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Knowledge, Attitudes and Practices of People Living with Hypertension Regarding Their Treatment and Lifestyle Modifications: A Case Study of the University Teaching Hospital, Lusaka, Zambia

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Abstract

Hypertension remains a leading cause of premature death and disability worldwide, and treatment and control rates in low-income countries, Zambia included, remain poor. This study assessed the knowledge, attitudes and practices (KAP) of people living with hypertension regarding their treatment and lifestyle modifications at the University Teaching Hospital (UTH), Lusaka, Zambia. A descriptive qualitative design was used. Fifty adults aged 19–70 years on antihypertensive follow-up at the UTH outpatient department were recruited through purposive sampling and interviewed using a pre-tested semi-structured interview guide; data were analysed thematically using Tesch's open coding method with NVivo support. Most participants (60%) correctly described hypertension as a chronic condition requiring continuous management, and 70% identified lifestyle and hereditary risk factors; however, only 10% could state blood pressure targets and 8% named complications of uncontrolled disease. Attitudes were largely positive: 90% believed medication was necessary for control and 60% relied on family and provider support. Practices were uneven; medication adherence was high (90%), whereas regular physical activity (30%), home blood pressure monitoring (20%) and stress management (30%) were uncommon. Financial constraints (80%) and limited time (60%) were the principal barriers to self-management. Structured patient education, subsidised antihypertensive therapy and strengthened family and community support systems are needed to translate positive attitudes into sustained hypertension self-management.

Keywords: *Hypertension; Knowledge, Attitudes and Practices; Treatment Adherence; Lifestyle Modification; Patient Education; Zambia.*

I. INTRODUCTION

Hypertension, defined as a systolic blood pressure of 140 mmHg or above or a diastolic blood pressure of 90 mmHg or above, is one of the strongest modifiable risk factors for premature death and disability [1,2]. The number of people living with hypertension doubled between 1990 and 2019, from 650 million to 1.3 billion, and progress in treatment and control has been highly unequal: control rates are highest in high-income countries and lowest in low-income countries and in the African region [1,2].

In Zambia, hypertension accounts for the largest share of the non-communicable disease burden and of cardiovascular deaths. National screening data from May Measurement Month 2019 showed a high proportion of undetected and uncontrolled hypertension in the adult population [3], and a study of two urban health facilities, including the University Teaching Hospital (UTH) in Lusaka, reported a prevalence of non-adherence to antihypertensive medication of about 30% together with a substantial productivity-adjusted life-year loss from uncontrolled hypertension [4]. Cost-effective pharmacological and lifestyle interventions exist, yet control remains poor [5].

Long-term control of hypertension depends on sustained self-management: consistent adherence to prescribed medication combined with lifestyle modifications such as salt reduction, a balanced diet, regular physical activity, limited alcohol intake and stress management [6]. Whether patients adopt these behaviours is shaped by what they know and believe about their condition. Studies from different settings report wide variation in awareness of the asymptomatic nature of hypertension, its complications and treatment goals, and document culturally rooted causal beliefs, including attribution to excessive thinking, supernatural forces or

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normal ageing [7,8,9,10]. These beliefs influence both attitudes towards medication and the self-care practices patients actually sustain [11,12].

Zambian evidence indicates that misconceptions about the causes and curability of hypertension persist, particularly outside urban tertiary care [9]. However, little is known about how knowledge, attitudes and practices (KAP) interact among patients already enrolled on follow-up at a tertiary facility in Lusaka, where the largest share of the national hypertension caseload is managed. The study was framed by the knowledge–attitude–practice continuum: accurate knowledge is expected to shape positive attitudes, which in turn determine self-management practices and, ultimately, blood pressure control.

This study therefore assessed the knowledge, attitudes and practices of people living with hypertension regarding their treatment and lifestyle modifications at the UTH outpatient department (OPD). The specific objectives were to: (i) assess knowledge of hypertension, its treatment and lifestyle modifications; (ii) ascertain attitudes towards treatment and lifestyle modifications; (iii) describe the self-management practices patients engage in; and (iv) identify barriers to, and patient suggestions for, improved hypertension management. The findings are intended to inform patient education and support interventions within national hypertension control efforts.

