The role of knowledge and perception of hypertension in adherence to drug therapy among hypertensive adults in Lagos, Nigeria: a cross-sectional study

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Abstract

Hypertension is the most common risk factor for both chronic illnesses and mortality. Numerous studies have assessed adults' perceptions and comprehension of hypertension among hospital patients in urban Nigeria. Nevertheless, there is little data on such studies and their influence on adherence to anti hypertensive drug therapy in rural communities. This study assessed knowledge and perception of hypertension among hypertensive adults in a rural community in Lagos, Nigeria, and how they affect their adherence to anti-hypertensive medication therapy.

A descriptive cross-sectional study was conducted among 65 purposively selected patients in nine randomly selected community pharmacies in Lagos, Nigeria, using a well-structured, in-person, interviewer-administered questionnaire. Questionnaire reliability was assessed with standardized Cronbach's alpha. The chi-square test and descriptive statistics were conducted using SPSS version 23, at a 0.05% level of significance.The Cronbach's alpha test gave > 70% threshold value. Respondents have high knowledge that hypertension is more common in older persons (98.5%), the illness's effects on the organs (83.1%), and its treatment (83.1%). About 50.8% of respondents forget to take their medications, 43.1% take them carelessly, 67.7% stop taking them when they occasionally feel better, and only 43.1% stop taking them when they feel worse. There was no correlation between respondents' knowledge and perceptions and their adherence to anti-hypertensive medication therapy.

Adequate knowledge and positive perception did not translate to a high level of adherence to anti-hypertensive medication therapy. Further studies are recommended to investigate reasons for poor adherence and explore innovative approaches that will improve adherence.

Keywords: Hypertension, Knowledge, Perception, Drug therapy, Adherence

Introduction

Hypertension is a chronic illness and the most common risk factor for chronic diseases and deaths. It is highly widespread and poses a substantial global health concern. It ranks third among diseases that cause permanent impairment. The affected persons might live with these challenges for the rest of their lives. Even though economically developed nations currently carry most of the burden of hypertension, it was predicted that developing countries would be more severely affected due to their larger populations. Hypertension affects adult and middle-aged African populations and is vital to the survival of the young (Ayodapo et al., 2020). Nigeria is going through an epidemiological transition and, like most developing countries, is bearing the combined burden of communicable and non-communicable diseases. In Nigeria, hypertension is the most frequently diagnosed illness, accounting for 25% of emergency room visits and 60% of hospital admissions. While control is notably rising by 10.5%, the prevalence of hypertension is steadily reducing by 2.6% in high-income countries. In contrast, the prevalence of hypertension rose by 7.7% and the level of control decreased from 8.4% to 7.7% in low- and middle-income nations (Ozumba & Ndukwu, 2021). According to the World Health Organization (2022), hypertension is a major global concern and is one of the key preventable risk factors for cardiovascular events. It has a massive disturbing impact on the population's health, resulting in unnecessary morbidity and mortality (WHO 2022).

Recent studies, in Nigeria, still revealed a relatively high prevalence of hypertension, inadequate knowledge, and negative perception of hypertension as well as poor adherence to prescribed antihypertensive drug therapy among adults (Adeloye et al., 2021; Abegunde & Owoaje, 2013). According to Ozumba & Ndukwu (2021), there is a relationship between medication compliance and blood pressure regulation, suggesting that noncompliance with medication is typically the root cause of inadequate blood pressure control. Chronic conditions like hypertension can make adherence extremely difficult and patients who followed their treatment plan

had a 1.20 times higher chance of controlling their blood pressure than those who didn't. Patients who disregarded their doctors' orders were 1.43 times more likely to develop cardiovascular diseases and 1.47 times more likely to be hospitalized for non-cardiovascular causes (Ozumba & Ndukwu, 2021). In addition, patients' self-care practices for hypertension may be impacted by their negative attitude toward the ailment as a result of a lack of knowledge about it (Ukoha-Kalu et al. (2020), There is a clear correlation between the level of information and the treatment of a patient's illness. Lower rates of morbidity and death, improved medication compliance, controlled blood pressure, and reduced cardiovascular risks have all been associated with a good knowledge of and a positive attitude toward hypertension (Ukoha-Kalu et al., 2020). Although there is a considerable incidence of hypertension, the average awareness rate of the problem in Nigeria is low (17.4%), (Anyanti, Akuiyibo, Fajemisin, et al., 2021). They found that because of a lack of knowledge about hypertension, modifiable risk factors for these disorders, such as alcohol use, smoking, and physical inactivity, are more prevalent than they should be among study participants.

