

## Awareness of Stroke Among Older Women in Osogbo, Nigeria: A Community-Based Study

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#### Ethical Consideration

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### ABSTRACT

**Background:** Stroke is a leading cause of death and disability worldwide, with a particularly high burden in developing countries like Nigeria. Understanding the awareness of stroke, especially among high-risk populations such as older women, is crucial for effective prevention. This study evaluates the knowledge, attitudes, and practices (KAP) related to stroke prevention among older women in Osogbo, Osun State, Nigeria.

**Methods:** This descriptive cross-sectional study involved 320 women. Data were collected using a structured questionnaire, which assessed participants' knowledge of stroke risk factors, symptoms, prevention strategies, and attitudes and practices related to stroke prevention. Data analysis was done using SPSS. A p-value of <0.05 was considered statistically significant.

**Results:** The study found that 96.3% of the respondents were aware of stroke, with a majority recognizing hypertension (85.8%) and diabetes (52.5%) as major risk factors. Despite this, significant gaps were observed in the knowledge of stroke symptoms and prevention methods. Attitudes towards stroke prevention were predominantly positive, with 89.6% acknowledging its importance. Bivariate analysis revealed no significant association between knowledge and most socio-demographic characteristics, but significant associations were found between attitude and characteristics such as ethnicity, marital status, and education level.

**Conclusions:** The results reveal a high level of awareness but inadequate knowledge and inconsistent practices regarding stroke prevention among older women in Osogbo. This highlights the necessity for targeted educational programs to address these gaps and promote effective stroke prevention in this vulnerable population.

**Key words:** Awareness; Stroke; Women; Nigeria

### 1. INTRODUCTION

Cardiovascular diseases (CVDs) are a leading cause of death and a major contributor to disability worldwide, accounting for an estimated 17.9 million deaths annually.<sup>1</sup> Among these, heart diseases and cerebrovascular conditions, including stroke, are the most prevalent.<sup>2</sup> Stroke is a significant health issue that results in high mortality and permanent disability rates globally.<sup>3,4,5,6</sup> It ranks as the second leading cause of death worldwide.<sup>7,8</sup>

Stroke is a debilitating condition with potentially devastating consequences characterized by sudden focal disturbances in cerebral function. Stroke is an acute focal brain injury resulting from interruption of cerebral blood flow (ischaemic stroke) or rupture of cerebral blood vessels leading to bleeding into the brain (haemorrhagic stroke).<sup>8</sup> Despite being preventable through the management of modifiable risk factors, stroke continues to impose a substantial burden on public health systems, particularly in developing countries like Nigeria.<sup>9,10</sup>

Understanding stroke requires an appreciation of both its clinical aspects and the behavioral factors influencing its occurrence and prevention. Knowledge and attitude play crucial roles in shaping indi-

viduals' preventive practices, yet gaps in awareness and understanding persist, especially among vulnerable populations such as elderly women.<sup>11,12</sup> While significant strides have been made in identifying modifiable risk factors and preventive measures for stroke, translating this knowledge into effective prevention strategies remains a challenge.<sup>12</sup>

The lack of awareness of stroke warning signs, risk factors, and preventive measures contributes to its high prevalence. Moreover, poor attitudes towards stroke prevention and inadequate preventive practices further exacerbate the problem, highlighting the need for targeted interventions to address these challenges. Furthermore, given the severe implications of stroke, understanding and mitigating its risk factors is crucial for effective prevention.<sup>13</sup>

In the context of Nigeria, stroke represents a considerable public health challenge.<sup>10</sup> The limited awareness and understanding of stroke risk factors among the elderly, particularly women, exacerbate the situation. Previous studies have indicated that elderly women are at a higher risk of stroke due to a combination of biological, social, and economic factors.<sup>14,15</sup> However, there is a scarcity of research focusing on the knowledge, attitude, and practice (KAP) of stroke prevention among this demographic in Nigeria. This study aims to address these gaps by comprehensively assessing the knowledge, attitude, and practice of stroke prevention among older women in Osogbo metropolis of Osun State in South West Nigeria. By examining the level of awareness, attitudes towards preventive measures, and actual preventive practices among this demographic group, we seek to provide insights that can inform targeted interventions aimed at reducing the burden of stroke in the community.

This study explores the knowledge, attitude and practices of older women in Osogbo, Osun state, Nigeria to stroke and its prevention.

## 2. METHODOLOGY

### 2.1 Research Design:

A descriptive cross-sectional design was employed to assess the knowledge, attitude, and practices of stroke prevention among elderly women in Osogbo, Osun State in South West Nigeria.

### 2.2 Description of Study Area:

The study was conducted in Osogbo Local Government, Osun State, Nigeria. Osogbo serves as the capital of Osun State, South Western Nigeria and shares boundaries with Ikirun, Ilesa, Ede and Iragbiji among others. It is easily accessible from any part of the state because of its central location. It has a diverse population of approximately 178,047 and its inhabitants are mostly of the Yoruba ethnic group.<sup>16</sup>

### 2.3 Target Population:

The target population comprised all older women aged 50 years and above residing in Osogbo Local Government Area, Osun State.

#### Inclusion and Exclusion Criteria:

Inclusion Criteria: women aged 50 years and above.

Exclusion Criteria: women with mental instability or dementia, those unwilling to participate, and critically ill elderly women.

### 2.4 Sample Size Calculation:

The sample size was calculated using Leslie-Fisher's formula, considering a prevalence (p) of 0.30 based on a previous study.<sup>17</sup>

The final sample size was determined to be 320 considering a 10% attrition rate.

