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Awareness and Behavioural Responses to Nurse-Led Patient Education and Hypertension Prevention Interventions among Patients Attending Selected Tertiary Health Facilities in Edo State, Nigeria

Josephine Joy Odufua Igimoh[1,*], Adelani Tijani[1,2], Ngozi Eucharia Makata[1,3] and Samuel Chinweuba Modeme[1]

[1]Department of Nursing Science, Faculty of Applied Health Sciences, Edo State University, Iyamho, Edo State, Nigeria

[2]Department of Nursing Science, Federal University, Oye-Ekiti, Nigeria

[3]Department of Nursing Science, Faculty of Health Sciences and Technology, Nnamdi Azikiwe University, Nigeria

Corresponding Author: josigimohjj@gmail.com

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ABSTRACT

Hypertension remains a major contributor to cardiovascular morbidity and mortality in Nigeria, while nurses remain central to prevention through patient education, counselling, blood pressure monitoring support and lifestyle reinforcement. This study assessed patients' awareness and behavioural responses to nurse-led patient education and hypertension prevention interventions in selected tertiary health facilities in Edo State, Nigeria. A descriptive cross-sectional design was adopted among 281 hypertensive patients attending the University of Benin Teaching Hospital and Irrua Specialist Teaching Hospital. Data were collected using a structured questionnaire and analysed using frequencies, percentages, means, chi-square tests and multivariate logistic regression at $p < 0.05$. *Findings showed that 55.5% of respondents had good awareness of nurse-led hypertension prevention strategies, while 31.7% had moderate awareness and 12.8% had poor awareness. Nurses were identified by 78.6% of respondents as providers of lifestyle modification education. Positive behavioural responses were strongest for regular blood pressure monitoring, salt reduction and dietary modification, while stress management and reduction of smoking or alcohol consumption remained weaker. Awareness was significantly associated with behavioural change (*$\chi^2 = 12.47$, $df = 2$, $p = 0.002$*). Older age, female gender, higher education, income, urban residence, health facility registration and longer facility attendance predicted good awareness and positive behavioural response. Strengthening nurse-led counselling, follow-up and culturally responsive patient education may improve sustained hypertension prevention behaviours.*

Keywords: Hypertension; nurse-led intervention; patient education; behavioural response; nursing practice; lifestyle modification; Nigeria.

1. Introduction

Hypertension is one of the leading preventable causes of cardiovascular disease, stroke, kidney disease and premature mortality worldwide. Its burden is particularly severe in low- and middle-income countries, where rapid urbanisation, changing diets, reduced physical activity, psychosocial stress and limited preventive care continue to increase population risk [1, 2, 3]. In Nigeria, hypertension awareness, treatment and control remain major clinical and public health concerns, and many patients do not consistently translate knowledge into preventive behaviour [4, 5].

Nurses are central to hypertension prevention because they are often the healthcare professionals most consistently involved in patient education, counselling, clinic follow-up, blood pressure monitoring guidance and reinforcement of lifestyle recommendations. Nurse-led patient education can improve knowledge of risk factors, self-monitoring, medication adherence, dietary practice and long-term self-management [6, 7, 8]. In tertiary healthcare settings, outpatient and chronic disease clinics provide repeated opportunities for nurses to deliver structured education and individualised counselling.

Hypertension prevention depends strongly on behavioural modification. Evidence-based lifestyle measures include salt reduction, healthy diet, weight control, regular physical activity, avoidance of tobacco, moderation of alcohol consumption, stress management and routine blood pressure monitoring [9, 10]. However, knowledge alone is often insufficient. Patients may be aware of hypertension risks but face financial limitations, cultural dietary preferences, low health literacy, work-related stress, poor family support and barriers in the healthcare system [11, 12].

In Edo State, tertiary health facilities such as the University of Benin Teaching Hospital and Irrua Specialist Teaching Hospital provide hypertension-related care to diverse patient populations. These facilities are important platforms for nurse-led health education and clinical prevention. Yet, there remains a need to assess how patients perceive these interventions and whether awareness is associated with actual behavioural response. This study therefore examined awareness and behavioural responses to nurse-led patient education and hypertension prevention interventions among patients attending selected tertiary health facilities in Edo State, Nigeria.