However, the majority of the studies and available literature have focused on hypertensive patients attending tertiary hospitals in urban areas; there is little data on such studies among hypertensive patients in rural communities. Such investigations must be carried out in rural communities to ensure equitable healthcare. Therefore, this study assessed the knowledge and perception of hypertension among hypertensive adults in a rural community in Lagos, Nigeria, and how it affects their adherence to antihypertensive medication therapy.

Methods

Study Design

This descriptive cross-sectional study was conducted among 65 purposively selected hypertensive patients in nine randomly selected community pharmacies in Lagos, Nigeria. A well-structured, in-person, interviewer-administered questionnaire was employed for the study.

Study Setting

This study was conducted in the selected community pharmacies in Ikorodu Local Government Area, the North East of Lagos state, Nigeria. Ikorodu is the second most populous Local Government Area in Lagos state with a population estimated at two (2) million people. Ikorodu was initially a massive forest that lies a few kilometers North of the Lagos Lagoon and less than 10 kilometers North of the Atlantic Ocean.

Sample Population

There were sixty-seven (67) community pharmacies spread within the five (5) Local Council Development Areas of Ikorodu. These pharmacies serve as the first point of contact for health-seeking community members and are therefore appropriate for the rural community study population. Only thirty-five (35) of the sixty-seven (67) community pharmacies had hypertensive patients' records.

Sample Size Determination

The number of community pharmacies to participate in the study was calculated as:

$S = N \times \frac{x}{x-1+N}$ (Al-Azzam *et al.*, 2020) ……..... 1

Where S is the sample size, N is the total number of retail Pharmacy outlets with hypertensive patients' records and

$X = Z^2 \times P \times \frac{1-P}{MOE^2}$ …… …… 2

In Equation 2 above, Z represents the critical value of normal distribution (1.96 is the value for 95% confidence), p is the response distribution (0.5), MOE is the margin of error which was set at +5%.

$X = 1.96^2 \times 0.5 \times \frac{1-0.5}{0.05^2}$

X = 3.8416 × 0.5 × 200

X = 384.16

Therefore,

$S = 35 \times \frac{384.16}{384.16 - 1 + 1094}$

$S = 35 \times \frac{384.16}{1477.16}$

S = 9.1, approximately 9

Given the above, nine (9) community pharmacies will participate in the study. The sample size of participating patients was calculated with the total population of all the hypertensive patients that visit the pharmacies, using the following sample size formula:

$S = N \times \frac{x}{x-1+N}$ (Al-Azzam *et al.*, 2020)

Where S is the sample size, N is the patients' population size and

$X = Z^2 \times P \times \frac{1-P}{MOE^2}$

The 'Z' represents the critical value of normal distribution (1.96 is the value for 95% confidence), p is the response distribution (0.5), and MOE is the margin of error which was set at +5%.

Based on the above information, the minimum recommended sample size for this study was calculated as thus:

$S = N \times \frac{x}{x - 1 + N}$

$X = Z^2 \times P \times \frac{1 - P}{MOE^2}$

$X = 1.96^2 \times 0.5 \times \frac{1 - 0.5}{0.05^2}$

X = 3.8416 × 0.5 × 200

X = 384.16

Therefore,

$$S = 224 \times \frac{384.16}{384.16 - 1 + 1094}$$

$$S = 224 \times \frac{384.16}{1477.16}$$

S = 58.72, approximately 59

Therefore, the minimum recommended sample size for this study was determined to be fifty-nine (59) participants. To carter for non-responders, and incomplete data, 10 % of the sample size was added to the sample size as follows:

