the Practice of Healthy-Lifestyle Among Elderly Patients Attending Family Medicine Clinics of a Tertiary Institution in South-West Nigeria

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Abstract

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Background: Lifestyle-related chronic diseases are a growing global health burden resulting in a significant proportion of morbidity and mortality worldwide. Globally, they account for 70% of all deaths, with an increasing burden in low- and middle-income countries due to rapid urbanization, changing dietary patterns, and sedentary lifestyles. In Nigeria, the prevalence of these conditions has risen markedly over the past few decades, with hypertension affecting approximately one in three adults and diabetes prevalence increasing, particularly in urban populations. Despite the known benefits of healthy lifestyle practices in preventing and controlling chronic diseases, there is limited context-specific data on the extent to which older patients in Nigeria adopt such practices, especially within the setting of family medicine clinics that serve as the first point of comprehensive and continuous care. Thus, this study aims to determine the relationship between lifestyle-related chronic disease and the practice of healthy lifestyle among older patients attending Family Medicine clinics in a tertiary health facility in south-western Nigeria.

Methods: This was a descriptive cross-sectional study with a sample size of 373. A systematic random sampling technique was used to recruit the respondents. Healthy lifestyle practices were assessed using the Simple Lifestyle Indicator Questionnaire (SLIQ). The 12-question SLIQ assesses five aspects of lifestyle: diet, exercise, stress, smoking, and alcohol consumption. Data were analysed using IBM SPSS Statistics for Windows, version 19 (IBM Corp., Armonk, NY, USA). The level of significance was set at $p < 0.05$.

Results: The majority of respondents (56.0%) were aged 60–69 years. The majority (80.4%) reported having a lifestyle-related chronic disease; however, comorbidity was present in only 15.8% of respondents. Among the specific types of diseases, Cardiovascular Diseases (CVDs) were the most common, affecting 63.5% of the respondents, followed by endocrine diseases (11%). There was a significant relationship between dietary behaviour and the presence of lifestyle-related diseases ($p = 0.006$). Likewise, there was a statistically significant association between having lifestyle-related diseases and the level of physical activity ($p = 0.04$).

Conclusion: These findings reveal that lifestyle-related diseases among elderly Nigerians are associated with their dietary and physical exercise behaviors.

Keywords: Lifestyle-related diseases, Elderly patients, Family Medicine, Healthy lifestyle

Introduction

Worldwide, there is a progressive rise in the number of older people above 60 years.¹ It has been projected that the percentage of people over 60 in the world will almost double from 12% to 22% between 2015 and 2050. Although population ageing began in high-income nations, low- and middle-income nations are currently seeing the biggest changes. Two-thirds of people over 60 worldwide will reside in low- and middle-income nations by 2050.¹

In Nigeria, the elderly population is growing rapidly and represents the highest number in Africa, around 10.9 million of age 65+ in 2020 projected to reach over 33 million by 2050.² Lifestyle related chronic diseases such as type 2 Diabetes, some cancer types, lipid disorders and cardiovascular diseases are common among the elderly.³ A systematic review and meta-analysis of 91 studies among older patients in Sub Saharan Africa found an overall prevalence of hypertension as 55.2%.⁴ Likewise, a cross-sectional study done in South-West Nigeria by Akodu et al showed that 51.4% of older patients who attended primary care facilities had hypertension.⁵ Similarly, type 2 diabetes was found to be common among the elderly in Sub Saharan Africa (SSA) in a systematic review with an overall prevalence of 13.2%.⁶ Also, an upward trend in cancer incidence has been projected among the elderly by year 2035.⁷ A rise in lifestyle-related chronic diseases among the elderly could

increase the burden of elderly care putting pressure on health care facilities, especially primary care and family medicine facilities where the older patients usually present first.

