

Patient-Related Factors Influencing Drug Non-Compliance among Hypertensive Patients in Selected State Hospitals in Lagos, Nigeria

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DOI: <https://doi.org/10.62154/qjastr.2024.016.010358>

Abstract

Drug non-compliance for some time has remained a major health-related issue among chronic diseases especially among hypertensive patients. Drug non-compliance in middle and low-income countries including Nigeria is attributed to many factors but aggravated by economic recession. There have not been sufficient studies, particularly theory-based, which explored drug non-compliance among hypertensive patients at the secondary health facilities. Understanding major factors that could influence drug non-compliance is a key step in controlling hypertension. Thus, this study aims to explore patient-related factors influencing drug non-compliance among hypertensive patients in selected state hospitals in Lagos State, Nigeria. The study adopted a quantitative and qualitative research designs using descriptive survey and Key Informant Interviews (KII) with sample size of 349\ participants among patients with hypertension in cardiac outpatient clinics of the selected general hospitals. Responses were also collected from purposively selected healthcare providers through oral interview and their responses were analyzed qualitatively. Survey data were analyzed using Statistical Package for Social Science (SPSS) version 25.0. The study revealed that both old and young patients are ignorant of the disease thus, they tend to forget their drugs prescription. The study further discovered that poverty and inability to procure their drugs regularly often make them to turn to unorthodox medicine, and these were responsible for drug non-compliance. The study recommended that government and healthcare providing institutions should intensify efforts to educate the patients on drug compliance so as to prevent complication resulting from drug non-compliance.

Keywords: Anti-Hypertension Therapy, Drug Non-Compliance, Cardiac Out-Patient Clinic, Patient Related Factor.

Introduction

Compliance to antihypertensive medications is a major key component in managing blood pressure levels among hypertensive population. Poor compliance to medication often leads to complications and increase the risk of cardiovascular diseases which in-turn reduces the ultimate clinical prognosis.

World Health Organization (WHO, 2021, p.32) defines healthcare compliance or adherence as "the extent to which an individual behavior (in terms of medications intake, adopting

healthy diets, or performing lifestyle modifications) concurs with medical or health advice". Healthcare compliance includes the timely and proper use of medication, the timely presence in the prearranged treatment programs, follow-up of the disease in case of subsequent required referral, and compliance with health behaviors change (Rodriguez, 2019).

Medication non-compliance is a multidimensional complex variable that can be classified into three stages: initial stage, implementation stage and discontinuation stage, all jointly called persistence. According to Hamrahiam (2022), healthcare non-compliance patients do not comply with therapeutic recommendations intentionally or unconsciously. Non-compliance may result in disappointment from healthcare providers, undesirable health outcomes, increased use of healthcare services, increased rate of morbidity and mortality, development of complications, increased family burden and wastage of resources in healthcare systems (Cutler et al., 2018). In addition, poor compliance is observed to be responsible for considerable worsening of disease condition, unnecessary over-prescription of drugs, increase in avoidable hospital admission rates and longer hospitalization leading to significant medical burden on the patient and their relatives such as reduced optimal clinical benefit and increased risk of cardiovascular disease.

There are various patient-related factors responsible for patient drug compliance, which include patient's socio-demographic factors such as age, ethnicity, gender, marital status and educational status. Psychological factors have to do with patient's beliefs, motivation, forgetfulness and attitude. Other patient-related factors include style of administration, treatment complexity, duration of the treatment, medication side effects, taste of medication, requirement for non-available drug storage facility, fear of adverse effects of the drug, long term drug regimens and complex regimens that require numerous medications with varying dosing schedules. Patients who had better knowledge of their dosage were more compliant than those who had little or no knowledge. It has also been observed that patient compliance varies between and within individuals and across time. Kumar (2021) also observed that sociocultural factors such as cultural practices, degree of behavioral change required, health literacy, tobacco smoking or alcoholic consumption are other factors that may affect patient's compliance.