### 2.5 Sampling Technique:

A multistage sampling technique was employed. Osogbo Local Government Area (LGA) was chosen from the two main LGAs in Osogbo (Olorunda and Osogbo) by simple random sampling via balloting. Five geopolitical wards and ten streets (two from each ward) were then randomly selected. Households in the chosen streets were selected sequentially until the desired sample size was reached.

### 2.6 Method and Instrument of Data Collection:

A structured interviewer-administered questionnaire in English language, containing both closed-ended and open-ended questions was used for data collection. The questionnaire was developed by the researchers based on literature on stroke awareness. It consisted of four sections as follows:

**Section A:** Socio-demographic characteristics (age, gender, marital status, ethnic group, occupational status, past medical history, family history of chronic diseases, etcetera)

**Section B:** Knowledge about stroke and its prevention (nature of diseases, its symptoms and methods of prevention)

**Section C:** Attitude towards stroke prevention (predisposition of subjects to stroke and its prevention)

**Section D:** Practice towards stroke prevention (such as healthy diets, regular exercises and participation in screening exercises)

Interpretation into respondents' languages was done in a few instances in which the respondents did not understand English by the interviewers or neighbours/relations who understood English.

### 2.7 Pretest:

A pretest was conducted using 10% of the sample size among elderly women in Igbona market, Olorunda local government area, Osogbo, Osun State to identify ambiguities in the questions before full administration. Necessary corrections regarding language and wordings were done before final data collection.

### 2.8 Method of Data Collection:

Data collection was conducted over a period of 5 weeks from 10 am to 4 pm daily in June-July of 2023 by the researchers.

### 2.9 Data Analysis:

IBM SPSS 20th edition was used for data analysis. Univariate analysis involved frequency tables and charts while bivariate analysis utilized chi-square statistical analysis. A p-value of <0.05 was considered statistically significant.

### 2.10 Ethical Consideration:

Ethical approval was obtained from the Research Ethics Committee of the College of Health Sciences, Osun State University, Osogbo (UNIOSUNHREC2023/PBH/045). Verbal consent was obtained from respondents and confidentiality was assured.

### 2.11 Methods and Measures:

Responses in Sections B,C and D were reviewed to ascertain the respondents' knowledge of stroke and their attitude and practices towards stroke and its prevention. Scoring (based on stroke knowledge in the literature) was done as follows: For Knowledge, correct answers were scored 1 while incorrect answers were scored 0, regrouped as poor knowledge (0-12) and good knowledge (13-25). For attitude and practice, correct answers

**Table 1:** Socio-Demographic Characteristics of Respondents (n=317)

| Variable                  | Categories                                       | Frequency | Percentage (%) |
|---------------------------|--------------------------------------------------|-----------|----------------|
| Age                       | 50-59                                            | 143       | 45.1           |
|                           | 60-69                                            | 108       | 34.1           |
|                           | 70-79                                            | 52        | 16.4           |
|                           | 80-89                                            | 14        | 4.4            |
| Ethnicity                 | Hausa                                            | 32        | 10.1           |
|                           | Igbo                                             | 59        | 18.6           |
|                           | Yoruba                                           | 226       | 71.3           |
| Marital Status            | Married                                          | 222       | 70.0           |
|                           | Single                                           | 6         | 1.9            |
|                           | Divorced/Separated                               | 69        | 21.8           |
|                           | Widowed                                          | 20        | 6.3            |
| Religion                  | Islam                                            | 103       | 32.5           |
|                           | Christianity                                     | 205       | 64.7           |
|                           | Traditional                                      | 9         | 2.8            |
| Educational Level         | No education                                     | 38        | 12.0           |
|                           | Primary                                          | 23        | 7.3            |
|                           | Secondary                                        | 48        | 15.1           |
|                           | Tertiary                                         | 208       | 65.6           |
| Occupational Status       | Unemployed                                       | 7         | 2.2            |
|                           | Employed                                         | 148       | 46.7           |
|                           | Self Employed                                    | 148       | 46.7           |
|                           | Retired                                          | 14        | 4.4            |
| Average Monthly Income    | 51,000-100,000                                   | 14        | 3.4            |
|                           | 100,000-200,000                                  | 109       | 26.6           |
|                           | Above 200,000                                    | 287       | 70.0           |
| Accommodation Description | Single Room (Shared Utilities)                   | 6         | 1.9            |
|                           | Single Room (With own Utilities)                 | 118       | 37.2           |
|                           | Flat (2 or More Rooms Apartments with Utilities) | 193       | 60.9           |

were scored 1 and wrong answers as 0, regrouped as 0-12 as poor attitude/practice and 13-36 as good attitude and practice of stroke prevention.

## 2.12 Data Availability Statement:

The dataset for the study is available in part on Zenodo at <https://doi.org/10.5281/zenodo.14262309>. Additionally, the study records can be accessed in part at <https://zenodo.org/records/14262309>.

## 3. RESULT

A total of 317 respondents participated in the study. However, complete data on the knowledge section were only available for about half of the respondents (162) while other sections had complete data. Those with missing data were not included in the analysis of the knowledge section.