10% of 59 = 5.9

Sample size = 59 + 5.9

Sample size = 64.9 ~ 65

The minimum representative number (R) of patient per each level of their study center was calculated using simple ratio calculation:

$$R = \frac{S \times n}{N}$$

Where, n = sample population in the particular year of study (taken as the estimated number of patients per pharmacy in three months)

S = final sample size = 65

N = total population size = 224

$$R = \frac{65 \times 14}{224}$$

$$R = \frac{896}{224}$$

R = 4

Therefore, the minimum representative number for each community pharmacy is four (4) participants. Numbers of respondents were proportionately assigned to the respective community pharmacies, based on the estimated number of hypertensive patients that visit them as obtained from the records of each selected pharmacy, for an average of three (3) months period, as shown in Table 1

Table 1: Community Pharmacy Sample Population and participants

Pharmacy	Estimated number of patients per pharmacy in three months	Sample Size/Participants
A	35	10
B	28	8
C	19	6
D	37	11
E	17	5
F	21	6
G	34	10
H	14	4
I	19	5
Total	224	65

Sampling Technique

Nine community pharmacies were selected by simple random sampling from the rural areas of the Ikorodu Local Government Area; Ikorodu West, Igbogbo-Baiyeku, Imota/Ijede and from Ikorodu North.

Eligible antihypertensive patients who came in for a prescription refill for an antihypertensive medication in the selected community pharmacies within the study period of May to July of 2023, were recruited as participants for the survey. Only one staff was trained as a Research Assistant in each selected community pharmacy to ensure that all participants were properly identified and to prevent the error of subjects participating in the study more than once. The purpose of the study was explained to the patient, and their consent was secured before the administration of the questionnaire, while the research assistant completed the survey based on their responses. The questionnaire was administered to eligible patients, only when the research assistant was on duty and patients who visited the pharmacy in the absence of the research assistant were not enrolled. The data collection continued in each selected pharmacy until the sample size was reached

Inclusion and Exclusion Criteria

Inclusion criteria

1. The availability of feasible data on hypertensive patients in the community pharmacies, the willingness of the community pharmacy owners to permit their pharmacies to be used as part of the study center, and the balloting outcome were the three criteria that all the pharmacies that participated in the ballot selection method must meet.

2. Participants must be known hypertensive patients who have been using antihypertensive drugs for more than six months with or without comorbidity, and who physically visited the pharmacy to refill their antihypertensive prescription during the study period, and when the Research Assistant is on duty, regardless of gender.

Exclusion criteria

1. Persons who were not hypertensive patients but went to the participating pharmacies to refill antihypertensive prescriptions on behalf of a patient.

2. Patients with hypertension who went to the participating pharmacies to get refills on their prescriptions but have not been taking antihypertensive drugs for at least six months.

3. Patients in the eligible group who declined to take part in the survey.

Instrument for Data Collection

The study adopted a quantitative data collection instrument that assessed the Knowledge, Perception, and Adherence levels of patients who are on antihypertensive medications for more than six months. The research instrument was a well-structured, face-to-face, interviewer-administered questionnaire, consisting of five sections. Section A was on the socio-demographic characteristics and elicited information on gender, age, literacy level, employment status, ethnicity, family, and religious background. Section B assessed patients' clinical data; first diagnosis of hypertension, presence of other comorbidity or not, impression on drug effectiveness, current drug use, and last blood pressure check. Section C contained ten items that assessed the patient's general knowledge of hypertension, its causes, implications, and management, Section D assessed the patient's perception of hypertension, and Section E assessed the patient's adherence to antihypertensive drug therapy.

The content validity of the questionnaire was determined by three subject matter experts, who read through and reviewed the questions and anticipated responses. The questionnaire was pretested on 10 antihypertensive patients who were not part of the final study, in a community pharmacy that was not part of the selected study sites. The pilot study tested the feasibility and clarity of the research instrument. Some observations such as the average time taken to fill the questionnaire, clarity of certain questions; and technical errors in the development of the survey tool, were cited and corrections were made. The reliability of the different sections of the questionnaire was tested using standardized Cronbach's alpha.

