Hypertension Management at Primary Healthcare in Kisumu County, Kenya: Barriers for Health Practice and Policy

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ABSTRACT

Background: Globally, approximately1.4 billion individuals are affected by Hypertension, and projections indicate an increase to 1.6 billion by 2025. Despite the availability of Hypertension management service, utilization remains low, particularly in low resource settings. Understanding gaps in service delivery is essential to improve utilization and treatment outcomes.

Objective: This study assessed the delivery and utilization of Hypertension management services at Primary Healthcare facilities in Kisumu County and identified barriers to inform health practices and policy.

Method: A descriptive cross-sectional mixed-methods design was employed. Quantitative data collected from 27 facilities and 274 Hypertensive patients, while qualitative data included In-depth interviews with 14 healthcare workers, 4 focus group discussions with Community Health Promoters, and key informant interviews with 4 health managers. Data analyzed using SPSS and NVIVO.

Results: Only 15% of the facilities provided all Hypertension services. Treatment guidelines were available in 37% of the facilities and just 26% of healthcare workers had received recent Hypertension training. Among adult patient, 82% were screened for high Blood Pressure, and 4% had elevated readings. Six key barriers identified: low disease awareness, poor treatment adherence, financial constraints, limited provider capacity, inadequate supplies and poor accessibility.

Conclusion: Primary Healthcare facilities in Kisumu County are inadequately prepared to manage Hypertension effectively. Strengthening providers' capacity, ensuring availability of guidelines and integration of Hypertension services are essential. Policy reform and increased health budgets to equip facilities with resources needed for Hypertension prevention and management could enhance service utilization and improve treatment outcomes in Kisumu County and similar setting.

Key word: Hypertension, Utilization, Framework, Primary Healthcare, Kenya.

INTRODUCTION

Hypertension (HTN) a preventable risk factor for Cardiovascular diseases (CVDs) and a major contributor to NCD related deaths (1). Globally, approximately 1.4 billion individuals are affected by Hypertension (HTN), and projections indicate an increase to 1.6 billion by 2025 (2) with more case occurring in low- and middle-income countries (3). Sub-Saharan Africa (SSA) has the highest global prevalence of HTN, estimated at 30.8% (4). A community survey conducted in 2018 in Kenya, Nigeria, Tanzania, and Uganda reported a pooled HTN

prevalence of 25.4 % (5). In Kenya, a national survey conducted in 2018 reported the age standard prevalence rate of 24.5% (6).While Kisumu County has a prevalence rate of 22 % (7).

Despite the availability of HTN management services, utilization remains low, particularly in low-resource settings resulting to poor treatment and control outcomes thus undermining efforts to reduce the burden of disease. In Kisumu County, treatment and control rates are alarmingly low at 6.7% and 3.8% respectively (7). Nationally, the treatment and control rates stand at 26.9 % and 13.7% respectively (6). These low rates reflect a broader trend across SSA, where only 18% of individuals with HTN receive treatment and only 7% achieve blood pressure control (8).

Several factors contribute to the low utilization of HTN services in resource limited settings, low disease awareness, poor treatment adherence, financial constraints, and insufficient provider capacity (9,10). Health system challenges such as lack of essential equipment, medication stock-outs, and poor service integration further exacerbate the problem (11). Furthermore, in Kenya, the ministry of health identified some critical challenges such as poor integration of NCD services, limited availability of necessary equipment and medicines, and insufficient human resource capacity in terms of numbers and skill mix.