A common approach to managing these lifestyle-related diseases is the adoption of healthy lifestyle practices. According to the American College of Lifestyle Medicine (ACLM), a healthy lifestyle is based on six pillars: optimal nutrition (whole-food, plant-predominant), regular physical activity, restorative sleep (7-9 hrs), effective stress management, avoidance of risky substances (tobacco, excessive alcohol, drugs), and positive social connections, all working together to prevent, manage, and even reverse chronic diseases.⁸ These have been more studied among adult patients less than 60 or 65 years, with results showing poor healthy lifestyle practices in many studies.⁹⁻¹³ Although health-related habits are usually developed during adulthood, a change of health habit is still possible in old age. Thus, the healthy lifestyle practices among adult population may not reveal lifestyle practices of older patients.

Previous studies have assessed associated factors of healthy lifestyle among older patients from different perspectives.¹⁴⁻¹⁹ These were categorised under individual, social, health care system and environmental levels. Majority of these studies highlighted socioeconomic factors, knowledge and self-efficacy as predictors. However, it is also important to explore the relationship between

their current practice of healthy lifestyle and the presence of lifestyle related chronic diseases among them as lifestyle interventions have been positively linked to reduced morbidity of chronic illnesses among the elderly.¹⁹

This study therefore explored the relationship between lifestyle-related diseases and practice of healthy dietary habit, physical activity level and smoking among older patients attending Family Medicine clinics in a tertiary health facility in South-West Nigeria with the goal of improving lifestyle practices among the study population.

Methodology

Study Area: This study was done in Federal Medical Centre, Abeokuta, located in Abeokuta, the state capital of Ogun State in the South-West geo-political zone of Nigeria. Abeokuta is located at approximately 7.1557° N, 3.3451° E covering the geopolitical areas of Abeokuta North and Abeokuta South Local Government areas of the State. The estimated population of the Abeokuta metropolitan area in 2024 is about 589,000.20. Abeokuta is a historic city known for its warrior heritage and is a notable tourist destination, largely due to its striking rock formations. The predominant occupations of the people are trading, civil service, dyeing of clothes and quarry work.

The study was conducted at the clinics of Family Medicine Department of the Federal Medical Centre, Abeokuta. In 2023, an average of 140 adult patients are seen during weekdays, of which an average of thirty-one are older than sixty years.

Study design: This was a hospital-based descriptive cross-sectional study.

Inclusion Criteria:

Male and female older patients aged 60 years old and above who presented at the family medicine clinics of FMC Abeokuta as at the time of data collection.

Elderly patients who have been attending FMC, Abeokuta for at least 6 months and consented to the study

Exclusion Criteria: elderly who were too ill to participate in the study as at the time of data collection.

Sample Size Determination

In determining the sample size, Cochran's formula was used to calculate the minimum sampling size required since the target population (N) > 10,000.

$$n^0 = z^2 pq / d^2$$

Where,

Z = standard normal deviate at α probability set at 95% confidence level which corresponds to 1.96

n = Minimum sample size

P = Prevalence of healthy lifestyle among elderly from a previous study in a tertiary facility in Nigeria 24 is 41.4%¹⁷

$$Q = 1 - P$$

d = Margin of error acceptable taken as 5%

$$\{1.96 \times 1.96 \times 0.414 \times .586\} / .0025$$

$$n = 372.8$$

$$n = 373$$

Sampling Technique:

A systematic random sampling technique was used to recruit the 373 respondents. The average estimated number of older patients who attended the clinic in 2023 was 3,420. This gave an estimate of 855 patients expected over the three-month study period. A sampling interval of 2, derived by dividing the estimated population within the study period by the calculated sample size (855/373), was used.

The first person was selected by balloting from the first two older patients to be seen at the GOPC on each clinic day. Thereafter, every consenting patient based on the sampling interval were recruited until the sample size (373) is achieved. Each participant was given a unique number which was noted on their case notes to prevent duplication.

Study Instrument: This is an interviewer-administered questionnaire divided into three sections which include 1. Sociodemographic factors 2. Disease related factors 3. Simple lifestyle indicator. The variables in the first two sections were derived from previous similar studies^{5,7-8}.