The questionnaire was found to be reliable since the Cronbach's Alpha Statistics obtained for each of the composite variables was > 70% threshold value. The coefficient of variation (CV) values were respectively less than 0.50 threshold value, indicating homogeneity on how the respondents rated the items. The instrument was therefore used for the data collection.

Scaling of data collection instrument

Scaling of Knowledge Questions

There were ten (10) knowledge questions, each question was scored as Yes or No, the scoring range is 10 (maximum) to 0 (minimum) a cut off level of <5 is considered poor, 5-8 average and 9-10 as adequate knowledge of hypertension.

Scaling of Perception Questions

There were eight (8) Perception questions which had their responses indicated on a four-point Likert scale (Strongly agree = 0, Agree = 1, Disagree = 3, strongly disagree = 4). The total score was obtained by summating the score of each question item ranging from 0-24, with an overall higher score indicating a more negative perception towards hypertension condition.

Scaling of Adherence Question

There were four (4) question scales on adherence using Morisky scale (MMAS) which is a scoring system of YES =0 and NO =1, the items were summed up to give a range of score from 0-4 MMAS=1 is poor, MMAS=2 or 3 is moderate while MMAS=4 is good adherence to drug therapy

Data Analysis

The statistical package for the social sciences, version 23, was used to analyze the data. Frequencies and percentages were used to describe categorical data, such as demographics, the date of the initial hypertension diagnosis, additional comorbidities, current drug use, and the most recent blood pressure reading. The presentation of continuous data, such as age, was done using mean ± standard deviation. The relationship between the categorical variables; knowledge and adherence, perception and adherence, and patient knowledge and perception about hypertension and adherence to antihypertensive medication therapy was ascertained, using the chi-square test. Five percent was the threshold for statistical significance (a P-value of less than 0.05 was considered significant).

Ethical Consideration

Ethical approval for the study was obtained from the Internal Review Board (IRB) of the National Institute of Medical Research (NIMR) with approval number - IRB/23/061. Permission was obtained from the Ikorodu Zonal Coordinator of the Association of Community Pharmacists of Nigeria (ACPN) Lagos State and the owners of the participating community pharmacies. Consent was obtained from all participants by asking them to fill out a consent portion of the questionnaire. Participants were informed of their right to cease participation at any time without having to give any reason. Additionally, participants who refused to participate were not pressured in any way.

Results

The Socio-Demographic Characteristics of Respondents

Table 2 shows that, in comparison to respondents from other age groups, the

majority of survey participants were female (56.9%) and fell between the ages of 51 and 60 (33,8%), followed by those between the ages of 41 and 50. Majority of the respondents were married (76.9%), while others were separated (1.5%), widowed (6.2%), divorced (10.8%), or single (4.6%). The main ethnic group was Yoruba (58.5%), followed by Igbo (30.8), Hausa (7.7%) and others (3.1%). From the religious angle, the respondents were Muslims (56.9%), and Christians (40%), with only 3.1% adhering to other religions. Results of their highest level of education showed that the majority of respondents (21.5%) were university graduates, others held post-graduate degrees (12.3%), no formal education (6.2%), ONDs (16.9%), HNDs (15.4%), secondary school (18.5%), and elementary school (9.2%).

According to their employment status, the respondents were primarily self-employed (53.8%), with the remaining respondents reporting private employment (15.4%), government employment (20%), or unemployment (10.8%).

Nearly all respondents (98.5%) claimed to have well-controlled blood pressure. A lower percentage (41.5%) reported having other medical conditions in addition to hypertension and these were reported as type 2 diabetes (9.2%), eye problems (7.7%), stroke (4.6%), dyslipidemia (3.1%), gastric ulcer (1.5%), stomach ulcer (1.5%), and other conditions (10.8%).