To address these challenges, World Health Organization (WHO) renewed interest in strengthening Primary Healthcare to manage the rising burden of Non-Communicable diseases by developing a technical package (12) to support health ministries to strengthen CVD management in primary healthcare (PHC) settings. This initiative supports healthy lifestyle counselling, use of standardized treatment protocols, uninterrupted medication supply, team-based care, and patient-centered services. To align to global initiatives, the Kenya's ministry of health developed policies on prevention and control of NCDs (13), Essential Package for Health services for the population (14) and a guideline for management of CVDs (15). The policies and guidelines provide a framework for service delivery and resources for management of NCD including HTN at PHC setting. At sub national level, Kisumu has implemented additional strategies to improve service delivery and utilization at PHC level including expansion of PHC facilities, deployment of more Community Health Promoters (CHPs) to create awareness and demand for services, and introduction of "Marwa" Health Insurance scheme. Underwritten by the National Hospital Insurance Fund (NHIF), the scheme is designed to ensure that the most vulnerable populations of Kisumu County also have access to affordable and quality healthcare services without suffering financial hardship. The scheme identifies those who can pay for NHIF and ensuring that they contribute while subsidizing those who cannot. In parallel, the scheme also helps clinics improve their quality.

Despite these efforts, utilization of HTN management services remains low in the county, highlighting the need to understand and address the gaps in service delivery and utilization to improve HTN treatment and control. This study aimed to assess HTN management at PHC facilities in Kisumu County, Kenya to inform health practices and policy. Specific objectives were to assess the delivery and utilization of HTN management services and identify barriers.

METHODS

Study design and setting

This study employed a descriptive cross-sectional survey design using a concurrent mixed-method approach. And was conducted in Kisumu County, one of the four pilot counties for Universal Health Coverage program in Kenya who reported the highest increase of HTN cases in 2020. The County is divided into 7 sub-Counties (3 urban and 4 peri-urban) and has a total of 131 PHC facilities.

Study population, sample size determination and Sampling procedures

The study involved 5 major cohorts: patients on HTN treatment, Facility in charges, healthcare workers (Nurses, Clinical Officers), Community Health Promoters, and Health Managers.

*Hypertensive patient sample size determination***.**

The sample size was calculated using Fishers et al formular as shown. $n = (Z^2pq) / d^2$ (3.9*0.22*0.78)/0.0025 and 10% non-response rate which gave a sample size of 295 patients.

Facility sample size determination.

Due to the small sample size, 25 % of 131 facilities were selected resulting to 33 facilities. And further adjustment made using finite formulae for population size calculation as shown. n = n/ (1 +n/N) 33/ (1+0.25) resulting to 27 facilities.

Sampling of Primary Healthcare facilities

Stratified random sampling was used. All facilities operationalized by 2020 were grouped per sub-County and level (Health centers and Dispensaries). Using the categorized list, the names of each facility were written on a slip of paper, folded and placed into separate boxes per category. One facility was randomly selected from each box until 27 facilities were chosen. The selected facilities were then complied into a list organized by sub-county and level. Finally, the number of HTN cases reported by each selected facility in 2020 was extracted from the Kenya Health Information System (KHIS) and used to rank the facilities and get the cumulative numbers in each sub-County. Facility in charges were interviewed.

Sampling of Hypertensive Patients

The patient sample size of 295 was proportionally distributed among 27 PHC facilities based on the HTN caseload reported in 2020. In each facility, HTN patients attending outpatient clinics for follow-up visit were randomly selected for interviews until the target number achieved. All HTN patients aged above 18 years and has been on antihypertensive drugs for more than six months before the study was included while women with pregnancy related HTN and patients diagnosed less than six months before the study were excluded.

Sampling of Healthcare Workers, Community Health Promoters, and Health Managers

Purposive sampling was employed for qualitative component of the study. One healthcare worker from both high caseload and low caseload facility in each sub-county was selected for In-depth Interviews (IDIs), resulting to 14 participants (7 high caseload and 7 low caseload).

Community Health Promoters attached to the highest caseload and lowest caseload facilities in both urban and peri-urban sub-County were selected for Focused Group Discussions (FGDs), this resulted in 4 FGDs (2 urban and two peri-urban facilities), with average of 8 participants per group.

