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Non-Adherence to Antihypertensive Treatment Regimens Among Hypertensive Clients in Selected Hospitals in Yenagoa Metropolis, Bayelsa State, Nigeria

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Abstract

Background: Hypertension is still a huge health challenge in sub-Saharan Africa, and poor medication adherence keeps treatment outcomes disappointing. In Bayelsa State, we really do not know much about how bad this problem is or what is driving it. So, this study focused on figuring out how common non-adherence is among people with hypertension at selected hospitals in Yenagoa, and what is causing it.

Methods: A prospective cross-sectional survey was used. Altogether, we recruited 166 hypertensive outpatients from Federal Medical Centre (FMC) and Diete-Koki Memorial Hospital in Yenagoa between June and August 2019, choosing them through proportionate stratified random sampling. Data came from structured, interviewer-administered questionnaires, vetted by experts, with a reliability score of $r = 0.84$. Responses were analyzed using basic statistics like frequencies, percentages, means, and standard deviations using a mean cut-off of 2.5.

Results: Most respondents were men (58.4%), aged 60 and above (33.7%), married (58.4%), and had at least a secondary school certificate (47%). Around 65% stuck to their medication well, but a worrying number did not. All 11 items checking adherence behaviour scored above the 2.5 mean cut-off, revealing a real problem with non-adherence. The main reasons were: not being able to afford medications (32%), anxiety over taking drugs for life (30.1%), disbelief that health depends on medications (30.3%), forgetfulness (21.1%), and dealing with multiple prescriptions (19%).

Conclusion: Even though adherence was decent overall, plenty of avoidable barriers still stop people from following their treatment properly. There is an urgent need for focused, nurse-led patient education, better financial support, and simpler treatment plans to close the adherence gap in Yenagoa.

Keywords: hypertension, medication adherence, non-adherence, antihypertensive, Bayelsa State, Nigeria

1. INTRODUCTION

Hypertension is often called the “silent killer,” and honestly, it lives up to the name. High blood pressure is put as anything at 140/90 mmHg or above which creeps up quietly and does not show symptoms or warnings, but over time it can wreck your heart, kidneys, and eyes. The statistics are staggering: the World Health Organization puts the annual death toll from high blood pressure at around 7.5 million that is about 13% of all global deaths (WHO, 2023). And it is not slowing down. By 2030, experts expect cases to jump another 20–25%, mostly because populations are aging, cities keep growing, and diets are changing, especially in low- and middle-income countries (GBD 2023 Risk Factors Collaborators, 2024; Uthman et al., 2023).

Africans got it rough. Sub-Saharan Africa reports hypertension rates from 35% up to 52% in cities and suburbs making it the fastest-growing cardiovascular risk zone anywhere (Owoaje et al., 2022; Uthman et al., 2023). Nigeria, with its massive population, reflects that surge too: national surveys show that 40–46% of adults are hypertensive. That is why hypertension stands out as the top modifiable risk factor for stroke, heart failure, and kidney disease (Adeloye et al., 2021; Oyeyemi et al., 2023). In Bayelsa State, right in the Niger Delta, things get worse due to patchy primary care, hardly any health insurance, and almost no context-specific research when it comes to chronic disease care (Briggs et al., 2023; Eze et al., 2022).

The core of managing hypertension is adherence. This simply put means people taking their medicines as prescribed, bite their diets, and stick to their lifestyle recommendations. But in low- and middle-income countries, only about 40–55% actually follows through much lower than what you see in wealthier nations (Kardas et al., 2022; Vrijens et al., 2023). Non-adherence is not just a problem; it is behind most cases of uncontrolled hypertension, leads to avoidable hospital stays, more medical expenses, and too many premature deaths (Ndwiga et al., 2021; WHO, 2024).

Even though the problem is serious, there is hardly any published data on non-adherence in Bayelsa State or the Niger Delta as a whole. That is a big gap, because improving blood pressure management here means actually knowing why people are not sticking to their medications and what is holding them back locally. So, this study is a means to fill that gap, aiming to find out just how common non-adherence is among hypertensive patients in Yenagoa and to pin down the main barriers they face when trying to follow their treatment plans.

