

Cardiovascular, Glycaemic and Hepatitis B Screening among Worshippers in Umuagu Community, Umuahia North, Abia State, Nigeria

Victor Ugochukwu Obisike, Victor Chinedu Okechukwu, Goodness Oluchi Emeka

Department of Public Health, Abia State University, Uturu Nigeria.

DOI: <https://doi.org/10.51244/IJRSI.2026.1308000249>

Received: 31 August 2026; Accepted: 05 September 2026; Published: 18 September 2026

ABSTRACT

Background: Hypertension, abnormal blood glucose and hepatitis B virus infection remain important public health concerns in Nigeria. Community- and faith-based screening can facilitate early identification of apparently healthy individuals at risk. This study assessed cardiovascular, glycaemic and hepatitis B screening outcomes among worshippers in Umuagu Community, Umuahia North, Abia State, Nigeria.

Methods: A community-based cross-sectional screening was conducted among 144 worshippers recruited through voluntary participation. Blood pressure, pulse rate and capillary blood glucose were measured using standard procedures, while hepatitis B infection was screened using a rapid diagnostic test. Blood pressure was classified according to the ACC/AHA criteria. Data were analysed descriptively using frequencies and percentages.

Results: Participants were predominantly female (83.3%), while 39.6% were aged 30–39 years. Of the respondents, 37.5% had Stage 2 hypertensive-range blood pressure and 20.8% had Stage 1 readings, giving 58.3% with hypertensive-range measurements. Blood glucose levels were 70–99 mg/dL in 41.7%, 100–125 mg/dL in 35.4%, and 126–199 mg/dL in 18.8%; none recorded ≥ 200 mg/dL. Most participants (70.8%) had pulse rates of 60–100 beats/minute, while 8.3% had tachycardic readings. All 144 participants were non-reactive for hepatitis B.

Conclusion: Elevated blood pressure was the most prominent abnormal finding. Regular faith-based screening, health education, repeat blood pressure assessment and appropriate referral may enhance early detection and prevention of cardiovascular and metabolic diseases.

Key words: Blood pressure, Blood Sugar, worshiper, Age, Sex

INTRODUCTION

Hypertension, diabetes mellitus and hepatitis B virus infection remain important public health problems in Nigeria and other low- and middle-income countries. Hypertension is a major contributor to cardiovascular disease, stroke, chronic kidney disease and premature mortality. Globally, the number of adults living with hypertension has increased substantially over the last three decades, with much of the burden occurring in low- and middle-income countries (NCD Risk Factor Collaboration [NCD-RisC], 2021). The World Health Organization estimates that about 1.4 billion adults aged 30–79 years were living with hypertension in 2024, while a substantial proportion remained unaware of their condition (World Health Organization [WHO], 2025).

Nigeria carries a considerable burden of hypertension. Earlier and more recent reviews have consistently shown that hypertension is common across different Nigerian populations, although prevalence varies by location, age, study design and diagnostic criteria (Akinlua et al., 2015; Ogah et al., 2012). A systematic analysis by Adedoye et al. (2021) estimated the crude prevalence of hypertension in Nigeria at 30.6%, with evidence of a marked increase in the number of affected adults over time. The increasing burden of hypertension underscores the need

for screening beyond conventional healthcare facilities, particularly because many affected individuals may remain asymptomatic.

Diabetes mellitus represents another major non-communicable disease of increasing importance in Nigeria. Persistent hyperglycaemia is associated with cardiovascular disease, renal impairment, neuropathy and other long-term complications. A Nigerian systematic review and meta-analysis by Uloko et al. (2018) estimated a pooled diabetes prevalence of 5.77% and identified older age, obesity, physical inactivity, unhealthy diet, family history and urban residence among important associated factors. (The rising burden of both hypertension and diabetes is especially important because the two conditions share several modifiable risk factors and may coexist in the same individual, substantially increasing cardiovascular risk.

Measurement of pulse rate is also useful during community health screening because it provides a simple indicator of cardiovascular function. Although pulse rate may vary with age, physical activity, emotional state, medications and environmental conditions, markedly elevated or reduced resting pulse rates may warrant further clinical assessment when persistent.

Hepatitis B virus infection remains an important infectious disease problem in Nigeria because chronic infection can progress to cirrhosis, liver failure and hepatocellular carcinoma. National systematic reviews have consistently demonstrated substantial hepatitis B endemicity in Nigeria, although prevalence varies among population groups and geographical locations. Consequently, community screening may provide an opportunity to identify potentially infected individuals for further investigation and to promote hepatitis B vaccination among susceptible persons.

Community and faith-based screening programmes can complement routine healthcare services by bringing preventive services closer to apparently healthy individuals. Places of worship are particularly useful settings because they bring together large numbers of community members who may not ordinarily present to health facilities for preventive assessment. Against this background, this study assessed blood pressure, blood glucose, pulse rate and hepatitis B status among 144 worshippers in Umuagu community, Umuahia North Local Government Area of Abia State, Nigeria.