Table 2 Socio-Demographic Characteristic of the Respondents

Characteristics	Categories	Frequencies	Percentages
Gender	Female	37	56.9
	Male	28	43.1
Age range	31-40	9	13.8
	41-50	16	24.6
	51-60*	22	33.8
	61-70	10	15.4
	71-80	7	10.8
	81-90	1	1.5
Marital status	Married	50	76.9

	Divorced	7	10.8
	Single	3	4.6
	Widowed	4	6.2
	Separated	1	1.5
Ethnicity	Hausa	5	7.7
	Yoruba	38	58.5
	Igbo	20	30.8
	Others	2	3.1
Religion	Islam	26	40.0
	Christianity	37	56.9
	Others	2	3.1
Highest educational level	Primary school	6	9.2
	Secondary school	12	18.5
	OND	11	16.9
	HND	10	15.4
	University	14	21.5
	Post-graduate	8	12.3
	No formal education	4	6.2
Employment status	Government employment	13	20.0
	Self-employed	35	53.8
	Unemployed	7	10.8
	Private employment	10	15.4
Additional disease condition	Yes	27	41.5
	No	38	58.5
Blood pressure control	Yes	64	98.5
	No	1	1.5
Co-morbidity	Eye problems	5	7.7
	Stroke	3	4.6
	Others	7	10.8

Type 2 diabetes	6	9.2
Gastric ulcer	1	1.5
Dyslipidemia	2	3.1
Stomach ulcer	1	1.5

Knowledge of Hypertension

The hypertension response distribution for each knowledge question is shown in Table 3 below. There was little agreement with the understanding that hypertension is treatable (83.1%) and that it affects organs (83.1%), with the majority of respondents agreeing that older adults are more likely to have hypertension (98.5%).

Table 3 Respondents' Knowledge of hypertension

KNOWLEDGE	YES	NO
High BP can affect my organs	83.1	16.9
Elderly people are more likely to have Hypertension	98.5	1.5
Hypertension is a silent killer because the signs & symptom are not obvious	89.2	10.8
Hypertension is treatable	83.1	16.9
Hypertension can lead to stroke if you do not manage it well by taking your medications	90.8	9.2
Eating food high in salt can predispose someone to having hypertension	95.4	4.6
Being overweight increases risk for hypertension	96.9	3.1
Lifestyle changes (exercise, diet etc.) can reduce chances of developing hypertension	96.9	3.1

Perceptions regarding Hypertension

Table 4 shows the Respondents' Perceptions towards hypertension disease. The majority of the respondents (61.5%) perceive that their daily activities are unaffected by their hypertensive condition. About 72.2% believe that hypertension is a short-term condition. A good number of the respondents (70.7%) felt they had total control of their hypertension condition. This is consistent with most responders (80%), who believe their medication can reduce blood pressure. More than half of the respondents (64.6%) perceive they have experienced severe side effects

from their medication but this did not correlate with the 76.9% that do not feel extremely concerned over their hypertensive condition. Less than half of the respondents agreed that their hypertensive condition affects them emotionally.

Table 4: Perception of respondents towards Hypertension disease

PERCEPTION	SD	D	A	SA
My HTN greatly affect my daily routine	29.2	32.3	6.2	32.3
I believe my HTN is a short-term condition	18.5	9.2	58.5	13.8
I feel that I have total control over my HTN	23.1	6.2	53.8	16.9
My treatment can help in reducing my blood pressure	16.9	3.1	53.8	26.2
I experience many severe symptoms from my HTN	15.4	20.0	49.2	15.4
I feel extremely concerned about my HTN	18.5	10.8	56.9	13.8
I clearly understand my HTN condition	10.8	12.3	67.7	9.2
My HTN extremely affects me emotionally	15.4	26.2	49.2	9.2

SD (Strongly Disagree) D (Disagree) A (Agree) SA (Strongly Agree)

Table 5 indicates that there is no direct relationship between the perceptions of respondents and their socio-demographic characteristics in the chi-square test analysis.