For the KIIs, the study purposively selected Sub-County Medical Officer and Community Focal Person from the urban sub-county with highest HTN caseload and peri-urban with lowest caseload. This resulted in 4 participants.

Data Collection

Quantitative data was generated using two sets of semi-structured (Facility and HTN patient) questionnaires while interview guide was used for qualitative data. Data collection tools were adopted from WHO STEPS instrument for Chronic Disease Risk Factor Surveillance, Kenya National Strategy for the Prevention and Control of Non-Communicable Disease, 2015–2020, and Kenya National Guidelines for Cardiovascular Diseases Management 2018. Validation of the tools was done through peer review and pilot testing in two facilities and 4 HTN patients.

The health facility survey and the qualitative interviews were concurrently carried out by four trained research assistants between December 4 and 8, 2023 with supervision of the PI. The team received training on study procedures and research ethics. Key variable collected are shown in table 1,3,4 and 5. Patients interviews took place for three months (December 2023 -February 2024). At each facility, a study trained healthcare worker supported identification and interview of eligible participants. Key variable collected are shown in table 2.

Data Analysis

Data collected underwent cleaning to ensure accuracy and integrity. Subsequently quantitative data were analyzed using SPSS version 23, employing descriptive statistics (frequencies, percentages, tables) and inferential statistics to explore variable relationships. Qualitative data were analyzed thematically using NVivo version 12, with themes and sub-themes organized for easier interpretation.

Ethical Consideration

Ethical approval was obtained from the Institutional Review Committee at Jaramogi Oginga Odinga University of Science and Technology (ERC 39/09/23-41). A research permit was granted by the National Commission for Science, Technology and Innovation (NACOSTI/P/23/30384), and access permission to facilities obtained from the Kisumu County Department of Health. Written informed consent forms were obtained from all study participants.

RESULTS

Characteristics of the Primary Healthcare Facilities

The basic characteristics of the studied facilities and respondents are summarized in table 1. Of the facilities studied, 19 were health centers (70%) and 8 dispensaries (30%). Facility in-charges were predominantly female (63%), with clinical officers (52%) and nurses (48%) as the main cadres. Most respondents had over 10 years of clinical experience (48%). Staffing across the facilities totaled 155, with nurses forming the majority (52%), followed by clinical officers (23%), laboratory technicians (13%), pharmaceutical technologists (8%), and nutritionists (4%). The average number of adult outpatients (SD) seen in the month of November 2023 was 280 (SD 63) with 230 (SD 52) screened for high BP, whereas 9 (SD 6) were detected with high BP readings.

Table 1: Characteristics of Primary Healthcare Facilities

Characteristic	**Health centers N (%)**	**Dispensaries N (%)**	**Total N (%)**
Number of facilities	19 (70)	8 (30)	27 (100)
Respondent			
Male	4 (15)	6 (22)	10 (37)
Female	14 (52)	3(11)	17 (63)
Clinical officer	10 (37)	4(15)	14 (52)
Nurse	8 (30)	5(19)	13 (49)
Respondents' years of professional experience			
>10 year	12 (44)	1(4)	13(48)
5-10 years	6 (22)	6 (22)	12 (44)
< 5 years	1(4)	1(4)	2 (8)
Staff deployment by cadre			
Nurses	63 (41)	18 (11)	81 (52)

RCO	27 (17)	9 (6)	36 (23)
Lab tech	16 (10)	4 (3)	20 (13)
Pharm tech	9 (6)	3 (2)	12 (8)
Nutritionist	4 (3)	2(1)	6 (4)
Availability of HTN management services			
Health education	18 (95)	7(86)	25 (93)
BP Screening	18(95)	8(100)	26 (96)
Diagnosis	14(74)	6(75)	20 (74)
Treatment	17(89)	6 (75)	23(85)
Referral	17(89)	8 (100)	25 (93)
Outpatient visits n (SD)	307 (80)	252 (96)	280 (63)
Screened for High BP n (SD)	256 (59)	115 (31)	230 (52)
High BP cases n (SD)	10 (6)	7 (4)	9 (6)

Characteristics of the study participants.