II. LITERATURE REVIEW

This section sets out the theoretical frameworks that guide the study and synthesises empirical evidence on knowledge, attitudes and practices (KAP) towards hypertension from global, sub-Saharan African and Zambian settings.

2.1 Theoretical review

2.1.1 Health Belief Model

The Health Belief Model (HBM), developed by Rosenstock [13] and refined by Becker and colleagues [14], holds that health behaviour is governed by six perceptions: susceptibility to a condition, its severity, the benefits of acting, the barriers to acting, cues to action, and self-efficacy, the confidence in one's ability to perform the behaviour [15]. Applied to hypertension, perceived susceptibility and severity correspond to a patient's recognition that silent elevation of blood pressure can still cause stroke or heart attack; perceived benefits underlie the belief that medication and lifestyle change are worth the effort; perceived barriers capture the financial and time costs documented in low-resource settings; cues to action include provider counselling, family reminders and follow-up appointments; and self-efficacy determines whether a patient who accepts advice can sustain salt reduction or regular exercise. The model predicts that adherence is strongest where threat is recognised, benefits outweigh barriers and cues are frequent, which makes it directly testable against the KAP data collected in this study.

2.1.2 Theory of Planned Behaviour

Ajzen's Theory of Planned Behaviour (TPB) [16] explains behaviour through intention, shaped in turn by attitude towards the behaviour, subjective norms and perceived behavioural control. In hypertension management, attitude corresponds to the value a patient places on taking medication and modifying diet; subjective norms capture the expectations and encouragement of family, peers and healthcare providers; and perceived behavioural control reflects command over the resources the regimen demands, namely money for drugs, time for exercise and access to monitoring. The central proposition of the theory, that intention fails to translate into action when actual control is low, offers a precise account of the knowledge–practice gap commonly observed in hypertension care: a patient may fully intend to adhere yet be unable to do so when cost or work pressure removes control.

2.1.3 Knowledge–attitude–practice framework

The KAP framework arranges these constructs into a causal chain in which knowledge shapes attitude and attitude shapes practice. It provides the organising structure for the objectives and interview guide of this study and locates the two behavioural theories within it: the HBM and the TPB explain how knowledge is converted into attitude, intention and perceived control, while the KAP chain traces the pathway onward to observable self-management and, ultimately, to blood pressure control.

2.2 Empirical review

2.2.1 Global evidence

KAP studies from other regions report consistently partial knowledge. In Portugal, more than 80% of patients identified overweight, sedentary lifestyle and salt as risk factors, yet most were unaware of the asymptomatic course of the disease and believed treatment could be time-limited [12]. In India, high salt intake (99%), alcohol (82%) and overweight (75%) were widely recognised as risk factors [17], whereas in Korea causal attributions extended to fate and disharmony with natural forces [8]. Illness perception was positively associated with treatment adherence among patients in Nepal [11], and KAP surveys from Sri Lanka [18] and Ethiopia [19,20] found adequate knowledge of medication but weak lifestyle modification, a pattern also reported in Sudan [21].

2.2.2 Evidence from sub-Saharan Africa

The pooled prevalence of hypertension in Africa is approximately 31%, with awareness, treatment and control lagging far behind other regions [1]. In Ghana, fewer than half of respondents correctly defined hypertension, although over 90% agreed that medication controls it and a third relied on herbal preparations [22]. In Tanzania, patients attributed hypertension chiefly to excessive thinking

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[7], and traditional healers described it as a long-standing, dangerous disease with bleeding manifestations, shaping care-seeking outside the formal health system [10]. In Zimbabwe, residents of a disadvantaged rural community showed limited knowledge and sporadic self-care practice [23]. Across these settings, cost, food access and health-system constraints repeatedly limited practice even where attitudes were positive [20,23].

2.2.3 Evidence from Zambia

In Zambia, national screening data indicate a large pool of undetected and uncontrolled hypertension [3]. In rural central province, residents attributed hypertension to daily stressors and poverty, a view reportedly reinforced by advice from health providers, alongside salt, cooking oil and processed foods [9]. Among patients on follow-up at two urban facilities, including UTH, non-adherence to antihypertensive medication was about 30% and uncontrolled hypertension carried measurable productivity losses [4]. Most Zambian evidence, however, comes from rural or community samples or from quantitative designs; qualitative evidence on how patients already enrolled in tertiary follow-up understand, feel about and manage their condition remains scarce, and it is this gap the present study addresses.