Statement of the Problem

Complication of hypertension is one of the most common causes of morbidity, hospitalization, and mortality among hypertensive population. In recent decades, increased urbanization and changes in lifestyle, diet and physical inactivity in developing countries have led to a major increase in the increased incidence of chronic diseases including hypertension. Uncontrolled hypertension causes 50% of the total coronary heart disease (CHD) global death rate (Gardezi et al 2023). However, to reduce the relative risk of stroke and other cardiovascular diseases, an effective anti-hypertensive treatment should be maintained consistently. In all the WHO regions, the prevalence of hypertension is

highest in the African Region (46%) and lowest in the region of the Americas (35%) (WHO 2020). It has however been observed that poor medication compliance is one of the leading causes of failure to achieve hypertension control.

According to Chukwuma and Muanya (2021), about 76.2 million (33%) of an average population of 200million Nigerians are hypertensive, and only one-third of this population, 23million are on treatment and they are not 100% compliant to hypertensive treatment. As a practicing nurse in one of the public health facilities in Lagos State, I have it on record that between 40-50% of patients admitted in both male and female medical wards in 2022 diagnosed with cardiovascular disease were as a result of non-compliant to medication (Field Work, 2023).

It has also been observed that there are insufficient studies especially theory-based, which investigated drug compliance among hypertensive patients at the secondary health facilities in Lagos State. It is against that background the researcher decided to embark on this study aimed at investigating the patient-related factors influencing drug non-compliance among hypertensive patients in selected hospitals in Lagos State.

Research Objectives

The primary objective of the study is to investigate how patient-related factors influence drug non-compliance among hypertensive patients in selected hospitals in Lagos State. To achieve this primary objective, the following specific objectives have been set. These are:

1. To investigate patients-related factors influencing drug non-compliance among hypertensive patients in selected state hospitals in Lagos State.
2. To explore clinical characteristics influencing drug non-compliance among hypertensive patients in some Lagos-based hospitals.

Theoretical Anchorage

Socio Ecological Model of Health Behaviour propounded by Urie Bronfenbrenner (1970) is a reference point used by many nursing scholars to highlight behavioral issues associated with influencing factors. The model identified five levels of influencing factors, which include patient as individual family or friends, health care provider, healthcare institution and the society at large. For this study, patient-related factors such as age, gender, educational status, knowledge and belief about hypertension and duration of hypertension will be considered as patient-related factors influencing drug compliance among hypertensive patients.

Literature Review

In a study conducted by Adisa et al (2018) on "Assessment of Anti-hypertensive Medication adherence among Hypertensive Patients Attending the Outpatient Clinics in the University of Uyo Teaching Hospital" the findings revealed that 54 (8.9%) patients were adherent to medications while 551 (91.1%) were non-adherent. Reasons for non-adherence to

prescribed medications were linked to a combination of patient factors which include forgetfulness 404 (35.2%), dose omission 370 (32.2%), side effects 157 (13.7%), non-affordability of medication costs 95 (8.3%), dislike for medication 74 (6.4%), intentional decision to take medicine when desired 34 (2.9%), preference for herbal medicine than conventional drugs eight (0.7%), and too many drugs (poly-therapy) seven (0.6%) among others. Bamidele et al (2020) in a study conducted at Babcock University Teaching Hospital, Ilisan, which assessed drug adherence among adult hypertensives attending medical out-patient clinic in a tertiary hospital in Ogun state, Nigeria. The result revealed some reasons for sub-optimal compliance to be connected to lack of funds (25.4%), feeling well (25.9%), forgetfulness (23.9%) and use of herb (18.1%) .

Research Methodology

Study Design

The study was conducted in the cardiac out-patient clinics of three purposively selected hospitals from the three Senatorial Districts of Lagos state (Ifako- Ijaiye General Hospital (IIGH), Somolu General Hospital (SGH) and Lagos Island General Hospital LIGH). The study adopted a quantitative and qualitative research designs using descriptive survey and Key Informant Interviews (KII). The survey method involves the use of structured questionnaire with close-ended questions while the open-ended guided questions were used for KII to obtain responses from patients, nurses and doctors on factors influencing drug non-compliance among hypertensive patients. Survey research is a research technique that allows researcher to gather data for research by asking questions from identified group of people. In addition, it also facilitates the exchange of information between the research respondents and the researcher (Longe, 2023). Key Informant Interview, according to Kibuacha (2024), is used by researchers as a crucial qualitative method employed to gain insight into issues by eliciting information from some selected professionals who possess in-depth knowledge and experience on the issue being researched. These two research designs created an opportunity for researchers to thoroughly explore patients and healthcare providers (doctor, nurses and pharmacists) on patients-related factors vis-a-vis drug non-compliance among hypertensive patients.