2. Literature Review

Hypertension prevention research consistently shows that health education improves knowledge, but sustained behavioural change requires repeated support and patient-centred counselling [13, 14]. Studies in different settings have reported that patient awareness of hypertension may be limited by education, income, place of residence and access to health services [15, 16]. In Nigeria, national survey evidence indicates that hypertension awareness and control remain suboptimal, especially among underserved groups [4].

Nurse-led interventions are particularly relevant because nurses are positioned at the intersection of clinical medicine, patient care and public health. Through routine clinic contact, nurses can identify patient misconceptions, reinforce physician recommendations, support self-monitoring and provide culturally appropriate lifestyle counselling. Educational interventions have been shown to improve adherence to lifestyle modification among hypertensive patients, although their effectiveness increases when education is combined with follow-up and behavioural support [6, 17].

The literature also highlights a knowledge-practice gap. Dhakal et al. [7] found low adherence to lifestyle modification among hypertensive patients despite education, while Yan et al. [18] reported suboptimal acceptance of behavioural risk factor interventions among patients with chronic conditions. These findings suggest that nursing strategies should address patient barriers and not merely provide information. In addition, digital tools, community outreach and structured follow-up have been proposed as ways to support chronic disease prevention [19, 20].

3. Theoretical Framework

This study is informed by Pender's Health Promotion Model. The model explains health-promoting behaviour as a function of prior behaviour, perceived benefits, perceived barriers, self-efficacy, interpersonal influence and situational factors. It is relevant to nursing because it emphasises the role of nurses in helping patients understand risk, identify benefits, overcome barriers and maintain positive health behaviours. In this study, nurse-led education is expected to increase awareness, while socio-demographic and contextual barriers may influence the translation of awareness into behavioural change.

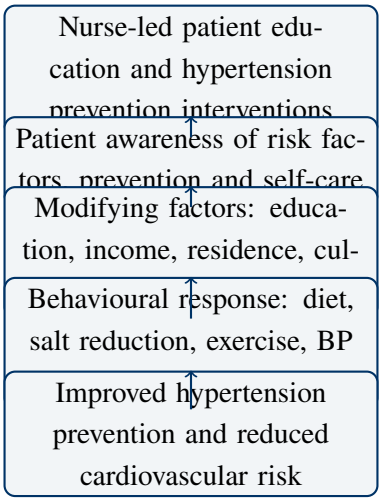

Figure 1: Conceptual pathway linking nurse-led education, awareness, modifying factors and behavioural response.

4. Materials and Methods

4.1. Design and Setting

A descriptive cross-sectional design was adopted. The study was conducted at the University of Benin Teaching Hospital, Benin City, and Irrua Specialist Teaching Hospital, Edo State. Both are tertiary health facilities providing outpatient, preventive and hypertension-related services.

4.2. Population, Sample and Sampling

The study population comprised 797 adult patients aged 18 years and above receiving outpatient and preventive care at the two facilities. A sample size of 285 was determined using Cochran's formula with finite population correction and a 10% non-response allowance. A total of 281 correctly completed questionnaires were retrieved and analysed. A multi-stage sampling technique was used,

involving purposive selection of study sites, stratification into hospital units and systematic selection of eligible patients using clinic registers.

4.3. Instrument and Data Collection

Data were collected using a structured questionnaire covering socio-demographic characteristics, awareness of nurse-led hypertension prevention interventions and behavioural responses. The instrument included multiple-choice items and four-point Likert scale questions. Face and content validity were established by experts in Community/Public Health Nursing and supervisors. Reliability was established through pilot testing among 29 hypertensive patients outside the study sites, with internal consistency at Cronbach's alpha ≥ 0.70.

4.4. Data Analysis and Ethical Considerations

Data were analysed using IBM SPSS Statistics version 27.0. Descriptive statistics were used to summarise frequencies, percentages, means and standard deviations. Chi-square tests and multivariate logistic regression were used at $p < 0.05$. Awareness was categorised as poor (0–49%), moderate (50–69%) and good ($\geq$ 70%). Likert scale responses were interpreted using a 2.5 mean cut-off. Ethical approval was obtained from the relevant institutional ethics committees, informed consent was obtained and confidentiality was maintained.

