Health Science Reports

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Perceived Barriers to Hypertension Control: A Cross-Sectional Study Among Healthcare Providers in the Ashanti Region of Ghana

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Received: 16 September 2024 | **Revised:** 1 March 2025 | **Accepted:** 3 March 2025

Funding: The authors received no specific funding for this work.

Keywords: barriers | Ghana | government | health provider | health system | hypertension | management

ABSTRACT

Background and Aims: Uncontrolled hypertension (HPT) is a major public health challenge in Ghana. This study investigated the impact of government health system, and healthcare provider-level barriers on hypertension management in the Ashanti region.

Methods: A cross-sectional survey of 210 healthcare providers at Komfo Anokye Teaching Hospital was conducted using a pre-tested questionnaire. Descriptive and inferential statistical analyses were employed to examine the associations between barriers and hypertension management.

Results: Government and health system-level barriers were significantly associated with healthcare providers' perceived effectiveness in managing hypertension and policy effectiveness. Similarly, healthcare provider-level barriers were linked to perceived effectiveness and policy impact. However, multivariable analysis revealed that the effects of these barriers on hypertension management were attenuated.

Conclusion: While government, health system, and healthcare provider barriers influence hypertension management in Ghana, their impact is less pronounced than anticipated. This finding is encouraging for achieving the national hypertension control target. However, further research is needed to identify factors mitigating the effects of these barriers to inform effective interventions.

1 | Introduction

The UN General Assembly's 2011 political statement on the prevention and management of non-communicable diseases (NCDs) places a strong focus on the necessity to build national capacity to address NCDs, especially in low- and middle-income countries (LMICs) [1]. Prevalence rates relative to hypertension [HPT], the main precursor of most NCDs continue to increase globally [2]. The global epidemiological data estimates that HPT prevalence ranges from 13% to 41% [2], 54% in the African continent [3, 4], 27% in Ghana [5] and 30.7% in the Ashanti Region [A/R] of Ghana [6]. These prevalence rates demonstrate the epidemiological pervasive nature of the disease with significant mortalities locally [7] and globally [8]. This has revealed the poor rates of HPT treatment in LMICs [9] and Ghana [6]. This situation is defeating the sustainable development goal [SDG] 3.4 which aims to reduce premature deaths from NCD by one-third by 2030 [10] and affecting achievement

of global target to reduce uncontrolled HPT from 25% to 30% by 2030 [11, 12]. Controlling and managing HPT requires concerted efforts from the patients, healthcare providers, health system, and the government.

In any health system, healthcare providers are essential to the administration, treatment, and prevention of diseases, but their ability to deliver the necessary care is dependent upon several factors [13]. These factors may include but are not limited to the healthcare provider competence/skills, self-efficacy/ability, and a supportive work environment (i.e., availability of equipment and medical consumables, adequate facilities, coordinated professional team, and adequate technological infrastructure) [11, 13]. Healthcare providers have expressed varied perspectives on barriers affecting effective HPT management. For instance, healthcare providers in Uganda highlighted cultural beliefs, complex practice environment, interprofessional dynamics, governmental prioritization of healthcare resources, and health literacy as challenges affecting the management of HPT [14]. Also, Green et al. [14] pointed out that healthcare providers struggle to collaborate with colleagues in coordinating the joint management of patients, high cost, and limited availability of medication as barriers. Also, healthcare providers in the Al-Rousan et al. [15] study intimated poor coordination and communication between different primary care physicians and specialists seeing the same patient, difficulty retrieving health data of patients to enable an accurate diagnosis of HPT, and low education among primary care physicians [15]. Other scholars highlight therapeutic inertia on the part of healthcare providers as a barrier affecting HPT control. This they cited as been precipitated by large patient volume, time constraints, ignorance of proper therapy goals, and handling patients with multiple comorbidities [16, 17]. Other perspectives by healthcare providers in Ghana further posit that inadequate health staff, inadequate training of staff, restrictions on lower cadre staff from prescribing first-line antihypertensive medication as barriers compromising the effective management of HPT [13, 18, 19]. These barriers not only weaken the healthcare providers clinical care spirit but also derail government and the health system efforts at controlling HPT. This is relevant in the renaissance call for healthcare providers NCDs management to be strengthened in the areas of screening proficiency, NCD knowledge, treatment recommendations, and care protocols [18–20].

Effective management of HPT requires crucial support from the government and health system in providing essential resources (i.e., access to health facilities, funds, availability of health consumables, qualified/available staff, and supportive work environment) [19, 21, 22]. Studies highlight the significant role of government in healthcare financing [21, 23], governance and infrastructure [24, 25], showing that government spending on public health improves longevity [21, 23] and reduces infant mortality [26].

In Ghana, the Ministry of Health (MoH) formulates healthcare policies and provides funding [19, 27] but struggles to fully meet its mandate for chronic conditions including HPT [19, 28]. Ghana spends only 6% of its Gross Domestic Product (GDP) on health, below the optimal of 15% [29] and relies on imports for approximately 85% of its total healthcare consumption, less production of medical equipment/devices, and very limited local production of pharmaceuticals [29]. This situation could affect the quality of health delivery and HPT management. Policy level barriers also hinder HPT management of Ghana [19] exemplified by a 5-year gap between the last NCD policy implemented from 2012–2016 [30, 31] and the recent published policy [27]. The 5-year vacuum in formulating a policy directive for NCDs and HPT control may erase gains made by the implementation of the previous policy. Other studies identified government and health system factors such as shortage of antihypertensive medications, shortage of health staff, high cost of medication, inadequate financing, and disconnect in policy implementation, monitoring, and evaluation [28, 32, 33]. Health inequalities, such as infrastructural gap and lack of training of health staff on HPT treatment and management, and legal restrictions to hypertensive drug prescription at the primary healthcare level further disrupt HPT control efforts [28, 32, 33]. Addressing these barriers is essential for improving HPT control in Ghana.