Population Sample and Sampling Technique

The study population includes the hypertensive patients attending cardiac outpatient clinic and the healthcare providers comprising nurses, doctors and pharmacists who are actively involved in the care of hypertensive patients in the selected hospitals. The study employed the use of multi- stage sampling technique in selecting the eligible respondents to participate in the study. Researcher purposively selected three hospitals that has the highest percentage of referral cases hypertension patients from Primary Health Care centers based on available record in each of the selected hospitals. Proportionate sampling was used to calculate the number of patients to be selected. A sample size of 349 was used

for the study. This was obtained from the population of 1370, which was an average monthly clinic attendance from January to March, 2023 using Taro Yamane formula.

Data Collection and Analysis

Data were collected using well-structured questionnaire and interview guide. The research instrument was self-administered and collected immediately by the researcher within a period of six weeks. This was done in order to guide the respondents to detect any element of bias and misunderstanding while filling the questionnaire and also for the researcher to be able to interact with all the respondents since they did not attend the clinic on the same day.

Data obtained were analyzed using SPSS Version 25.0. Means and standard deviations were used to summarize the numeric data. Frequencies and percentages were obtained for categorical variables. The proportion of all measured variables were computed and presented with relevant tables and charts. Qualitative data is a non-structured open-ended question. It includes the use of video, audio and photos. Five steps guide-lines were used in this study to analyze the data.

Step 1: (Collection of data) In this study, face-to-face interview was used to collect data from healthcare providers. This is in agreement with Kibuacha (2020) who posits that in qualitative research especially KII, data collection can be done using various methods including textual, observation or visual analysis and interview.

Step 2: (Description or transcription of qualitative interviews and comments on raw data). After the interview has been conducted and recorded electronically, the researcher started transcription of the responses. This is in agreement with Parameswaran et al., (2020) observation that in academic research, transcription is a process of turning research finding into readable text.

Step 3: (Coding, conducting patterns and contextual analysis). Coding is a process of labeling and organizing identified data and their relationship to the research objective (Locke et al., (2022).

Step 4: (Identification of the themes) Kibuacha (2024) and Kiger & Varpio (2020) agreed that theme analysis is a process of detecting themes from the text by analyzing the word and sentence structured in attempt to understand experience, behavior or thoughts across a data set. The researcher put together the similar codes to form themes in this study.

Step 5: Interpretation of the result is the most thrilling part in KII. There is no need of writing lengthy report Kibuacha, (2024). Table was used to interpret the analyzed the data.

Findings

In the study, a total of 349 respondents including (340 patients and nine healthcare providers) properly filled questionnaires and returned, giving a response rate of 100%. The study found that respondents' socio-demographic and clinical characteristics were responsible for hypertensive patients non-compliant to drug prescription.

Table 1 revealed the socio-demographic characteristics of the respondents (patients). The mean age 56.6 year. Almost half of the respondents were between 50-59 years of age 146 (42.9%), More than half, 184(54.9%) of the participants had above primary education. In qualitative data, 100% (3 nurses, 3 doctors and 3 pharmacists) 5 females and 4 males respectively. Majority 88.8% of the healthcare providers had spent more than nine years in the service and 66.6% had more than six years' experience at the cardiac outpatient department. 66.6% of the nurses had bachelor's degree in nursing, 33.3% of the doctors were consultant cardiologists. Notwithstanding, the summary of the respondents (healthcare providers) socio-demographic characteristics, themes and sub-themes were presented in tables 3 and 4.