Study Objectives

The general objective was to assess cardiovascular, glycaemic and hepatitis B screening indicators among worshippers in Umuagu Community, Umuahia North Local Government Area, Abia State, Nigeria.

Specifically, the study sought to: (1) describe the age and sex distribution of participants; (2) determine the distribution of blood pressure categories and pulse-rate patterns; (3) describe the distribution of capillary blood glucose measurements; (4) determine hepatitis B screening outcomes; and (5) examine the distribution of cardiovascular and glycaemic screening indicators according to age and sex.

Justification of the Study

Hypertension, abnormal blood glucose and hepatitis B infection may remain undetected in apparently healthy individuals. Community and faith-based screening provides an opportunity to identify abnormal health indicators among persons who may not routinely access preventive health services. The findings from this study provide local information that may support health education, repeat assessment and referral within the community.

Research Questions

1. What are the age and sex characteristics of the worshippers screened?
2. What proportions of participants fall within the different blood pressure and pulse-rate categories?
3. What is the distribution of measured capillary blood glucose values among participants?
4. What are the hepatitis B screening outcomes among participants?
5. How are blood pressure, blood glucose and pulse-rate categories distributed according to age and sex?

Research Hypotheses

H01: There is no statistically significant association between age group and blood pressure category among the participants.

H02: There is no statistically significant association between sex and blood pressure category among the participants.

Operational Definition of Key Terms

Community-based screening: Health screening conducted within a defined community outside a conventional health facility.

Faith-based screening: Community health screening conducted in association with a religious gathering.

Hypertensive-range blood pressure: A screening blood pressure measurement falling within Stage 1 or Stage 2 categories based on the ACC/AHA classification.

Capillary blood glucose: Blood glucose measured from a finger-prick blood sample using a glucometer.

Hepatitis B screening: Testing for hepatitis B surface antigen using a rapid diagnostic test strip.

Classification of Study Indicators within the Continuum of Care

The study indicators were classified within the continuum of care as follows: preventive care comprised blood pressure, blood glucose and hepatitis B screening for early identification of abnormal findings; promotive care comprised health education and awareness arising from the screening exercise; rehabilitative care referred to follow-up and restoration of function for persons subsequently found to have persistent cardiovascular or metabolic abnormalities; and palliative care referred to supportive care for persons with advanced chronic disease where applicable. The measurements undertaken in this study were principally preventive and promotive.

MATERIALS AND METHODS

Study Design

A community-based cross-sectional study design was used for the study.

Study Area

The study was conducted in Umuagu Community, Umuahia North Local Government Area of Abia State, Nigeria. The screening exercise was carried out immediately after a worship session in the community.

Method of Data Collection

Primary data were collected directly from participants during the community screening exercise. Information collected included age, sex, blood pressure, pulse rate, capillary blood glucose, fasting/eating status at the time of glucose testing, and hepatitis B screening result.

Data Collection Procedure

Participants were screened immediately after the worship session. Age and sex were recorded before the clinical measurements. Blood pressure was measured using electronic blood pressure monitors and manual sphygmomanometers, while pulse rate was recorded in beats per minute. Capillary blood glucose was measured by finger-prick using an AccuSense glucometer. Hepatitis B screening was performed using a rapid diagnostic test strip, and the result was interpreted from the control and test lines.

Study Instrument

Data were collected using a structured field data collection form, electronic blood pressure monitors, manual sphygmomanometers, an AccuSense glucometer with compatible test strips and lancets, and hepatitis B rapid diagnostic test strips. The field data collection form contained entries for participant serial number, age, sex, systolic and diastolic blood pressure, pulse rate, capillary blood glucose, fasting/eating status, hepatitis B screening result and remarks. Blood pressure readings were classified according to the American College of

Cardiology/American Heart Association criteria as normal, elevated, Stage 1 hypertension and Stage 2 hypertension (Whelton et al., 2018).

Sampling Technique

Participants were recruited through voluntary participation among worshippers present at the community gathering. A total of 144 worshippers who volunteered to participate were included in the screening.

Ethical Considerations

Ethical clearance for the study was obtained from the Ethical Committee of Abia State University, Uturu, Nigeria. Verbal informed consent was obtained from each participant before data collection and screening.

Data Analysis

Data were analysed using descriptive statistics. Frequencies and percentages were used to summarize age, sex, blood pressure, blood glucose, pulse rate and hepatitis B screening results. Cross-tabulations were used to present blood pressure, blood glucose and pulse rate according to age and sex.