Although prior studies have explored HPT in Ghana [19, 28, 32–34] the present study's novelty is quantitatively evaluating government health system, and healthcare provider barriers situated within the chronic care model (CCM) [35] to understand the productive interactive nuances these critical actors contribute to HPT management. This approach will provide insight into government, health system, and healthcare provider barriers, potentially leading to a refocusing of resources, efforts, and policies for enhanced HPT control.

2 | Conceptual Framework

This study is part of a broader mixed-methods project entitled: *An evaluation of progress towards hypertension control in Ghana: A study in the Ashanti Region*. This study was nested in the CCM (Figure 1) for chronic illness management [35]. It is an ideal model for this study as it examines health outcomes based on the impact of government health policies and health systems, patient self-management practices, and healthcare provider influence in HPT management [36]. The model further integrates health experts, in a multifaceted assessment of constructs required to deliver preventative care, which is integral in HPT management [37]. Besides, the model has been validated in the extant literature and in diverse settings [36–41] including Ghana [32, 38].

The model is made up of six constructs namely, "delivery system support," "decision support," "clinical information support," "health system organization," "self-management," and "community resources and policies [35, 42]". Four of the constructs namely "health system organization," "delivery system support", "decision support", and "clinical information support" are healthcare procedures usually carried out by healthcare providers toward patients' care, treatment, and disease control [40]. However, healthcare providers trained to care for patients may struggle to manage conditions like HPT if they lack self-efficacy, overloaded due to insufficient staffing, or lack adequate logistics to enable them to perform their duties. This, therefore generates barriers at the healthcare provider level and hinders disease control (e.g., HPT). This situation has been

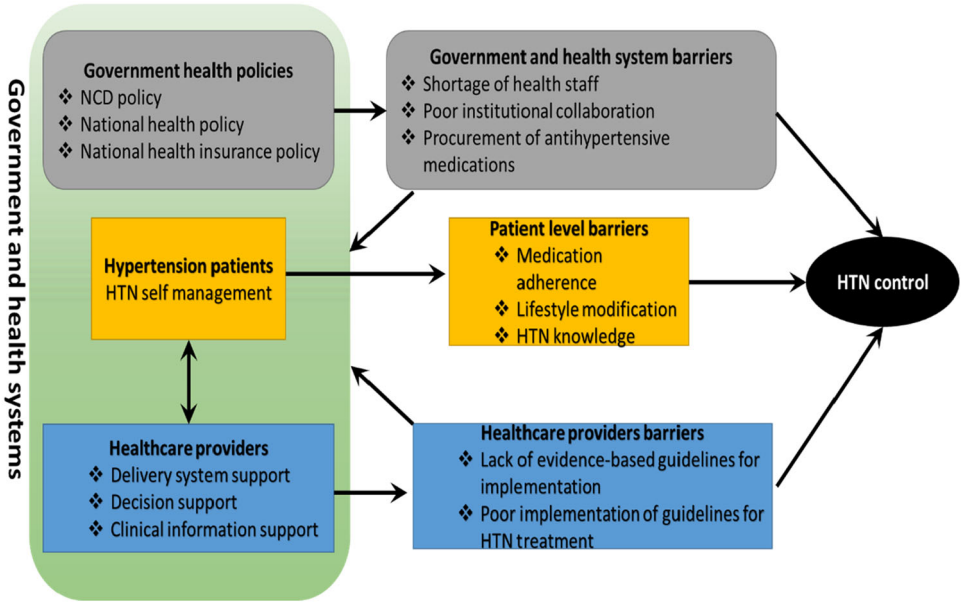

FIGURE 1 | Chronic cCare Model (CCM) [11].

observed as a barrier against HPT management/control in Ghana [32] and Africa [11]. The present study adapted these constructs and examined the inherent barriers guided by the facets identified in the African governments' consensus statement for the attention of its ministries of health to address [11].

Also, the study adapted the health system component in the model [35, 42] to mean "government and health system" (Figure 1), which is mandated to design the organizational structure, funding, policy direction, and direction of the healthcare system through legislation [31]. Additionally, the Ghanaian government is the largest employer of healthcare providers, provides healthcare infrastructure, stocking of medications, and medical consumables [28]. This may lead to government inability to meet the demands of the health system causing inherent challenges to quality health delivery and affect the productive interaction between HPT patients and healthcare providers toward HPT management. Thus, the modified construct assesses the impediments to HPT control in Ghana within the government and health system by employing the aspects that Dzudie et al. [11] highlighted. Besides, given the pivotal role of healthcare providers within both the Ghanaian government's health initiatives and the braoder healthcare system, this study sought to understand the obstacles these modified model components posed to effective patient management of HPT within the local context.

3 | Methods

3.1 | Ethics Approval

This study adhered to ethical principles outlined in the Declaration of Helsinki [43]. Approval was obtained from three institutional review committees: the James Cook University (JCU) Human Ethics Committee (H9031), the Komfo Anokye Teaching Hospital (KATH) Ethical Review Committee (KATHIRB/AP/029/23), and the Ghana Health Service (GHS) Ethics Review Committee (GHS-ERC: 005/09/22). Additional approval was granted by the Ashanti Regional Health Directorate. Written informed consent was obtained from all participants after a detailed explanation of the study's objectives, confidentiality measures, and their right to withdraw at any stage without consequences. Participants were assured that their identities would not be disclosed, and the collected information was solely for academic purposes.