5. Results

5.1. Socio-Demographic Characteristics

The respondents were mainly older adults, with most aged 50–69 years and a mean age of 58.1 ± 13.0 years. Females constituted 52.0%, married respondents 77.2%, and respondents with secondary education 40.9%. Nearly half were self-employed or engaged in business, while more than two-thirds earned N60,000 or less monthly. Slightly more than half lived in urban areas and 74.0% were registered at a health facility.

Table 1: Selected socio-demographic characteristics of respondents (n = 281)

Characteristic	Frequency	Percentage
Female gender	146	52.0
Male gender	135	48.0
Married	217	77.2
Secondary education	115	40.9
Tertiary education	45	16.0
Self-employed/business	138	49.1
Monthly income N60,000 or below	190	67.6
Urban residence	147	52.3
Registered at health facility	208	74.0
Attended UBTH	168	59.8
Attended ISTH	113	40.2

5.2. Awareness of Nurse-Led Hypertension Prevention Interventions

Respondents demonstrated encouraging awareness of nurse-led hypertension prevention strategies. Health education talks were recognised by 75.8%, posters and leaflets by 58.4%, and nurses were identified by 78.6% as providers of lifestyle modification education. The composite score showed that 55.5% had good awareness, 31.7% had moderate awareness and 12.8% had poor awareness.

Table 2: Awareness of selected nurse-led hypertension prevention strategies (n = 281)

Awareness item	Frequency	Percentage
Health education talks as awareness method	213	75.8
Posters and leaflets as awareness method	164	58.4
Nurses as providers of lifestyle modification education	221	78.6
Health workers as providers of lifestyle modification education	178	63.3
Community outreach educates the public on risk factors	209	74.4
Health education sessions for diet and salt reduction	198	70.5
Health talks during clinic visits	214	76.2
Posters and leaflets educate patients on prevention	238	84.7

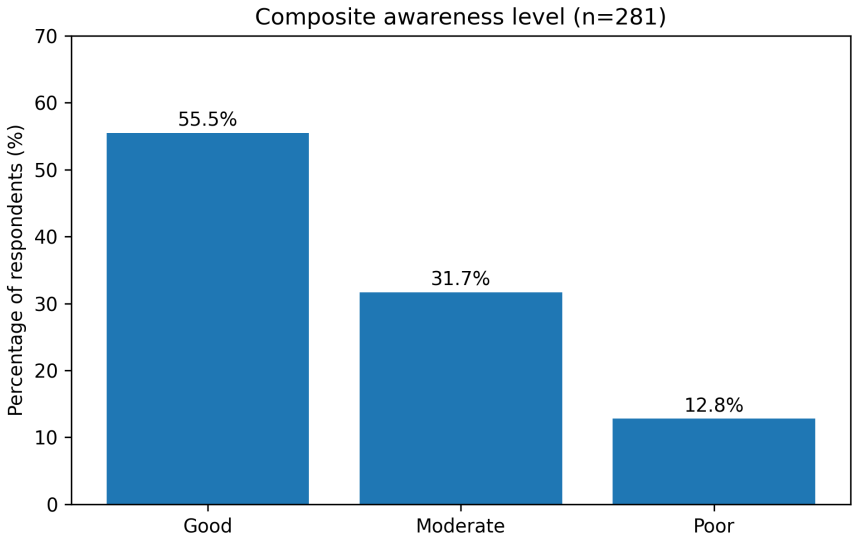

Figure 2: Composite awareness level of nurse-led hypertension prevention interventions.

5.3. Behavioural Responses

The overall behavioural response was positive with a grand mean of 2.6 ± 0.99. Regular blood pressure monitoring recorded the highest mean score (2.9 ± 0.97), followed by salt reduction (2.8 ± 0.98). Dietary modification and healthy body weight maintenance also showed positive responses. Stress management and reduction of smoking or alcohol consumption remained below the 2.5 cut-off.