### Socio-Demographic Characteristics

Table 1 presents the socio-demographic characteristics of the study respondents. The majority of participants were aged between 50 to 59 years 143 (45.1%). Christianity was the most prac-

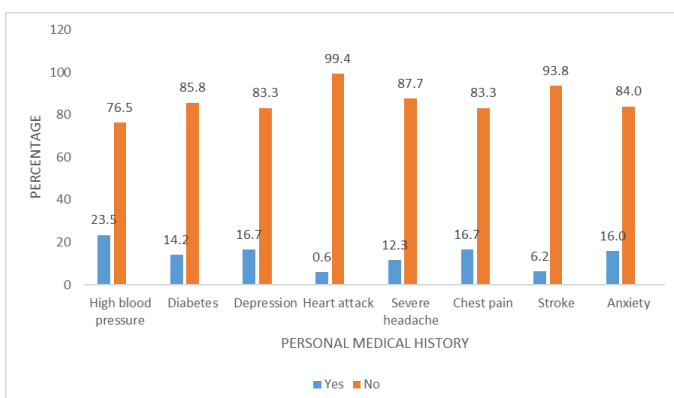
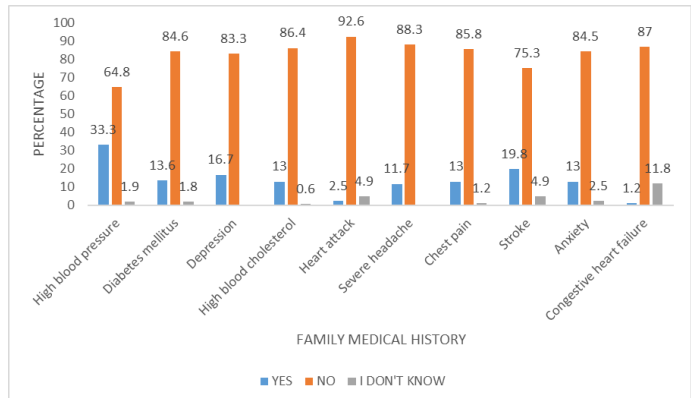
ticed religion 205 (64.7%), and the majority identified as Yoruba ethnicity 226 (71.3%). Tertiary education was the highest level of education attained by 208 (65.6%), and most participants were married 222 (70.0%). Most respondents were employed (46.7%) or self-employed (46.7%).

Background personal and family history of stroke and related conditions are presented in figures 1 and 2. A small number (6.2%) of the respondents had suffered varying degrees of stroke in the past while almost a fifth of them (19.8%) had a family history of stroke.

### Knowledge of Stroke and Stroke Prevention

Regarding knowledge of stroke, stroke symptoms and stroke prevention, complete data were only available for about half of the respondents (162) which are presented in tables 2, 3 and 4. Majority of the respondents 156(96.3%) have heard about stroke, while 139(85.8%), 85(52.5%) and 74(45.7%) knew that hypertension, diabetes mellitus and obesity respectively are risk factors for stroke (table 2).

Table 3 shows the level of respondents' knowledge about symptoms and complications of stroke. Majority 98(60.5%) agreed that sudden numbness is a symptom of stroke while 68(42%), 127

**Figure 1:** Personal Past Medical History**Figure 2:** Family Medical History

**Table 2: Knowledge of Stroke**

| Variable                                                   | Sub-Variable | Frequency (n162) | Percentage |
|------------------------------------------------------------|--------------|------------------|------------|
| Have You Heard of Stroke                                   | Yes          | 156              | 96.3       |
|                                                            | No           | 6                | 3.7        |
| All Stroke Patients are Considered Handicapped             | Yes          | 124              | 76.5       |
|                                                            | No           | 30               | 18.5       |
|                                                            | I don't know | 8                | 4.9        |
| Stroke only Happens in Elderly People                      | Yes          | 96               | 59.3       |
|                                                            | No           | 49               | 30.2       |
|                                                            | I don't know | 17               | 10.5       |
| <b>Which of the Following are Risk Factors for Stroke?</b> |              |                  |            |
| Hypertension                                               | Yes          | 139              | 85.8       |
|                                                            | No           | 11               | 6.8        |
|                                                            | I don't know | 12               | 7.4        |
| Smoking                                                    | Yes          | 44               | 27.2       |
|                                                            | No           | 88               | 54.3       |
|                                                            | I don't know | 30               | 18.5       |
| Poor Sleep                                                 | Yes          | 1                | 6          |
|                                                            | No           | 149              | 92.0       |
|                                                            | I don't know | 12               | 7.4        |
| Diabetes                                                   | Yes          | 85               | 52.5       |
|                                                            | No           | 52               | 32.1       |
|                                                            | I don't know | 25               | 15.4       |
| High Cholesterol                                           | Yes          | 54               | 33.3       |
|                                                            | No           | 70               | 43.2       |
|                                                            | I don't know | 38               | 23.5       |
| Obesity                                                    | Yes          | 74               | 45.7       |
|                                                            | No           | 58               | 35.8       |
|                                                            | I don't know | 30               | 18.5       |
| Age                                                        | Yes          | 45               | 27.8       |
|                                                            | No           | 83               | 51.2       |
|                                                            | I don't know | 34               | 21.0       |
| Gender                                                     | Yes          | 15               | 9.3        |
|                                                            | No           | 102              | 63.0       |
|                                                            | I don't know | 45               | 27.8       |

(78.4%) and 107(66%) agreed that weakness on one side of the body, sudden loss of speech and loss of consciousness respectively are stroke symptoms.

Regarding stroke prevention, most respondents 129(79.6%) knew that stroke is preventable and that lifestyle modification 77 (47.5%), control of blood sugar 96(59.3%), control of blood pressure 96(59.3%), and, early diagnosis and treatment 128(79%) are all helpful in preventing stroke (table 4).

The categorized knowledge score of respondents on stroke and its prevention are presented in figures 3A and B. Majority of the respondents 69.1% had good knowledge about stroke and 66.0% had good knowledge of its prevention.