Table 1. Sociodemographic characteristics of respondents

Variable	Frequency (n)	Percentage (%)
Age group (years)		
<18	24	16.7
18–29	12	8.3
30–39	57	39.6
40–49	36	25.0
≥50	15	10.4
Total	144	100.0
Sex		
Female	120	83.3
Male	24	16.7
Total	144	100.0

The study population was predominantly female, with **120 (83.3%) females** compared with 24 (16.7%) males. The largest age group was 30–39 years, accounting for **57 (39.6%)** respondents. This was followed by those aged 40–49 years, who constituted 36 (25.0%). Participants aged 18–29 years constituted the smallest group, at 12 (8.3%). Overall, adults aged 30–49 years accounted for almost two-thirds of the study population.

Table 2. Blood pressure status of respondents

Blood pressure category	Frequency (n)	Percentage (%)
Normal	27	18.8

Elevated	9	6.3
Stage 1 hypertension	30	20.8
Stage 2 hypertension	54	37.5
Not measured/recorded	24	16.7
Total	144	100.0

For descriptive screening, BP was grouped as normal ($<120/<80$ mmHg), elevated (120–129 and <80 mmHg), Stage 1 hypertension (130–139 systolic or 80–89 diastolic) and Stage 2 hypertension (≥ 140 systolic or ≥ 90 diastolic).

A considerable burden of elevated blood pressure was observed. **54 (37.5%)** of the total study population had readings within the Stage 2 hypertension range, while another 30 (20.8%) had readings within the Stage 1 hypertension range. Therefore, **84 (58.3%) of the entire study population had a blood pressure reading within the hypertensive range during screening.** A further 9 (6.3%) had elevated blood pressure.

Only 27 (18.8%) had BP readings classified as normal, while BP was not recorded for 24 (16.7%). Importantly, these findings represent **single screening measurements and should not be interpreted as clinical diagnoses of hypertension.** Individuals with elevated readings would require repeat measurements and appropriate clinical evaluation.

Table 3. Blood glucose distribution of respondents

Blood glucose level (mg/dL)	Frequency (n)	Percentage (%)
<70	6	4.2
70–99	60	41.7
100–125	51	35.4
126–199	27	18.8
≥ 200	0	0.0
Total	144	100.0

The largest proportion, **60 (41.7%)**, had glucose values between 70 and 99 mg/dL, while 51 (35.4%) had values between 100 and 125 mg/dL. Twenty-seven respondents (18.8%) had glucose values between 126 and 199 mg/dL, while 6 (4.2%) had readings below 70 mg/dL. No participant had a glucose value of 200 mg/dL or above.

These categories should be interpreted cautiously because the survey did not use a uniform fasting status. For example, the source records include both fasting participants and those who had eaten before testing. Consequently, a value of 126 mg/dL has a different clinical implication in a fasting participant compared with a random/post-meal measurement.

Table 4. Pulse rate distribution of respondents

Pulse rate	Frequency (n)	Percentage (%)
Bradycardia (<60 beats/min)	6	4.2

Normal (60–100 beats/min)	102	70.8
Tachycardia (>100 beats/min)	12	8.3
Not measured/recorded	24	16.7
Total	144	100.0

Most respondents, **102 (70.8%)**, had pulse rates within the conventional resting range of 60–100 beats per minute. Tachycardic readings (>100 beats/min) occurred in 12 (8.3%), while 6 (4.2%) had pulse rates below 60 beats/min. Pulse rate was not recorded for 24 (16.7%) respondents.

The presence of tachycardia during a community screening exercise does not necessarily indicate cardiovascular disease, as pulse rate may be temporarily influenced by recent physical activity, anxiety, caffeine consumption, medications and other factors.

Table 5. Hepatitis B screening results among respondents (N = 144)

Hepatitis B result	Frequency (n)	Percentage (%)
Negative/non-reactive	144	100.0
Positive/reactive	0	0.0
Total	144	100.0

No positive hepatitis B result was recorded among the screened worshippers. Thus, all 144 (100.0%) were non-reactive based on the screening data.

Relationship between sociodemographic characteristics and screening results

Table 6. Age group and blood pressure status of respondents

Age (years)	Normal (%)	Elevated (%)	Stage 1 (%)	Stage 2 (%)	Not measured (%)	Total (%)
<18	6 (4.2)	0 (0.0)	0 (0.0)	0 (0.0)	18 (12.5)	24 (16.7)
18–29	3 (2.1)	0 (0.0)	0 (0.0)	6 (4.2)	3 (2.1)	12 (8.3)
30–39	15 (10.4)	3 (2.1)	24 (16.7)	15 (10.4)	0 (0.0)	57 (39.6)
40–49	0 (0.0)	6 (4.2)	6 (4.2)	24 (16.7)	0 (0.0)	36 (25.0)
≥50	3 (2.1)	0 (0.0)	0 (0.0)	9 (6.3)	3 (2.1)	15 (10.4)
Total	27 (18.8)	9 (6.3)	30 (20.8)	54 (37.5)	24 (16.7)	144 (100.0)

A clear descriptive pattern of higher BP readings among older respondents was observed. The 40–49-year group contributed the largest number of Stage 2 readings, accounting for 24 (16.7%) of the entire study population. Among participants aged 30–39 years, 24 (16.7%) of the total sample had Stage 1 readings and 15 (10.4%) had Stage 2 readings.

