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Barriers and Facilitators of Anti-hypertensive Medication Adherence in Kumasi, Ghana: An Exploratory Descriptive Qualitative Study

Priscilla Osei-Wusu

priscillaoowusu@wiuc-ghana.edu.gh

Wisconsin International University College

Edward Appiah Boateng

Kwame Nkrumah University of Science and Technology

Abigail Kusi-Amponsah Diji

Kwame Nkrumah University of Science and Technology

Collins Atta Poku

Kwame Nkrumah University of Science and Technology

Jeremiah Kofi Asante

Kwame Nkrumah University of Science and Technology

Francis Amankwaa

Kwame Nkrumah University of Science and Technology

Lilian Kolbila

Ghana Health Service

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Abstract

Introduction

Hypertension requires long-term adherence to prescribed anti-hypertensive medication to prevent complications. Although anti-hypertensive therapy is effective, many patients experience personal, social, financial, and health-system challenges that affect consistent medication use. Understanding patients' experiences is important for designing context-specific strategies to improve adherence. This study explored factors that influence adherence to drug therapy among hypertensive patients attending two government hospitals in Kumasi, Ghana.

Methods

An exploratory Descriptive Qualitative study was conducted among hypertensive patients receiving care in Kumasi, Ghana. Twenty-four participants were purposively recruited and interviewed using a semi-structured interview guide. Data were analysed thematically, guided by Braun and Clarke's reflexive thematic analysis approach and informed by the predisposing, enabling and reinforcing constructs of the PRECEDE model.

Results

Three major themes emerged from the analysis: making sense of hypertension and medication use, navigating treatment and care access, and staying on treatment through motivation and support. Key facilitators included knowledge, medication routines, healthcare-provider counselling, and family support, while barriers included forgetfulness, side effects, financial constraints, service delays, medicine unavailability, and cultural and religious beliefs.

Conclusions

Adherence to oral anti-hypertensive medication among patients in Kumasi was shaped by the interaction of patient-related, social, and health-system factors. Improving adherence requires continuous patient education, practical medication counselling, respectful communication between healthcare providers and patients, family involvement, affordable access to medicines, and stronger health-system support for long-term hypertension care.

1 Background

Hypertension remains a major global public health challenge and one of the leading contributors to cardiovascular disease, stroke, kidney disease, and premature mortality. The World Health Organization (WHO) [1] describes hypertension as a major but often silent threat, especially because many people living with the condition remain unaware of their status, untreated, or inadequately controlled. The burden is particularly concerning in low- and middle-income countries, where challenges related to

diagnosis, treatment continuity, medicine availability, and long-term follow-up can undermine effective hypertensive control [2, 3].

In Ghana, hypertension is an important contributor to cardiovascular morbidity and mortality [4–6]. Effective hypertension control requires lifestyle modification, regular monitoring, and consistent use of prescribed anti-hypertensive medicines [7]. However, because hypertension is often asymptomatic, patients may feel well despite having poorly controlled blood pressure, potentially reducing their perceived need for continuous treatment [8]. Medication adherence is therefore central to the effective management of hypertension. WHO [1] defines adherence as the extent to which a person's behaviour, corresponds to agreed recommendations from a healthcare provider. Thus, highlighting the active role of patients in managing their treatment as reported by Ratnayake et al. [9].

Despite its importance, adherence to anti-hypertensive medication remains suboptimal and is influenced by interacting patient-related, treatment-related, socioeconomic, and health-system factors [10–12]. Patient-related factors include knowledge of hypertension, treatment beliefs, forgetfulness, perceived severity of hypertension, and medication-taking routines, while treatment-related barriers include side effects and dosing demands [13, 14]. Financial difficulties, medication costs, transportation difficulties, and limited insurance coverage may further affect continuity of treatment [15]. Health-system barriers such as long waiting times, medication shortages, limited follow-up and communication challenges can also undermine adherence [16, 17]

Evidence from Ghana and sub-Saharan Africa suggests that these barriers are highly context-specific. In Ghana, adherence to anti-hypertensives has been associated with awareness of hypertension, perceived severity, financial burden, co-payment, treatment concerns, and social support [18, 19]. Traditional medicine use, religiosity, and socioeconomic constraints have also been reported as influences on medication use [18, 20]. Although Ghana's National Health Insurance Scheme has improved access to healthcare, patients may still incur out-of-pocket payments for medicines, laboratory investigations, and other services, creating an economic burden that may interrupt treatment continuity [15]. Conversely, family support, healthcare-provider counselling, and accessible medication and monitoring services may facilitate adherence [14, 21].

Although previous studies have examined hypertension management and medication adherence in Ghana, there remains limited qualitative evidence on how patients attending district hospitals experience adherence to oral anti-hypertensive medication. Understanding these experiences is important because district hospitals provide ongoing care for many patients with chronic conditions and may face specific challenges related to service access, medicine availability, waiting times, and continuity of care. This study therefore explored the barriers and facilitators of oral anti-hypertensive medication adherence among hypertensive patients attending Manhyia District Hospital and Suntreso Government Hospital in Kumasi, Ghana.