3.2 | Study Setting, Design and Population

The study was conducted in the Ashanti Region (A/R) of Ghana, precisely at the Komfo Anokye Teaching Hospital (KATH), which is the only tertiary hospital and referral center for the surrounding areas [44]. The region was chosen because it is one of the economically vibrant places in Ghana with a high prevalence of HPT [45]. The hospital also serves as the only tertiary health institution in the region and also a referral points for Brong, Ahafo, and the Northern parts of Ghana for chronic condition such as HPT [46]. It carries a huge burden of HPT, with a prevalence as high as 18.1% among men and 15.3% among women aged 15–49 years [45]. This study used a facility-based cross-sectional design [47] and followed the STROBE guidelines (Supporting Information S1: Appendix S1). This design has been published in a previous study [48]. Data were collected from healthcare providers at the Family and Internal Medicine clinics of KATH, including doctors, nurses, pharmacists, nutritionists, and disease surveillance staff involved in HPT care. Providers with less than 1 year of experience or without direct HPT care responsibilities were excluded to ensure the responses reflected practical experience in managing HPT.

3.3 | Sample Size and Sampling

A sample size of 214 was determined for this study using the Raosoft sample size calculator [49]. An estimated population of 1000 healthcare providers of nurses, doctors and pharmacists at the Family Medicine and Internal Medicines HPT clinics and in-patient wards managing HPT patients were used with a 5%

margin of error, a confidence interval (CI) of 95%, and a 50% default distribution resulted in a sample size of 214. This sample size determination formular has been used in a similar study among healthcare providers in Ghana [50]. Due to incomplete responses, the final sample size used for the analysis was 210. The study was advertized through the head of departments, health administrators and the nurse in-charge (i.e., leader of the nurses) of the two departments (i.e., the Family Medicine and Internal Medicines units). Sampling technique as outlined by J.K. Ogah, 2013 was adopted to recruit all healthcare providers who were on duty within the period of the data collection, met the inclusion criteria and consented to participate in the study [51]. This sampling approach was adopted because these healthcare providers dealing with HPT patients at the various HPT clinics and the chronic care inpatient wards have demanding schedules making it challenging for them to engage in such studies. The choice of convenience sampling strategy was also influenced by the availability and accessibility of the healthcare providers relative to HPT care.

3.4 | Data Collection and Instrument

Data were collected using a researcher-generated questionnaire based on previous literature [11]. The questionnaire was structured to include respondents' background characteristics and the constructs in the adapted CCM framework. Close-ended questions and Likert-type responses were employed. Specific examples of the items are, "Healthcare policies do not cover HPT control", "Inadequate health system capacity for early screening and diagnosis of HPT", and "Lack of knowledge of how to carry out, search and appraise best practices in HPT management by healthcare providers". The questionnaire was administered in English language. Four trained research assistants (RAs), two from the Kwame Nkrumah University of Science and Technology, Kumasi, Ghana, and the Department of Population and Health, University of Cape Coast, Ghana and one from the Institute of Educational Planning and Administration (IEPA), University of Cape Coast, Ghana were recruited and trained for 2 days on how to ask questions, seek consent, and adhere to ethical principles. The questionnaire was pretested among 50 healthcare providers at KATH before the main data collection. These 50 healthcare providers were excluded in the main study. It took respondents an average time of 20 min to complete the questionnaire. No modification was required after the pre-test. The Cronbach α for the internal consistency of the government and healthcare system level subscale was $\alpha = 0.90$ while the healthcare providers subscale was $\alpha = 0.89$. These internal consistencies are considered very good to excellent measure of the reliability of the scales to measure what they were intended to measure [52].

4 | Study Variables

4.1 | Outcome Variable

Three outcome variables were adopted in this study.

Healthcare Providers Perceived Self-efficacy/Ability to Effectively Manage HPT: A single 4-point item measured providers self-efficacy. "How will you rate your ability to adequately care for persons with HPT?" Responses ranged from 0 ("Least Ability") to 4 ("Most Ability") (See Appendix S1 for details). This was dichotomized into "Low Ability/Self-Efficacy" (coded 0), and "High Ability/Self-Efficacy" (coded 1). Where 1–2 was categorized as "Low Ability/Self-Efficacy" and 3–4 as "High Ability/Self-Efficacy".

Perceived Effectiveness of Healthcare Policies on HPT Management: A single 4-point item measured healthcare provider perceived effectiveness of healthcare policies on HPT management. "How would you rate the effectiveness of policies on HPT control in Ghana? Response options were: "Very effective" (coded 1), "Effective" (coded 2), "Ineffective" (coded 3), and "Very ineffective" (coded 4) (Appendix S1). These were dichotomized into "Effective/Very Effective" (coded 1) and "Ineffective/Very Ineffective" (coded 0).

Perceived effectiveness of Ghana to manage HPT: A single 4-point scale measured Ghana's effectiveness in tackling HPT management. "To what extent do you think Ghana is effectively tackling the control of HPT?" Response options were: "Very effective" (coded 1), "Effective" (coded 2), "Ineffective" (coded 3), and "Very ineffective" (coded 4) (Appendix S1). These were dichotomized into "Effective/Very Effective" (coded 1) and "Ineffective/Very Ineffective" (coded 0).

4.2 | Explanatory Variables

Government and Health System Barriers: A 25-item scale derived from Dzudie et al. [11] identified government and health system level barriers to HPT management/control. Participants rated each barrier on a 5-point Likert type scale (1 = least barrier, 5 = high barrier) (Appendix S1). A mean composite score was calculated with a cut-off point of 67.33 as the mean and dichotomized into "Low Barrier" (coded 0, below the mean) and "High Barrier" (coded 1, above the mean).