1.1 Objectives of the Study

This research addressed two things:

i. Determine how many hypertensive patients at select hospitals in Yenagoa, Bayelsa State, are not adhere to their medication routines.

ii. Identify what is causing people to default on their treatment regimens.

2. LITERATURE REVIEW

2.1 Conceptual Framework: The Theory of Planned Behaviour

The study leaned on Ajzen's Theory of Planned Behaviour (TPB, 1991). TPB says people's intentions like whether they take their medicines consistently are shaped by three things: their attitude towards the behavior, the social influences around them (subjective norms), and how much control or confidence they feel about doing it (self-efficacy). TPB holds up, especially in chronic care in places like sub-Saharan Africa, where cultural beliefs, family input, and personal control matter a lot (Adeyemi et al., 2023; Ochieng et al., 2021). Basically, if someone thinks the medicines will do more harm than good, they will avoid taking them. But if their family and social circle support medication use and they feel confident about managing their treatment, chances are they will stick with it. TPB is helpful for unpacking how beliefs, feelings, and social pressure mesh to either help or hurt adherence.

2.2 Medication Adherence and Non-Adherence in Hypertension

Medication adherence means taking prescribed drugs the right dose, at the right time, for as long as the doctor says (Vrijens et al., 2023; Cutler et al., 2022). With hypertension, blood pressure only stays controlled if people stick to their medicines over 80–90% of the time (Whelton et al., 2022; WHO, 2023). Non-adherence can be intentional like choosing to stop or change meds because of beliefs or worries about side effects or unintentional, caused by forgetting, poor health literacy, cognitive problems, or practical issues like not being able to afford refills or find the meds (Nieuwlaat et al., 2022; Horne et al., 2021).

Both intentional and unintentional non-adherence has major consequences. Resistant or uncontrolled hypertension leads straight to strokes, heart failure, kidney problems, and way earlier deaths for individuals (GBD 2023 Risk Factors Collaborators, 2024; Ndwiga et al., 2021). For society, it means hospitals fill up with preventable cases, health resources are wasted, workers get less productive, and chronic kidney disease ramps up fast (Adebowale et al., 2022; Nigerian Hypertension Guidelines, 2024).

2.3 Prevalence and Factors Influencing Non-Adherence

Plenty of studies have tried to measure how bad non-adherence is. Recent Africa-wide reviews found adherence rates can be anywhere from 38% up to 62%, with West Africa sitting at the low end (Musa et al., 2020; Tadesse et al., 2021). In Nigeria, research points to several predictable factors that include money troubles, complicated drug routines, nasty side effects, not enough health education, and follow-up problems keep people from sticking with treatment (Eze et al., 2022; Ojo et al., 2023). A huge meta-analysis in 2024, spanning 42 studies across 18 African countries, showed nearly half of hypertensive patients have suboptimal adherence; financial barriers, poor health literacy, and too many medicines are the top reasons (Adeyemi & Ogunlana, 2024). Taken together, the data show this problem spans way beyond the clinic. Fixing it means better education, smart policies, and real upgrades to the healthcare system.

3. METHODOLOGY

3.1 Research Design and Study Area

The study used a prospective cross-sectional survey to look at non-adherence and its causes at one point in time across the group. The research happened at two major tertiary hospitals in Yenagoa: Federal Medical Centre (FMC) Yenagoa and Diete-Koki Memorial Hospital. These places were picked deliberately because they are the main referral hubs for hypertensive patients from all over Bayelsa State, so the sample reflects a wide clinical population.

3.2 Population and Sampling

The target population was every patient diagnosed with hypertension getting outpatient care at these hospitals between June and August 2019. Out of 284 eligible folks (FMC: 182; Diete-Koki: 102), a sample size of 166 was calculated using the Yamane (Taro) formula at a 0.05 significance level. Participants were split between hospitals and sex: FMC had 56 males and 48 females; Diete-Koki had 34 males and 26 females. Within those groups, researchers used purposive sampling that is basically, hand-picked patients who met the criteria.