Table 1: Socio-demographic characteristics of respondents (N-340)

		Frequency	Percentage
Age	18-29	18	5.5%
	30-39	20	5.7%
	40-49	40	11.8%
	50-59	146	42.9%
	60-69	66	19.4%
Gender	Male	107	31.5%
	Female	233	68.5%
Education	Illiterate	88	25.9%
	Primary education	68	20%
	Secondary education	76	22.4%
	Tertiary education	108	31.7%
Marital status	Unmarried	40	11.7%
	Married	154	45.4%
	Widow/widower	80	23.5%
	Divorce	66	19.4%
Occupation	Business	140	41.2%
	Retired	75	22.1%
	Civil/public	70	20.5%
	Others	55	11.2%
Monthly income	<30,000	30	19.1%
	30-60,000	95	27.9%
	60,000-100,000	180	53.0%

Table 1: Contd.

		Frequency	Percentage
Number of pills per day	One	55	16.2%
	Two	95	27.9%
	Three	120	35.3%
	Four	70	20.6%
Duration of hypertension	<5years	77	22.6%
	6-10years	118	34.8%
	11-15years	60	17.6%
	>16years	85	25.0%
Duration of treatment	<5years	70	20.6%
	6-10years	134	39.4%
	11-15years	88	25.9%
	>16years	48	14.1%

Source: Field Work 2023

Table 2: Clinical characteristics of the respondents (N=340)

S/N	Variables	Yes	No
1	Do you prefer herbs to lower your high blood pressure?	181(53.2%)	159(46.8%)
2	Do you have enough income to procure the medication?	129(37.8%)	211(62.2%)
3	Do you have the tendency to forget your medication?	211(62.2%)	129(37.8%)
4	Are you afraid of the side effects?	172(50.6%)	168(49.4%)
5	Are your medication too many?	230(67.9%)	110(32.1%)
6	Do you have health insurance scheme?	153(44.9%)	187(55.1%)
7	Do you smoke cigarette?	87(25.6%)	253(74.4%)
8	Do you take alcohol?	91(26.9%)	249(73.1%)
9	Do you receive support from your family members?	213(62.8%)	127(37.2%)
10	Does your religion support taking drugs?	246(72.4%)	94(27.6%)
11	Does your work permit you to attend clinic and taking your drug?	251(73.7%)	89(26.3%)
12	Do you have smokers around you?	192(56.4%)	148(43.6%)

Source: Field Work 2023

Table 3: Demographic Characteristic of Healthcare Providers (N=9)

Participant code	Years in Service	Years in cardiac outpatients	Educational Status	Gender	Religion	Ethnicity
N 1	14	06	BNSc, RNM	Female	Christianity	Yoruba
N 2	10	08	BNSc, RNM	Female	Christianity	Igbo
N 3	12	05	BNSc (in view), RNM	Female	Christianity	Yoruba
D1	09	06	MBBS	Male	Christianity	Igbo
D 2	18	08	MBBS	Male	Christianity	Yoruba
D3	22	15	MBBS,FWACP	Male	Christianity	Yoruba
P 1	12		BSc Pharmacy	Female	Muslim	Yoruba
P 2	16		BSc Pharmacy	Female	Christianity	Yoruba
P3	14		BSc Pharmacy	Male	Christianity	Edo

Source: Field Work 2023

N: Nurse, D: Doctor, P: Pharmacist, BNSc: Bachelor of Nursing Science, RNM: Registered Nurse/ Midwife, MBBS: Bachelor of Medicine and Bachelor of Surgery. FWACP: Fellow West Africa College of Physician.

Table 4: Themes and Summarized Responses

S/N	Themes	Summarized Responses
1	Negative attitude and belief	Ignorance Religion belief Lack of financial Poor behavioral regulation lack of knowledge Negative emotion Worry about long-term therapy
2	Medication-related barriers	Adverse effect of drug Complexity of the medication Poly-therapy Multiple prescribers
3	Sociocultural relation	Herbal medication Negative influence of the society Negative influence of the family
4	Improving compliance	Simplifying treatment regime Therapeutic education Reducing treatment cost

Source: Field Work 2023

Discussion of Findings

Research Question 1: What are the patient-related factors responsible for drug non-compliance among hypertensive patients?