1.1 Conceptual Framework

The PRECEDE model guided this study. PRECEDE stands for Predisposing, Reinforcing, and Enabling Constructs in Educational Diagnosis and Evaluation [22]. The model provides a useful framework for understanding health-related behaviour by examining factors that influence whether individuals are likely to adopt and maintain a behaviour [23, 24]. In this study, the PRECEDE model was used to organise the factors influencing adherence to oral anti-hypertensive medication. Predisposing factors referred to patient-level factors such as knowledge of hypertension, attitudes towards medication, beliefs about treatment, and medication-taking routines. Enabling factors were resources and conditions that made adherence easier or more difficult, including access to health facilities, medication refill services, blood pressure monitoring, laboratory investigations, and the cost of care. Reinforcing factors referred to influences that encouraged patients to continue treatment, including personal motivation, healthcare-provider counselling, family support, friends, and religious groups.

The PRECEDE model was appropriate for this study because adherence to anti-hypertensive medication is shaped by more than knowledge alone [25]. Interactions among individual understanding, daily routines, financial capacity, access to health services, provider communication, and social support influence it. Using this framework allowed the study to examine medication adherence as a complex behaviour shaped by personal, social, and health-system factors.

2 Materials and Methods

2.1 Study Design

This study employed an exploratory descriptive qualitative (EDQ) design to examine the barriers and facilitators of oral anti-hypertensive medication adherence among hypertensive patients in Kumasi, Ghana. The study was guided by the PRECEDE model, which helped to organise the factors influencing medication adherence into predisposing, enabling, and reinforcing factors. The Consolidated Criteria for Reporting Qualitative Research (COREQ) was used to improve transparency in reporting the study.

2.2 Study Setting

The study was conducted at Manhyia District Hospital and Suntreso Government Hospital in Kumasi, Ghana. The setting was appropriate for the study because patients attending district hospitals may experience a range of personal, socioeconomic and health-system factors that influence long-term medication adherence.

2.3 Study Population and Eligibility Criteria

The study population comprised adult hypertensive patients receiving care at Manhyia District Hospital and Suntreso Government Hospital. Participants were eligible for inclusion if they had been diagnosed with hypertension, were receiving oral anti-hypertensive medication, attended a review at either of the two study facilities, and were willing to share their experiences.

2.4 Sampling and Sample Size

Participants were selected purposively. This sampling approach was used to recruit patients with direct experience with hypertension treatment and who could provide rich information on medication adherence. The selection of participants considered variation in sex, age, marital status, study setting, and mode of payment for anti-hypertensive medicines. A total of 24 hypertensive patients participated in the study. Twelve participants were recruited from Manhyia District Hospital and twelve from Suntreso Government Hospital. The final sample size was considered adequate because the interviews generated sufficient information to address the study objective and recurring patterns were observed across participants' accounts. Eligible participants were approached face-to-face by the researcher at the outpatient department after their review. Three patients declined to participate in the study mainly because of personal reasons, and no patient withdrew after the interview had begun. Data saturation was judged to have been reached when no new codes emerged from the last interviews.

2.5 Data Collection

Data were collected using a semi-structured interview guide adapted from Ashoorkhani et al. [26], with modifications to fit the Ghanaian context and the study objectives. The guide explored participants' understanding of hypertension, knowledge of prescribed medicines, medication-taking routines, experiences with adherence and non-adherence, access to healthcare services, cost of care, medication refills, healthcare-provider communication, and sources of support.

Interviews were conducted in a private and convenient setting within the health facilities to ensure confidentiality and allow participants to speak freely. Each participant was informed of the study's purpose, the voluntary nature of participation, and the right to withdraw at any time. Consent was obtained before each interview. The semi-structured nature of the interviews allowed the interviewer to ask follow-up questions and probes where necessary. This helped to obtain detailed explanations of participants' experiences and clarify issues that emerged during the interviews. Field notes were also taken to capture important observations and reflections during data collection.

The interviews were conducted between March and August 2022. The interviewers had training and experience in qualitative interviewing. The interviewers had no prior relationship with the participants. Interviews were held in English and Twi, audio-recorded and transcribed verbatim. Interviews held in Twi were translated into English. Each interview lasted about 35 minutes, and no repeat interviews were conducted. The interview guide was not pilot tested. No one else was present during the interviews, aside the interviewers and the participants.

2.6 Data Analysis

Data were analysed using Braun and Clarke's reflexive thematic analysis approach [27]. The analysis involved familiarising with the interview data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the report. The analysis was also informed by the PRECEDE model, which provided a framework for organising the findings into predisposing, enabling and reinforcing factors. The interview data were first read repeatedly to gain an overall understanding of participants' experiences. Meaningful segments of the data were then coded manually. Codes that

shared similar meanings were grouped into subthemes, and related subthemes were organised under broader themes. The themes were reviewed against the data to ensure that they accurately represented participants' accounts. Transcripts were not returned to participants.