The socio-demographic and behavioral characteristics of study patients distributed by gender are presented in Table 2. A total of 274 (93%) patients were interviewed. Most were female (66%), and many (38%) were aged 60 years and above. The majority were married (68%) and had primary (40%) or secondary (26%) education. Over half (55%) were unemployed.

Table 2: Sociodemographic and behavioural characteristics of respondents

Characteristics	Category	N= 274 (%)
Number of HTN patients per facility: level	Dispensary:	48 (18)
	Health center:	226 (82)
Sex:	Male:	92 (34)
	Female:	182 (66)
Age:	30- 39 years:	39 (14)
	40-49 Years:	62 (23)
	50-59 Years:	70 (25)
	60 + years:	103 (38)
Marital status:	Single:	8 (3)

	Married:	187 (68)
	Widowed:	67 (25)
	Separated:	12 (4)
Level of education:	No formal education:	52 (19)
	Primary education:	109 (40)
	Secondary school:	71 (26)
	Tertiary education:	42 (15)
Occupation:	Formal employment:	25 (9)
	Self-employment:	85 (31)
	Informal employment:	14 (5)
	Unemployed:	150 (55)
Aware of HTN before diagnosis	Male	44 (48)
	Female	91 (50)
Know the risks factors for developing HTN disease	Male	35 (38)
	Female	97 (53)
Know any symptoms of HTN	Male	58 (63)
	Female	134 (74)
Currently smoking tobacco products	Male	5 (2)
	Female	0 (0.0)
Currently taking alcohol	Male	10 (11)
	Female	4 (2)
Are you currently taking any herbal or traditional drugs for your raised blood pressure? YES	Male	0
	Female	1(0.6)
Based on your first experience during diagnosis of HTN, did you visit the facility again? YES	Male	82 (89)
	Female	158(86)

Availability of Hypertension Management Services

Table 1 shows the availability of HTN services at different facilities. Health education and referral services were available in 93% of the facilities. Blood pressure screening was conducted in 96% of facilities. Diagnosis and treatment services were available in 74% and 85% of facilities, respectively. On average, only 15% of facilities had all five categories of HTN services available.

Table 3 shows that most facilities had basic equipment: BP machines (93%), stethoscopes (96%), and weighing scales (93%). Only 19% had CVD risk assessment tools. Nifedipine (67%) and Hydrochlorothiazide (41%) were the most available antihypertensive drugs. Other drugs like Enalapril, Adalat, and Atenolol were scarce, especially in dispensaries.

Table 3: Availability of Equipment and Anti-hypertensive drugs at health facilities

Variable	**Health centers N =19 (%)**	**Dispensaries N=8 (%)**	**Total N=27 (%)**
Availability of functioning equipment n (%)			
BP Machine	17 (89)	8(100)	25 (93)
Stethoscope	18 (95)	8(100)	26 (96)
Weighing scale	17 (89)	8(100)	25 (93)
Height scale	15 (79)	7(86)	22 (81)
CVD risk assessment tool	4 (21)	1(13)	5 (19)
Availability of Anti-Hypertensive drugs by class			
Calcium Chanel Blockers			
Nifedipine	12 (63)	6 (75)	18 (67)
Adalat	4 (22)	0 (0)	4 (15)
Thiazide			
Hydrochlorothiazide (HCTZ)	9 (47)	2 (25)	11(41)
Atenolol	3(16)	0 (0)	3(11)
Angiotensin Converting Enzyme Inhibitor			
Enalapril	4 (22)	0 (0)	4(15)

Knowledge, training and availability of guidelines

To assess the knowledge and abilities of providers to manage HTN as per the treatment guidelines, healthcare providers were asked a range of questions subjectively presented as yes/no on 4 domains: 1) HTN signs and symptoms with nine questions, 2) diagnosis with 4 questions, 3) treatment with 7 questions and 4) complications with 3 questions. To determine the accuracy rate for each domain, the cumulative number of correct responses for each domain was divided by the total number of expected correct responses for each cadre. For example, if all nurses answered only 44 correct responses out of the expected 117 on the signs and symptoms domain, then their accuracy rate is 38% (44/117*100). Additionally, providers were asked to rate their confidence in management of HTN.