III. MATERIALS AND METHODS

3.1 Study design and setting

A descriptive qualitative study was conducted at the UTH OPD in Lusaka, Zambia (15.432° S, 28.314° E; Figure 1). UTH is the largest public tertiary referral hospital in Zambia, with a bed capacity of 1,655, and approximately 35 hypertensive patients attend review clinics at the OPD each day. The site was selected for its patient volume and accessibility.

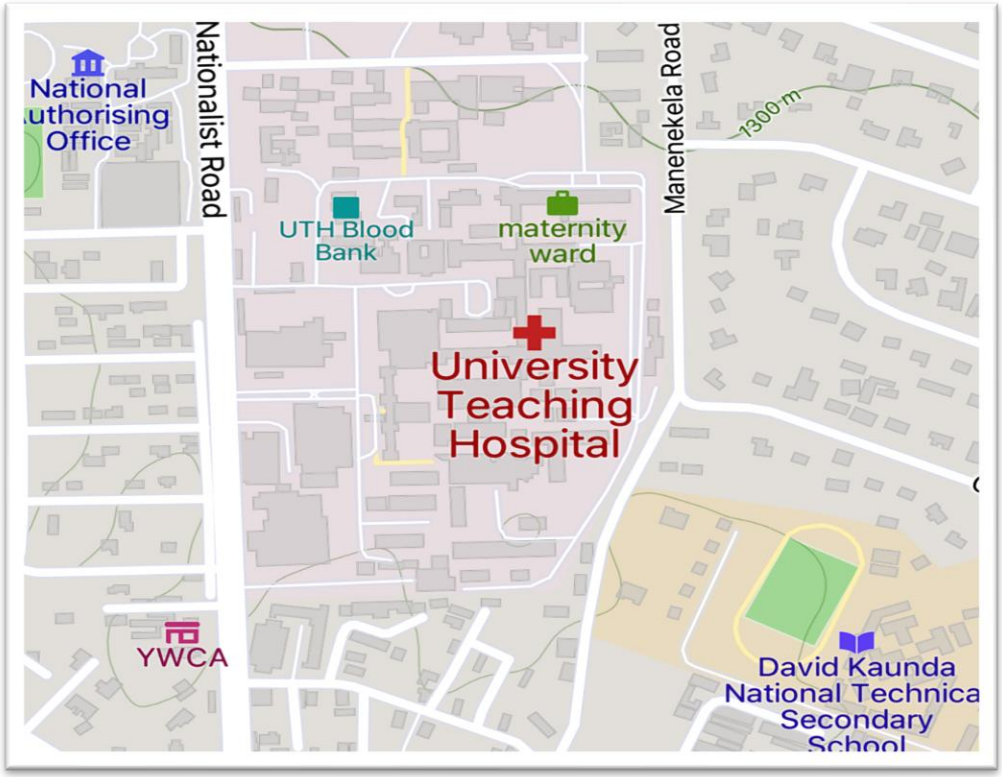


Figure 1: Map of the study setting, University Teaching Hospital, Lusaka, Zambia (source: Mapcarta, © OpenStreetMap contributors).

3.2 Study population and sampling

The study population comprised adult men and women aged 19–70 years diagnosed with hypertension and receiving antihypertensive treatment at the UTH OPD. Participants were included if they were willing and able to give informed consent, and excluded if they had cognitive impairment or a severe concurrent illness that would limit participation, or were pregnant. Fifty participants were recruited through purposive sampling over four weeks, with deliberate selection to capture a range of ages, sexes and educational backgrounds.

3.3 Data collection

Primary data were collected using a pre-tested, semi-structured interview guide with open-ended questions, organised into five sections: socio-demographic characteristics; knowledge of hypertension, its causes and treatment regimen; attitudes towards treatment and lifestyle modifications; hypertension management practices; and challenges and recommendations. Face-to-face

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interviews were conducted in a private room at UTH, lasted 30–45 minutes, and were audio-recorded with consent; field notes captured non-verbal cues. The guide was piloted with five hypertensive patients at the Levy Mwanawasa Teaching Hospital OPD, a site similar to the main study setting, and refined before use.