Healthcare Provider Barriers: A 15-item scale derived from Dzudie et al. [11] identified barriers that affect healthcare provider management/control of HPT. Participants rated each barrier on a 5-point Likert type scale (1 = least barrier, 5 = high barrier) (Appendix S1). A mean composite score was calculated with a cut-off point of 42.07 as the mean and dichotomized into "Low Barrier" (coded 0, below the mean) and "High Barrier" (coded 1, above the mean).

Background Characteristics: Demographic characteristics included age, gender/sex, marital status, highest educational qualification, religion, ethnicity, residential status, years of professional experience, and job category. These variables were included based on prior studies demonstrating their association with HPT management [19, 53, 54].

4.3 | Data Analysis

Data was analyzed using the "Statistical Package for Social Sciences (SPSS) version 27". Descriptive statistics (frequencies,

percentages, and means) were used to characterize the sample. Data normality was assessed using the Shapiro–Wilk test ($p > 0.05$ indicating normality). Bivariate (i.e., χ^2) and multivariable logistic regression models were fitted to examine the association between the independent variables (background characteristics, government and health system level barriers, and healthcare providers level barriers) and the outcomes (perceived effectiveness of tackling HPT management, effectiveness of healthcare policies and self-efficacy/ability of healthcare providers to care for HPT patients). Variables considered in the multivariable model were pre-selected based on their clinical relevance (age, qualification, working experience, and job category) and other variables in an iterative manner to assess the association of exposure variables with the outcomes. The results were presented as Adjusted Odds Ratios (AOR) with 95% Confidence Intervals (CI) and the level of statistical significance set at $p < 0.05$.

5 | Results

5.1 | Sociodemographic Characteristics of Respondents

Table 1 shows the sociodemographic characteristics of the 210 healthcare providers who participated in the study. Over half were females (58.1%), with 41.9% males. Most were urban dwellers (92.4%), and aged 30–34 years (34.8%). The majority were Christians (80,5%), unmarried, (56.7%), degree holders (55.6%) and Akans (81.9%). About 38.6% had 2–5 years of professional experience, and 59.7% were nurses. Most (85.7%) reported high perceived self-efficacy in caring for HPT patients and 62.4% perceived health policies were effective for HPT management. Also, majority (64.3%) of healthcare providers perceived Ghana is effectively tackling the control of HPT. Lastly, a substantial number of healthcare providers (52.4%) reported on high provider level barriers to HPT management (See Table 1 for details).

Bivariate analysis on the association between the sociodemographic variables, government and health system level barriers and perceived effectiveness of hypertension management, effectiveness of policies and ability of healthcare providers to care for hypertension patients.

Table 2 presents a bivariate analysis of the association between sociodemographic factors, government and health system and healthcare provider barriers, and perceived effectiveness in managing HPT in Ghana. Demographic variables such as ethnicity ($\chi^2 = 5.7834$; $p = 0.02$) and job category ($\chi^2 = 8.5145$; $p = 0.04$), as well as government and health system level barriers ($\chi^2 = 13.4417$; $p < 0.001$) were significantly associated with healthcare provider perceived effectiveness in managing HPT. Further, work experience ($\chi^2 = 8.3172$; $p = 0.04$), ethnicity ($\chi^2 = 6.1548$; $p = 0.02$), and government and health system level barriers ($\chi^2 = 15.0890$; $p < 0.001$) were significantly associated with effectiveness of policy on HPT management. Ethnicity ($\chi^2 = 5.4835$; $p = 0.04$) was significantly associated with healthcare provider self-efficacy/ability to manage HPT. Healthcare provider barriers ($\chi^2 = 13.4417$; $p < 0.001$) were significantly

TABLE 1 | Sociodemographic characteristics of respondents.

Variable	Frequency	Percentage
Gender/sex		
Female	122	58.1
Male	88	41.9
Age (years)		
20–24	25	11.9
25–29	56	26.7
30–34	73	34.8
35–39	34	16.2
40+	22	10.5
Residence		
Urban	194	92.4
Rural	16	7.6
Highest educational qualification		
Certificate	15	7.1
Diploma	57	27.1
Bachelor's degree	116	55.2
Postgraduate	22	10.5
Religious affiliation		
Christian	169	80.5
Muslims	20	9.5
Others	21	10.0
Marital status		
Not married	119	56.7
Married/cohabiting	91	43.3
Ethnicity		
Akan	172	81.9
Other	38	18.1
Years of professional experience		
1 year	31	14.8
2–5	81	38.6
6–9	41	19.5
10+	57	27.1
Job description		
Nurse	125	59.5
Doctor/PA	46	21.9
Pharmacist	17	8.1
Other	22	10.5
Government health system barriers		
Low barrier	105	50.0
High barrier	105	50.0
Healthcare provider barrier		

(Continues)

TABLE 1 | (Continued)

Variable	Frequency	Percentage
Low barrier	100	47.6
High barrier	110	52.4
Healthcare providers perceived self-efficacy/ability to care for HPT patients		
Low self-efficacy/ability	30	14.3
High self-efficacy/ability	180	85.7
Healthcare providers perception of policy effectiveness to HPT control		
Ineffective	79	37.6
Effective	131	62.4
Extent of effectiveness to tackle HPT control		
Ineffective	75	35.7
Effective	135	64.3

Note: Within the other in the main table; religion, (those who subscribe to other religious affiliations such as traditionalist, Buddhist etc.), ethnicity (those who belong to other ethnic groups such as the Mole Dagbani, Ewe, Ga, etc.), job description (those other professionals like nutritionist).
Abbreviations: HPT, hypertension; PA, physician assistant.

associated with healthcare provider perceived effectiveness in HPT management. Lastly, healthcare provider barriers $\chi^2 = 15.0890$; $p < 0.001$) were significantly associated with healthcare policy effectiveness to tackle HPT management in Ghana (See Table 2).