The apparent absence of elevated BP among most respondents below 18 years should be interpreted cautiously because BP was not measured for 18 of the 24 respondents in this age group.

Table 7. Sex and blood pressure status of respondents (N = 144)

Sex	Normal (%)	n	Elevated (%)	n	Stage 1 (%)	n	Stage 2 (%)	n	Not measured (%)	n	Total (%)	n
Female	24 (16.7)		9 (6.3)		27 (18.8)		45 (31.3)		15 (10.4)		120 (83.3)	
Male	3 (2.1)		0 (0.0)		3 (2.1)		9 (6.3)		9 (6.3)		24 (16.7)	
Total	27 (18.8)		9 (6.3)		30 (20.8)		54 (37.5)		24 (16.7)		144 (100.0)	

The absolute number of participants with hypertensive-range readings was considerably higher among females. This, however, largely reflects the fact that females constituted 83.3% of the study population.

Table 8. Age group and blood glucose level of respondents (N = 144)

Age (years)	<70 n (%)	70–99 n (%)	100–125 n (%)	126–199 n (%)	≥200 n (%)	Total n (%)
<18	3 (2.1)	6 (4.2)	15 (10.4)	0 (0.0)	0 (0.0)	24 (16.7)
18–29	0 (0.0)	6 (4.2)	0 (0.0)	6 (4.2)	0 (0.0)	12 (8.3)
30–39	3 (2.1)	27 (18.8)	18 (12.5)	9 (6.3)	0 (0.0)	57 (39.6)
40–49	0 (0.0)	12 (8.3)	15 (10.4)	9 (6.3)	0 (0.0)	36 (25.0)
≥50	0 (0.0)	9 (6.3)	3 (2.1)	3 (2.1)	0 (0.0)	15 (10.4)
Total	6 (4.2)	60 (41.7)	51 (35.4)	27 (18.8)	0 (0.0)	144 (100.0)

The 30–39-year age group accounted for the largest number of participants with glucose values between 70 and 99 mg/dL. Values between 126 and 199 mg/dL were observed across the 18–29, 30–39, 40–49 and ≥50-year groups. However, because fasting status differed among participants, this table describes the **distribution of measured glucose values by age rather than the prevalence of diabetes by age**.

Table 9. Sex and blood glucose level of respondents (N = 144)

Sex	<70 n (%)	70–99 n (%)	100–125 n (%)	126–199 n (%)	≥200 n (%)	Total n (%)
Female	6 (4.2)	51 (35.4)	42 (29.2)	21 (14.6)	0 (0.0)	120 (83.3)
Male	0 (0.0)	9 (6.3)	9 (6.3)	6 (4.2)	0 (0.0)	24 (16.7)
Total	6 (4.2)	60 (41.7)	51 (35.4)	27 (18.8)	0 (0.0)	144 (100.0)

Table 10. Age group and pulse rate of respondents (N = 144)

Age (years)	<60 bpm n (%)	60–100 bpm n (%)	>100 bpm n (%)	Not measured n (%)	Total n (%)
<18	0 (0.0)	6 (4.2)	0 (0.0)	18 (12.5)	24 (16.7)

18–29	0 (0.0)	9 (6.3)	0 (0.0)	3 (2.1)	12 (8.3)
30–39	3 (2.1)	45 (31.3)	9 (6.3)	0 (0.0)	57 (39.6)
40–49	0 (0.0)	33 (22.9)	3 (2.1)	0 (0.0)	36 (25.0)
≥50	3 (2.1)	9 (6.3)	0 (0.0)	3 (2.1)	15 (10.4)
Total	6 (4.2)	102 (70.8)	12 (8.3)	24 (16.7)	144 (100.0)

The majority of respondents had pulse rates within the 60–100 beats/minute range. Tachycardic readings were concentrated mainly among those aged 30–39 years, although the number of abnormal pulse readings was relatively small.

Table 11. Sex and pulse rate of respondents (N = 144)

Sex	<60 bpm n (%)	60–100 bpm n (%)	>100 bpm n (%)	Not measured n (%)	Total n (%)
Female	6 (4.2)	87 (60.4)	12 (8.3)	15 (10.4)	120 (83.3)
Male	0 (0.0)	15 (10.4)	0 (0.0)	9 (6.3)	24 (16.7)
Total	6 (4.2)	102 (70.8)	12 (8.3)	24 (16.7)	144 (100.0)

DISCUSSION

The findings of this study provide important information on the cardiovascular, metabolic and infectious disease profile of the 144 worshippers screened in Umuahia North. The parameters assessed included blood pressure, blood glucose, pulse rate and hepatitis B status, while age and sex provided the sociodemographic characteristics for examining patterns in the screening outcomes. Overall, the most prominent finding was the relatively high proportion of respondents with elevated blood pressure readings, whereas most respondents had pulse rates within the normal range. Blood glucose values showed considerable variation, while no reactive hepatitis B result was recorded.