Table 3: Behavioural responses to nurse-led hypertension prevention interventions

Behavioural response item	Mean ± SD	Remark
Reduced salt intake after health education	2.8 ± 0.98	Positive
Regular physical exercise	2.5 ± 1.00	Positive
Modified diet to include fruits and vegetables	2.6 ± 0.99	Positive
Stopped or reduced smoking/alcohol consumption	2.4 ± 1.00	Negative
Regular blood pressure monitoring	2.9 ± 0.97	Positive
Practices stress management techniques	2.4 ± 0.99	Negative
Lifestyle changes for healthy body weight	2.6 ± 0.99	Positive
Grand mean	**2.6 ± 0.99**	**Positive**

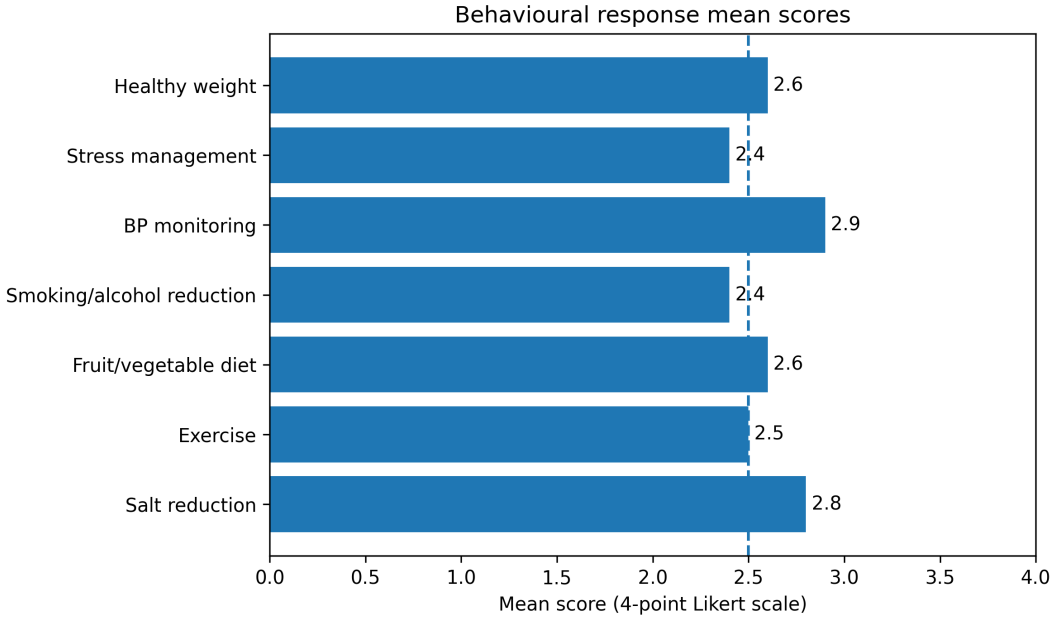

Figure 3: Mean scores for behavioural responses to nurse-led hypertension prevention interventions. The dashed line indicates the 2.5 positivity cut-off.

5.4. Association between Awareness and Behavioural Change

There was a statistically significant relationship between awareness level and behavioural change ($\chi^2 = 12.47$, $df = 2$, $p = 0.002$). Among respondents with good awareness, 65.5% demonstrated positive behavioural changes, compared with 43.7% among those with moderate awareness and 26.1% among those with poor awareness.

Table 4: Relationship between awareness level and behavioural change

Awareness level	Positive n (%)	Negative n (%)	χ^2	p-value
Good	112 (65.5)	59 (34.5)	12.47	0.002
Moderate	38 (43.7)	49 (56.3)		
Poor	6 (26.1)	17 (73.9)		