#### Attitude Towards Stroke Prevention

Table 5 presents the attitude of the respondents to stroke and its prevention. The majority 137(43.2%) of the respondents are concerned about the risk of stroke and most 284(89.6%) believed that stroke is preventable. Regarding how important they think stroke prevention is for maintaining a healthy lifestyle, the majority 113 (35.6%) have a better scale of five out of five and considered

healthy lifestyle extremely important and a larger number 252 (79.5%) are willing to make lifestyle changes to reduce the risk of stroke. The categorized attitude score of respondents are summarized in figure 4. The majority 139(88.73%) had good attitude towards the stroke and its prevention of stroke.

#### Practices of Stroke Prevention

Table 6 presents the practices of the elderly women in Osogbo towards stroke prevention. Majority 166(52%) of the participants have been screened before and majority 198(62.5%) claim to engage in regular physical activities as well as follow a healthy diet {273(86.1%)}. However, many 203(64.0%) of the respondents do not participate in a stroke prevention program. Figure 5 shows the categorized total practices of the respondents towards the prevention of stroke with the majority having good practices {278 (87.7%)}.

#### Association between respondents' socio-demographic characteristics, knowledge, attitude and practices towards stroke prevention

Bivariate analysis revealed that socio-demographic characteristics such as marital status, educational level, average monthly income, accommodation description, means of mobility and previous medical condition had no statistically significant association with knowledge of stroke and its prevention (p-values >0.05).

The associations between respondents' sociodemographic characteristics and attitude and between socio-demographic characteristics and their practices towards stroke are presented in tables 7 and 8 respectively.

**Table 3: Knowledge of Stroke Symptoms and Complications**

| Variable                                     | Sub-variable | Frequency | Percentage |
|----------------------------------------------|--------------|-----------|------------|
| <b>What are the Symptoms of Stroke?</b>      |              |           |            |
| Sudden numbness                              | Yes          | 98        | 60.5       |
|                                              | No           | 28        | 17.3       |
|                                              | I don't know | 36        | 22.2       |
| Weakness on One Side of the Body             | Yes          | 68        | 42.0       |
|                                              | No           | 76        | 46.9       |
|                                              | I don't know | 18        | 11.1       |
| Difficulty in Swallowing                     | Yes          | 58        | 35.8       |
|                                              | No           | 68        | 42.0       |
|                                              | I don't know | 36        | 22.2       |
| Sudden Loss of Speech                        | Yes          | 127       | 78.4       |
|                                              | No           | 14        | 8.6        |
|                                              | I don't know | 21        | 13.0       |
| Vomiting                                     | Yes          | 2         | 1.2        |
|                                              | No           | 143       | 88.3       |
|                                              | I don't know | 17        | 10.5       |
| Diarrhea                                     | Yes          | 4         | 2.5        |
|                                              | No           | 141       | 87.0       |
|                                              | I don't know | 17        | 10.5       |
| Unconsciousness                              | Yes          | 107       | 66.0       |
|                                              | No           | 31        | 19.1       |
|                                              | I don't know | 24        | 14.8       |
| <b>What are the Complications of Stroke?</b> |              |           |            |
| Depression                                   | Yes          | 122       | 75.3       |
|                                              | No           | 26        | 16.0       |
|                                              | I don't know | 14        | 8.6        |
| Speech Disorder                              | Yes          | 126       | 77.8       |
|                                              | No           | 13        | 8.0        |
|                                              | I don't know | 23        | 14.2       |
| Chronic Headache                             | Yes          | 58        | 35.8       |
|                                              | No           | 63        | 38.9       |
|                                              | I don't know | 41        | 25.3       |
| Death                                        | Yes          | 147       | 90.7       |
|                                              | No           | 4         | 2.5        |
|                                              | I don't know | 11        | 6.8        |

**Table 4:** Knowledge of Stroke Prevention

| Variable                                                                 | Sub-variable | Frequency | Percentage |
|--------------------------------------------------------------------------|--------------|-----------|------------|
| Do You Think Stroke is Preventable                                       | Yes          | 129       | 79.6       |
|                                                                          | No           | 13        | 8.0        |
|                                                                          | I don't know | 20        | 12.3       |
| Lifestyle Modification is Important in Prevention of Stroke              | Yes          | 77        | 47.5       |
|                                                                          | No           | 39        | 24.1       |
|                                                                          | I don't know | 46        | 28.4       |
| Early Diagnosis and Treatment can Help in Preventing Stroke              | Yes          | 128       | 79.0       |
|                                                                          | No           | 13        | 8.0        |
|                                                                          | I don't know | 21        | 13.0       |
| Doctors can Help Prevent Stroke                                          | Yes          | 127       | 78.4       |
|                                                                          | No           | 14        | 8.6        |
|                                                                          | I don't know | 21        | 13.0       |
| Ensuring Appropriate Treatment of Heart Diseases can Help Prevent Stroke | Yes          | 39        | 24.1       |
|                                                                          | No           | 70        | 43.2       |
|                                                                          | I don't know | 53        | 32.7       |
| Regular Medical Check-up Helps in Preventing Stroke                      | Yes          | 122       | 75.3       |
|                                                                          | No           | 13        | 8.0        |
|                                                                          | I don't know | 27        | 16.7       |
| Avoiding the use of Contraceptives can Help to Prevent Stroke            | Yes          | 9         | 5.6        |
|                                                                          | No           | 77        | 47.5       |
|                                                                          | I don't know | 76        | 46.9       |
| What are the Preventive Measures to Take?<br>Consume Healthy Diet        | Yes          | 80        | 49.4       |
|                                                                          | No           | 55        | 34.0       |
|                                                                          | I don't know | 27        | 16.7       |
| Control Blood Sugar                                                      | Yes          | 96        | 59.3       |
|                                                                          | No           | 41        | 25.3       |
|                                                                          | I don't know | 25        | 15.4       |
| Control Blood Pressure                                                   | Yes          | 128       | 79.0       |
|                                                                          | No           | 18        | 11.1       |
|                                                                          | I don't know | 16        | 9.9        |
| Avoid Smoking                                                            | Yes          | 52        | 32.1       |
|                                                                          | No           | 79        | 48.8       |
|                                                                          | I don't know | 31        | 19.1       |
| Exercise                                                                 | Yes          | 75        | 46.3       |
|                                                                          | No           | 58        | 35.8       |
|                                                                          | I don't know | 29        | 17.9       |
| Avoid Drinking                                                           | Yes          | 45        | 27.8       |
|                                                                          | No           | 84        | 51.9       |
|                                                                          | I don't know | 33        | 20.4       |