3.4 Data analysis

Audio recordings were transcribed verbatim and checked for accuracy. Transcripts were analysed using thematic analysis with Tesch's open coding method; coding was performed manually and NVivo software was used to organise and manage the data. Themes and sub-themes were generated inductively, and the frequency of coded responses within each theme was summarised descriptively (n, %) to outline the distribution of views in the sample; these percentages describe this purposive sample only and are not population estimates. Illustrative quotations are reported with each theme.

3.5 Ethical considerations

Ethical approval was obtained from the Cavendish University Zambia Ethics Committee, and authorisation to conduct the study was granted by UTH management. Written informed consent was obtained from all participants after explanation of the study purpose and procedures. Confidentiality was protected by using initials in place of names, participants were informed of their right to withdraw at any point without consequence, and all data were stored securely with access limited to the research team.

IV. RESULTS AND DISCUSSION

4.1 Results

4.1.1 Socio-demographic characteristics

Fifty participants completed the interviews. Women constituted 60% of the sample. Participants aged 56 years and above formed the largest age group (28%), followed by 46–55 years (26%) and 36–45 years (22%); 24% of participants were below 36 years. Most had secondary (40%) or primary (26%) education, and 34% were self-employed while 20% were unemployed (Table 1).

Table 1: Socio-demographic characteristics of participants (N = 50).

Characteristic	Category	n	%
Age (years)	19–25	3	6.0
	26–35	9	18.0
	36–45	11	22.0
	46–55	13	26.0
	56 and above	14	28.0
Gender	Female	30	60.0
	Male	20	40.0
Education	Primary	13	26.0
	Secondary	20	40.0
	Certificate	8	16.0
	Diploma	6	12.0
	Bachelor's degree	2	4.0
	Postgraduate	1	2.0
Employment	Full-time	15	30.0
	Part-time	8	16.0
	Self-employed	17	34.0
	Unemployed	10	20.0

4.1.2 Knowledge of hypertension, its causes and treatment

Three in five participants (60%) described hypertension as a chronic condition requiring continuous management, and 70% correctly identified lifestyle and hereditary risk factors, particularly excess salt intake, overweight and family history. The remaining 30% held misconceptions or could not name specific causes. Awareness of monitoring targets was limited: only 10% could state a blood pressure target such as 120/80 mmHg, while 90% relied on clinic visits or could not interpret readings. Most participants (80%)

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described treatment as a combination of daily medication and lifestyle adjustment, but awareness of complications was notably weak, with only 8% naming stroke or heart attack, and only 10% had ever received formal education on hypertension management (Table 2).

Table 2: Knowledge of hypertension, its causes and treatment regimen (N = 50).

Theme	N	Illustrative quotation
Understands hypertension as a chronic condition needing continuous management	30	"Hypertension is high blood pressure that needs constant management." (female participant)
Identifies lifestyle and hereditary risk factors (salt, overweight, family history)	35	"Eating too much salt and being overweight are common causes." (male participant)
Holds misconceptions or unable to name specific causes	15	—
Able to state blood pressure measurement targets (e.g. 120/80 mmHg)	5	"I use a digital machine, and my target is 120/80 mmHg." (male participant)
Describes treatment as medication combined with lifestyle adjustment	40	"I take prescribed pills daily to manage it." (female participant)
Aware of complications of uncontrolled hypertension (stroke, heart attack)	4	"If untreated, it can lead to stroke or heart attack." (male participant)
Received formal education or training on hypertension management	5	"I attended a workshop on hypertension management at UTH last year." (female participant)

4.1.3 Attitudes towards treatment and lifestyle modifications

Emotional responses to diagnosis were split evenly between fear (50%), driven by awareness that hypertension can be fatal, and a sense of empowerment (50%) after counselling by healthcare providers. Confidence in making lifestyle changes was reported by 40%, while 60% struggled to sustain changes because of busy schedules and limited resources. Belief in the necessity of medication was nearly universal (90%), and 60% described family members or healthcare providers as central to their adherence. Overall, 70% perceived an improvement in their quality of life since starting treatment (Table 3).

