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Determinants of Unmet Medical Needs Among Patients with Hypertension at Kapkatet Sub-County Hospital, Lake Region Economic Bloc, Kenya

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Abstract

Unmet medical needs represent a critical barrier to effective hypertension management, particularly in low-resource settings where structural, socioeconomic, and psychosocial challenges limit consistent access to care. This study examined the prevalence and determinants of unmet medical needs among hypertensive patients receiving outpatient services at Kapkatet Sub-County Hospital, located in Kenya's Lake Region Economic Bloc (LREB). Guided by the Andersen Behavioral Model, a cross-sectional design was applied using retrospective patient records and follow-up interviews for the period January–December 2024. Logistic regression was used to analyze associations between predisposing, enabling, and need factors and reported unmet needs. Findings revealed that 21.6% of patients experienced an unmet medical need within the past year. Key determinants included low household income, rural residence, female sex, lack of Social Health Authority (SHA) coverage, poor self-rated health, and the presence of comorbidities such as diabetes and chronic kidney disease. These findings are consistent with evidence from related Kenyan studies showing that geographic isolation, financial constraints, and chronic disease burden shape access patterns. Policy interventions such as expanded SHA coverage, community-based hypertension management, mental health integration, and improved rural health infrastructure are necessary to address persistent inequities. Strengthening these systems is essential to achieving universal health coverage and reducing complications among patients living with hypertension in underserved regions.

Keywords: Hypertension, Unmet Medical Needs, Andersen Behavioral Model, Access to Healthcare, Social Health Authority, Lake Region Economic Bloc, Kenya.

1. Introduction

Hypertension remains one of the leading causes of morbidity and mortality in Kenya, contributing significantly to cardiovascular disease, stroke, and renal complications. National estimates place adult hypertension prevalence at approximately 24%, with disproportionately higher rates in economically disadvantaged and rural populations such as those in the LREB (Ministry of Health, 2021; Gathecha et al., 2018). Despite the existence of effective antihypertensive therapies, many patients fail to receive timely or adequate care due to structural, economic, psychosocial, and cultural barriers.

Unmet medical needs are defined as situations in which patients are unable to obtain necessary healthcare despite recognizing their need. These unmet needs often arise from three domains: affordability, accessibility, and acceptability (Andersen, 2008; Cole & Nguyen, 2020). In Kenya, barriers such as long distances to health facilities, stock-outs of medications, lack of insurance coverage, cultural interpretations of chronic disease, and low risk perception contribute to missed treatment opportunities. Previous research in the region has documented similar patterns in diabetes and hypertension care, particularly in Kapkatet and other rural clinics (Ng'ambwa et al., 2025).

Gender dynamics also influence care-seeking behavior. Women often experience limited autonomy in health-related decisions, while men may delay care due to stigma or perceptions of masculinity. Cultural beliefs, including interpretations of hypertension as a non-serious or spiritually influenced condition, further undermine treatment adherence.

Although unmet medical needs have been examined in relation to maternal health and communicable diseases in Kenya, limited empirical work has focused specifically on hypertension within rural populations. Given the chronic nature of hypertension and its requirement for lifelong monitoring, understanding these unmet needs is essential for preventing severe complications. This study addresses this gap by identifying determinants of unmet need among hypertensive patients attending Kapkatet Sub-County Hospital.

2. Methods

2.1 Study Design and Setting

A cross-sectional descriptive study was conducted at Kapkatet Sub-County Hospital in Kericho County, a major referral facility serving rural communities within the LREB. The population is characterized by limited financial resources, long travel distances to health facilities, and a high burden of NCDs. Data were obtained from outpatient NCD clinic records between May and December 2024, supplemented by structured follow-up interviews.

2.2 Study Population

Participants included adults aged ≥18 years diagnosed with hypertension and actively receiving care during the study period. Patients with incomplete documentation, severe cognitive impairment, or those too ill for follow-up interviews were excluded.

2.3 Sample Size Calculation

The required sample size was determined using Cochran's formula for proportions:

$$n = Z^2 \times p \times (1-p)/e^2$$

Where:

- n = required sample size

- Z = Z-score corresponding to the desired confidence level (1.96 for 95% confidence)

- p = estimated prevalence of unmet medical needs (assumed to be 50% = 0.5 for maximum variability)

- e = margin of error (5% = 0.05)

Substituting the values:

$$n = (1.96)^2 \times 0.5 \times (1-0.5)/(0.05)^2 = 384.16$$

Thus, the minimum sample size required was approximately 384 participants.