Table 4 presents the findings on knowledge and rating in HTN management among healthcare providers per the carders. On average 74 % of healthcare providers demonstrated good knowledge on the 4 domains (Nurses 75% and Clinical officers 72%). On rating for management of Hypertension, few health providers, 19 % (4 clinical officers and 1 nurse) were very confident on management of HTN, 52% (9 nurses and 5 clinical

officers) were confident, while 30 % (5 clinical officers and 3 nurses) lacked confidence and expressed a need for training.

Table 4: Provider knowledge on different domains of Hypertension Management services

Domain	No. of items	Clinical Officer n=14			Nurses n=13		
		Expected correct responses. (Item*n)	Actual responses	% Accuracy	Expected correct responses. (Item*n)	Actual responses	% Accuracy
Signs and symptoms	9	126	42	33	117	44	38
Diagnosis	4	56	40	71	56	42	75
Treatment & Control	7	98	88	89	98	84	86
Complication	3	42	40	95	39	39	100
Confidence level in managing HTN Patient							
Very confident			4 (29)		1(8)		
Confident			5 (36)		9 (69)		
Not confident, need more training			5 (36)		3 (23)		

Training and Availability of Guidelines

Facility in charges were asked the number of staff who have received any form of HTN training in the past two years prior to study period. Additionally, the study inquires on the availability of the Kenya National Guidelines for Cardiovascular Diseases Management 2018 and orientation on its use. Drawing from Table 5, only 24% of providers have received any HTN-related training in the past two years. The guidelines were available in 37% of facilities, and no staff had received orientation on their use.

Table 5: Training and availability of guidelines

Variable	**Health centers No. of Staff N=90**	**Dispensaries No. of staff N=27**	**Total N =117**
Forms of trainings on HTN management received			
Continuous Medical Education	13 (14)	4 (15)	17 (15)
On-Job Training	8 (9)	1 (4)	9 (7)
Workshop (5 days)	2 (2)	0	2 (2)
Total	23 (26)	5 (19)	28 (24)
Variable	**Facilities N=19**	**Facilities N=8**	**Total N=27**
Training needs in HTN management services			

Health promotion	10 (53)	7 (86)	17(63)
Diagnosis	9(47%)	3(38)	12(44)
Treatment	11(58%)	5(63)	16(59)
Psychosocial support	10 (53%)	6(75)	16(59)
Availability of guidelines	8(42)	2(25)	10(37)
Staff orientation on the use of the guidelines	0 (0)	0(0)	0(0)

Patient Knowledge, Awareness, and Practices

Nearly half of the patients (49%) reported awareness of HTN prior to diagnosis. There was a significant association of disease awareness and education level ($p < 0.001$). Knowledge of risk factors for developing HTN was higher among females (53%) than males (38%) ($p = 0.017$). Table 2 show that only 2 % of patient (all males) and 5 % currently smokes tobacco and take alcohol respectively. Tobacco and alcohol use were significantly higher among males ($p < 0.001$). On compliance to clinic appointments, 88 % of patients returned to the same facility for follow-up. The use of traditional medicine was minimal at 3%.

Barriers to Utilization of Hypertension Management Services

Six major themes emerged as challenges to utilization of HTN management. These are discussed below.