Disease-related information, including the presence and type of lifestyle-related chronic disease and comorbidity, was obtained from participant self-report and confirmed from available clinical records. Comorbidity was defined as the co-occurrence of two or more medical or psychological conditions, including the primary diagnosis.

Simple Lifestyle Indicator Questionnaire²¹

Simple Lifestyle Indicator Questionnaire (SLIQ): The 12-question SLIQ assesses five aspects of lifestyle (diet, exercise, stress, smoking, and alcohol consumption) and yields a score for each component as well as a total lifestyle score.²¹ There are three questions on food habits, three about physical activity, three about alcohol use, two about smoking, and one about stress. Three sections make up the diet section: fruits, high-fiber foods, and consumption of green leafy vegetables. A score of 0 to 5 was assigned to each subdivision based on how frequently they consumed fruits, vegetables, and fibre. The scores in the each subdivision is further added up for each respondent. Scores between 0-5 = 0 (unhealthy), 6-10 = 1 (Moderately healthy) and 11-15 = 2 (healthy). The physical activity component consists of light, moderate and vigorous exercise; alcohol consumption included type and times of consumption of alcohol; smoking habits- yes/no, if no, ever smoked; self-assessment of stress on a likert scale of 1 to 6. The 12 question SLIQ has a test-retest reliability between 0.65-0.97. Although the overall Cronbach's alpha of the SLIQ is 0.6 (reflecting the complexity of the constructs it measures) the test-retest reliability falls within an acceptable range. The diet and physical activity section have moderate to strong correlation scores of 0.679 and 0.455.²² The questionnaire was adapted in its original form.

Pre-testing of questionnaire

The pre-test sample was selected from the General Outpatient department of Federal Neuropsychiatry Hospital, Aro Abeokuta. The questionnaire was pretested to exclude any ambiguity and necessary adjustments were made. The questionnaire was translated into (Yoruba) language and back translated to English. This is to ensure understanding of the questionnaire by respondents who may not understand English Language.

Data Collection

Data was collected between December 1st, 2024 and March 1st, 2025. Informed consent was taken from patients who were eligible. Information was obtained by two of the researchers and two registrars in the department of Family Medicine who were trained on how to administer the questionnaire.

Data Analysis Plan

Data were collected and entered into a Google spreadsheet and then transferred into IBM SPSS Statistics for Windows, version 19 (IBM Corp., Armonk, NY, USA) for analysis. Descriptive statistics, including frequencies and percentages, were used to present qualitative variables, while means and standard deviations were used for quantitative variables. Chi-square tests were used to assess associations between categorical variables. The level of significance was set at $p < 0.05$.

Ethical considerations

Ethical approval for the study was obtained from the Research and Ethics Committee of Federal Medical Centre, Abeokuta, with approval number FMCA/470/HREC/01/2024/23. Voluntary written informed consent was obtained from each participant after an adequate explanation of the study. Information obtained was treated with strict confidentiality.

Results

Table 1: The majority of respondents (56.0%) were aged 60–69 years, followed by 34.3% aged 70–79. Males constituted a greater proportion of the sample (60.3%) compared to females (39.7%). Most respondents were married (76.1%), while 20.9% were widowed. Only a small percentage was separated (2.1%) or divorced (0.8%). Christianity was the predominant religion (76.1%), followed by Islam (23.3%), and a minimal number practiced traditional beliefs (0.5%).

The majority of respondents were of Yoruba tribe (71.3%), Respondents in active employment constituted 52.3%, while 47.7% were retired. Most respondents had some level of formal education with only 6.4% without no formal education. Half of the respondents (50.1%) were classified as lower class, 27.6% as poor, 21.2% as middle class, and only 1.1% as upper middle class.