5.2 | Multivariable Analysis on the Predictors of Hypertension Management Among Participants

Table 3 presents a multivariable logistic regression analysis on the predictors of perceived HPT management among participants. In the final model, healthcare providers with postgraduate education were more likely to effectively manage patients' hypertensive conditions compared to those with certificate (AOR = 6.966, 95% CI = 1.204–40.30). Also, high government and health system level barriers have less likelihood to affect the extent to which healthcare providers effectively tackle the management of HPT in the A/R of Ghana (AOR = 0.415, 95% CI = 0.203–0.852). High healthcare providers barriers were less likely to affect their perceived management of HPT (AOR = 0.454, 95% CI = 0.223–0.928). Further, participants aged 25–29 years (AOR = 0.111, 95% CI = 0.021–0.598), 30–34 years (AOR = 0.081, 95% CI = 0.012–0.547), 35–40 years (AOR = 0.075, 95% CI = 0.009–0.647) and ≥ 40 years were less likely (AOR = 0.054, 95% CI = 0.005–0.570) to impact on their perceptions of health policies effectiveness to HPT management. Besides, non-Akans were less likely to perceive the effectiveness of HPT policies on HPT management compared to Akans (AOR = 0.297, 95% CI = 0.089–0.988). Additionally, healthcare providers with 2–5 years and 6–9 years' work experience were more likely to know the effectiveness of healthcare policies on HPT management (AOR = 11.228, 95% CI = 2.392–52.71), (AOR = 8.459, 95% CI = 1.364–52.48), respectively. Furthermore, pharmacists (AOR = 7.129, 95% CI = 1.057–48.09) were more likely to appreciate the effectiveness of health policies on HPT management. Lastly, the higher the government and health system level barriers, the less likely healthcare policies were on HPT management (AOR = 0.119, 95% CI = 0.052–0.272). Healthcare providers of non-Akan ethnic group (AOR = 0.299, 95% CI = 0.141–0.640) and other job category (AOR = 0.311, 95% CI = 0.135–0.716) had less self-efficacy/ability to manage patients HPT condition (See Table 3).

6 | Discussion

This study aimed to evaluate government and health system, and healthcare provider barriers militating against the management of patients HPT condition in the A/R of Ghana. The findings were underpinned by the CCM to identify the perceived barriers impacting healthcare providers management of HPT [35]. The findings revealed that government and health system level barriers were associated with HPT management. Comparatively, some studies in Ghana [19, 33, 55], Kenya [56], and Africa [11] revealed government and health system level barriers affected the management of HPT which agrees with the current study. High government and health system level barriers were less likely to affect healthcare providers perceived management of HPT. Though there is paucity of literature to contextualize this finding, however, a study in China explicated that government support to primary healthcare institutions were less incentivized to prescribe antihypertensive medication, yet they had high BP management rates [57]. The probable reasons for this finding may be due to other institutional resilient factors/measures including the professional learning communities (PLC) among healthcare providers that may masked the impact of the government and healthcare system barriers on HPT management. Besides, other findings in this study including the individual healthcare provider level characteristics such as postgraduate/higher educational attainment could attenuate the negative impact of the government and health system level barriers on HPT management.

Healthcare provider barriers were significantly associated with HPT management. This observation concurs with Vedanthan et al. [58] study, where high healthcare worker density significantly increased HPT management. Invariable, the adjusted model indicated that higher healthcare provider barriers were less likely to impact on HPT management. This may have informed the finding observed in a previous study under the same methodological condition where majority of HPT patients reported mild HPT [48], situating a positive interactive effect between healthcare providers and HPT patients managing their HPT conditions at KATH HPT clinic and hospital as explained by the CCM [35]. This implied other institutional and healthcare provider level facilitators may have attenuated any negative impact of provider level barriers to HPT management. For instance, Kieft et al. [59] posit that "collaborative working relationships", "autonomous nursing practice", "adequate staffing", "control over nursing practice", "managerial support", and "patient-centered culture" impact patient experience of care and thus may mask any provider level bottlenecks. To buttress, majority (85.7%) of the participants in the present

TABLE 2 | χ^2 analysis on the association between sociodemographic, government and health system, and healthcare provider barriers and perceived effectiveness of hypertension management, effectiveness of healthcare policies, and self-efficacy/ability to care for hypertension patients.