Table 5: Relationship between sociodemographic characteristics and perception

	Chi-Squared Test Statistics	Sig (2-tailed)
Gender	.086	.993
Age range	16.320	.361
Ethnicity	11.803	.225
Religion	8.028	.236
Highest Education level	20.681	.296
Marital Status	8.034	.782

Employment Status	9.273	.412
When were you diagnosed of having High Blood Pressure?	12.020	.212
Apart from Hypertension do you have any other disease condition?	6.841	.077

Adherence to Drug Therapy

Table 6 shows that 50.8% of the respondents forget to take their antihypertensive medications, 43.1% are careless with their antihypertensive medications, 67.7% stop taking their medications when they occasionally feel better while 43.1% of the respondents stop their medications when they feel worse taking their antihypertensive medications.

Table 6: Respondents Adherence to Antihypertensive Drug Therapy

ADHERENCE	YES	NO
Do you ever forget to take your AHM?	50.8	49.2
Are you careless at times about taking your AHM?	43.1	56.9
When you feel better do you sometimes stop taking your AHM?	67.7	32.3
Sometimes if you feel worse when you take your AHM, do you stop taking it?	43.1	56.9

As seen in Table 7, none of the socio-demographic characteristics was statistically significant with adherence to antihypertensive drug therapy

Table 7: Relationship between sociodemographic characteristics and adherence to antihypertensive drug therapy

	Pearson Chi-Square	Sig (2-tailed)
Gender	.155	.694
Age range	6.567	.255
Ethnicity	4.586	.205
Religion	3.613	.164
Highest Education level	6.278	.393
Marital Status	6.685	.153
Employment Status	1.776	.620
When were you diagnosed of having High Blood Pressure?	1.123	.772
Apart from Hypertension do you have any other disease condition?	.739[a]	.390

Discussion

The role of knowledge and perception of hypertension on adherence to drug therapy among adult hypertensive patients in a rural community in Lagos, Nigeria, was studied. There is growing evidence that the most prevalent non-communicable disease in society is hypertension, but sadly, the condition is not adequately managed. Although the patients in this study had adequate knowledge and a positive perception of hypertension, their level of adherence was poor. These findings are consistent with similar studies conducted by Boma, Oji, & Tari-Oki (2022) and Chaves (2012), which indicated that knowledge and perception had an inverse association with medication adherence, suggesting that other factors impacting patients' adherence should be investigated. Although Boma, Oji, & Tari-Oki (2022) demonstrated a thorough comprehension of hypertension among their study participants, this information did not translate into practical hypertension control measures. However, there is evidence that information or knowledge can influence a patient's adherence to their pharmaceutical regimen; multiple researches have shown a positive relationship between adherence and knowledge but only in specific situations (Sjölander, Eriksson & Glader 2013).

In this study, the high educational qualification of the respondents was found to be associated with the tendency to stop their medication when they felt worse taking their medication. This finding is similar to that reported by Odelola et al., (2021 where age, educational achievement, financial difficulty, side effects from pharmaceuticals, use of herbal medicines, forgetfulness, and the belief that there are no symptoms have all been associated with inadequate hypertension control methods. Likewise, another study conducted in Northern Sri Lanka noted that though patients in their study were unaware of the values of blood pressure during their last outpatient clinic visit, forgetfulness and interruptions of daily routine were the reasons attributed to non-adherence to treatment (Pirasath et al.,2017).

It is currently unknown how patients' perceptions and knowledge of hypertension affect their adherence to antihypertensive medication therapy in the context of the Ikorodu Local Government Area of Lagos state, Nigeria, as there has not been a previous study in this field and in this locality that can be compared with the current study. However, a study in 2021 by Adeloye et al. reported that over the last 20 years, the prevalence of hypertension has significantly increased in Nigeria. The rate of clinical therapy and

control rates (adherence to hypertension treatment) remains low despite an increase in the number of people who are aware of their status as hypertensive. Contrary to this assertion, a study conducted in Ethiopia found good knowledge (56 %) and self-care practice (59.4 %) towards hypertension, respectively (Worku et al, 2020)

The majority of the respondents agree that hypertension is treatable. This assertion is in line with a similar study that examined the association between adherence to medication, treatment satisfaction, and illness perception in Lebanese hypertensive patients, where the majority believed that hypertension can be cured completely (Saarti, S., Hajj, A., Karam, L. *et al., 2016*). Additionally, According to Bashyal & Thapa (2020), if people consider hypertension to be a less serious condition, they could find it more difficult to follow treatment suggestions that require lifestyle alterations. According to their study, hypertension was not as big of an issue because it could be managed with medications.