Table 1: Sociodemographic characteristics of respondents

Variables	Frequency N=373	Percent %
Age	Mean age=68.5	
60-69	209	56.0
70-79	128	34.3
80-89	36	9.7
Gender		
Male	225	60.3
Female	148	39.7
Marital Status		
Married	284	76.1
Divorced	3	0.8
Separated	8	2.2
Widowed	78	20.9
Religion		
Islam	87	23.3
Christianity	284	76.1
Traditional belief	2	0.5
Ethnic Group		
Yoruba	266	71.3
Hausa	17	4.6
Igbo	24	6.4
Others	66	17.7
Occupation		
Retired	178	47.7
Not Retired	195	52.3
Ethnic Group		
Yoruba	266	71.3
Hausa	17	4.6
Igbo	24	6.4
Others	66	17.7
Occupation		
Retired	178	47.7
Not Retired	195	52.3
Educational level		
No formal education	24	6.4
Primary	92	24.7
Secondary	139	37.3
Tertiary	118	31.6
Socioeconomic class		
Poor (<₦30,000)	103	27.6
Lower class (₦30,000-₦59,999)	187	50.1
Middle class (₦60,000-₦99,999)	79	21.2
Upper middle class (>₦100,000)	4.0	1.1

Table 2: A significant percentage of the respondents (80.4%) reported a lifestyle-related disease. Among the specific types of diseases, Cardiovascular Disease was by far the most

common, affecting 63.5% of the respondents. This was followed by Endocrine Disease (11.0%) and Oncological Disease (5.9%). In contrast to the high prevalence of single diseases, the presence of co-morbidity (having two or more diseases) was relatively low, with only 15.8% of respondents reporting it.

Table 2: Disease Related Factors among the Study Respondents

	Frequency (N=373)	Percentage (%)
Presence of lifestyle-related diseases		
Yes	300	80.4
No	73	19.6
Presence of Co-morbidity		
Yes	59	15.8
No	314	84.2
Type of lifestyle-related diseases		
Cardiovascular Disease	237	63.5
Endocrine Disease	41	11.0
Oncological Disease	22	5.9
None	73	19.6

Table 3: The table shows healthy lifestyle practices among the respondents

The majority had either an "intermediate" diet (52.3%) or an "unhealthy" one (45.0%), with only 2.7% achieving a healthy diet score. About half (47.2%) engaged in light exercise only, while 39.9% did moderate exercise. Only 12.9% participated in any vigorous activity. Half of the respondents reported experiencing moderate levels of life stress (50.4%) while only a small minority (7.5%) reported high stress. All respondents (100.0%) fell into the lowest alcohol consumption score category, and the vast majority (92.8%) were non-smokers.

Table 3: Healthy Lifestyle Practices of Respondents

Variable	Frequency (N=373)	Percent (%)
Diet		
Diet score 0-5(Unhealthy)	168	45.0
Diet Score 6-10(Intermediate)	195	52.3
Diet Score 11-15(Healthy)	10	2.7
Exercise Score		
Light exercise only (0)	176	47.2
Any moderate exercise (1)	149	39.9
Any vigorous activity (2)	48	12.9
Alcohol Score		
Alcohol score 14 or more	0	0
Alcohol score 8-13	0	0
Alcohol score 0-7	373	100.0
Smoking Score		
Yes	27	7.2
No	346	92.8
Life Stress		
Life stress 1 or 2	157	42.1
Life stress 3 or 4	188	50.4
Life stress 5 or 6	28	7.5

Table 4a: There was a statistically significant relationship between the presence of lifestyle-related diseases and dietary practice ($\chi^2 = 10.188, p = 0.006$). A significant association was also observed between the type of disease and dietary behavior ($\chi^2 = 13.190, p = 0.040$). Respondents with cardiovascular diseases (Hypertension and post-stroke) had the poorest dietary habits, followed by those with endocrine (type 2 DM) and oncological diseases (Breast Ca). None of the respondents with oncological disease reported healthy dietary practice.