Sociodemographic characteristics of the respondents

The study population was predominantly female, with 120 (83.3%) females compared with 24 (16.7%) males. In terms of age, the highest proportion of respondents, 57 (39.6%), were aged 30–39 years, followed by 36 (25.0%) aged 40–49 years. Thus, almost two-thirds of the participants were aged between 30 and 49 years. This age distribution is important because cardiovascular and metabolic risk factors may begin to become increasingly evident during middle adulthood.

The predominance of females in the present study may reflect patterns of participation in religious activities and community health programmes rather than the underlying sex distribution of Umuahia North. Consequently, comparisons of absolute numbers of abnormal findings between males and females should be made cautiously. The greater number of abnormal measurements among females may largely be influenced by their substantially higher representation in the study population.

BLOOD PRESSURE FINDINGS

Blood pressure was the most striking cardiovascular finding in the study. Of the 144 respondents, 54 (37.5%) had Stage 2 hypertensive-range readings, while 30 (20.8%) had Stage 1 readings. Therefore, 84 (58.3%) respondents had blood pressure measurements falling within the hypertensive range at the time of screening. An additional 9 (6.3%) had elevated blood pressure, while 27 (18.8%) had normal readings. Several markedly elevated blood pressure measurements were recorded among the respondents.

The proportion of respondents with hypertensive-range measurements in this study is considerable when compared with estimates reported in the Nigerian literature. Adeloye et al. (2021), in a systematic analysis of 53 Nigerian studies involving 78,949 participants, reported a pooled crude hypertension prevalence of 30.6%. The authors further estimated an age-adjusted hypertension prevalence of 32.5% among Nigerian adults in 2020. The 58.3% of respondents with Stage 1 or Stage 2 hypertensive-range readings in the present study is therefore considerably higher than the pooled national estimate.

Regional evidence is particularly relevant to the present findings. Adeloye et al. (2021) reported a pooled hypertension prevalence of **33.3% in South-East Nigeria**, which was among the highest estimates across the Nigerian geopolitical zones.) Since Umuahia North is located within South-East Nigeria, the present findings support existing evidence that elevated blood pressure constitutes an important public health challenge within the region. However, the higher proportion observed in the present study may be related to differences in study population, age distribution, sampling procedures and criteria used for categorising blood pressure.

An important consideration is that the blood pressure values obtained during the outreach represent screening measurements rather than confirmed clinical diagnoses. The World Health Organization (WHO, 2025) defines hypertension as systolic blood pressure of ≥ 140 mmHg and/or diastolic blood pressure of ≥ 90 mmHg when elevated measurements are demonstrated on two different days. Thus, individuals identified with elevated measurements during the present screening require repeat assessment before a diagnosis of hypertension can be established. The findings are nevertheless important because screening provides an opportunity to identify individuals who may otherwise remain unaware of elevated blood pressure.

The high frequency of hypertensive-range readings is particularly concerning because hypertension is frequently asymptomatic. Adeloye et al. (2021) estimated that only 29.0% of Nigerians with hypertension were aware of their condition, while only 12.0% were receiving treatment and 2.8% had achieved target blood pressure. The findings of the present study therefore demonstrate the potential importance of community and faith-based screening programmes for detecting elevated blood pressure among individuals who may not routinely undergo medical examinations.

Age and blood pressure

The relationship between age and blood pressure demonstrated an important descriptive pattern. Respondents aged 40–49 years accounted for the largest number of Stage 2 hypertensive-range readings, while substantial numbers of respondents aged 30–39 years also had Stage 1 and Stage 2 readings. This suggests that elevated blood pressure was already prominent among respondents in early and middle adulthood rather than being restricted to the elderly.

This observation is consistent with established knowledge concerning the relationship between increasing age and hypertension. WHO (2025) identifies older age as an important non-modifiable risk factor for hypertension. Other established risk factors include genetic predisposition, overweight and obesity, physical inactivity, high dietary salt intake and excessive alcohol consumption. Physiologically, ageing is associated with progressive arterial stiffening, changes in vascular compliance and increased peripheral vascular resistance, all of which contribute to increasing blood pressure.

The occurrence of elevated readings among respondents aged 30–49 years has important public health implications. Individuals within these age groups are generally economically and socially active, and persistent uncontrolled hypertension over several decades increases cumulative exposure to cardiovascular risk. Early identification and appropriate intervention may consequently help reduce future risks of stroke, heart disease, renal disease and other hypertension-related complications.