The study assessed patients-related factors influencing drug non-adherence among hypertensive patients. This research sought to understand how age, income, marital status, educational status, knowledge, complexity of medication regime, number of pills, duration of illness, family influence, co-morbidity and clinical characteristics influence drug non-compliance among hypertensive patients in the three selected state hospitals in Lagos.

Age

The socio-demographic profile of this study revealed that the mean age was 56.6. This is similar to another study by Alsofyani, et al (2022) that assessed the factors related to treatment adherence among hypertensive patients at Taif Primary Healthcare centers Saudi Arabia with the mean age put at 55.7 years. This is also relatively similar to the study conducted in Philipines by Gutierrez et al., (2022), which assessed the factors associated with medication adherence among hypertensive patients in which the mean age was 51.7 years. Azeez et al (2019) reported that age may affect the pharmacokinetics of therapy and lessen the patient's ability to follow treatment recommendations. However, health care professionals should pay more attention to older hypertensive patients who have low level of education and who have no social support.

In the key informant interview conducted, D2 said, age has nothing to do with medication. "From my personal experience, I can say that age has nothing to do with medication adherence, patient that has positive attitude towards the use of medication will comply regardless of their age or educational status". D2 added that patients are aware that taken their medication will prolong their lives in good health, prevent complications such as stroke, heart failure, renal failure and also leads to successful aging.

Gender

This study also revealed that about two-third of the respondents 233 (68.7%) were female. This implies that hypertension is more prevalence among female after menopause than in male. But then, the clear impact of gender on drug compliance is unknown. Compliance among female can also be attributed to household activities. Similar study was conducted at Northern Italy to explore gender differences in medication and mortality in a cohort of hypertension involving (55.5% women; 44.6% men). Reports on gender differences in medication consumption and mortality have been found, but the extent to which these are attributable to a female socio-cultural disadvantage is questionable (Consolazio, Gattoni & Russo, 2022). In addition, there was another study conducted at Tikur Anbessat Specialist hospital Addis Ababa, Ethiopia where about 59.7% of the respondents were female. This shows that women has the likelihood of being treated, but lower likelihood of therapeutic compliance. The differences may be biological, behavioral and socio-cultural factors. The

biological factors include sex hormone and other innate sex difference that are protective against hypertension in women. For instance, women enjoy the protective effect of estrogen before menopause which makes them less subjected to salt-sensitivity and contributes to delayed onset of hypertension. Behavioral risk factors such as low physical activities in women may contribute to the narrowing of gender gap in hypertension. It is important to note that stress activities are also influenced by the dominant gender role that are present in our society.

From my observation in this study, more than 50% of the patients attending cardiac outpatient clinic were females while males generally are too busy with their secular activities and do not have time to attend clinic. Some of them often claim that nothing is wrong with them so there is no need of doctor, nurse or hospital service N2.

Level of Education

Furthermore, this study revealed that 108(31.7%) had tertiary education and 76 (22.4%) had secondary education. This indicates that educational status is one major factor that can influence patients' compliance to medication regime. Patients with low education may have difficulty in understanding instructions and this eventually may result in increase non-compliance and poor medication management. Misunderstanding of the nature of the disease and side effect of the drug can lead to noncompliance. Also, adequate education leads to better understanding of risks involved in non-compliance behavior. Literate persons and those who are motivated to know more about their illness are more responsive to health education than illiterate persons. In a similar study conducted by Bamidele (2020), it was observed that the respondents with higher education levels had (100%) drug compliance rate, take their medication regularly while respondents with moderate education level 7 (58.33%) take their medication on fairly regular basis while the respondents with low education levels 21(72.41%) take their medication irregularly. Also, in another study which shows that patients with secondary school education had significantly better medication adherence than those with primary education according to Adisa, Illesanmi, & Fakeye (2018).

The above observations however, contradict the opinion of D2 & P1 who believes that non-compliance is more common among the educated individual even among the medical personnel as a result of their nonchalant attitude and shift job schedule. "Patients on shift work have the tendency to forget to take their medication along with them when going to work". This is similar to another studies conducted by Lee, et al., (2022) and Consolazio, et al., (2022), which revealed that lack of awareness and busy work schedule are the main reasons for non-adherence to medication.