Table 4a: Relationship between Lifestyle Related Diseases and Dietary Practices

		Diet			Chi square	
		Unhealthy	Intermediate	Healthy	χ^2	p-value
Presence of lifestyle related diseases	Yes	124	169	7	10.188	0.006*
	No	44	26	3		
Type of lifestyle related diseases	Cardiovascular Disease	94	138	5	13.190	0.040*
	Endocrine Disease	19	20	2		
	Oncological Disease	11	11	0		
	NA	44	26	3		
Presence of Co-morbidity	Yes	24	32	3	1.858	0.395
	No	144	163	7		

*Values are significant at $p < 0.05$

Table 4b: There was a statistically significant association between having lifestyle-related diseases and the level of physical activity ($\chi^2 = 6.275$, $p = 0.043$). A larger proportion of respondents with these diseases engaged only in light exercise, compared to those without such conditions. Fewer respondents with lifestyle diseases engaged in moderate or vigorous exercise.

A significant association was found between comorbidity and exercise level ($\chi^2 = 11.771$, $p = 0.003$). Respondents with multiple health conditions were far less likely to engage in moderate or vigorous activity.

Table 4b: Relationship between Lifestyle Related Diseases and Physical Activity Level

		Diet			Chi square	
		Unhealthy	Intermediate	Healthy	χ^2	p-value
Presence of lifestyle related diseases	Yes	124	169	7	10.188	0.006*
	No	44	26	3		
Type of lifestyle related diseases	Cardiovascular Disease	94	138	5	13.190	0.040*
	Endocrine Disease	19	20	2		
	Oncological Disease	11	11	0		
	NA	44	26	3		
Presence of Co-morbidity	Yes	24	32	3	1.858	0.395
	No	144	163	7		

*Values are significant at $p < 0.05$

Table 4c: There was a significant association between the type of disease and smoking status ($\chi^2 = 9.209$, $p = 0.027$). A higher proportion of smokers were found among those with cardiovascular and oncological diseases. A strong and statistically significant relationship was found between comorbidity status and smoking ($\chi^2 = 17.913$, $p = 0.000$). Smoking was more prevalent among respondents with multiple health conditions.

Table 4c: Relationship between Lifestyle Related Disease and Smoking

		Smoking		Chi square	
		Yes	No	χ^2	p-value
Presence of lifestyle-related diseases	Yes	23	277	0.418	0.518
	No	4	69		
Type of lifestyle-related diseases	Cardiovascular Disease	14	223	9.209	0.027*
	Endocrine Disease	4	37		
	Oncological Disease	5	17		
	NA	4	69		
Presence of Comorbidity	Yes	12	47	17.913	0.000*
	No	15	299		

Discussion

This study explored the relationship between lifestyle-related chronic diseases and the practice of healthy lifestyles among older patients receiving care in a tertiary institution in South-West Nigeria. The findings revealed important sociodemographic and epidemiological patterns that provide insight into the burden of non-communicable diseases (NCDs) and lifestyle behaviors among older adults in this context.

Sociodemographic Characteristics

The study population was predominantly aged 60–69 years, which falls within the young old category. This age distribution is consistent with previous studies conducted in outpatient settings of primary care facilities in Nigeria.^{23,24} This may suggest a good health seeking behavior among this age group. The predominance of males (60.3%) may reflect gender differences in healthcare utilization or survival patterns in chronic disease populations, as some studies have suggested that elderly men in Nigeria may access tertiary care more often than women due to socioeconomic advantages or cultural factors influencing health-seeking behavior.^{25,26}

The majority of respondents were married, Christian, and Yoruba, consistent with the

regional demographics of South-West Nigeria. This aligns with the findings of previous studies done in the region.^{3,5} However, this pattern varies in some other African counties. For example, in Ghana, Fonta et al found that widowhood is more common among the elderly.²⁷ The relatively high proportion of individuals with formal education (93.6%) and those still in active employment (52.3%) could indicate a relatively health-literate and economically active segment of the elderly population. This finding equally supported the fact that old age is not necessarily a barrier to productivity.²⁸ However, a multi country study carried out in sub-Saharan Africa show that a significant proportion of older adults have limited formal education.²⁹ The predominance of lower socioeconomic status (50.1%) highlights inequalities that may affect access to quality nutrition, healthcare, and opportunities for physical activity.²⁸ Some studies have reported that a large proportion of elderly persons fall within the low-income socioeconomic category, making them vulnerable to poverty, food insecurity, and poor health.³⁰⁻³²