To account for potential non-response or incomplete records, a 10% buffer was added:

$$N \text{ adjusted} = 384 + (0.10 \cdot 384) = 422.4, \text{ approximately } 423$$

$$n \text{ adjusted} = 384 + (0.10 \cdot 384) = 422.4 = 423$$

However, the final sample size used in this study was 384, as data completeness was confirmed in advance during record screening, and follow-up was conducted for missing responses during data collection.

2.4 Outcome Variable: Unmet Medical Need

Unmet medical need was assessed through the self-reported question: "In the past 12 months, was there a time you needed to see a doctor but could not?" Responses were dichotomized as unmet versus met. Follow-up questions documented reasons, including cost, distance, transport challenges, facility constraints, and cultural factors.

2.5 Data Analysis

SPSS v26 was used for descriptive statistics, chi-square tests, and multivariate logistic regression. Adjusted odds ratios (AORs) and 95% confidence intervals (CIs) were computed, with significance set at $p < 0.05$.

2.6 Theoretical Framework

This study was anchored on the Andersen Behavioral Model of Health Services Use, a theoretical framework initially developed in the 1960s to explain why individuals utilize or fail to utilize healthcare services. Over time, the model has evolved to include both individual and contextual factors that influence healthcare access, making it especially relevant for health systems in low- and middle-income countries like Kenya (Andersen, 2008).

The model posits that healthcare utilization is determined by three core categories of independent variables: predisposing, enabling, and need factors. Predisposing factors are socio-demographic characteristics that influence an individual's inclination to seek healthcare services even before a health condition arises. In this study, they included age, sex, marital status, education level, and area of residence (rural or urban). These factors shape health beliefs, awareness, and general attitudes toward health-seeking behavior. Enabling factors refer to the logistical and financial resources available to individuals that either facilitate or constrain access to healthcare. These included enrollment in the Social Health Authority (SHA), household income, employment status, and distance to the nearest health facility. Such factors often reflect broader structural and systemic inequalities. Need factors represent the perceived or professionally evaluated necessity for medical care. These are the most immediate drivers of service use and, in this study, included self-rated health, presence of comorbidities (such as diabetes or chronic kidney disease), and psychosocial indicators such as stress and depression. The dependent variable in this framework is the experience of unmet medical needs, defined as a situation in which a person perceived the need to seek healthcare but did not receive it due to barriers such as cost, availability, or accessibility. Figure 1 illustrates the conceptual framework guiding this study. It visually maps how predisposing, enabling, and need factors interact to influence the outcome of unmet medical needs among hypertensive patients.