The opinion of D2 above is not too dissimilar to that of N3 & P3. According to them, "medication compliance is a personal issue, only persistent encouragement and regular health education from healthcare provider can stimulate most patients to comply to

medication. Some patients are very difficult to persuade but their family member can be involved in the treatment plan”.

Another participant D1 said, “whenever I prescribed medication to illiterate patient, I usually recorded it on their cell phone as a voice message in the language best understand, so that they can listen to it repeatedly at their leisure time. I will also call the attention of relatives to the message to serve as reminder in case he/she forgets”.

Marital Status

Based on the results above, it would be appropriate to discuss the impact of marriage on drug noncompliance. It was revealed that 154 (45.4%) respondents are married, 80(23.5%) are widower/widow while 66(19.4%) are divorcees. The death or divorcement of their spouse may trigger drug compliance as the study shows. Trivedi, et al (2018) reported that emotional well-being and marital status were related to baseline blood pressure levels and adherence to medications and lifestyle recommendations. This is because married people often receive family support, which also encourages medication compliance. Family support on the care of hypertensive patient is considered dynamic and complex, involving individual and family network. Thus, involvement of family on the care of hypertensive patient provides social, psychological, economic relieve for the patient. P2 observed that because of the influence of family members on the patient, some of them opted for the use of herbs instead of their prescribed medications.

The above observation tallies with the opinion of another participants, D3 who stated that “in most cases, death of a close member of the family can prompt other members to seek medical assistance inform of medical screening”. Speaking further, D3 also remarked that “there is always improved drug compliance in situations where a member of the family developed complications such as stroke, cardiac or renal disease as a result of drug non-compliance. Other members of the family have tendency to learn from the mistake of the victim and encourage the affected individual”.

Co-morbidity

From the study’s findings above, another patient-related factor shows a significant relationship existing between number of co-morbidity and drug compliance as 148(43.6%) of the respondents were also diagnosed with diabetes. The presence of comorbidity and/or complications reduced the tendency of adherence whereas having good knowledge about the disease increases the chances of medication compliance among hypertensive population (Dilip, 2022). One of the respondents, N2 also supported the above finding in her response where she said, “patients with more than one chronic disease such as diabetes and hypertension get tired of using a combination of medications therefore, trying to skip time of medication”. As a follow to that, respondent D3 said: to achieve better management of hypertension, characteristic and behavior of the patient must be understood and combined therapy can be prescribed as a single dose instead of multiple medications.

Lack of Funds

As a result of the economic recession in the society nowadays, some of the patient find it difficult to comply with their medication due to lack of funds to purchase their drugs. The case become worse among patient with unstable monthly income.

This study also found that the reason for the respondents noncompliant to their medication regime is due to unaffordable cost of buying drugs per month. Findings revealed that majority of the respondents spent above N6000 naira every month on their antihypertensive drugs when some of them earn between N30,000 -N60,000 as their monthly income. This may be considered too low for them as a family or matured individual. Drug cost is a major cause of drug noncompliance, high drug cost may lead to patients not replacing their medications or ration the available one by skipping the dosage. High drug cost is the primary impacting factor influencing medication compliance. It's advisable that healthcare providers should assess the financial strength of the patient before prescribing any medication. This is contrary to the view of P1, which says, "financial constraint is not the problem with some patients but swallowing the drug and forgetfulness are the major problem".

This is also relatively similar to the study conducted in Philipines by Atria (2024) and Gutierrez et al (2022) that studied the factors associated with medication adherence among hypertensive patients in which 46.6% of the respondents were observed to face financial challenges in procuring their medication. In addition, high treatment cost also affected medication compliance. The study revealed that 65 (19.1%) of the respondents received below 30,000 wages monthly, this is considered too small for an individual to live on monthly. The financial strength of patients should be considered by physicians when prescribing antihypertensive medications, which are more expensive than others, and patients should be referred to social services if necessary.