This study found a high prevalence (80.4%) of lifestyle-related chronic diseases among respondents. This resonates with global and regional epidemiological transitions showing high NCD burdens among older adults in low- and middle-income countries (LMICs), including Nigeria.³³⁻³⁵ Cardiovascular diseases including hypertension and stroke (CVDs) were the most prevalent (63.5%), followed by endocrine disorders (11.0%), mainly diabetes, and oncological diseases (5.9%). This agrees with the findings of Adebuseye et al in South-West Nigeria in their study among the older patients which showed that hypertension and related CVDs dominated morbidity patterns among them.³ However, the relatively low rate of comorbidity (15.8%) among our respondents contrasts with patterns observed in high-income countries where multi-morbidity is common among the elderly.³⁶ Comorbidity in this study referred to the co-occurrence of two or more medical or psychological conditions including a primary diagnosis. The relatively low level of comorbidity may also reflect under-recognition of psychological conditions such as depression and financial barriers to healthcare utilization. Depression is frequently under-detected in primary care, with patient under-reporting and stigma contributing to missed diagnoses.³¹ In the index study, the existence of co-morbidities was confirmed from both patient self-report and their clinical records.

The majority of respondents exhibited either an *intermediate* (52.3%) or *unhealthy* (45.0%) dietary pattern, while only a small fraction (2.7%) met the criteria for a healthy diet. This indicates that poor dietary habit is a major concern among the study population. The significant relationship between dietary behavior and the presence of lifestyle-related diseases (χ^2

= 10.188, $p = 0.006$), as well as between disease type and diet ($\chi^2 = 13.190$, $p = 0.040$), supports the findings of previous studies that poor nutrition is a key modifiable determinant of chronic diseases in this population.^{37,38} Respondents with cardiovascular diseases (CVDs) reported the poorest dietary habits, followed by those with endocrine and oncological diseases. A similar pattern was reported by Ogunyemi et al who found that older adults in South-West Nigeria often consume calorie-dense but nutrient-poor diets due to economic constraints, cultural food preferences, and inadequate nutritional knowledge.³⁹

Physical activity levels were generally low: nearly half of the respondents engaged in only light exercise (47.2%), while fewer engaged in moderate (39.9%) or vigorous (12.9%) activity. This aligns with the findings of another study conducted in Nigeria among 246 community-dwelling older adults, which reported that light to moderate physical activity was more common in this population.⁴⁰ This may be related to the common occurrence of musculoskeletal problems among older adults, which can limit mobility. In this study, disease status was significantly associated with physical activity level ($\chi^2 = 6.275$, $p = 0.043$). This finding is consistent with evidence from the World Health Organization (WHO), which identifies physical inactivity as an important risk factor for non-communicable diseases and premature mortality worldwide.⁴¹

All respondents reported low alcohol consumption, likewise almost all were nonsmokers. This supports the findings of Ibadan Study of Ageing that the use of alcohol and smoking among the elderly population is low.⁴²

Implications for Policy Makers

These findings underscore the need for more policies targeting adoption of healthy lifestyles among the elderly population. These may include provision of subsidies on healthy foods and provision of community based exercise facilities for low-income elderly populations to promote healthier eating habits and physical activities to reduce the risk of lifestyle-related diseases.

Limitations and Future Directions: Causal relationships cannot be inferred because of the cross-sectional design. Self-reported behaviours such as diet and exercise may also be prone to recall and social desirability biases. Future studies should employ longitudinal designs and objective measurements (e.g., dietary recalls and accelerometer-based activity data) to validate these associations. Moreover, qualitative exploration of cultural and motivational factors underlying these behaviours would complement the quantitative findings and inform targeted interventions.

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