Categories	Perceived effectiveness in HPT management Effective *n* (%)	Effectiveness of policies on HPT control Effective *n* (%)	Self-efficacy/ability to care for HPT patients High ability *n* (%)
Age (years)	$\chi^2 = 5.2343$; $p = 0.27$	$\chi^2 = 1.2670$; $p = 0.87$	$\chi^2 = 5.8740$; $p = 0.14$
20–24	12 (48.0)	13 (52.0)	20 (80.0)
25–29	24 (42.9)	32 (57.1)	53 (94.6)
30–34	23 (31.5)	50 (68.5)	61 (83.6)
35–39	11 (32.4)	23 (67.7)	29 (85.3)
≤ 40	5 (22.7)	17 (77.3)	17 (77.3)
Gender/Sex	$\chi^2 = 0.2104$; $p = 0.66$	$\chi^2 = 0.8035$; $p = 0.39$	$\chi^2 = 2.0375$; $p = 0.17$
Females	42 (34.4)	80 (65.6)	101 (82.8)
Males	33 (37.5)	55 (62.5)	79 (89.8)
Religion	$\chi^2 = 2.7337$; $p = 0.26$	$\chi^2 = 0.5290$; $p = 0.78$	$\chi^2 = 0.4603$; $p = 0.71$
Christian	56 (33.1)	113 (66.9)	146 (86.4)
Muslim	10 (50.0)	10 (50.0)	17 (85.0)
Other	12 (57.1)	13 (61.9)	17 (81.0)
Highest educational qualification	$\chi^2 = 4.0457$; $p = 0.26$	$\chi^2 = 2.2256$; $p = 0.53$	$\chi^2 = 3.1538$; $p = 0.10$
Certificate	7 (46.7)	8 (53.3)	11 (73.3)
Diploma	17 (29.8)	40 (70.2)	48 (84.2)
Degree	46 (39.7)	70 (60.3)	103 (88.8)
Postgraduate	5 (22.7)	17 (77.3)	8 (81.8)
Working experience	$\chi^2 = 5.7808$; $p = 0.13$	$\chi^2 = 8.3172$; $p = 0.04$	$\chi^2 = 7.1495$; $p = 0.06$
1 year	16 (51.6)	15 (48.4)	24 (77.4)
2–5 years	28 (34.6)	53 (65.4)	75 (92.6)
6–9 years	10 (24.4)	31 (75.6)	36 (87.8)
10+ years	21 (36.8)	36 (63.2)	45 (79.0)
Place of residence	$\chi^2 = 0.0241$; $p > 0.99$	$\chi^2 = 1.1753$; $p = 0.42$	$\chi^2 = 1.6237$; $p = 0.26$
Urban	6 (37.5)	10 (62.5)	168 (86.6)
Rural	69 (35.6)	125 (64.4)	180 (85.7)
Ethnicity	$\chi^2 = 5.7834$; $p = 0.02$	$\chi^2 = 6.1548$; $p = 0.02$	$\chi^2 = 5.4835$; $p = 0.04$
Akan	55 (32.0)	117 (68.0)	152 (88.4)
Other	20 (52.6)	18 (47.4)	28 (73.7)
Marital status	$\chi^2 = 1.0347$; $p = 0.38$	$\chi^2 = 0.0486$; $p = 0.89$	$\chi^2 = 0.1584$; $p = 0.70$
Not married	46 (38.7)	73 (61.3)	103 (86.6)
Married/cohabiting	29 (31.9)	62 (68.1)	77 (84.6)
Job category	$\chi^2 = 8.5145$; $p = 0.04$	$\chi^2 = 6.7391$; $p = 0.07$	$\chi^2 = 6.9895$; $p = 0.11$
Nurse	42 (33.6)	83 (66.4)	108 (86.4)
Doctor/PA	19 (41.3)	27 (58.7)	41 (89.1)
Pharmacist	2 (11.8)	15 (88.2)	16 (94.1)
Other	12 (54.6)	10 (45.5)	15 (68.2)
Government and health barriers	$\chi^2 = 13.4417$; $p < 0.001$	$\chi^2 = 15.0890$; $p < 0.001$	$\chi^2 = 0.0794$; $p = 0.85$
Low barrier	23 (23)	77 (77)	85 (85.0)

(Continues)

TABLE 2 | (Continued)

Categories	Perceived effectiveness in HPT management Effective *n* (%)	Effectiveness of policies on HPT control Effective *n* (%)	Self-efficacy/ability to care for HPT patients High ability *n* (%)
High barrier	52 (46.7)	58 (53.3)	95 (86.4)
Healthcare provider barriers	$\chi^2 = 13.4417$; $p < 0.001$	$\chi 2 = 15.0890$; $p < 0.001$	$\chi 2 = 0.0795$; $p = 0.78$
Low barrier	77 (77)	76 (76)	85 (85)
High barrier	58 (52.7)	55 (50)	95 (86.4)

study, reported high perceived self-efficacy to care for HPT patients.

Self-efficacy is a self-belief that is a vital motivational component for independent job performance, health professional identity and competence booster associated with quality healthcare delivery [60, 61]. The advantages of high self-efficacy in HPT management, such as better patients' management skills and greater health awareness cannot be underestimated [62]. This is because a healthcare provider with high self-efficacy may commit fewer medical errors, engender patient belief in self-management practices and the healthcare system, and potentially lead to better health outcomes [63]. Even though high self-efficacy was reported in the present study, the few healthcare providers (14.3%) with low self-efficacy should be a concern necessitating healthcare workers retooling through retraining on chronic disease management, communication skills, reducing workload, improving healthcare provider work climate and conditions of service [63, 64]. This may partly explain our finding. This is positive for Ghana's road map toward achieving the global target of reducing uncontrolled HPT by 2025. Another significant highlight of this finding to healthcare delivery at KATH and by extension Ghana, is the fact that a high percentage of the participants in this study are nurse cadres (59.7%) who forms the majority of healthcare providers and the first contact professionals that patients encounter most during healthcare services. The high-self efficacy is a revelation of the competence and confidence that majority of our healthcare providers possess and that is positive for quality healthcare delivery and a good sign for Ghana's progress toward HPT control. This as well explains the essence to implement task-shifting approach at the first level health facilities, where nurse health cadres also numerically dominant with less medical and pharmacist present. This will aid the scaling up of first line treatment of HPT conditions. Despite this finding, caution must be exercised due to the convenience sampling technique of the study. Overall, healthcare providers self-efficacy for HPT patients care was high (85.7%), non-Akan healthcare providers and those belonging to other job category had less self-efficacy/ability to manage patients with HPT. This means cultural intricacies and other job descriptions have the tendency to erode gains in our efforts to manage HPT. Stakeholders must address cultural impediments as well as involve health workforce in HPT management trainings to enhance task-shifting opportunities. Contrary, some studies have reported low-moderate self-efficacy among healthcare providers [65–68]. This inconsistency is expected due to geographical, and other methodological limitations.