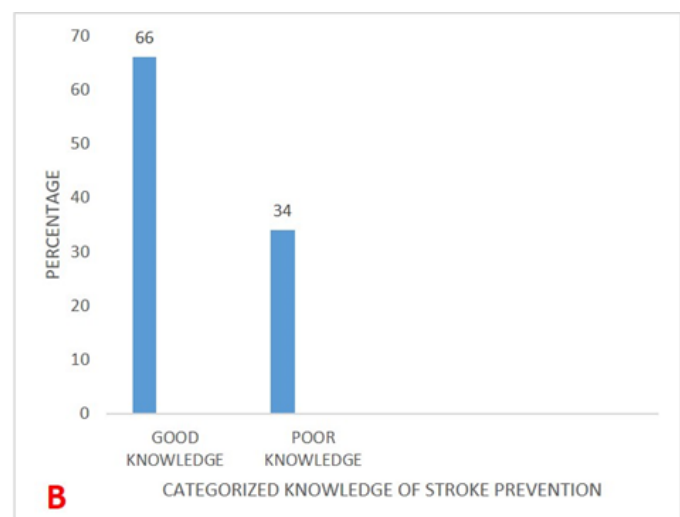
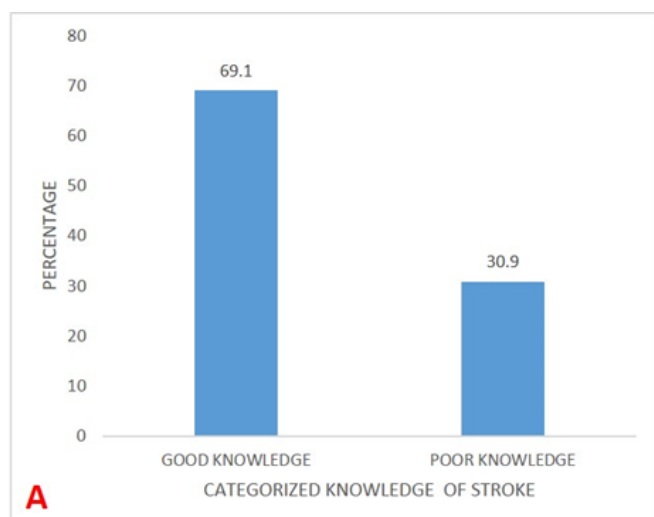
## 4. DISCUSSION

Cardiovascular diseases (CVDs) are a leading cause of mortality and morbidity globally, with stroke being a significant contributor to this burden. Stroke, a major public health issue, is particularly devastating in sub-Saharan Africa, including Nigeria, where it accounts for a substantial proportion of deaths and disabilities. Un-

derstanding the knowledge, attitude, and practice (KAP) towards stroke prevention among elderly women is critical for developing targeted interventions that can reduce stroke incidence in this vulnerable population.

### Knowledge of Stroke Prevention

Our study indicates that while there is a reasonable level of awareness about hypertension as a leading risk factor for stroke among



**Figure 3:** Categorized Knowledge Score on Stroke (A) and Stroke Prevention (B)

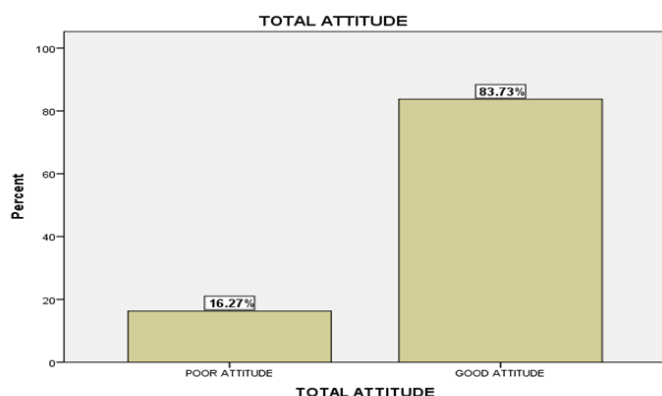
**Table 5:** Respondents Attitude Towards Stroke and its Prevention (n=317)