2.7 Trustworthiness and Reflexivity

Trustworthiness was enhanced through credibility, dependability, confirmability and transferability [28, 29]. Credibility was supported by detailed semi-structured interviews and direct participant quotations. Dependability was enhanced by a systematic and consistent data collection and analysis process. Confirmability was addressed through reflexive consideration of the researcher's influence during data collection and interpretation to reduce the influence of personal assumptions on the findings. Finally, transferability was supported by providing sufficient description of the study setting, participants, sampling, and data collection procedures.

3 Results

3.1 Demographic Characteristics of Participants

A total of 24 hypertensive patients participated in the study. Twelve participants were recruited from Manhyia District Hospital and twelve from Suntreso Government Hospital. The participants were aged between 30 and 90 years. Fifteen participants were female, and nine were male. Most participants were married, lived with family members and were registered under the National Health Insurance Scheme. However, some participants reported making additional payments for their anti-hypertensive medicines despite having health insurance. Only two participants lived alone. Table 1 presents the demographic characteristics of the participants.

Table 1
Demographic characteristics of participants

Characteristic	Category	Frequency
Sex	Male	9
	Female	15
Study setting	Manhyia District Hospital	12
	Suntreso Government Hospital	12
Age group	30–50 years	8
	51–70 years	10
	71–90 years	6
Marital status	Married	18
	Single	6
Mode of payment for anti-hypertensive medicines	Health insurance	18
	Self-sponsorship	6
Living arrangement	Living with family	22
	Living alone	2

3.2 Themes Generated from the Data

Three major themes were generated from the analysis: (1) making sense of hypertension and medication use, (2) navigating treatment and care access, and (3) staying on treatment through motivation and support. These themes reflected the predisposing, enabling, and reinforcing constructs of the PRECEDE model. Each theme had related subthemes that explained how participants experienced adherence to oral anti-hypertensive medication. Table 2 presents the themes and subthemes generated from the data.

Table 2
Themes and subthemes generated from participants' interviews

PRECEDE construct	Main theme	Subthemes
Predisposing factors	Making sense of hypertension and medication use	Knowledge of hypertension and its pharmacological treatment Attitudes, beliefs and medication-taking routines
Enabling factors	Navigating treatment and care access	Access to health facilities and medication refill services Access to healthcare services at home, work and in the community
Reinforcing factors	Staying on treatment through motivation and support	Personal motivation to remain healthy Healthcare-provider communication and counselling Support from family, friends and religious groups

3.3 Making Sense of Hypertension and Medication Use

The first theme describes how participants understood hypertension and how this understanding shaped their medication-taking behaviour. Participants' adherence was influenced by what they knew about hypertension, how they interpreted the purpose of their medicines, their beliefs about complications, and how they fitted medication use into daily routines. While some participants understood hypertension as a long-term condition requiring continuous treatment, others had limited knowledge of their condition and prescribed medicines.

3.3.1 Knowledge of Hypertension and its Pharmacological Treatment

Some participants understood hypertension as a chronic condition that required regular medication use. They explained that healthcare providers had informed them that anti-hypertensive medicines were meant to control blood pressure and prevent complications, rather than cure the disease completely. This knowledge encouraged some participants to continue taking their medicines.

One participant explained:

"*You can live with the disease for several years without any complications and maintain the blood pressure within normal limits; that was exactly what the doctor told me.*" **(H.M)**

Another participant linked medication adherence to the prevention of organ damage:

"My doctor encouraged me to take my medications as prescribed so the medicines will maintain a normal blood pressure and not damage vital organs in my body." **(A.F)**

Participants also described hypertension in relation to possible complications. Stroke was among the most commonly mentioned complications, and fear of such outcomes encouraged adherence among some participants. One participant stated:

"My doctor has informed me that hypertension has no cure, and knowing that familial history can cause complications, I am always conscious of taking my medications." **(M.A)**

Participants' explanations of hypertension were not limited to biomedical causes. Some linked the condition to emotional stress, excessive thinking, financial pressure and family history. One participant connected hypertension to financial stress and family responsibilities:

"I know that hypertension is caused by excessive thinking. I think too much. When a new day is about to begin, I feel scared. If I wake up in the morning and I do not have GH□100, some of my children would have to stay home for others to go to school." **(S.A)**

Another participant connected hypertension to both psychological stress and heredity:

"My children's school fees gave me panic attacks, which I think is the cause of my sickness because I was always under pressure when they came on vacation and after their completion, that has made me relieved a bit, but I think the pressure is in my bloodline because my mother and my uncle had pressure." **(I.A)**

Although some participants had a reasonable understanding of hypertension and its treatment, others had limited knowledge of their prescribed medicines. Some could not identify the names or dosages of their medicines and relied on pill boxes to recognise them. One participant stated:

"I take two anti-hypertensive medicines, but I do not know their names or dosages. I identify the medicines using their pill boxes. So I do not throw them away when they finish." **(A.A)**

This limited knowledge posed a risk of poor medication management, especially when medicines were changed, repackaged, unavailable at the hospital pharmacy, or purchased outside the hospital.