Also, there is a common misperception, according to Odelola et al., 2021, that hypertension is more common in men. Though this study did not focus on prevalence, more females than males were recorded in the demographic characteristics of respondents. The fact still stands that approximately half of adult women have high blood pressure. Corroborating this finding is a study that found that male sex, formal education, and being an urban resident are associated with better knowledge, attitude, and self-care practice of hypertensive patients at the study hospital (Bacha & Abera, 2019). Hence, compared to men with high blood pressure, women with high blood pressure have a significantly higher chance of developing cardiovascular disease. There is therefore a need to focus on addressing such limitations of hypertensive patients and focus attention on hypertensive patients who are females, have low educational levels, and come from rural areas.

According to a study conducted in Lokoja by Ukoha-kalu et al. (2020), which opined that it is significant that patients who had a history of hypertension in their families scored higher on knowledge, attitude, and practice questions than patients who did not. This could be because being around a sick close relative or cousin piques one's interest in the same illness.

The high level of knowledge of hypertension reported in this study contradicts findings from similar studies that found relatively little knowledge about cardiovascular diseases among their study population and these

factors may vary based on the circumstances (Omoronyia, Ayuk, Nwafor, et al., 2020)

Consequently, according to Oyewole et al. (2020), a barrier to treating hypertension is the incapacity to make lifestyle changes and the lack of knowledge about them. Thus, it is important to promote public education campaigns about compliance and non-drug intervention.

Study limitation

This is a cross-sectional study and may not be a truly representative sample of patients in that area, hence, it is not generalizable. As an interviewer-administered questionnaire-based study, the study may suffer social desirability and recall bias.

Acknowledgment

The Researchers are grateful to the Community Pharmacists who consented to the pharmacies to be used as sites for the research.

Conflict of Interest

There is no conflict of interest concerning this study

Conclusion

Adherence to antihypertensive drug therapy was low among the study participants, despite their adequate knowledge and positive perception about hypertension. This has demonstrated that patients' positive perceptions and high level of knowledge of hypertension had no effect on how appropriately they adhered to their drug regimen and suggests that other factors may be associated with medication adherence. Hence, concerted efforts should be made by community pharmacists and other healthcare providers at the community level to educate patients on antihypertensive medications; that hypertension is not curable, and that drug therapy is for life. We recommend further studies to investigate reasons for poor adherence and explore innovative approaches that will improve chronic disease medication adherence.

References

1. Abegunde KA, Owoaje ET. (2013). Health problems and associated risk factors in selected urban and rural elderly population groups of South-West Nigeria. *Ann Afr Med*[serialonline] 2013; 12: 907 Available: http://www.annalsafrmed.Org/text.asp?2013/12/2/90/112398

2. Adeloye, D., Owolabi, E. O., Ojji, D. B., Auta, A., Dewan, M. T., Olanrewaju, T. O., ... & Harhay, M. O.

(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.

3. Anyanti J, Akuiyibo SM, Fajemisin O, et al (2021). Assessment of the level of knowledge, awareness and management of hypertension and diabetes among adults in Imo and Kaduna states, Nigeria: a cross-sectional study BMJ Open;11:e043951. doi: 10.1136/bmjopen-2020-043951

4. Ayodapo, A. O., Elegbede, O. T., Omosanya, O. E., & Monsudi, K. F. (2020). Patient education and medication adherence among hypertensives in a tertiary hospital, South Western Nigeria. *Ethiopian journal of health sciences*, *30*(2).

5. Bacha D, Abera H. (2019). Knowledge, Attitude and Self-Care Practice towards Control of Hypertension among Hypertensive Patients on Follow-up at St. Paul's Hospital, Addis Ababa. Ethiop J Health Sci. 29(4):421-430. doi: 10.4314/ejhs.v29i4.2.