| Variable                                                                | Categories                       | Frequency    | Percentage |      |
|-------------------------------------------------------------------------|----------------------------------|--------------|------------|------|
| How Concerned are You About the Risk of Stroke?                         | Not concerned at all             | 14           | 4.4        |      |
|                                                                         | Not concerned                    | 54           | 17.0       |      |
|                                                                         | Concerned                        | 137          | 43.2       |      |
|                                                                         | Very concerned                   | 47           | 14.8       |      |
|                                                                         | Extremely concerned              | 65           | 20.5       |      |
| Are You Aware of the Risk Factors Associated With Stroke?               | Yes                              | 142          | 44.8       |      |
|                                                                         | No                               | 175          | 55.2       |      |
| Do you Believe that Stroke is Preventable?                              | Yes                              | 284          | 89.6       |      |
|                                                                         | No                               | 33           | 10.4       |      |
| Are You Willing to Make Lifestyle Changes to Reduce the Risk of Stroke? | Yes                              | 252          | 79.5       |      |
|                                                                         | No                               | 65           | 20.5       |      |
| What will You do if Someone Develops Stroke in Your Presence?           |                                  |              |            |      |
|                                                                         | Take Him to the Hospital         | Yes          | 115        | 71.0 |
|                                                                         |                                  | No           | 45         | 27.8 |
|                                                                         |                                  | I don't know | 2          | 1.2  |
|                                                                         | Sprinkle Water Over the Face     | Yes          | 18         | 11.1 |
|                                                                         |                                  | No           | 126        | 77.8 |
|                                                                         |                                  | I don't know | 18         | 11.1 |
|                                                                         | Wait for Spontaneous Recovery    | Yes          | 30         | 18.5 |
|                                                                         |                                  | No           | 117        | 72.2 |
|                                                                         |                                  | I don't know | 15         | 9.3  |
|                                                                         | Advise the Person to Take Rest   | Yes          | 97         | 59.9 |
|                                                                         |                                  | No           | 57         | 35.2 |
|                                                                         |                                  | I don't know | 8          | 4.9  |
|                                                                         | Call the Spouse or Family Member | Yes          | 147        | 90.7 |
|                                                                         |                                  | No           | 13         | 8.0  |
|                                                                         |                                  | I don't know | 2          | 1.2  |
|                                                                         | Start Sessions of Prayer         | Yes          | 83         | 51.2 |
|                                                                         |                                  | No           | 78         | 48.1 |
| I don't know                                                            |                                  | 1            | 6          |      |

**Table 6:** Respondents Practices Toward Stroke Prevention (n=317)

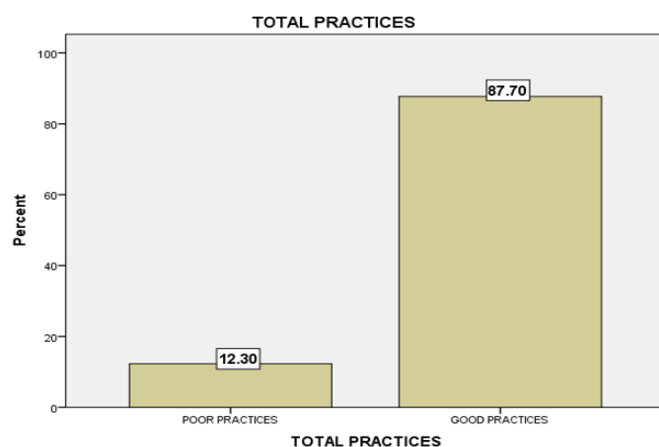
| Variable                                                                           | Categories                | Frequency | Percentage |
|------------------------------------------------------------------------------------|---------------------------|-----------|------------|
| Have you been Screened for Risk Factors Associated With Stroke?                    | Yes                       | 151       | 47.6       |
|                                                                                    | No                        | 166       | 52.4       |
| Do you Engage in Regular Physical Activity?                                        | Yes                       | 198       | 62.5       |
|                                                                                    | No                        | 119       | 37.5       |
| If Yes, Please Specify the Type and Frequency of the Physical Activity             | Jogging                   | 88        | 49.2       |
|                                                                                    | Dancing                   | 77        | 43.0       |
|                                                                                    | Cooking                   | 14        | 7.8        |
|                                                                                    |                           |           |            |
| Do You Follow a Healthy Diet that Includes Fruits, Vegetables and Whole Grains?    | Yes                       | 273       | 86.1       |
|                                                                                    | No                        | 44        | 13.9       |
| Do You Monitor Your Blood Pressure Regularly?                                      | Yes                       | 286       | 90.2       |
|                                                                                    | No                        | 31        | 9.8        |
| Do You Take Prescribed Medications Regularly?                                      | Yes                       | 212       | 66.9       |
|                                                                                    | No                        | 105       | 33.1       |
| Have you ever Participated in any Health Education Programme on Stroke Prevention? | Yes                       | 114       | 36.0       |
|                                                                                    | No                        | 203       | 64.0       |
| If Yes, Please Specify the Programs or Activities                                  | Education by Health Staff | 60        | 47.2       |
|                                                                                    | Community Awareness       | 39        | 30.7       |
|                                                                                    | Others                    | 28        | 22.0       |

elderly women in Osogbo, knowledge about other modifiable risk

**Figure 4:** Categorized Attitude Score on Stroke and its Prevention

factors, such as diabetes, obesity, and high cholesterol, remains inadequate. This finding is consistent with several studies conducted across Nigeria and other African nations. For instance, some studies in Nigeria found that awareness of hypertension as a stroke risk factor was high among Nigerian adults, yet the recognition of other risk factors was limited.<sup>18,19</sup> Similarly, a study by Donkor et al. (2014) in Ghana revealed that although hypertension awareness was common, knowledge of other stroke risk factors was much lower.<sup>20</sup> This disparity highlights the need for comprehensive health education that addresses a broader range of stroke risk factors.

Moreover, the limited knowledge about smoking as a risk factor is concerning, especially given the growing tobacco use in many African countries. Many studies have demonstrated that smoking



**Figure 5: Categorized Practices Towards Stroke Prevention**

is increasingly prevalent among Nigerian youth, raising the future risk of stroke in the population.<sup>21-25</sup> Therefore, public health campaigns should intensify their focus on educating the population about the dangers of smoking and its role in stroke development.