3.3.2 Attitudes, Beliefs and Medication-Taking Routines

Participants' attitudes, beliefs and daily routines shaped how they adhered to their medicines. For some participants, taking anti-hypertensive medication had become part of daily life. These participants did not wait for symptoms before taking their medicines, but took them regularly as part of their routine.

One participant described medication-taking as the first activity of the day:

*"Sometimes, I don't even brush my teeth before I take my medications. It is always the first thing on my mind when I wake up, and I always take them as instructed by the doctor."***(A.K)**

Another participant explained that he had adjusted his daily routine to accommodate medication use, even when staying away from home:

"Hypertension has become part of me, so I take my medication immediately after breakfast, and I take it along when I know I will stay overnight at work." **(A.O)**

Participants' beliefs about complications also influenced adherence. Some participants took their medicines because they did not want to experience worsening symptoms or complications. One participant stated:

"I don't want to experience the complications that can occur because of not taking the medications, so I take them as instructed by the doctor." **(M.A)**

For another participant, observing the symptoms experienced by a hypertensive spouse reinforced the importance of regular medication use:

"My husband is also hypertensive. When he does not take his daily medicines, he complains of symptoms such as severe headache and blurred vision. I try to take my medications all the time because I don't want to experience such symptoms." **(K.J)**

However, adherence was not always consistent. Busy schedules, tiredness and forgetfulness affected participants' medication-taking routines. One participant explained how work demands disrupted medication use:

"The nurses mentioned to me that it does not matter whether I take my medications in the morning, afternoon or evening, so if I don't have a busy schedule in the morning, I remember to take the medication. However, if I forget, and my customers who are coming to buy merchandise call me early in the morning, I prefer to go to the market and take my medication in the evening. If I feel tired, I retire to bed and take the medication in the morning the following day." **(K.M)**

Another participant described forgetfulness as a challenge:

"I'm a very busy person. Even though I take my drugs frequently, sometimes I forget to take the medicines either in the morning or evening." **(M.T)**

Medication side effects and perceived side effects also affected attitudes towards medication use. One participant associated anti-hypertensive medication with reduced sexual performance:

"Taking the medicines has reduced my sexual performance. I have developed erectile dysfunction." **(I.B.Y)**

Financial concerns also shaped participants' behaviour during review visits. Some participants avoided reporting symptoms because they feared being asked to pay for laboratory investigations or additional services:

"Any time I visit the hospital for my medication refills, I find it difficult to complain of other symptoms to the doctor for fear of him asking me to go and do laboratory investigations. I cannot afford to top up my medications, let alone pay for additional services." **(S.A)**

Some participants also described prayer, fasting and herbal medicines as part of how they understood or managed hypertension. These beliefs provided emotional support for some participants but could also interfere with regular medication use when patients delayed or skipped prescribed medicines.

3.4 Navigating Treatment and Care Access

The second theme describes how participants accessed hospital care, medication refills, blood pressure monitoring and other support services. Participants valued hospital-based care because it enabled them to monitor their condition and obtain medicines. However, long waiting times, medication unavailability, laboratory costs and additional payments created barriers to adherence.

3.4.1 Access to Health Facilities and Medication Refill Services

Participants reported that attending a hospital review helped them check their blood pressure, refill medicines, undergo laboratory investigations and receive professional advice. Although some participants experienced delays, they still considered hospital attendance important for controlling hypertension. One participant stated:

"I find it beneficial to come to the hospital because when I come, I get to check my blood pressure and sugar levels, and the doctor attends to my needs despite the long waiting times." **(A.K)**

Another participant linked medication refill to long-term control of hypertension:

"I come to the hospital when my review date is due and follow the treatment orders because I get to top up the medications at a reasonable cost so that the condition will be well controlled and I will live long." **(Y.M)**

Some participants valued hospital services because they could access laboratory investigations and medicines through the National Health Insurance Scheme:

"I get to do all my laboratory investigations ordered by the doctor in the hospital, and the national health insurance covers my drugs." **(M.T)**

However, hospital access also posed challenges. Long wait times were a common concern. One participant described the exhaustion of arriving early and still waiting for several hours:

"It's very disturbing, and I feel exhausted because I come very early in the morning around 5:30 to queue, and I am also diabetic, so if by 9 am I have not left the hospital, it can be frustrating." **(O.A)**

The cost of laboratory investigations was another barrier. One participant explained:

“Right now, if I go to the consulting room and the doctor requests laboratory tests, I will go back home because I cannot afford it.” **(M.I)**

Participants also reported that medicines were not always available at the hospital pharmacy. When this occurred, they had to buy medicines from outside pharmacies or chemical shops, often at a higher cost. This situation created difficulty for participants with limited income and could interrupt regular medication use.