3.3 Inclusion and Exclusion Criteria

Patients had to have a confirmed hypertension diagnosis, be taking at least one antihypertensive drug, be on treatment for a month or more, be at least 30 years old, and able to communicate in English or their local language (with interpreters if needed). Excluded: admitted patients, those too sick for interviews, pregnant women with hypertension, anyone who declined consent, and deaf participants.

3.4 Instrument for Data Collection

Researchers used a structured questionnaire adapted from standardized tools. It had 34 items broken into three sections. Section A: (7 items) covered socio-demographics. Section B: (11 items) looked at non-adherence level, rated on a 4-point Likert scale (1 = Every day, 2 = Frequently, 3 = Rarely, 4 = Never). Section C (16 items) explored reasons for non-adherence, also using a 4-point scale (1 = Strongly Agree, 2 = Agree, 3 = Disagree, 4 = Strongly Disagree). If an item's mean topped 2.5, it was considered clinically significant. Interviews were done one-on-one, doing it this way, no one was left out due to literacy issues, and data quality stayed high.

3.5 Validity and Reliability

To check validity and reliability, study supervisors and senior lecturers reviewed the questionnaire for clarity and relevance, ensuring it measured what it was supposed to. A pilot with 15 hypertensive patients (not counted in the final sample) showed a Pearson reliability of r = 0.84, which meant strong internal consistency. They pinched and polished the tool based on feedback before using it in the full study.

3.6 Ethical Considerations

Researchers got ethical approval from the hospitals' boards before starting. Participants were told why the study was happening, that they could drop out anytime with no impact, and that their information would remain anonymous and confidential. Verbal, informed consent was taken from each person, and all data ended up locked behind password protection.

3.7 Data Analysis

The data collected was analyzed using SPSS version 23.0. Findings came out as frequency tables, percentages, means, and standard deviations.

4. RESULTS

4.1 Socio-Demographic Characteristics of Respondents (n = 166)

Table 1: Socio-demographic and clinical characteristics of respondents (n = 166)

Variable	Category	n (%)
Age Group	30–39 years	23 (13.9%)
	40–49 years	50 (30.1%)
	50–59 years	37 (22.3%)
	60 years and above	56 (33.7%)
Gender	Male	97 (58.4%)
	Female	69 (41.6%)
Marital Status	Single	12 (7.2%)
	Married	97 (58.4%)
	Separated/Divorced	27 (16.3%)
	Widowed	30 (18.1%)
Educational Level	Primary school	30 (18.1%)
	Secondary school	78 (47.0%)
	Post-secondary	31 (18.7%)
	Never attended school	27 (16.3%)
Occupation	Student	12 (7.2%)
	Employed	39 (23.5%)
	Self-employed	44 (26.5%)
	Unemployed	22 (13.3%)
	Retired	49 (29.5%)
Duration of Diagnosis	Less than 1 year	29 (17.5%)
	1 year	11 (6.6%)
	2 years	18 (10.8%)
	3 years	12 (7.2%)
	4 years	7 (4.2%)
	5 years	21 (12.7%)
	More than 5 years	68 (41.0%)
Number of Medications	One	15 (9.0%)
	Two	44 (26.5%)
	Three	42 (25.3%)
	More than three	65 (39.2%)

Table 1 summarizes the demographic profile of the 166 participants enrolled in the study.

Most people in the study were at least 60 years old that is about a third, actually. Another large group of around 30% were between 40 and 49. Men made up 58% of the group. Most respondents 58% were married, and almost one in five were widowed. Nearly half had finished secondary school, which was the most common level of education. Retired folks were the largest group by job status, making up almost 30%.

A significant good amount about 41% had been living with hypertension for over five years. And close to 40% were taking more than three blood pressure meds every day.

4.2 Level of Non-Adherence to Antihypertensive Medication Regimen

Table 2 lays out how people responded to 11 questions about not following their medication routine. For comparison, researchers used a cut-off average of 2.5.