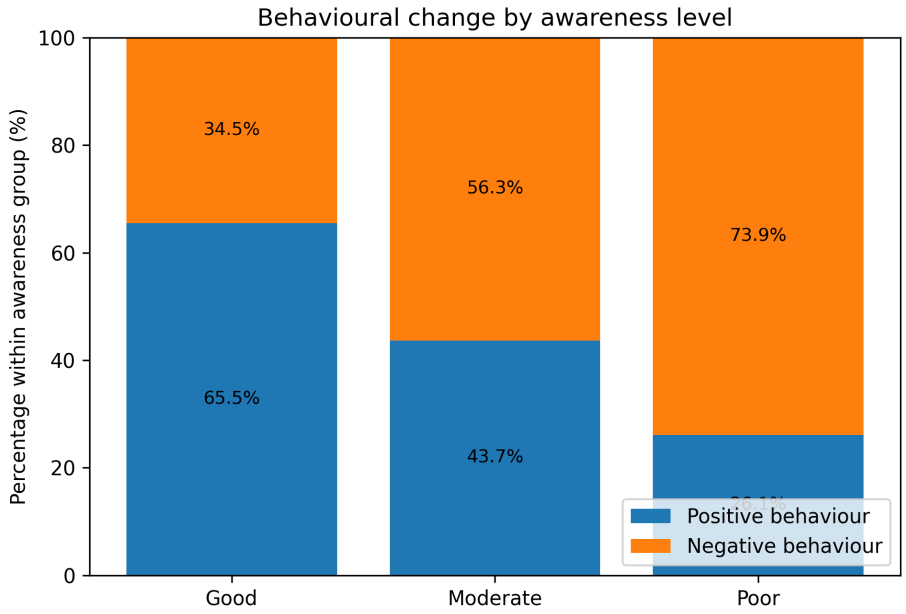

Figure 4: Behavioural change by level of awareness.

5.5. Predictors of Awareness and Positive Behavioural Response

Multivariate logistic regression showed that female gender, age 50–59 years, age 60–69 years, secondary and tertiary education, civil service employment, higher income, urban residence, health facility registration and attending the facility for 4–6 years significantly predicted good awareness. Positive behavioural response was similarly predicted by age, gender, education, occupation, income, urban residence, facility registration and longer facility attendance.

Table 5: Selected predictors of good awareness and positive behavioural response

Predictor	Good awareness OR (95% CI)	Positive behaviour OR (95% CI)
Female gender	1.68 (1.07–2.64)	1.74 (1.12–2.71)
Age 50–59 years	2.41 (1.16–5.02)	2.18 (1.03–4.61)
Age 60–69 years	2.38 (1.13–5.01)	2.22 (1.04–4.74)
Tertiary education	3.94 (1.73–8.97)	2.98 (1.44–6.17)
Civil servant	2.14 (1.05–4.36)	2.42 (1.12–5.23)
Urban residence	1.84 (1.03–3.29)	2.08 (1.13–3.83)
Registered at health facility	1.92 (1.12–3.29)	2.12 (1.21–3.72)
Facility attendance for 4–6 years	2.12 (1.08–4.16)	2.24 (1.17–4.29)