3.4.2 Access to Healthcare Services at Home, Work and in the Community

In addition to hospital-based care, participants accessed blood pressure monitoring services at home, work and in community settings. These services helped participants remain aware of their blood pressure levels between hospital review dates.

One participant reported monitoring blood pressure at work:

“I monitor my blood pressure from my workplace when I am on duty at least once weekly.” **(I.A)**

Another participant relied on a nearby pharmacy for blood pressure checks:

“There’s a pharmacy shop close to my house where I go to monitor my blood pressure at least once before my clinic date or any time I am not feeling well.” **(Y.M)**

These services made blood pressure monitoring more convenient and helped participants remain conscious of their condition. However, community-based monitoring did not replace formal hospital care. Participants still depended on hospital review for clinical assessment, medication refill, laboratory investigations and professional counselling.

3.5 Staying on Treatment through Motivation and Support

The third theme describes the factors that encouraged participants to continue taking their medicines despite challenges. These included personal motivation, healthcare-provider counselling and support from family, friends and religious groups.

3.5.1 Personal Motivation to Remain Healthy

Participants were motivated to adhere to medication because they wanted to remain healthy, live longer, prevent complications and continue caring for their families. One participant described adherence as necessary for fulfilling family responsibilities:

“I want to live long. I have a wife and children to take care of. My kids are very young and they need me.” **(M.A)**

Another participant explained that awareness of living with a chronic condition encouraged medication use:

"I know I am living with an incurable disease and the prescribed medicines maintain my blood pressure within normal limits. If I do not take the medicines, then I am not doing myself any good." **(I.B.Y)**

Participants' motivation was therefore linked to self-preservation, fear of deterioration and the desire to remain useful to family members. However, motivation alone did not eliminate all adherence barriers, especially when participants faced costs, side effects, long waiting times, or forgetfulness.

3.5.2 Healthcare-Provider Communication and Counselling

Healthcare-provider communication and counselling influenced participants' adherence. Some participants reported that nurses, doctors and pharmacists educated them on the importance of medication adherence and the consequences of stopping treatment.

One participant stated:

"I take the medicines because of the health information given to me by the nurses. I was informed that if I don't take the medicines, I can get a stroke." **(E.F)**

Another participant valued advice from a doctor who explained that hypertension management required exercise, dietary changes and regular medication use:

"I think the healthcare professional knows best and would advise me accordingly. I do appreciate it. I met one young doctor the last time I came who changed the medication for me and told me there were three things I had to do; that is, exercise, adopt good eating habits and take my medications as prescribed." **(A.F)**

Another participant explained that counselling reinforced awareness of medication use and blood pressure control:

"The doctor counselled me to take my medications as prescribed to stay healthy. I know that when I don't take my medication or when I stop taking the medication, I feel uneasy in my body and I begin to have palpitations, then I know my pressure is elevated." **(M.A)**

However, not all participants were satisfied with the level of education they received. One participant complained that routine medication refills were not accompanied by adequate counselling:

"Nothing goes on well here. The pharmacists know the medication given to the patient is routine, so no education on the medication is given." **(J.D)**

This position suggests that continuous counselling is important, even for patients who have been on treatment for a long time.

3.5.3 Support from Family, Friends and Religious Groups

Family support was one of the strongest sources of encouragement for medication adherence. Participants reported that children, spouses and grandchildren reminded them to take their medicines, supported them financially and encouraged hospital attendance.

One participant described support from grandchildren and children:

"My grandchildren remind me all the time to take my medicines because I live with them while my children pay my hospital bills." **(C.A)**

Another participant explained that regular calls from a son helped reinforce medication-taking:

*"My son regularly calls to inquire if I have taken my medications, but I am always conscious about taking my drugs every day."***(M.A)**

Spousal support was also important:

"My wife informs me it's time for me to take my medications. She also supports me financially to come for my medications." **(H.M)**

Friends also offered encouragement to some participants, while religious support provided hope and emotional strength. However, religious practices such as fasting could interfere with medication-taking if patients delayed or stopped medication. Overall, participants who had family, social, and emotional support appeared better positioned to continue treatment despite challenges.

4 Discussion

This study explored the barriers and facilitators of oral anti-hypertensive medication adherence among hypertensive patients attending Manhyia District Hospital and Suntreso Government Hospital in Kumasi, Ghana. The findings show that adherence was shaped by a complex interaction of patient-related, social, cultural, financial, and health-system factors. Three major themes emerged: making sense of hypertension and medication use, navigating treatment and care access, and staying on treatment through motivation and support. These themes align with the PRECEDE model, which explains health behaviour through predisposing, enabling, and reinforcing factors.