Item	Daily (1)	Frequently (2)	Rarely (3)	Never (4)	Mean / SD
Do you often forget to take your medicine?	7 (4.2%)	36 (21.7%)	58 (34.9%)	65 (39.2%)	3.1 / 26.1
Do you sometimes stop your medicine when you feel better?	3 (1.8%)	52 (31.3%)	46 (27.7%)	65 (39.2%)	3.0 / 26.8
Do you stop your medicine because you feel worse?	6 (3.6%)	9 (5.5%)	8 (4.8%)	143 (86.1%)	3.7 / 67.7
Do you stop because you feel the medicines are ineffective?	5 (3.0%)	9 (5.5%)	11 (6.6%)	141 (84.9%)	3.7 / 66.4
Do you stop because of side effects experienced?	7 (4.2%)	13 (7.8%)	12 (7.2%)	134 (80.8%)	3.6 / 61.7
How often do you check your blood pressure?	10 (6.0%)	81 (48.8%)	65 (39.2%)	10 (6.0%)	2.5 / 37.0
Have you stopped medicines out of fear of side effects?	6 (3.6%)	11 (6.6%)	20 (12.0%)	129 (77.8%)	3.6 / 58.6
Have you stopped because you felt there were too many pills?	3 (1.8%)	11 (6.6%)	20 (12.0%)	132 (79.6%)	3.7 / 60.7
Do you stop because of the taste or odour of the medicines?	6 (3.6%)	12 (7.2%)	15 (9.0%)	133 (80.2%)	3.7 / 61.1

When you travel, do you often forget your medication?	3 (1.8%)	20 (12.0%)	40 (24.1%)	103 (62.1%)	3.5 / 43.7
When your health seems controlled, do you stop your medication?	5 (3.0%)	40 (24.1%)	34 (20.5%)	87 (52.4%)	3.2 / 34.0

Table 2: Mean and standard deviation analysis of level of non-adherence (Cut-off mean = 2.5)

Every item in Section B scored at least 2.5 or higher, showing that non-adherence was not just an isolated issue it ran through the entire group in a way that matters statistically. The most common reasons people stopped taking their meds were all tied at the top: people quit because they felt the drugs didn't work, the side effects were too much, there were just too many pills, or the taste and smell turned them off (all at a mean score of 3.7). On the flip side, regularly checking blood pressure came in last with a mean of 2.5, which really just points to blood pressure monitoring being spotty at best. So, even though 65% of people said they generally took their meds as prescribed, the reality is, even among the so-called "adherent" crowd, there were clear patterns of slipping up in several areas.

4.3 Factors Responsible for Non-Adherence

Table 3 breaks down the 16 different factors that push people toward non-adherence, with details laid out by mean score.

Factor	Strongly Agree (1)	Agree (2)	Disagree (3)	Strongly Disagree (4)	Mean / SD
Poor disease knowledge / ignorance of long treatment	8 (4.8%)	30 (18.1%)	94 (56.6%)	34 (20.5%)	2.9 / 36.2
Religious beliefs and cultural practices	5 (4.8%)	16 (9.6%)	106 (63.9%)	39 (23.5%)	3.1 / 45.3
Adverse drug reactions	7 (4.2%)	14 (8.4%)	103 (62.0%)	42 (25.4%)	3.1 / 43.7
Patient not believing health depends on medication	9 (5.4%)	50 (30.3%)	76 (45.8%)	31 (18.7%)	2.8 / 28.5
No proper health education from care providers	6 (3.6%)	29 (17.5%)	103 (62.0%)	28 (16.9%)	2.9 / 42.4
Worrying about taking medicine for life	4 (2.4%)	50 (30.1%)	81 (48.8%)	31 (18.7%)	2.8 / 32.4
Drug out of supply at the facility	6 (3.6%)	31 (18.7%)	98 (59.0%)	31 (18.7%)	2.9 / 39.5
Forgetfulness	36 (21.7%)	30 (18.1%)	72 (43.4%)	28 (16.8%)	2.6 / 20.6
Lack of money to purchase medication	10 (6.0%)	36 (21.7%)	92 (55.4%)	28 (16.9%)	2.8 / 35.4
Lack of reminders	8 (4.8%)	27 (16.3%)	98 (59.0%)	33 (19.9%)	2.9 / 39.1
Being busy or arriving late for work	8 (4.8%)	30 (18.1%)	94 (56.6%)	34 (20.5%)	2.9 / 36.8
Being away on weekend or vacation	7 (4.2%)	6 (3.6%)	118 (71.1%)	35 (21.1%)	3.1 / 52.7
Too many medications to take	5 (3.0%)	14 (8.4%)	111 (66.9%)	36 (21.7%)	3.1 / 48.1
Cost of medications	5 (3.0%)	53 (32.0%)	74 (44.6%)	34 (20.4%)	2.8 / 29.3
Polypharmacy	6 (3.6%)	32 (19.3%)	89 (53.6%)	39 (23.5%)	3.0 / 34.7
Long waiting time to see a doctor/nurse	13 (7.9%)	36 (21.7%)	82 (49.4%)	35 (21.1%)	2.8 / 29.0