#### Attitude Towards Stroke Prevention

The positive attitudes towards stroke prevention observed in this study are encouraging. Most respondents acknowledged that stroke is preventable and expressed a willingness to adopt lifestyle changes to mitigate their risk. These attitudes are consistent with findings from other African study which highlighted a generally positive attitude towards stroke prevention in the region.<sup>26</sup>

However, the challenge lies in translating these attitudes into sustained preventive practices.

The willingness to engage in preventive measures is often hindered by socio-economic factors, cultural beliefs, and limited access to healthcare services. For example, in rural areas of Nigeria, as noted by Adeloye et al. (2014), socio-economic barriers often prevent individuals from accessing healthcare services and adopting healthy lifestyles.<sup>27</sup> This is further compounded by cultural beliefs that may not align with modern medical practices, making it difficult to implement effective stroke prevention strategies.

#### Practice of Stroke Prevention

Despite the positive attitudes, the actual practice of stroke prevention remains suboptimal among the study population. A large number of participants were not actively engaged in regular physical activity and many do not take prescribed medications. In addition, majority of the study participants have never participated in any stroke prevention programs or activities. This gap between knowledge and practice is a significant public health concern and has been observed in some other studies.<sup>28,29</sup>

Furthermore, high level of the lack of awareness about the signs and symptoms of stroke is particularly troubling. Early recognition of stroke symptoms is crucial for timely intervention and can significantly improve outcomes. Delayed recognition of stroke symptoms has been highlighted as a major barrier to effective treatment in many low- and middle-income countries, including Nigeria.<sup>30-32</sup> Public health initiatives must therefore prioritize educating the

**Table 7: Association Between Respondent's Attitude and Socio-Demographic Characteristic (n=317)**

| Variable                                    | Categories                                       | Attitude of the Respondent |      | Statistics                        |
|---------------------------------------------|--------------------------------------------------|----------------------------|------|-----------------------------------|
|                                             |                                                  | Poor                       | Good |                                   |
| Age                                         | 50-59                                            | 21                         | 62   | $\chi^2 = 11.044$<br>$p = 0.1111$ |
|                                             | 60-69                                            | 3                          | 46   |                                   |
|                                             | 70-79                                            | 3                          | 29   |                                   |
|                                             | 80-89                                            | 0                          | 2    |                                   |
| Ethnicity                                   | Hausa                                            | 8                          | 8    | $\chi^2 = 20.385$<br>$p = 0.0000$ |
|                                             | Igbo                                             | 0                          | 30   |                                   |
|                                             | Yoruba                                           | 19                         | 101  |                                   |
| Marital Status                              | Married                                          | 27                         | 90   | $\chi^2 = 21.013$<br>$p = 0.0000$ |
|                                             | Single                                           | 0                          | 6    |                                   |
|                                             | Divorced/Separated                               | 0                          | 41   |                                   |
|                                             | Widowed                                          | 0                          | 2    |                                   |
| Religion                                    | Islam                                            | 0                          | 51   | $\chi^2 = 27.986$<br>$p = 0.0000$ |
|                                             | Christianity                                     | 25                         | 113  |                                   |
|                                             | Traditional                                      | 2                          | 2    |                                   |
| Educational Level                           | No education                                     | 0                          | 14   | $\chi^2 = 18.636$<br>$p = 0.0000$ |
|                                             | Primary                                          | 0                          | 16   |                                   |
|                                             | Secondary                                        | 1                          | 25   |                                   |
|                                             | Tertiary                                         | 26                         | 84   |                                   |
| Occupational Status                         | Unemployed                                       | 27                         | 55   | $\chi^2 = 43.501$<br>$p = 0.0000$ |
|                                             | Employed                                         | 0                          | 70   |                                   |
|                                             | Self Employed                                    | 0                          | 14   |                                   |
|                                             | Retired                                          |                            |      |                                   |
| Average Monthly Income                      | 51,000-100,000                                   | 1                          | 74   | $\chi^2 = 35.183$<br>$p = 0.0000$ |
|                                             | 100,000-200,000                                  | 10                         | 45   |                                   |
|                                             | Above 200,000                                    | 16                         | 20   |                                   |
| Accommodation type                          | Rented                                           | 0                          | 28   | $\chi^2 = 5.185$<br>$p = 0.0233$  |
|                                             | Owned                                            | 27                         | 111  |                                   |
| Accommodation Description                   | Single Room (Shared Utilities)                   | 0                          | 42   | $\chi^2 = 10.922$<br>$p = 0.0010$ |
|                                             | Single Room (With Own Utilities)                 | 0                          | 97   |                                   |
|                                             | Flat (2 or More Rooms Apartments with Utilities) | 27                         | 139  |                                   |
| Means of Mobility                           | Public Bus                                       | 0                          | 50   | $\chi^2 = 23.155$<br>$p = 0.0000$ |
|                                             | Family Car                                       | 8                          | 16   |                                   |
|                                             | Personal Car                                     | 19                         | 73   |                                   |
| Do You have any Previous Medical Condition? | Yes                                              | 3                          | 46   | $\chi^2 = 5.251$<br>$p = 0.0220$  |
|                                             | No                                               | 24                         | 93   |                                   |