Furthermore, high government and health system level barriers affected the impact of HPT policies toward the effective management of HPT, and this persisted after controlling for confounders. This means the magnitude of the government and health system challenges can be defeatist to policies implemented for the management of HPT. For instance, some studies in Ghana [19, 28, 32, 33] and elsewhere [69] highlight health system, and policy level challenges as predominate barriers to achieving adequate HPT management. This buttress Dzudie et al. [11] advocacy to African governments to address government and health system level barriers knowing their consequence to HPT management. Prior research exposed Ghana's inability to address these barriers through healthcare policies [34]. This underpinned the CCM position on contributory factors that essentially interplay to influence chronic disease management [35]. According to the CCM, there is a productive interactive effect between government and health system level factors, healthcare provider and the patient. Where the impact of any of the other productive factors consequently affect the patient's disease condition [35, 40]. But as healthcare policies are subsumed by either the government and health system or the healthcare provider level, HPT management may be hampered. We suggest that the NCDs department in the A/R, the Ministry of Health and stakeholders at KATH should address government and health system level barriers to bolster the effectiveness of health policies [27] toward achieving national and global HPT reduction targets [6].

Majority (62.4%) of participants indicated their perceived effectiveness of healthcare policies toward HPT management in Ghana. Invariably, a scoping review showed Ghana's health policies failed to address PASCAR's 10-points barriers [34]. The finding, however, aligns with some Asian studies [70, 71] that found implemented healthcare policies translated into BP control. For example, Zhang et al. [71] in their longitudinal study found that implemented healthcare policies were responsible for 7.9%, 10.3% and 10.5% of HPT patients BP control, increased antihypertensive medication use and BP monitoring respectively. This variation needs to be enquired further to contextualize the translation of policies to impactful healthcare delivery outcomes.

Healthcare providers' age and ethnicity showed less likelihood on their perceived impact of healthcare policies on HPT management. This may be expected as many public policies are enforced with less publicity and public engagement with low buy-in [28, 33, 34]. At worse, policy communication is worded in technical jargon and medium that neglect the average and

TABLE 3 | Multivariable analysis on the predictors of hypertension management/control among participants.

Variable	Perceived effectiveness in tackling HPT	Effectiveness of policies on HPT control	Self-efficacy/Ability to care for HPT patients
Age (years)			
20–24	Ref	Ref	Ref
25–29	0.967 [0.283,3.297]	0.111* [0.021,0.598]	1.300 [0.498,3.395]
30–34	1.646 [0.396,6.836]	0.082** [0.0122,0.547]	0.460 [0.150,1.416]
35–40	1.602 [0.301,8.526]	0.076* [0.009,0.647]	0.567 [0.163,1.972]
40+	3.116 [0.403,24.110]	0.055* [0.005,0.570]	0.505 [0.127,2.018]
Sex			
Female	Ref	Ref	Ref
Male	0.896 [0.421,1.904]	1.388 [0.591,3.256]	1.520 [0.877,2.635]
Residence			
Rural	Ref	Ref	Ref
Urban	1.591 [0.436,5.801]	0.640 [0.125,3.270]	1.552 [0.708,3.405]
Highest qualification			
Certificate	Ref	Ref	Ref
Diploma	2.875 [0.724,11.420]	2.113 [0.449,9.946]	1.018 [0.399,2.598]
Bachelor's degree	2.488 [0.658,9.408]	0.963 [0.219,4.228]	1.627 [0.662,3.998]
Postgraduate	6.966* [1.204,40.30]	1.641 [0.258,10.430]	1.499 [0.495,4.540]
Religious affiliation			
Christian	Ref	Ref	Ref
Muslim	1.137 [0.276,4.689]	2.306 [0.466,11.420]	2.497 [0.907,6.876]
Others	0.752 [0.262,2.165]	1.585 [0.441,5.699]	1.056 [0.475,2.348]
Ethnicity			
Akan	Ref	Ref	Ref
Non-Akan	0.505 [0.175,1.456]	0.298* [0.089,0.988]	0.300** [0.141,0.640]
Marital status			
Not married	Ref	Ref	Ref
Married/cohabiting	1.114 [0.507,2.448]	1.187 [0.484,2.913]	1.262 [0.734,2.170]
Working experience			
1 year	Ref	Ref	Ref
2–5 years	1.238 [0.384,3.993]	11.230** [2.392,52.710]	2.418 [0.930,6.285]
6–9 years	1.158 [0.262,5.121]	8.460* [1.364,52.480]	2.432 [0.750,7.894]
10+ years	0.721 [0.164,3.173]	5.682 [0.955,33.810]	1.667 [0.530,5.243]
Job category			
Nurse	Ref	Ref	Ref
Doctor/PA	0.523 [0.198,1.378]	1.786 [0.602,5.302]	0.972 [0.482,1.964]
Pharmacist	2.841 [0.504,16.030]	7.129* [1.057,48.090]	0.956 [0.356,2.569]
Other	0.588 [0.188,1.841]	0.518 [0.146,1.844]	0.311** [0.135,0.716]
Government and health barriers			
Low barrier	Ref	Ref	Ref
High barrier	0.416* [0.203,0.852]	0.119*** [0.052,0.272]	0.851 [0.515,1.407]
Healthcare provider barrier			

(Continues)

TABLE 3 | (Continued)