Table 3: Attitudes towards treatment and lifestyle modifications (N = 50).

Theme	n (%)	Illustrative quotation
Fear at diagnosis, linked to perceived fatality of the condition	25 (50.0)	"I was scared at first because I heard it can be deadly." (male participant)
Felt empowered to manage the condition after provider counselling	25 (50.0)	"I didn't know what to expect, but the doctors explained it well." (female participant)
Confident in ability to make and sustain lifestyle changes	20 (40.0)	"It takes discipline, but I'm making progress." (female participant)
Believes medication is necessary for blood pressure control	45 (90.0)	"I know that without medication, my blood pressure will rise again." (male participant)
Relies on family and healthcare-provider support for adherence	30 (60.0)	"My husband ensures I take my pills." (female participant)
Perceives improved quality of life since starting treatment	35 (70.0)	"I feel like I have more energy now." (female participant)

3.1.4 Practices in hypertension management

Dietary change was the most common lifestyle adjustment: 50% had reduced salt intake and 40% had increased fruit and vegetable consumption, while 10% reported no dietary change. Regular physical activity was reported by 30%, and only 20% monitored their blood pressure at home. Medication adherence was high (90%), although some participants reported timing errors and 10% admitted regularly skipping doses. Stress management techniques were used by 30%, reduction of alcohol or smoking by 20%, and regular attendance of follow-up appointments by 40%; the remaining 60% cited financial or logistical obstacles to follow-up (Table 4, Figure 2).

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Table 4: Self-management practices reported by participants (N = 50).

Practice	n (%)	Illustrative quotation
Reduced dietary salt intake	25 (50.0)	"I avoid adding extra salt to my food now." (female participant)
Increased fruit and vegetable consumption	20 (40.0)	"I include fruits in my meals every day." (female participant)
Regular physical activity (e.g. 30-minute walks)	15 (30.0)	"I walk for 30 minutes every evening." (male participant)
Home blood pressure self-monitoring	10 (20.0)	"I check my blood pressure at home twice a week using a digital machine." (female participant)
Adherent to prescribed antihypertensive medication	45 (90.0)	"I never miss a dose, but sometimes I forget the timing." (male participant)
Uses stress management techniques	15 (30.0)	"I practice breathing exercises when I feel stressed." (female participant)
Reduced alcohol intake or stopped smoking	10 (20.0)	"I used to drink a lot, but now I only drink occasionally." (male participant)
Attends regular follow-up appointments	20 (40.0)	"I visit my doctor at UTH once every three months for a check-up." (male participant)