Low HTN disease awareness

Almost half of the facility in charges (48%) reported low HTN disease knowledge and awareness among patients as a barrier to the utilization of HTN management services. Similarly, 51 % of patients reported not being aware of HTN before diagnosis. And despite having been diagnosed with HTN treatment, 55 % still did not know the risk factors for developing HTN and a further 32% of the patients were not aware of any symptoms. Content analysis of qualitative data also points at low awareness as a challenge to utilization of HTN management services.

"*You find that the villagers also believe that disease is just in the family lineage. If it was not in the blood and your grandmother or your sisters never, had it, then you don't have it"* [FGD _1 participant 1].

"What the community members are saying that can hinder them for coming for treatment for hypertension is that it's a disease for the rich. So, if I am a poor person, I just say that this disease is not in me because it is for the rich and that has made other people not to go for treatment and suffer, because it affects everyone" [FGD _1participant 2].

"Some believe that when you are having excessive headache maybe you have been bewitched" [IDI_1 Nurse Heath center 1].

Poor Treatment Adherence among Hypertensive Patients

41% of facility in charges reported poor treatment adherence among HTN patients as a challenge. Although few patients, 7 % cited non-adherence to treatment as a challenge. IDI participant reported that some patients stop medications once their blood pressure normalizes.

"There was one who told me, he felt good, he was feeling better, and he didn't find a need for coming back for checkup" [IDI_3 Nurse Dispensary 2].

"Lack of proper teaching. Some of them are going to the facility and are being given drugs and they were not trained on how to take them; maybe they are going to misuse them; some are over-taking; some are not taking them properly" [FGD _2 participant 1]

Financial Constraint

15% of facility in charges mentioned financial limitations as hinderance to purchasing necessary medications during stockouts, as well as 8 % of patient reported not buying drugs during stockouts due to high cost. While 5 % of patients reported missing clinic visits due to lack of transport.

"We are living in hard economic times, a client comes, pays for a card, also pays for medication, and I know these hypertensives are also not that cheap. So, cost and with these hard-economic times, that one can bar somebody from not coming to the facility to seek such services"(KII_1 Health manager1)

Poor provider capacity on Hypertension management

Inadequate training, lack of guidelines and inadequate staff were common. Only 26 % of staff have received any form of training on HTN management in the last two years. While only 37% of the facilities had treatment guidelines.

Interviewer 1: Do you have guidelines for the management of hypertension within the facility?

Respondent: Mm…not really…we don't have. (IDI_4 Nurse Health centre 2)

Interviewer 2: Do you have guidelines for the management of hypertension within the facility?

Respondent: Guidelines, we don't have [IDI_5 Nurse Health Centre 3]

Interviewer 3: Do you have guidelines for the management of hypertension within the facility?

Respondent: "Yes! Situated at the outpatient department [*IDI_3 Nurse Dispensary 2*]

Inadequate staffing was also reported as a challenge by 11% of facility in-charges. Additionally, 43% of IDIs participants mentioned inadequate staffing as a challenge. An FGD discussant

"Barrier that is in the county, is like my colleague had said that it is the drugs and staffs are also few. And staff like I had said, sometimes it's only one person so he wants to look at this side and this side, so that person with high blood pressure is not served" [FGD_3 participant 1]

Inadequate Supply of anti-Hypertensive drugs

Over three-quarters (85%) of facility in-charges reported stock out of anti-hypertensive drugs. Similarly, 73 % of patients reported lack of drugs at facilities as a challenge.

''When it comes to drugs, the supplies are not constant, at times you diagnose a patient but then you advise the patient to go and buy the medicine'' [IDI_6 clinician dispensary 3]

"We offer the treatment; we have limited resources like in my case whatever I have ever stocked is Nifedipine" [IDI_7 Nurse Dispensary 4]

Limited Access to Hypertension Management Services

Fifteen percent of facility in-charges reported the long distance to facilities as a challenge contributing to missed clinic visits and delays in seeking health services during referrals. However, only 8% of patients cited long distances to the facility as a challenge.