Income

Azeez (2019) reported that hypertensive patients with monthly income above N13, 600 in 2019 were about three times more likely to have good treatment adherence compared to those who are earning N30, 000 today. This is largely due to inflation rate that takes toll on every drug. This is similar to the study conducted in Ogun State by Bamidele, et al., (2020), which shows that lack of money to procure medication, use of combined drugs daily, side effect of the drug, forgetfulness and busy schedule were the causes of drug non-compliance. WHO (2021) considers socio-economic status of patients as an important factor influencing compliance. Patients with low socio-economic status find it difficult to afford the cost of their medication and transportation fees to the hospital for their regular follow-up clinic. This observation is supported by respondent D1. According to him, some patients find it difficult to afford the cost of the medication, which cause financial drain on the patient and lead to taking cost saving measures such as delaying in buying the

prescribed medication, skipping medication, missing time of medication, reducing doses or using herbs as alternative measure.

Against the above findings N₃ therefore suggested that “doctors should prescribe cheap and efficient anti-hypertensive medication to patient facing financial challenges”.

Duration of Hypertension

It was observed from this study that 55 (33.9%) had hypertension duration of not less than 10 years. This is supported by the findings from the study of Adisa and Fakeye (2018) where most of the patients with duration of hypertension below 5 years had better medication adherence (66.7%) compared to those (33.3%) with 5 years above.

Respondents D₂ & P₃ also added that:

patients on long term anti-hypertensive drug may exhibit drug non-compliance because of monotony of the medication, it is advisable to prescribe combined medication as a single dose than for patient to be take more than one tablet that can lead to medication non-compliance.

Attitude and Belief

From the findings above, it is observed that individual-related factors that were associated with poor medication adherence includes attitude, religious belief and knowledge towards anti-hypertensive drugs. This study revealed that 191(56.4%), 281 (82.7%) of the respondents strongly agreed or just agreed that hypertension cannot be cured or be controlled respectively. This corresponds with two studies by Akintunde (2015) and Dai (2023), which observed that negative feelings were elicited in many cases as anti-hypertensive drugs were perceived as having damaging effect and not good for the body. It is believed that the adverse effects of the drugs are issues of concern to most patients. There is a relationship between patients' attitude, religious belief and knowledge toward taking medication. The above finding was further reinforced by N₂ who also argued to support the assertion that: patients' negative attitude may precipitate side effect of long term anti-hypertensive medication. Some patients believed that hypertension is caused by evil spirit or demonic attack, therefore it must be handled in a spiritual way not by medication. While some also believe that because of fasting they will skip some doses of medication.

Still on patients' attitude, D₃ observed that lack of symptoms in some patients can lead to medication non-compliance and when some patients feel that their blood pressure is under control, they on their own stop taking their drug or skip dosage without healthcare provider notification. In addition, some patients are worried of becoming drug dependent so they stop taking the medication that are supposed to be a long-term therapy.

Family Support

It is important to note that family support is an important positive factor that influences medication compliance among patient with chronic diseases such as hypertension. This study revealed that 213 (67 %) of the respondents received adequate social and emotional supports from their family. It indicates that involvement of the family member in the treatment of hypertension is necessary. This agreed with a study carried out in Ibadan by Olalemi (2020), which assessed the effect of family support on medication adherence and blood pressure control. The study further revealed that out of 69.7% of the respondents that had strong family support, 63.8% had good medication adherence. This indicates that strong family support has a positive impact on adherence to hypertensive medication which in turn promotes optimal blood pressure control.

Research Question 2: What are the clinical characteristics responsible for drug non-compliance among hypertensive patients?