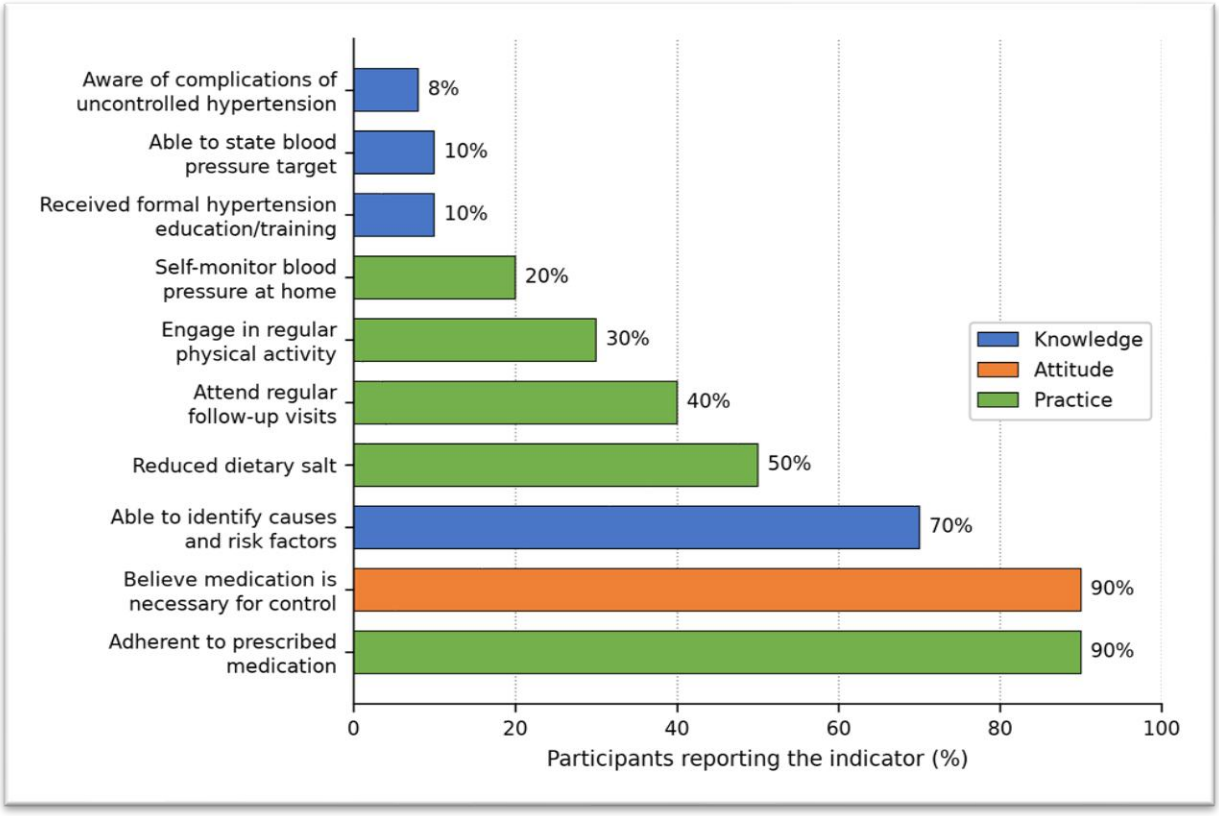


Figure 2: Proportion of participants reporting key knowledge, attitude and practice indicators (N = 50).

4.1.5 Challenges and recommendations

Financial difficulty was the dominant barrier, reported by 80% of participants who struggled to purchase medications or nutritious food, and 60% described time constraints as a further obstacle to healthy routines. Accordingly, 90% requested subsidised or free antihypertensive medication, 30% asked for more detailed dietary and exercise counselling from clinicians, and 60% identified family support as essential to maintaining their regimens (Table 5).

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Table 5: Challenges in hypertension management and participant recommendations (N = 50).

Theme	n (%)	Illustrative quotation
Financial constraints (cost of medication and nutritious food)	40 (80.0)	"I can't afford to buy all the medications I'm prescribed." (male participant)
Time constraints (balancing work, family and healthy routines)	30 (60.0)	"Balancing work and maintaining a healthy lifestyle is tough." (female participant)
Requests subsidised or free antihypertensive medication	45 (90.0)	"If the hospital could provide free medications, it would be easier for me." (female participant)
Requests more detailed dietary and exercise counselling	15 (30.0)	"Doctors should provide more detailed advice on diet and exercise." (male participant)
Relies on family and friends for encouragement and reminders	30 (60.0)	"My wife ensures I stick to my diet, which helps a lot." (male participant)

4.2 Discussion

Participants showed a sound grasp of the chronic nature of hypertension and of its principal risk factors, a pattern consistent with hospital-based studies from Portugal [12], India [13] and Ethiopia [14], and better than the causal attributions to supernatural forces or excessive thinking reported in rural Zambia, Tanzania and Korea [7,8,9]. Exposure to repeated biomedical messaging during tertiary-care follow-up may explain this difference. Nevertheless, the striking gaps observed here, namely that only one participant in ten knew the blood pressure target and fewer than one in ten could name complications, mirror the Portuguese finding that patients understand treatment but not the silent, asymptomatic course of the disease [12]. Because perceived severity and susceptibility drive health behaviour, this specific deficit plausibly weakens adherence once symptoms are absent.

Attitudes were predominantly positive. The near-universal belief in the necessity of medication (90%) agrees with findings from Nepal [11] and Ghana [15], and the supportive role of family and providers echoes reports from Ghana [15] and Zimbabwe [16]. The coexistence of fear and empowerment after diagnosis is consistent with health belief model reasoning: perceived threat initiates action, while provider counselling converts threat into self-efficacy. The 40% who felt confident about lifestyle change, against 90% confident about medication, indicates that patients regard pills as easier to control than daily habits.