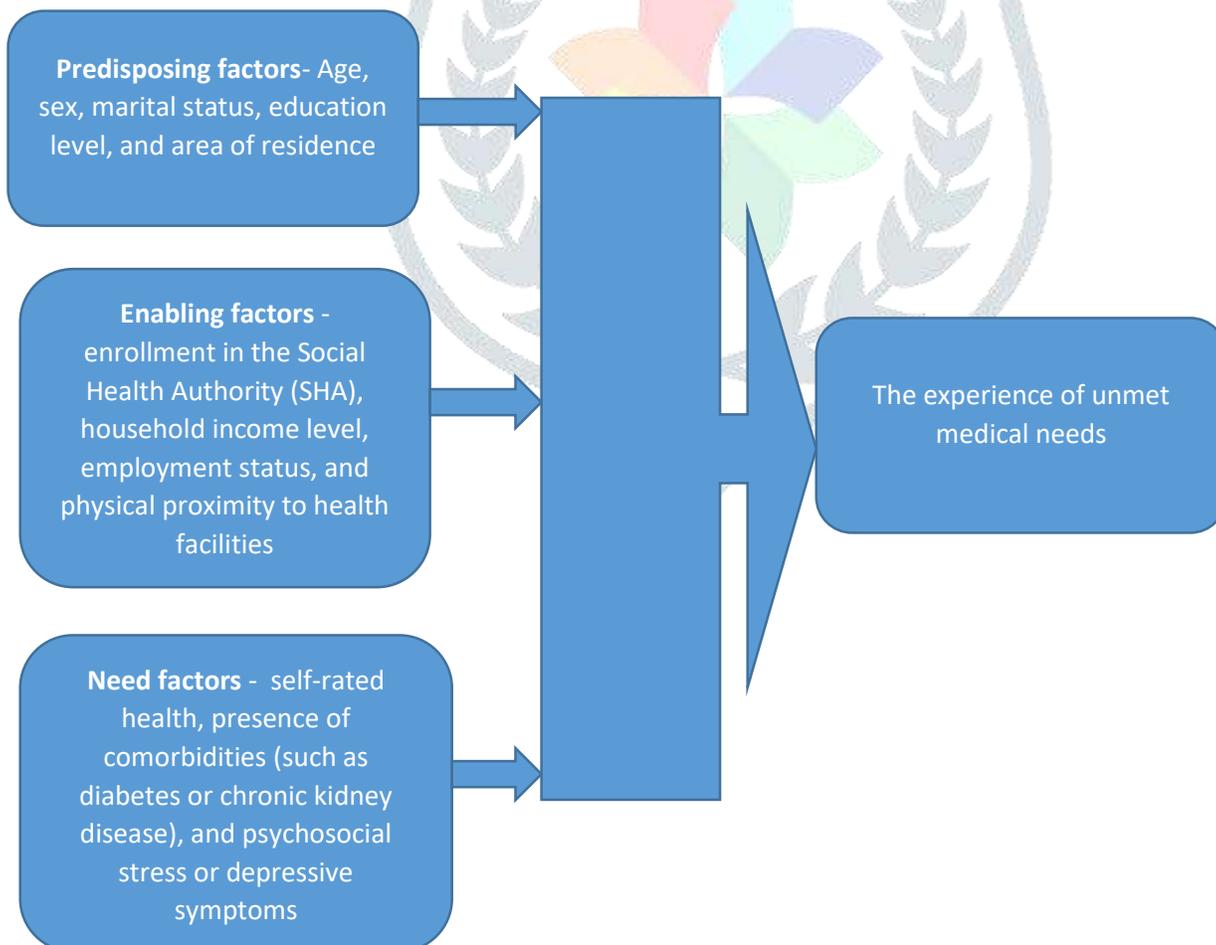**INDEPENDENT VARIABLES**   **DEPENDENT VARIABLE**

Predisposing factors- Age, sex, marital status, education level, and area of residence

Enabling factors - enrollment in the Social Health Authority (SHA), household income level, employment status, and physical proximity to health facilities

Need factors - self-rated health, presence of comorbidities (such as diabetes or chronic kidney disease), and psychosocial stress or depressive symptoms

The experience of unmet medical needs

Figure 1, the conceptual framework based on Andersen's Behavioral Model

3. Results

3.1 Participant Characteristics

Among the 384 participants, mean age was 56.3 years (SD ±11.2). Women comprised 61.2%, and 68.5% resided in rural areas. More than half (53.7%) reported monthly household incomes below KES 10,000. Nearly half (47.4%) lacked SHA coverage. Poor self-rated health was reported by 39.6%, and 44.8% had at least one comorbidity (mainly diabetes or kidney disease).

3.2 Prevalence of Unmet Medical Needs

The prevalence of unmet medical need was 21.6%.

3.3 Determinants of Unmet Need

Multivariate analysis identified several significant predictors:

Predictor	Odds Ratio	95% Confidence Interval
Female sex	1.7	1.2–2.4
Rural residence	2.1	1.4–3.0
Low income	2.5	1.7–3.8
No SHA coverage	2.3	1.6–3.3
Poor self-rated health	2.9	1.9–4.2
Comorbidities	2.8	1.9–4.0

table

These patterns mirror findings in Kenyan studies demonstrating the influence of socioeconomic vulnerability, rural residence, and multimorbidity on healthcare utilization (Otieno et al., 2020).

4. Discussion

This study demonstrates a substantial burden of unmet medical needs among hypertensive patients in rural Kericho County. The prevalence (21.6%) aligns with evidence from similar low-resource settings, emphasizing systemic inequities in healthcare access.