4.1 Making Sense of Hypertension and Medication Use

The findings showed that participants' understanding of hypertension influenced how they approached medication use. Some participants understood hypertension as a chronic condition requiring lifelong treatment and recognised that anti-hypertensive medicines helped control blood pressure and prevent complications. This understanding encouraged regular medication use. This finding is consistent with the World Health Organisation's view that patients' understanding of their condition influences adherence, their beliefs about treatment, and the quality of their interactions with healthcare providers

[30]. It also supports previous evidence that knowledge of hypertension and awareness of complications can improve adherence among patients receiving anti-hypertensive therapy [12, 19].

Participants who understood the consequences of uncontrolled hypertension were motivated to take their medicines regularly. Stroke, organ damage, and worsening health were commonly mentioned as outcomes participants wanted to avoid. This finding is important because hypertension is often asymptomatic, and patients may underestimate its seriousness when they feel physically well [31, 32]. Kitt et al. [8] noted that the silent nature of hypertension can make long-term control difficult because patients may not always feel an immediate need for treatment. In this study, participants who accepted that hypertension could remain silent but still cause complications appeared more committed to medication adherence.

However, knowledge was not always complete. Some participants did not know the names or dosages of their anti-hypertensive medicines and identified them mainly by the colour, appearance or container. This position creates a practical risk for adherence, especially when medicines are repackaged, changed, unavailable at the hospital pharmacy, or purchased from outside sources. This finding suggests that patient education should go beyond general advice to “take your medicine.” Patients should be helped to understand the names, purposes, doses, and timing of their medicines in a simple, practical way.

Medication-taking routines also influenced adherence. Some participants had integrated medication use into their daily lives by taking medicines immediately after waking up, after breakfast, or before going to work. These routines made adherence easier and reduced the likelihood of missed doses. This position supports the idea that adherence is not only determined by knowledge but also by how patients organise medication-taking within their daily lives. Shin et al. [14] similarly identified patient-related and treatment-related factors as important determinants of medication adherence among patients with hypertension.

Despite this, forgetfulness and busy schedules were important barriers. Participants who were traders or workers, or had demanding daily routines, sometimes delayed or missed doses when work activities interrupted their medication schedule. This finding shows that even motivated patients may fail to adhere when treatment is not fitted into their real-life routines. Interventions to improve adherence should therefore include practical strategies such as reminder systems, linking medication use to daily activities, using pill organisers, and helping patients choose realistic times to take medication.

The findings also showed that side effects, both actual and perceived, influenced adherence. One participant associated anti-hypertensive medication with erectile dysfunction, while others feared additional complaints because they might lead to laboratory costs or extra payments. This position reflects a broader issue in chronic disease care: patients may silently struggle with treatment concerns without discussing them with providers. If side effects are not explored during consultations, patients may reduce, skip, or stop medicines without informing health workers. This finding is consistent with evidence that medication-related concerns can affect adherence and should be addressed through patient-centred counselling [12, 16].

Religious beliefs, fasting, prayer and herbal medicine also formed part of participants' understanding of hypertension management. For some participants, faith provided hope and emotional strength. However, reliance on prayer, fasting, or herbal medicine could interfere with prescribed medication when patients delayed or stopped anti-hypertensive medicines. This finding is similar to studies in Ghana and sub-Saharan Africa showing that religiosity, traditional medicine use and cultural beliefs influence hypertension management and medication adherence [16, 18, 20]. Healthcare providers, therefore, need to discuss religious and herbal medicine practices respectfully rather than dismiss them. This situation may help patients feel safe to disclose their practices and receive appropriate guidance.

4.2 Navigating Treatment and Care Access

The second major theme showed that adherence was strongly influenced by access to hospital care, medication refill services, laboratory investigations, and blood pressure monitoring. Participants valued hospital visits because they allowed them to check their blood pressure, obtain medicines, undergo laboratory investigations, and receive advice from healthcare providers. This finding supports the Ministry of Health Ghana's recommendation that hypertension control requires regular monitoring, patient education, lifestyle modification and appropriate pharmacological treatment [7].

However, access to care was not always smooth. Long waiting times were a major concern for participants, especially those who arrived early and still spent several hours at the facility. Long waiting times can discourage regular clinic attendance and may contribute to missed appointments or delayed medication refills. This finding aligns with that of [17], who identified health-system barriers, including limited follow-up and service delivery challenges, as important issues in hypertension management in Ghana. It also supports Sambah et al. [16], who reported that provider-level and policy-related issues affected effective hypertension management among patients in Ghana.

Cost of care was another important barrier. Although the National Health Insurance Scheme covered many participants, some still reported paying for medicines, laboratory investigations, or other services. For patients requiring lifelong treatment, even small repeated payments may become a burden. This finding is consistent with [18], which reported that patients with hypertension in Ghana experienced financial burden and co-payment challenges. It also supports Gnugesser et al. [15], who found that hypertension treatment imposes a significant economic burden in sub-Saharan Africa, with medication costs accounting for a substantial share of overall treatment costs.