Practice data reveal the expected knowledge–behaviour gap. Medication adherence (90%) was considerably higher than the 30% non-adherence previously documented at UTH [4], a difference that may partly reflect social desirability in face-to-face interviews. Lifestyle practices lagged far behind: regular exercise (30%), home monitoring (20%) and stress management (30%) were all uncommon, in line with low lifestyle-modification practice reported in Ethiopia [17], Sudan [18], Sri Lanka [19] and Gondar, Ethiopia [20], and with African evidence that cost and food access limit dietary change [16]. Low uptake of home monitoring is a particular concern, because self-monitoring reinforces adherence and early detection of loss of control [11].

Financial constraint, reported by 80% of participants, was the most frequently cited barrier and aligns with evidence from low- and middle-income settings where out-of-pocket costs for drugs and nutritious food undermine self-management [16,17]. Time pressure from work and family obligations compounded the problem for 60%. Participants' own solutions, subsidised medication, practical dietary counselling and family involvement, point to low-cost, health-system-level interventions rather than further awareness campaigns alone.

Taken together, the findings indicate that further awareness campaigns alone will not close the control gap at UTH. The binding constraints are practical: patients already accept medication but cannot afford it, cannot monitor it, and were never taught what target they are treating towards. Brief structured counselling at each OPD contact, affordable home monitoring, subsidised drugs and deliberate involvement of family members address these constraints directly and are feasible within existing primary and tertiary care platforms.

Four limitations should be noted. First, the single-site purposive sample of 50 patients limits transferability, and the over-representation of women reflects sex differences in care-seeking. Second, self-reported data are vulnerable to recall and social desirability bias. Third, the cross-sectional qualitative design describes associations but cannot establish causality. Fourth, the perspectives of healthcare providers and of the wider health system were not examined. Multi-site mixed-methods and longitudinal studies are recommended to address these gaps.

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V. CONCLUSION

Patients on hypertension follow-up at UTH understand that their condition is chronic and accept medication as necessary, but critical knowledge gaps remain regarding blood pressure targets, the asymptomatic course of the disease and its complications. Positive attitudes and strong family support sustain high medication adherence, while lifestyle modifications and home monitoring remain inconsistent because of cost, time and counselling gaps. Four actions follow from these findings: (i) structured, culturally adapted patient education at every OPD contact, emphasising the silent nature of hypertension, treatment targets and complications; (ii) subsidised or free antihypertensive medication and affordable blood pressure monitoring for patients unable to pay; (iii) active involvement of family members and establishment of community support groups; and (iv) integration of these measures into national non-communicable disease programmes, with workplace- and community-based lifestyle promotion. Addressing these gaps should improve control rates and reduce the cardiovascular burden of hypertension in Zambia.

VI. RECOMMENDATION

The data indicate a set of mutually reinforcing acts. Patient education should be restructured first, brief, culturally appropriate explanations of the silent nature of hypertension, blood pressure targets, and complications should be integrated into every outpatient contact rather than left to chance, and reinforced with printed take-home messages and periodic hypertension workshops at UTH. Because cost was the most common barrier cited by patients, financial protection is equally important: subsidized or free antihypertensive medication for those who cannot afford it, combined with reliable stocks of affordable first-line drugs, would remove the single most significant barrier to adherence, while loaned or shared validated monitors would bring home blood pressure measurement within reach of the majority who currently rely solely on clinic visits. Because family members already play an important role in adherence, counseling sessions should intentionally include them, and community peer-support groups should be developed to help people maintain their food and exercise improvements between visits. Clinicians should provide practical, low-cost dietary and exercise counseling in the workplace, while salt-reduction, physical activity, and stress-management programs should be expanded to community centers. These strategies will only last if hypertension control is prioritized in the national noncommunicable disease agenda with a dedicated funding line, and larger multi-site mixed-methods and longitudinal studies evaluate if self-management benefits are sustained over time.

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Conflict of Interest
The authors declare no conflict of interest.

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