"It is the distance. According to the distance, you cannot get the patient to access the medication" [FGD _1 participant 4]

Lack of all HTN management services in single facilities was also mentioned as a challenge by 26 % of in charges and 21 % of patients.

"Now what I can say, for our level we majorly do the screening, depending on the result and we are not able to manage the patient, then we do a referral to a higher level. We usually tell them when you get to a higher level based on how we referred you, whatever information you get from the higher level, you come back to us and then now you can, depending on what they've seen at the higher level, we can now continue with the management [IDI _7 Clinician Dispensary 5].

Table 6 highlight summary and triangulation of key qualitative and quantitative findings

Table 6: Summary and triangulation of study key findings

Theme	Quantitative	Qualitative	Interpretation
Low disease awareness	49% aware before diagnosis. 48% in charges cited low knowledge	Beliefs about heredity, wealth, and witchcraft	Strong convergence: limited awareness and misconceptions hinder care
Poor Treatment Adherence	41% of providers reported poor adherence 7% of patients self-reported	Patients stop meds when feeling better lack of instruction	Partial convergence: perception gap explained by misunderstanding
Financial Constraints	15% in charges, and 8% of patients cited cost 5% of missed visits due to transport	Economic hardship cited as barrier to care	Strong convergence: financial burden consistently affects access
Provider Capacity	26% staff trained 37% of facilities had guidelines. 11% of in-charges cited staff shortage	Lack of guidelines Staff shortages Rushed consultations	Strong convergence: systemic gaps undermine quality of care
Medication Supply	85% in charges and 73% of patients reported stockouts: 41% of facilities stocked HCTZ, and 67% had Nifedipine	Inconsistent supply: patients advised to buy medication	Strong convergence: stockouts and limited drug availability
Access to Services	15% in charges, and 8% of patients cited distance Only 15% of facilities offered full services	Long distances delay care poor service integration	Strong convergence: geographic and service limitations reduce access

DISCUSSION

Study findings show that only 15% of PHC facilities are offering all the HTN management services. Treatment guidelines were available in 37% of the facilities while just 26% of healthcare workers had received recent

HTN training. Among adult patients who attended the facilities for treatment, 82% were screened for high Blood Pressure, with 4% detected with high readings. Six key barriers identified: low disease awareness, poor treatment adherence, financial constraints, limited provider capacity, inadequate supplies and poor accessibility.

Service Availability and inadequate supplies

Although most facilities offered HTN services such as BP screening and health education, only 15% provided all elements of HTN services. This poor integration limits continuity of care and may discourage patients from seeking services in facilities due to fear for missing other services or referrals. Similar findings on poor integration of HTN services were reported by (16–18). Limited availability of medications, particularly in dispensaries, further undermines service delivery. These findings align with previous studies in sub-Saharan Africa that highlight stock outs of medication as a major barrier to non-communicable disease (NCD) management at the PHC level(19–22).

Patient Awareness

Nearly half of the patients were unaware of HTN prior to diagnosis, and knowledge of risk factors and symptoms was generally low, especially among those with lower education levels. Cultural beliefs and misconceptions such as viewing HTN as a disease for the wealthy or attributing symptoms to witchcraft were common. These findings emphasize the importance of health education to improve disease literacy, increase demand for services and promote early detection and treatment. Similar trends on low awareness been reported by in Kenya by (23,24), who identified low awareness as a contributing factor to poor service utilization and treatment adherence leading to poor disease outcome. In Uganda, (21) reported low patients' knowledge on HTN while in Eritrea, (25) identified low knowledge as critical factors in HTN control. Additionally, in Nepal (26), identified low awareness among HTN patients as a barrier in controlling high BP.