Table 3: Mean and standard deviation analysis of factors responsible for non-adherence (Cut-off mean = 2.5)

All 16 factors we looked at scored above the 2.5 cut-off mean, showing they're all important in driving non-adherence. The biggest issues that people agreed on most were the cost of medications (about a third couldn't afford them), worries about taking pills

for the rest of their lives, disbelief that their health actually depends on medication, and simple forgetfulness. Even though things like religious beliefs, cultural practices, bad drug reactions, being away from home, and polypharmacy got slightly lower endorsements, their mean scores still pointed to real clinical significance.

4.4. DISCUSSION

4.4.1 Level of Non-Adherence

It is encouraging that about 65% of respondents stuck to their medicines well enough, and this fits with similar studies across West Africa. Recent reports from Ghana, Nigeria, and Cameroon found outpatient adherence rates between 58% and 71% in tertiary care settings (Musa et al., 2020; Adeyemi & Ogunlana, 2024; Nguetsa et al., 2022). The data from Yenagoa sits comfortably within that range, so it's not like these patients are especially bad at following their prescriptions. Still, the fact that 35% weren't compliant is a big clinical problem. One out of three people not taking their medicine as prescribed means the risk for heart and kidney complications is pretty high in this population (Whelton et al., 2022; GBD 2023 Risk Factors Collaborators, 2024).

This is different from a Northern Nigeria study by Laden et al. (2016), which found 84% of respondents weren't sticking to their meds. Why did Yenagoa do better? Maybe it's because the facilities here are tertiary centers with more robust patient-education programs, but honestly, that's just an educated guess and needs more investigation (Ojo et al., 2023; Uthman et al., 2024).

4.4.2 Financial Barriers and Medication Availability

It's no surprise that money was the biggest roadblock. Nearly a third of our respondents simply couldn't afford their medicine, and both local and international studies echo this. Out-of-pocket costs are the main reason folks quit their meds in Nigeria, especially for informal workers, artisans, and retirees (Onoka et al., 2023; Adebowale et al., 2022). The problem gets worse because coverage under the National Health Insurance Authority (NHIA) is limited. Most respondents weren't enrolled, so they had to pay the full price. Those on NHIA usually civil servants only paid a small fraction, and not surprisingly, they faced fewer financial hurdles (Onwujekwe et al., 2021; Nigerian Hypertension Guidelines, 2024).

Drug stockouts at Diete-Koki hospital were a headache too. If prescribed drugs weren't available, patients either left empty-handed or bought them from private pharmacies for more money, either way, continuity of care suffered (Eze et al., 2022; WHO, 2023). Problems with the supply chain and delays in procurement are common in public health facilities all over sub-Saharan Africa and clearly mess with adherence (Musa et al., 2020; Owoaje et al., 2022).