Sex and blood pressure

Females accounted for most of the respondents with abnormal blood pressure measurements. However, females constituted 83.3% of the entire study population, making direct comparison of absolute frequencies between males and females inappropriate as an indication of sex-specific risk.

Interestingly, national evidence does not demonstrate a large difference between males and females. Adeloye et al. (2021) estimated hypertension prevalence at approximately 30.4% among Nigerian women and 29.5% among men, with no statistically significant difference between the sexes. This suggests that the predominance of females among those with abnormal blood pressure in the present study is likely influenced substantially by the female-dominated study population. A larger study with a more balanced representation of males and females would provide a better basis for assessing sex differences.

Blood glucose findings

Blood glucose screening revealed that 60 (41.7%) respondents had values between 70 and 99 mg/dL, while 51 (35.4%) had values between 100 and 125 mg/dL. Twenty-seven (18.8%) had blood glucose measurements between 126 and 199 mg/dL, while 6 (4.2%) had values below 70 mg/dL. No respondent recorded a glucose measurement of 200 mg/dL or above.

These findings suggest that the majority of respondents did not have markedly elevated glucose levels at the time of screening. Nevertheless, the finding that almost one-fifth had measurements between 126 and 199 mg/dL is important and indicates the need for appropriate follow-up, particularly among individuals whose measurements were obtained after fasting.

Diabetes mellitus represents an important and growing public health problem in Nigeria. Uloko et al. (2018), in a systematic review and meta-analysis of Nigerian studies, reported a pooled diabetes mellitus prevalence of **5.77%**. The authors identified family history of diabetes, urban residence, unhealthy dietary habits, physical inactivity, older age and obesity as important factors associated with diabetes in Nigeria. The occurrence of elevated glucose measurements among some respondents in the present study is therefore consistent with the broader evidence demonstrating an appreciable burden of abnormal glucose metabolism in the Nigerian population.

Age and blood glucose

Blood glucose values between 126 and 199 mg/dL occurred across several adult age categories. Respondents aged 30–49 years contributed a substantial proportion of these measurements, although this partly reflects the predominance of these age groups within the study population.

The pattern is broadly consistent with evidence that the risk of type 2 diabetes increases with age. Uloko et al. (2018) identified older age as an important risk factor for diabetes mellitus in Nigeria. Increasing age may interact with other metabolic and behavioural factors, including reduced physical activity, increasing body weight and central adiposity, to increase the risk of impaired glucose regulation.

The coexistence of elevated blood pressure and elevated glucose measurements among members of the population is also important from a cardiovascular disease prevention perspective. Hypertension and diabetes share several modifiable risk factors, particularly overweight and obesity, unhealthy diet and physical inactivity. Consequently, community interventions should ideally address these conditions collectively rather than treating blood pressure and blood glucose abnormalities as completely separate problems.

Sex and blood glucose

Females accounted for a greater absolute number of respondents within each glucose category, including those with values between 126 and 199 mg/dL. The Nigerian meta-analysis by Uloko et al. (2018) demonstrated that the epidemiology of diabetes is influenced by several demographic, behavioural and anthropometric factors rather than sex alone. Future community studies would therefore benefit from collecting additional variables such as body mass index, waist circumference, family history of diabetes, physical activity, dietary habits and history of hypertension. These would permit a more comprehensive assessment of factors associated with abnormal glucose measurements.

Pulse rate findings

Pulse rate measurements were generally reassuring. A total of 102 (70.8%) respondents had pulse rates between 60 and 100 beats per minute. Twelve (8.3%) had pulse rates above 100 beats per minute, while 6 (4.2%) recorded values below 60 beats per minute.

The predominance of pulse rates within the conventional resting range suggests that overt abnormalities of heart rate were less common than elevated blood pressure in the study population. Nevertheless, the presence of pulse rates above 100 beats per minute among some respondents warrants attention. Heart rate is influenced by numerous physiological and environmental factors, including physical activity immediately before measurement, emotional stress, anxiety, temperature, medications and stimulant consumption. Therefore, an isolated elevated pulse during community screening does not necessarily indicate underlying cardiac disease.

The age-specific distribution showed that most respondents with elevated pulse rates were within the 30–39-year age group. This finding should be interpreted cautiously because that group also constituted the largest proportion of the study population. Repeat measurement after an adequate resting period would be appropriate for respondents with unusually high or low pulse rates, while persistent abnormalities should prompt further clinical assessment.

Hepatitis B findings

Another important finding was the absence of reactive hepatitis B results among the 144 respondents. Assuming that the recorded screening results represent non-reactivity, none of the respondents screened positive for hepatitis B.