**Table 8:** Association Between Respondent's Total Practices and Socio-Demographic Characteristics

| Variable                                    | Categories                                       | Total practices of the respondent |      | Statistics                        |
|---------------------------------------------|--------------------------------------------------|-----------------------------------|------|-----------------------------------|
|                                             |                                                  | Poor                              | Good |                                   |
| Age                                         | 50-59                                            | 18                                | 125  | $\chi^2 = 3.793$<br>$p = 0.2855$  |
|                                             | 60-69                                            | 14                                | 94   |                                   |
|                                             | 70-79                                            | 7                                 | 45   |                                   |
|                                             | 80-89                                            | 0                                 | 14   |                                   |
| Ethnicity                                   | Hausa                                            | 4                                 | 28   | $\chi^2 = 0.322$<br>$p = 0.8511$  |
|                                             | Igbo                                             | 6                                 | 53   |                                   |
|                                             | Yoruba                                           | 29                                | 197  |                                   |
| Marital Status                              | Married                                          | 27                                | 195  | $\chi^2 = 14.938$<br>$p = 0.0022$ |
|                                             | Single                                           | 4                                 | 2    |                                   |
|                                             | Divorced/Separated                               | 8                                 | 61   |                                   |
|                                             | Widowed                                          | 0                                 | 20   |                                   |
| Religion                                    | Islam                                            | 18                                | 85   | $\chi^2 = 5.511$<br>$p = 0.0644$  |
|                                             | Christianity                                     | 21                                | 184  |                                   |
|                                             | Traditional                                      | 0                                 | 9    |                                   |
| Educational Level                           | No education                                     | 0                                 | 38   | $\chi^2 = 20.376$<br>$p = 0.0000$ |
|                                             | Primary                                          | 7                                 | 16   |                                   |
|                                             | Secondary                                        | 11                                | 37   |                                   |
|                                             | Tertiary                                         | 21                                | 187  |                                   |
| Occupational Status                         | Unemployed                                       | 0                                 | 7    | $\chi^2 = 5.748$<br>$p = 0.1255$  |
|                                             | Employed                                         | 20                                | 128  |                                   |
|                                             | Self Employed                                    | 19                                | 129  |                                   |
|                                             | Retired                                          | 0                                 | 14   |                                   |
| Average Monthly Income                      | 51,000-100,000                                   | 10                                | 133  | $\chi^2 = 8.716$<br>$p = 0.0133$  |
|                                             | 100,000-200,000                                  | 24                                | 104  |                                   |
|                                             | Above 200,000                                    | 5                                 | 39   |                                   |
| Accommodation type                          | Rented                                           | 15                                | 64   | $\chi^2 = 4.070$<br>$p = 0.4400$  |
|                                             | Owned                                            | 24                                | 209  |                                   |
| Accommodation Description                   | Single Room (shared utilities)                   | 0                                 | 6    | $\chi^2 = 6.241$<br>$p = 0.0444$  |
|                                             | Single Room (with own utilities)                 | 21                                | 97   |                                   |
|                                             | Flat (2 or More Rooms Apartments with Utilities) | 18                                | 175  |                                   |
| Means of Mobility                           | Public bus                                       | 15                                | 78   | $\chi^2 = 22.660$<br>$p = 0.0000$ |
|                                             | Family car                                       | 17                                | 47   |                                   |
|                                             | Personal car                                     | 7                                 | 153  |                                   |
| Do You have any Previous Medical Condition? | Yes                                              | 0                                 | 97   | $\chi^2 = 19.608$<br>$p = 0.0000$ |
|                                             | No                                               | 39                                | 181  |                                   |

population about the warning signs of stroke and the importance of seeking immediate medical attention.

#### Public Health Implications

These findings underscore the necessity for comprehensive stroke education programs that not only increase awareness of risk factors but also promote healthy behaviors and practices. Public health interventions should focus on educating the elderly population about the full spectrum of stroke risk factors and the importance of lifestyle modifications. Healthcare providers play a crucial role in this educational effort and should be equipped with the necessary resources to educate their patients effectively. Additionally, integrating stroke education into routine healthcare visits for the elderly could help reinforce knowledge and encourage preventive practices. Community-based interventions, including health fairs and workshops, could also be effective in reaching a larger audience and addressing the specific needs of elderly women in Osogbo.

#### Limitations

The study had some limitations. The cross-sectional design limits the ability to infer causality between knowledge, attitudes, and practices. Additionally, the reliance on self-reported data may introduce response biases. Future research should consider longitudinal designs to better understand the dynamics of stroke prevention behaviors over time.

#### 4.1 Conclusion

The findings of this study underscore the need for comprehensive and sustained public health interventions that address both knowledge gaps and barriers to effective stroke prevention practices among elderly women in Nigeria. Strengthening health education, improving access to preventive services, and promoting community-based interventions are crucial steps towards reducing the burden of stroke in this population. Future research should focus on evaluating the effectiveness of these interventions and exploring innovative approaches to enhance stroke prevention efforts in resource-limited settings.

#### 4.2 Recommendations for Stroke Prevention in Nigeria and Africa

Stroke prevention in Nigeria and other African countries faces several challenges, including inadequate healthcare infrastructure, limited access to preventive services, and socio-economic barriers. However, there are significant opportunities to improve stroke prevention through targeted interventions. Community-based programs have shown promise in promoting stroke prevention in various African settings. For example, several studies have demonstrated that community health workers could effectively deliver education and support for cardiovascular diseases prevention, including stroke, in rural areas of not only low-and-middle-income countries but also in developed countries.<sup>33-38</sup>

Additionally, integrating stroke prevention strategies into primary healthcare services can enhance the reach and effectiveness of these interventions. The importance of strengthening primary

healthcare systems to deliver comprehensive CVD prevention services, including hypertension management, smoking cessation programs, and dietary counseling has been emphasized.<sup>38,39</sup> In Nigeria, leveraging existing community structures and involving local leaders in health promotion activities could significantly improve stroke prevention efforts especially in vulnerable groups like older women.

#### Contributor Roles Taxonomy (CRediT) Statement

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