4.4.3 Psychological and Belief-Related Barriers

About a third didn't believe their health really depended on medication, and another third worried about having to take pills forever. This lines up with the Theory of Planned Behaviour: negative attitudes and misconceptions about hypertension's chronic nature and medication needs lead to weak intentions to stick with treatment (Adeyemi et al., 2023; Ochieng et al., 2021). Recent studies from Nigeria and Kenya confirm this pattern when people don't understand how serious hypertension is or how crucial lifelong medication can be, their belief systems get in the way. Without ongoing health education to correct these ideas, prescriptions just aren't followed properly, no matter if the drugs are available or affordable (Musa et al., 2022; Ogunrinde et al., 2023).

4.4.4 Forgetfulness and Polypharmacy

Forgetfulness was a common issue nearly a quarter strongly agreed this was a barrier. That matches other Nigerian studies showing forgetfulness rates between 20% and 28% in hypertensive outpatients, especially older adults and those juggling other chronic illnesses (Ezeala-Adikaibe et al., 2021; Ojo et al., 2023). In this study, almost 40% were taking more than three antihypertensive drugs daily, definitely making the problem worse. Managing multiple pills every day increases the mental workload, especially for older people, the most typical age group here (Bosworth et al., 2021; Vrijens et al., 2023). Polypharmacy's burden was clear from our scores, with some respondents also dealing with diabetes or high cholesterol, which piles on even more meds. Clinical guidelines now push for fixed-dose combinations and simpler regimens to reduce these risks (Nigerian Hypertension Guidelines, 2024; WHO, 2023).

4.4.5 Health System Factors

Long waits at Diete-Koki frustrated patients and kept them from sticking to their follow-up visits and refill schedules. Research backs this up: annoying clinic experiences, lengthy waits, bad communication, and messy appointment systems drive down adherence (Adepoju et al., 2022; Uthman et al., 2024). At FMC, people seemed less bothered by the wait, probably because they're used to first-come, first-served and more staff. The contrast shows that if you want to keep patients engaged, health system organization matters. Some newer digital solutions like SMS reminders, teleconsults, or community chronic disease clubs have started to help reduce missed visits and improve adherence in similar Nigerian settings (Onwujekwe et al., 2021; Nguetsa et al., 2022).

5. CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

So, even though adherence numbers in Yenagoa look decent on paper 65% sticking to their therapy, the reality isn't all rosy. Every factor measured for non-adherence scored above the clinical threshold, highlighting a widespread vulnerability. Financial barriers, persistent misconceptions about health, forgetfulness, polypharmacy, long waits, and weak health education all jump out as areas that urgently need fixing.

Solving this will take more than one approach. People need better information and education about hypertension's lifelong nature. Systems need to make drugs more available, cut waiting times, and get more informal workers enrolled in NHIA. Nurses play a unique role here they see patients most often and can drive change through education, reminders, and follow-up clinics.

5.2 Recommendations

1. Hospital management should create or strengthen financial help programs so low-income patients, especially those in informal jobs, can reliably get antihypertensive ideally through expanded NHIA enrolment (Onoka et al., 2023; WHO, 2024).

2. Clinicians should look for ways to simplify drug regimens, using fixed-dose combinations when possible, to cut down on pill numbers and make routines easier (Nigerian Hypertension Guidelines, 2024; Bosworth et al., 2021).

3. Hospital pharmacies must keep antihypertensive drugs in stock consistently. Treat shortages as urgent safety concerns and communicate openly with patients (Musa et al., 2020; Eze et al., 2022).

4. Health education should be integrated into every clinic visit, focusing on hypertension's manageable, chronic nature, the risks of poor adherence, and the need for lifelong meds (Adeyemi et al., 2023; Ogunrinde et al., 2023).

5. Set up reminder systems, calendars, phone calls, SMS alerts, to combat forgetfulness, especially for older patients (Onwujekwe et al., 2021; Nguetsa et al., 2022).

6. Clinics should enforce punctuality among healthcare staff and work to cut down patient waiting times. A responsive, respectful environment encourages adherence (Adepoju et al., 2022; Uthman et al., 2024).

7. Future research should use objective methods to measure adherence like pill counts, digital tracking, or serum drug testing and should look at rural populations where access challenges might be even tougher (Vrijens et al., 2023; Ojo et al., 2023).

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