This finding contrasts markedly with the established epidemiology of hepatitis B infection in Nigeria. Ajuwon et al. (2021), in a systematic review and meta-analysis of Nigerian studies published between 2010 and 2019, reported a substantial national burden of hepatitis B virus infection. The authors' analysis supports the continued classification of hepatitis B as an important infectious disease problem in Nigeria.

The absence of a reactive result in the present study should therefore not be interpreted to mean that hepatitis B is absent in Umuahia North. Rather, it indicates that no infection was detected among the respondents screened during this particular outreach. Differences between the present finding and national estimates may reflect characteristics of the population screened, previous vaccination, behavioural risk profiles and other epidemiological factors.

The finding nevertheless provides an opportunity to emphasize preventive measures. Hepatitis B screening programmes can be combined with education on transmission, assessment of vaccination status, vaccination of eligible susceptible individuals and referral of reactive individuals for confirmatory testing and appropriate clinical management.

Public health implications

Taken together, the findings indicate that **elevated blood pressure was the most prominent abnormal health indicator detected among the 144 worshippers**. The proportion of respondents with hypertensive-range measurements was considerably higher than pooled national estimates reported by Adeloye et al. (2021). This finding deserves particular attention because hypertension is a major modifiable cardiovascular risk factor and may remain clinically silent for many years. (

The findings further demonstrate the potential value of religious institutions as settings for community-based health promotion. Places of worship regularly bring together individuals from different age groups and social backgrounds, including people who may not routinely attend healthcare facilities for preventive screening. Integrating periodic blood pressure and blood glucose measurements with health education and referral services in such settings could contribute to earlier identification of individuals at increased cardiovascular and metabolic risk.

Health education accompanying these programmes should emphasize modifiable hypertension risk factors. WHO recommends healthy dietary practices, reduced salt consumption, maintenance of healthy body weight, increased physical activity and avoidance of tobacco as important measures for preventing and controlling high blood pressure. Respondents with elevated blood pressure should be referred for repeat measurements and clinical evaluation rather than assuming that a single screening measurement establishes hypertension.

Similarly, respondents with abnormal glucose measurements should undergo standardized follow-up testing. Future screening programmes would be strengthened by adopting uniform procedures for glucose assessment, clearly separating fasting from random blood glucose measurements and recording additional risk factors for diabetes. This would improve both clinical interpretation and epidemiological analysis.

CONCLUSION OF THE DISCUSSION

The study demonstrates a considerable burden of cardiovascular risk indicators among the 144 worshippers screened in Umuahia North, with elevated blood pressure emerging as the most important finding. The proportion with hypertensive-range readings was higher than pooled estimates previously reported for Nigeria and South-East Nigeria, reinforcing concerns about the growing burden of hypertension in Nigerian communities. Blood glucose measurements were within lower ranges for most respondents, although a noteworthy proportion had values requiring further evaluation. Pulse rates were predominantly within the conventional resting range, while no reactive hepatitis B result was identified.

These findings support the strengthening of **community- and faith-based screening programmes** as complementary strategies for prevention and early detection of non-communicable diseases. Screening should be linked to appropriate referral, repeat testing and health education, particularly concerning healthy diet, reduced salt intake, physical activity, weight management and routine blood pressure monitoring. The findings also highlight the need for larger community studies in Umuahia North to provide further evidence on the burden and determinants of hypertension, abnormal glucose regulation and other cardiovascular risk factors.

REFERENCES

1. Adeloye, D., Ige-Elegbede, J. O., Ezejimofor, M., Owolabi, E. O., Ezeigwe, N., Omoyele, C., Mpazanje, R. G., Dewan, M. T., Agogo, E., Gadanya, M. A., Alemu, W., Harhay, M. O., & Auta, A. (2021). Prevalence, awareness, treatment, and control of hypertension in Nigeria in 1995 and 2020: A systematic analysis of current evidence. *The Journal of Clinical Hypertension*, 23(5), 963–977. <https://doi.org/10.1111/jch.14220> (PubMed)
2. Adeloye, D., Ige, J. O., Aderemi, A. V., Adeleye, N., Amoo, E. O., Auta, A., & Oni, G. (2017). Estimating the prevalence, hospitalisation and mortality from type 2 diabetes mellitus in Nigeria: A systematic review and meta-analysis. *BMJ Open*, 7(5), e015424. <https://doi.org/10.1136/bmjopen-2016-015424>
3. Ajuwon, B. I., Yujuico, I., Roper, K., Richardson, A., Sheel, M., & Lidbury, B. A. (2021). Hepatitis B virus infection in Nigeria: A systematic review and meta-analysis of data published between 2010 and 2019. *BMC Infectious Diseases*, 21, 1120. <https://doi.org/10.1186/s12879-021-06800-6>
4. Akinlua, J. T., Meakin, R., Umar, A. M., & Freemantle, N. (2015). Current prevalence pattern of hypertension in Nigeria: A systematic review. *PLoS ONE*, 10(10), e0140021. <https://doi.org/10.1371/journal.pone.0140021>
5. American Diabetes Association Professional Practice Committee. (2024). 2. Diagnosis and classification of diabetes: Standards of care in diabetes—2024. *Diabetes Care*, 47(Supplement_1), S20–S42. <https://doi.org/10.2337/dc24-S002>
6. GBD 2019 Risk Factors Collaborators. (2020). Global burden of 87 risk factors in 204 countries and territories, 1990–2019: A systematic analysis for the Global Burden of Disease Study 2019. *The Lancet*, 396(10258), 1223–1249. [https://doi.org/10.1016/S0140-6736\(20\)30752-2](https://doi.org/10.1016/S0140-6736(20)30752-2)
7. Mills, K. T., Stefanescu, A., & He, J. (2020). The global epidemiology of hypertension. *Nature Reviews Nephrology*, 16(4), 223–237. <https://doi.org/10.1038/s41581-019-0244-2>