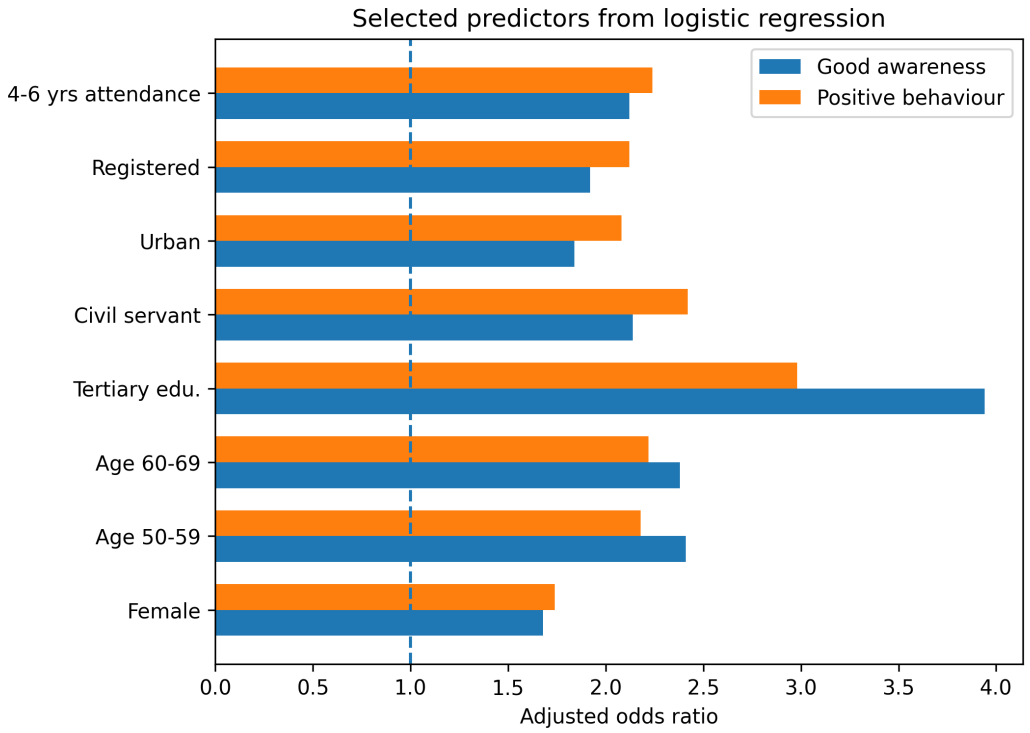

Figure 5: Selected adjusted odds ratios for good awareness and positive behavioural response.

6. Discussion

This study showed that awareness of nurse-led patient education and hypertension prevention interventions was relatively high among patients attending the selected tertiary health facilities. The finding is consistent with reports that structured health education improves hypertension knowledge and self-care awareness [13, 14]. The recognition of nurses as providers of lifestyle modification education is a central finding, confirming the important role of nurses in chronic disease prevention and patient education.

The behavioural findings suggest that patients are more likely to adopt practices that are repeatedly reinforced during clinic attendance, such as regular blood pressure monitoring and salt reduction. However, behaviours requiring more sustained motivation and environmental support, such as physical activity, stress management and reduction of smoking or alcohol intake, were weaker. Similar gaps between knowledge and preventive practice have been reported in hypertension studies across Asia and Africa [7, 18, 12].

The significant association between awareness and behavioural change indicates that nurse-led education is important. However, the continued presence of negative behavioural responses among some respondents with good awareness shows that education alone is not enough. Behaviour change requires counselling that addresses perceived barriers, self-efficacy, family support, cultural dietary practices and economic limitations. This supports recommendations that hypertension prevention should combine education, behavioural counselling, adherence support and clinical follow-up [8, 5, 10].

Socio-demographic predictors of awareness and behavioural change included age, gender, education, occupation, income, residence, facility registration and duration of facility attendance.

These findings suggest that patients with better socioeconomic resources and more frequent health system contact are more likely to benefit from nurse-led interventions. Rural patients, low-income earners and patients with limited education may need more targeted support, simplified educational materials and community-based nursing outreach [11, 16].

7. Implications for Nursing Practice

The study has important implications for nursing practice. Nurses should strengthen routine hypertension education by using individualised counselling, goal setting, motivational interviewing and follow-up. Nurse-led hypertension prevention programmes should address practical barriers such as cost, lack of time, cultural food preferences and family support. Stress management, physical activity and alcohol or smoking reduction require more structured counselling because they showed weaker behavioural improvement.

Hospitals should institutionalise nurse-led hypertension education clinics and provide culturally appropriate educational materials. Community health nurses should extend hypertension prevention programmes to markets, workplaces, churches and rural communities. Nursing administrators should support continuing professional development in chronic disease counselling, behaviour change communication and digital follow-up tools.

8. Conclusion

Nurse-led patient education and hypertension prevention interventions improved awareness and supported some positive behavioural responses among hypertensive patients attending selected tertiary health facilities in Edo State. Nevertheless, the translation of awareness into sustained behavioural change remains incomplete. Positive responses were strongest for blood pressure monitoring, salt reduction and dietary modification, but weaker for stress management and smoking or alcohol reduction. Strengthening patient-centred nursing counselling, follow-up and community outreach may improve long-term adherence to hypertension prevention behaviours and contribute to better cardiovascular outcomes.

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Conflict of Interest

The authors declare no conflict of interest.

Funding Statement

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Author Contributions

JJOI, AT and NEM participated in study conception and development of the research instrument. JJOI carried out data collection and data analysis with SCM. SCM prepared the initial manuscript draft. All authors reviewed and revised the final manuscript. AT and NEM provided overall supervision of the research process.

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