The finding that some participants avoided reporting symptoms due to fear of laboratory costs is particularly important. It suggests that financial barriers may not only affect medication refills but also patient-provider communication. Patients may hide symptoms, delay investigations, or avoid follow-up because they anticipate costs they cannot afford. This finding has implications for patient safety because untreated complications of uncontrolled blood pressure may go unnoticed [33, 34]. Therefore, improving adherence requires attention to both the affordability of medicines and the hidden costs of hypertension care, including laboratory tests, transportation, and time spent at the clinic.

Medication availability also influenced adherence. When medicines were unavailable at the hospital pharmacy, participants had to buy them from outside pharmacies or chemical shops, often at a higher cost. This situation could lead to treatment interruption, especially among patients with limited income. Byiringiro et al. [17] identified medication supply challenges as a health-system barrier to hypertension management in Ghana. Similarly, Sambah et al. [16] reported medication-related challenges as part of the barriers to effective hypertension management. Strengthening medicine supply systems at district hospitals may therefore improve medication continuity and reduce out-of-pocket spending.

Participants also used community-based blood pressure monitoring services at workplaces and nearby pharmacies. These services helped them remain aware of their blood pressure levels between hospital visits. This service is an important facilitator because regular monitoring can keep patients aware of their condition and encourage continued treatment [35, 36]. However, community monitoring should complement, not replace, formal clinical review. Patients still need professional assessment, medication review, laboratory investigations, and counselling [37]. A practical strategy may be to strengthen linkages between district hospitals, pharmacies, community health services, and workplace health services to support continuity of hypertension care.

4.3 Staying on Treatment through Motivation and Support

The third theme showed that adherence was reinforced by personal motivation, healthcare-provider counselling, and support from family, friends, and religious groups. Participants were motivated to take their medicines to live longer, avoid complications, and remain available to their families. For some, the desire to care for children, spouses, and dependents served as a strong reason to continue treatment. This finding suggests that adherence counselling may be more effective when it connects medication use to patients' personal goals and family responsibilities.

Healthcare-provider communication was another important source of reinforcement. Participants who received counselling from doctors, nurses, or pharmacists reported that such education encouraged them to take their medicines. Some participants specifically remembered being told that non-adherence could lead to stroke or other complications. This finding supports the World Health Organisation's emphasis on the patient-provider relationship in promoting adherence [30]. It also aligns with Sambah et al. [16], who identified provider support and patient-provider relations as important enablers of hypertension management.

However, some participants felt that education was inadequate, especially when providers assumed that routine patients already understood their medicines. This finding highlights the need for continuous medication counselling, even for patients who have been on treatment for many years. Hypertension is a lifelong condition, and patients' circumstances, medicines, beliefs and financial capacity may change over time [38]. Routine visits should therefore include brief but consistent education on medication purpose, dose, side effects, lifestyle modification, and the importance of not stopping treatment without professional advice.

Family support emerged as one of the strongest facilitators of adherence. Participants described receiving reminders, financial assistance, and emotional encouragement from spouses, children, and grandchildren. This finding is consistent with Atibila et al. [18], who reported that social support influenced how patients experienced hypertension care in Ghana. It also supports Sambah et al. [16], who identified family and provider support as important enablers of hypertension management. In this study, family members not only provide emotional support but also play practical roles by paying hospital bills, reminding participants to take medicines, and encouraging clinic attendance.

The importance of family support suggests that adherence interventions should not focus only on individual patients. Where appropriate, family members can be included in counselling sessions, especially when patients depend on them for reminders, transport or financial support. This support may be particularly useful for older patients, patients with low literacy, patients living with relatives, and patients who have difficulty remembering medication schedules. However, patient confidentiality and autonomy should still be respected when involving family members.

Religious and social support also played a role. For some participants, faith communities provided emotional encouragement and hope. This support can be positive when it strengthens coping and motivates patients to continue care [39, 40]. However, religious practices may become a barrier if patients stop taking their medicines during fasting or replace prescribed treatment with prayer alone [41, 42]. Healthcare providers should therefore adopt culturally sensitive counselling that acknowledges patients' beliefs while clearly explaining the importance of consistent medication use.

4.4 Interpretation through the PRECEDE Model

The PRECEDE model provided a useful framework for interpreting the findings. Predisposing factors included knowledge of hypertension, beliefs about treatment, attitudes towards medication, forgetfulness, and personal routines. These factors shaped participants' perceptions of medication use as necessary and manageable. Enabling factors included hospital access, medication refill services, blood pressure monitoring, medicine availability, laboratory costs, and health insurance coverage. These factors determined whether participants had the resources and opportunities needed to adhere. Reinforcing factors included personal motivation, healthcare-provider counselling, family support, social support, and religious encouragement. These factors helped sustain medication-taking behaviour over time.