8. Musa, B. M., Bussell, S., Borodo, M. M., Samaila, A. A., & Femi, O. L. (2015). Prevalence of hepatitis B virus infection in Nigeria, 2000–2013: A systematic review and meta-analysis. *Nigerian Journal of Clinical Practice*, 18(2), 163–172. <https://doi.org/10.4103/1119-3077.151035>
9. NCD Risk Factor Collaboration (NCD-RisC). (2021). Worldwide trends in hypertension prevalence and progress in treatment and control from 1990 to 2019: A pooled analysis of 1,201 population-representative studies with 104 million participants. *The Lancet*, 398(10304), 957–980. [https://doi.org/10.1016/S0140-6736\(21\)01330-1](https://doi.org/10.1016/S0140-6736(21)01330-1)
10. Odili, A. N., Chori, B. S., Danladi, B., Nwakile, P. C., Okoye, I. C., Abdullahi, U., Nwegbu, M. M., Zawaya, K., Essien, I., Sada, K., Nwachukwu, V., et al. (2020). Prevalence, awareness, treatment and control of hypertension in Nigeria: Data from a nationwide survey 2017. *Global Heart*, 15(1), 47. <https://doi.org/10.5334/gh.848> (PubMed)
11. Ogah, O. S., Okpechi, I., Chukwuonye, I. I., Akinyemi, J. O., Onwubere, B. J. C., Falase, A. O., Stewart, S., & Sliwa, K. (2012). Blood pressure, prevalence of hypertension and hypertension related complications in Nigerian Africans: A review. *World Journal of Cardiology*, 4(12), 327–340. <https://doi.org/10.4330/wjc.v4.i12.327>
12. Schweitzer, A., Horn, J., Mikolajczyk, R. T., Krause, G., & Ott, J. J. (2015). Estimations of worldwide prevalence of chronic hepatitis B virus infection: A systematic review of data published between 1965 and 2013. *The Lancet*, 386(10003), 1546–1555. [https://doi.org/10.1016/S0140-6736\(15\)61412-X](https://doi.org/10.1016/S0140-6736(15)61412-X)
13. Uloko, A. E., Musa, B. M., Ramalan, M. A., Gezawa, I. D., Puepet, F. H., Uloko, A. T., Borodo, M. M., & Sada, K. B. (2018). Prevalence and risk factors for diabetes mellitus in Nigeria: A systematic review and meta-analysis. *Diabetes Therapy*, 9(3), 1307–1316. <https://doi.org/10.1007/s13300-018-0441-1> (PubMed)
14. Whelton, P. K., Carey, R. M., Aronow, W. S., Casey, D. E., Jr., Collins, K. J., Dennison Himmelfarb, C., DePalma, S. M., Gidding, S., Jamerson, K. A., Jones, D. W., MacLaughlin, E. J., Muntner, P., Oviagele, B., Smith, S. C., Jr., Spencer, C. C., Stafford, R. S., Taler, S. J., Thomas, R. J., Williams, K. A., Sr., Williamson, J. D., & Wright, J. T., Jr. (2018). 2017 ACC/AHA/AAPA/ABC/ACPM/AGS/APhA/ASH/ASPC/NMA/PCNA guideline for the prevention, detection, evaluation, and management of high blood pressure in adults. *Hypertension*, 71(6), e13–e115. <https://doi.org/10.1161/HYP.0000000000000065> (PubMed)
15. World Health Organization. (2024). Diabetes. World Health Organization.
16. World Health Organization. (2024). Global hepatitis report 2024: Action for access in low- and middle-income countries. World Health Organization.
17. World Health Organization. (2025). Global report on hypertension 2025: High stakes—Turning evidence into action. World Health Organization.
18. World Health Organization. (2025). Hypertension. World Health Organization.