Complexity of Medication Regime

Clinical characteristics observed according to this study was that 285(83.8%) of the respondents were using two-to-four drugs in a day. Complexity of medication regimes in patients with long term diseases or chronic diseases has been recorded as a major clinical factor for drug non-compliance especially those on polytherapy. It implies that high blood pressure is one of the chronic diseases that needs long-term use of medication. Noncompliance to pharmaceutical therapy is one of the main challenges to hypertension control and it leads to poor prognosis and complication. However, medication regime complexity is a preventable clinical characteristic. Partnership with the healthcare providers can simplify the regime complexity and as a result improve medication compliance. Research conducted by Bamidele et al (2020) also supported the fact that 67% of the study population were taken between two to four types of medication. The use of fixed-dose drug (many drugs combined into one) like the medication used in managing chronic diseases such as tuberculosis will encourage hypertensive patients as well as reduce poly-pharmacy. A respondent (D1), also corroborated the above assertion, adding that, noncompliance to medication as a result of medication complexity contributes to treatment failure among hypertensive patients. Speaking further, he said medication complexity and non-compliance can be reduced by prescribing combined medication.

Another participant, D2, P1 & P3 note that when a patient is on several medication prescription and higher dose frequency, it leads to medication noncompliance. However, long-acting medication can reduce the burden of medication noncompliance. Also, P2, said that some patients erroneously think that hypertension is a short-term treatable disease and as a result defy lifelong maintenance therapy. He further said that healthcare providers should health educate patients in an understandable manner and use appropriate language.

Medication Side Effects

Also, from the study, 172 (50.6%) failed to use their drug as a result of its side effects. This is supported by a similar study conducted in Ogun State by Bamidele et al (2020), which found out that compliance was significantly low among male hypertensive patients because of impotency caused by the use of hypertensive medication.

This observation was confirmed by N₁; according to her, "most hypertensive patients often complain about side effects of the anti-hypertensive drug such as drowsiness and decreased libido". Respondent D₂ also corroborated the above. As he observed, patient that has experienced previous side effects with the same drug or similar drugs may be frightened of the possible side effect. Some patients that have witnessed the side effects experienced by a close relatives or friends may be thinking that all anti-hypertensive medication can cause similar side effects.

Implications on Nursing Practice

This study portends certain implications for nursing practice. First, there is the critical need for nurses and midwives with highly specialized training in medical and surgical nursing and psychotherapist to work in cardiology clinic. Second, nurses and midwives need to have relevant and updated knowledge and skills in improving the level of drug compliance among hypertensive patients. Third, the study calls for regular retrainor courses for nurses on management of hypertension.

Conclusion and Recommendation

Based on the findings of this study, the following recommendations are put forward as possible strategies for improvising level of compliance among hypertensive patients.

- The PHCs (Primary Health Care system) play a critical role in creating awareness, screening, diagnosis, and management of hypertension. Hence, it is essential to investigate medication compliance and the determining factors among hypertensive patients receiving care at PHCs. This is necessary so that appropriate measures can be taken within the PHCs to promote patients' compliance to their medications, prevent long-term side effects of non-compliance and decrease the burdens on secondary and tertiary health care.
- Treatment protocols and guidelines for anti-hypertensive regimes must be developed and implemented by the government.
- Effective communication and counselling technique for healthcare giver should be developed through regular in-service training.
- Healthcare giver should endeavor to prescribe an effective and affordable medication with minimal side effects as this will improve patient's compliance considerably.

In conclusion, drug non-compliance among hypertensive patients is multi-faceted as it has been established that it depends on various intrinsic and extrinsic factors. Patient-related factors have been observed to constitute the strongest influencing factors leading to drug non-compliance. Patient-related reasons for non-adherence were diverse to include financial limitation, ignorance, forgetfulness and the preference for herbal medications. Thus, it can be deduced from the study that a decrease in any of the identified factors will yield better drug compliance among hypertensive patients. This study therefore concludes that to ensure better blood pressure control and effective management of hypertension in Nigeria, there is the need for interventions at the Primary Healthcare centers.

Suggestion for further studies

1. The scope of similar studies should be expanded to include other healthcare facilities especially, private clinics and primary healthcare facility for proper generalization.
2. Subsequent researchers can also adopt in-depth interview (Qualitative research method) at primary and secondary healthcare facilities.

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Ethical Consideration

The study's protocol was ethically cleared by Babcock University Health Research Ethics Committee (BUHREC: BUHREC 772/222) and Lagos State Health Service Commission. Also, I obtained informed consent from the study participants prior to the study.