6. Bashyal, S. P., & Thapa, N. (2020). Knowledge and perception regarding hypertension among hypertensive patients at a tertiary hospital in Kathmandu, Nepal. *Journal of Advanced Academic Research*, *7*(1), 51-62.

7. Boma I.G., Oji A.L., Tari-Oki U.P. (2022), Knowledge of Hypertension and Practice of Hypertension Control among Hypertensive Patients in University of Port Harcourt Teaching
8. Hospital (UPTH), Nigeria. Africa n Journal of Health, Nursing and Midwifery 5(1), 64-77. DOI:10.52589/AJHNM-DMGBY9C2
9. Burnier M. (2023). The role of adherence in patients with chronic diseases. European Journal of Internal Medicine. DOI: https://doi.org/10.1016/j.ejim.2023.07.008

10. Chaves ES, Lucio IM, de Araujo TL, Damasceno MM (2011). *Efficiency of*

health education programs; Chen S-L, Tsai J-C, Chou K-R. Illness perceptions and adherence to therapeutic regimens among patients with hypertension: a structural modeling approach. Int J Nurs Stud. 2011;48(2):235–245.

11. Odelola, O. I., Akinpelu, A., Idowu, A. O., Adesegun, O. A., Osibowale, B. T., Ehioghae, O., ... & Ajose, O. (2021). Hypertension: Predictors of Knowledge among Market Women in the Sub-Urban Town of Sagamu, South West Nigeria. *African Journal of Health Sciences*, *34*(4), 526-536.

12. Ozumba, L. N., & Ndukwu, G. U. (2021). The association between medication adherence and blood pressure control among hypertensive patients attending a tertiary hospital in south-south Nigeria. *International Journal of Research in Medical Sciences*, *9*(4), 965-969.

13. Omoronyia, O., Ayuk, A., Nwafor, K. *et al.* (2020). Hypertensive patients' knowledge of cardiovascular disease in Calabar, Nigeria. *J. Egypt. Public. Health. Assoc.* **95**, 16. https://doi.org/10.1186/s42506-020-00045-y

14. Oyewole, Oluwatosin Mary; Olorunfemi, Olaolorunpo; Ojewole, Foluso; Olawale, Mojolaoluwa Omolad. (2020). Effect of a Training Programme on Knowledge and Practice of Lifestyle Modification among Hypertensive Patients Attending Out-Patient Clinics in Lagos. Iranian Journal of Nursing and Midwifery Research 25(1):p 58-64, DOI: 10.4103/ijnmr.IJNMR_201_18

15. Pirasath S, Kumanan T, & Guruparan MA (2017). Study on Knowledge, Awareness, and Medication Adherence in Patients with Hypertension from a Tertiary Care Centre from Northern Sri Lanka. Int J Hypertens; 2017:9656450. doi: 10.1155/2017/9656450. Epub 2017 Nov 2. PMID: 29230325; PMCID: PMC5688346.

16. Saarti, S., Hajj, A., Karam, L. *et al.* Association between adherence, treatment satisfaction and illness perception in hypertensive patients. *J*

Hum Hypertens **30**, 341–345 (2016). https://doi.org/10.1038/jhh.2015.86

17. Sjölander M, Eriksson M, Glader E-L. (2013). The association between patients' beliefs about medicines and adherence to drug treatment after stroke: a cross-sectional questionnaire survey. *BMJ Open*, 3(9):e003551. doi:10.1136/bmjopen-2013-003551

18. Ukoha-Kalu BO, Adibe MO, Anosike C, Ukwe CV (2020). Knowledge, attitude and practice towards hypertension among patients receiving care in a Nigerian Hospital. Ann Clin Hypertens; 4: 016-019

19. World Health Organisation *Expert Committee on Arterial Hypertension (Technical report Series No. 628). Geneva:* WHO 2010. Accessed 2022 Oct 12 12:00noon

20. Worku KC, Asasahegn A, Hagos D, Ashenafi E, Tamene F, Addis G, Endalkachew K. (2020). Knowledge on Hypertension and Self-Care Practice among Adult Hypertensive Patients at University of Gondar Comprehensive Specialized Hospital, Ethiopia. Int J Hypertens. 1-