The findings show that medication adherence cannot be improved solely through patient education. While knowledge is important, patients also need affordable medicines, accessible services, respectful communication from providers, manageable clinic processes, and social support. This finding supports the PRECEDE model's view that health behaviour is influenced by multiple interacting factors rather than individual knowledge alone [23, 24]. For hypertension care in district hospital settings, interventions must therefore address patient-level, family-level, and health-system-level barriers together.

4.5 Implications for Practice and Policy

The findings have important implications for hypertension care in Ghana. First, healthcare providers should provide continuous, simple, and practical education on hypertension and medication use. Education should include the chronic nature of hypertension, the purpose of anti-hypertensive medicines, medication names and doses, possible side effects, what to do when doses are missed, and the danger of stopping medicines without professional advice.

Second, providers should assess adherence barriers during routine clinic visits. Patients should be asked about forgetfulness, side effects, cost challenges, use of herbal medicine, fasting, prayer practices, and difficulties with medication refills. These conversations should be non-judgemental so that patients feel comfortable discussing their real practices.

Third, district hospitals should strengthen medication refill systems and reduce unnecessary delays for stable hypertensive patients. Long waiting times may discourage regular attendance, especially for patients who work, trade, or have other responsibilities. Appointment systems, refill clinics, nurse-led counselling, and triage of stable patients may help improve service efficiency.

Fourth, health-system managers and policymakers should address the financial burden of hypertension care. Even among insured patients, out-of-pocket payments for medicines, laboratory tests, and other services may disrupt adherence. Ensuring regular availability of essential anti-hypertensive medicines and reducing extra payments could improve long-term treatment continuity.

Finally, family involvement should be considered as part of adherence support. With the patient's permission, family members can be educated on how to support medication adherence, clinic attendance, lifestyle modification, and blood pressure monitoring. This situation may be particularly helpful for older patients and those who depend on relatives for financial or practical support.

4.6 Strengths and Limitations

A strength of this study is that it provides qualitative insight into the lived experiences of hypertensive patients receiving care in two district hospitals in Kumasi. The use of direct participant quotations helped preserve patients' voices. It showed how adherence is shaped by everyday realities such as work schedules, cost of care, family support, side effects and healthcare access. The use of the PRECEDE model also strengthened the interpretation of the findings by organising adherence factors into predisposing, enabling and reinforcing influences.

However, the study has some limitations. The findings were based on 24 participants from two district hospitals in Kumasi and may not represent all hypertensive patients in Ghana. Patients receiving care in rural settings, private facilities, teaching hospitals or community-based clinics may have different experiences. The study also relied on self-reported accounts, which may be affected by recall bias or social desirability bias. Participants may have underreported non-adherence or overemphasised behaviours they considered acceptable. Despite these limitations, the study provides important context-specific evidence that can inform patient-centred hypertension care in similar district hospital settings.

4.7 Conclusion

Adherence to oral anti-hypertensive medication among patients in the two Kumasi district hospitals was shaped by how well they understood their condition, whether they could afford and access care, and how much support they received from providers and family. Motivation and knowledge helped patients stay on treatment, but they did not remove the barriers of forgetfulness, side effects, cost, long waiting times, and medicine shortages. Adherence should therefore be understood as a shared responsibility of patients, families, and the health system, not as the patient's effort alone.

Abbreviations

CHRPE: Committee on Human Research, Publication and Ethics

COREQ: Consolidated Criteria for Reporting Qualitative Research

EDQ: Exploratory descriptive qualitative

GH₵: Ghana cedi

KNUST: Kwame Nkrumah University of Science and Technology

PRECEDE: Predisposing, Reinforcing, and Enabling Constructs in Educational Diagnosis and Evaluation

WHO: World Health Organization

Declarations

Ethics approval and consent to participate

In accordance with the Declaration of Helsinki, ethical approval was obtained from the Committee on Human Research, Publication and Ethics (CHRPE) at Kwame Nkrumah University of Science and Technology (KNUST), Kumasi, Ghana with reference number CHRPE/AP/324/22. The studyPermission was also obtained from the management of Manhyia District Hospital and Suntreso Government Hospital before data collection. Participants were informed about the purpose of the study, the voluntary nature of participation, and their right to withdraw at any time without affecting their care. Informed consent was obtained from all participants before each interview. Confidentiality was maintained by using participant codes instead of names. Interview data were handled securely and used only for the study.

Consent for Publication

Not applicable

Availability of data and materials

The datasets generated and analysed during this study are not publicly available because the interview transcripts contain personal accounts that could identify participants. De-identified extracts are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

P.O.W., E.A.B., A.K.A.D., C.A.P., L.K., J.K.A., and F.A. conceptualised and designed the study and developed the interview guide. P.O.W. and L.K. collected the data. P.O.W., J.K.A., F.A., C.A.P., and A.K.A.D. coded, analysed, and interpreted the data. P.O.W., C.A.P., E.A.B., A.K.A.D, J.K.A., F.A. and L.K. drafted the original manuscript. All authors reviewed and approved the final manuscript.

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