Variable	Perceived effectiveness in tackling HPT	Effectiveness of policies on HPT control	Self-efficacy/Ability to care for HPT patients
Low barrier	Ref	Ref	Ref
High barrier	0.454* [0.223,0.928]	0.641 [0.297,1.383]	1.401 [0.833,2.355]
N	210	210	210

Abbreviations: HPT, hypertension; PA, physician assistant; Ref, reference category.

disadvantage lower class of society [72]. This therefore lowers perceptions on such policies and appreciation of policies impact on HPT management. Health policy issues such as HPT policies, should reflect culture and incorporate the demographic characteristics of all necessary stakeholders. Health professionals work experience and job category significantly impacted their perception on the contribution of HPT policies to HPT management, although, with wide CIs. Specifically, participants with over 2 years work experience acknowledged the positive contribution of HPT policies to HPT management. This is plausible as workers stay longer on a job, they are more likely to get opportunities for institutional capacity buildings, personal upgrades through further education, and PLC programmes.

6.1 | Implications for Policy and Practice

These findings have significant implications for policy and practice in HPT management within the A/R and Ghana at large. First, HPT management programmes should target healthcare providers intricacies that will help bolster competence and self-efficacy. Further, various health cadres should be trained on HPT management interventions to help enhance task-shifting when necessary. Additionally, the Ministry of Health, the regional health directorate of the A/R should endeavour to sensitize health cadres on HPT policies. Furthermore, strategies are needed to address healthcare providers, government and healthcare system level barriers that derail gains in HPT management across the health spectrum. Also, health authorities should capitalize on the institutional resilience attenuating government and health system, and healthcare provider level barriers to bolster HPT management.

6.2 | Strength and Limitations

The study's novelty lies in applying the CCM model to identify government and health system level barriers, healthcare provider level barriers and their impact on policy effectiveness and healthcare providers ability to manage HPT in the A/R of Ghana. Additionally, to our knowledge, this is the first study to investigate the factors contributing to poor HPT management highlighted by PASCAR [11] in an African context. However, the cross-sectional nature of the study limits causal inferences. Besides, caution should be exercised when interpreting the findings due to the use of convenience sampling, self-report bias, cultural and confounding factors and wide CIs in some of the estimates. Furthermore, the findings cannot be generalized to all healthcare providers due to being conducted in a single tertiary healthcare facility.

7 | Conclusion

This study evaluated government health system, and healthcare providers level barriers preventing the management of patients HPT condition in the A/R of Ghana. Our findings emphasize the association of government health system, and healthcare providers level barriers and HPT management. However, government and health system, and healthcare providers barriers had less impact on HPT management in the Ashanti region of Ghana. We infer that institutional and healthcare providers resilient factors may have attenuated the impact of the barriers. Building on this study's foundation, healthcare authorities in Ghana and the Ashanti region can identify those resilient factors and enhance them for better healthcare delivery toward achieving HPT reduction. We recommend, qualitative research to gain deeper insights into stakeholders (i.e., healthcare providers, policy makers, and HPT patients) perspectives within the CCM framework to understand the nitty-gritties impacting the management of HPT. Acknowledging the critical role nurse cadres play as a predominant workforce in most health delivery processes, their capacity building on chronic disease management should be enhanced. The complexity of HPT management further necessitates an interdisciplinary research approach to develop a comprehensive understanding of the challenges and design effective interventions tailored to the Ghanaian context. By addressing these and incorporating the strengths thereof into policy and practice, the Ashanti region and Ghana can move closer to achieving its national target of reducing uncontrolled HPT and enhancing quality chronic care services.

Author Contributions

Conceptualization: Francis Sambah and Theophilus I. Emeto. Data curation and analysis: Francis Sambah and Abdul-Aziz Seidu. Writing – original draft preparation: Francis Sambah. Review and editing: Francis Sambah, Kristin McBain-Rigg, Abdul-Aziz Seidu, and Theophilus I. Emeto. Supervision: Kristin McBain-Rigg and Theophilus I. Emeto. Funding acquisition: Theophilus I. Emeto. All authors approved it for publication. All authors have read and agreed to the published version of the manuscript publication.

Acknowledgments

The authors are appreciative of the participants. We would like to also thank the Research assistants who helped with the data collection. We would also like to acknowledge James Cook University for the PhD research scholarship for the first author, F.S. Lastly, we appreciate Dr. Emmanuel Ati, Acting Head of Department of Family Medicine Directorate of the Komfo Anokye Teaching Hospital for his immense

support throughout the processes leading to and during the data collection. The authors received no specific funding for this work.

Ethics Statement

This study adhered to ethical principles outlined in the Declaration of Helsinki. Approval was obtained from three institutional review committees: the James Cook University (JCU) Human Ethics Committee (H9031), the Komfo Anokye Teaching Hospital (KATH) Ethical Review Committee (KATHIRB/AP/029/23), and the Ghana Health Service (GHS) Ethics Review Committee (GHS-ERC: 005/09/22). Additional approval was granted by the Ashanti Regional Health Directorate. Written informed consent was obtained from all participants after a detailed explanation of the study's objectives, confidentiality measures, and their right to withdraw at any stage without consequences. Participants were assured that their identities would not be disclosed, and the collected information was solely for academic purposes.

Consent

Written informed consent was obtained from all participants after a detail explanation of the objectives of the study.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Transparency Statement

The lead author Francis Sambah affirms that this manuscript is an honest, accurate, and transparent account of the study being reported; that no important aspects of the study have been omitted; and that any discrepancies from the study as planned (and, if relevant, registered) have been explained.

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Supporting Information

Additional supporting information can be found online in the Supporting Information section.