Treatment Adherence

Some patients discontinued medication once symptoms subsided, reflecting a lack of understanding of HTN as a chronic condition requiring lifelong management. Additionally, risky behaviors such as tobacco and alcohol use were reported among a few patients, which may further complicate disease control. These behaviors highlight the need for integrated pear to pear behavioral counseling within HTN management programs. This study finding on poor adherence among HTN patients is in agreement with (23) who found that approximately two-thirds of HTN patients on follow-up in Central Kenya demonstrated medication non-adherence, largely due to inadequate understanding of HTN. Similarly, in University of Gondar Comprehensive Specialized Hospital, Ethiopia, (27) discovered that over one-third of patients had poor adherence, of which 13.4% stated that their symptoms led them to alter their medication administration practices, and one-fifth of individuals believe that their symptoms were brought on by their antihypertensive drugs.

Financial constraints and accessibility

Financial constraints, including the cost of medications and transport, were cited as barriers to service utilization. Although Kisumu County has implemented initiatives such as the "Marwa" Health Cover, the findings suggest that out-of-pocket expenses remain a significant burden. This finding on financial burden is consistent with study report in Ghana by (28) who identified that a significant contributing factor to low healthcare utilization and loss to follow-up among hypertension patients is the high cost of care. Similarly, in Nigeria (29) identified high cost of medication as a patient related barrier. (30) reports that high medication cost is a major contributor to non-adherence among HTN patients in developing while (25) identified poor economic status as critical factors to poor outcome of HTN treatment and control.

Facility access was also a concern, particularly where patients must travel long distances to reach facilities that offer all HTN services. In Nigeria, (17) recommend that qulaity of services should be improved in all facilities to ensure better equity access to healthcare and treatemnt outcomes.

Provider capacity and Training

While study finding indicates that 74 % of healthcare providers demonstrated good knowledge on HTN management, 26 % had insufficient understanding. Only 24% of healthcare providers received recent training on HTN management, while national guidelines were available in just 37% of facilities. Insufficient knowledge, training and lack of treatment guidelines compromises the quality of care and may contribute to inconsistent treatment practices. In agreement with study finding on insufficient knowledge on HTN management are studies by (31) and (32) which report that most PHC providers had insufficient understanding of the risk factors and symptoms of HTN. Lack of staff training on HTN management has been reported by (21) as some of the factors affecting treatment and control of HTN in SSA regions. Findings on lack of treatment guidelines at PHC facilities in Kenaya include study reports by (33) who found that only 34.4% of the PHC facilities had HTN treatment guidelines, with more availability at health centers than dispensaries and (34) who found several facilities lacking treatment guidelines for HTN treatment with more availability at higher level facilities. While in Congo (18) report that only 51.7 % of PHC facilities had guidelines for management of HTN. The observed knowledge gaps, particularly in symptoms recognition and diagnosis, underscore the need for continuous capacity development and availability of treatment protocols.

Implications For Health Practice And Policy

To improve effective delivery and utilization of HTN, Kisumu County Department of health needs to train health providers on HTN management, distribute and disseminate treatment guidelines and ensure availability of all HTN services across facilities. Additionally, there is a need to prioritize community engagement and HTN education to improve awareness and demand for services. There is need for policy reforms and increased budget allocation to equip facilities for effective HTN management in Kenya and similar setting.

CONCLUSION

Primary Healthcare facilities in Kisumu County are inadequately prepared to manage HTN effectively. Strengthening providers capacity, ensuring availability of guidelines and integration of HTN services are essential. Policy reform and increased health budgets for HTN management could enhance service utilization and improve treatment outcomes in Kenya and similar setting. This study finding is solely limited to PHC level, and the finding may not be generalized to higher healthcare level. Therefore, additional study should investigate the management of HTN at secondary and tertiary healthcare facilities in Kenya using the same methodology to provide a holistic view.

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Competing Interest

None

Authors' Contribution

All authors contributed to the development of the manuscript

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Data Availability

All data is available for sharing with a reasonable request to corresponding author (okothoscar08@gmail.com)

Disclaimer

This publication is solely based on study findings

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