Rural residence

Rural patients were significantly more likely to report unmet needs, consistent with findings from western Kenya documenting geographic isolation, poor road networks, and transport costs as critical barriers (Otieno et al., 2020; Onyango et al., 2021).

Financial barriers and insurance gaps

Patients with low income or without SHA coverage had markedly higher odds of unmet need. These findings echo reports that insurance awareness and adequacy remain problematic, limiting financial protection even among enrolled members (Barasa et al., 2018). This pattern aligns with prior work at Kapkatet and Kakamega showing that out-of-pocket expenditures hinder continuity of care for NCDs (Ng'ambwa et al., 2021).

Clinical and psychosocial needs

Poor self-rated health and comorbidities greatly increased unmet needs. Similar findings in Kisumu and Nairobi suggest that chronic disease complexity and psychosocial stress diminish care-seeking behavior (Oduor et al., 2020; Wambugu et al., 2019).

Gender disparities

Women faced higher odds of unmet need, reflecting broader patterns in Kenya where caregiving responsibilities, limited household autonomy, and cultural expectations restrict timely care utilization.

Contrast with urban studies

Studies from Accra and Nairobi report lower unmet needs due to denser facility distribution and shorter travel distances (Boateng et al., 2020), highlighting rural–urban disparities.

Collectively, these findings underscore the need for integrated, community-centered interventions similar to nurse-led and community-based approaches successfully implemented in diabetes and hypertension programs in the same region (Ng'ambwa et al., 2025).

5. Conclusion

Unmet medical needs among hypertensive patients in the LREB remain substantial and are driven by intertwined socioeconomic, geographic, gender-related, and clinical factors. Financial barriers and gaps in SHA coverage severely restrict access. Rural residents, women, and individuals with multimorbidity are disproportionately affected. Strengthening community-based care, insurance coverage, and psychosocial support is essential to improving outcomes and advancing universal health coverage.

6. Recommendations

1. Expand SHA Awareness and Enrollment-Integrate SHA registration into routine outpatient visits and leverage community health volunteers (CHVs) for household-level sensitization.

2. Strengthen Community-Based Hypertension Follow-Up-Deploy CHVs to provide home-based BP monitoring, medication adherence support, and early detection of complications.

3. Establish Mobile Hypertension Clinics-Target remote villages to reduce travel distances and enhance continuity of care.

4. Integrate Mental Health Services-Routine screening for depression, stress, and anxiety should be embedded into NCD clinics, as psychosocial stress is a known predictor of care avoidance.

5. Subsidize Essential Antihypertensive Medication-Promote public-private partnerships to reduce out-of-pocket expenditures for low-income patients.

6. Improve Referral and Continuity Systems-Enhance record-keeping, digital tracking, and feedback loops between primary and referral facilities.

7. Conduct Further Longitudinal and Qualitative Research-Explore lived experiences of patients to complement quantitative findings.

7. Implications for Practice

Nurses and clinical officers serve as the first line of contact for hypertensive patients and should integrate socioeconomic screening, insurance counseling, and mental health assessment into routine care. Community health nurses must extend follow-up services into remote settings. These findings reinforce the importance of nurse-led interventions, an approach that has shown to improve access and outcomes in related NCD studies in the region (Ng'ambwa et al., 2025).

8. Limitations

This study has several limitations that should be acknowledged. First, its cross-sectional design limits the ability to infer causality between the identified factors and unmet medical needs. While associations were observed, longitudinal research would be necessary to establish temporal relationships. Second, the study relied in part on self-reported data, particularly in assessing whether participants had experienced unmet medical needs and in variables such as self-rated health and psychosocial stress. This introduces the potential for recall bias or social desirability bias, where respondents may misreport past healthcare experiences.

To mitigate these limitations, multiple strategies were employed. The use of clinical records from Kapkatet Sub-County Hospital ensured that key variables such as diagnosis, comorbidities, and visit history were objectively verified. Additionally, data collectors were trained to build rapport and clarify any ambiguous questions during

interviews to reduce reporting errors. Pretesting of the questionnaire also helped refine items for clarity and cultural relevance. Despite these efforts, the limitations underline the need for cautious interpretation of the findings and call for future longitudinal or mixed-method studies to explore the nuanced pathways leading to unmet medical needs.

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Appendices

1.STUDY QUESTIONNAIRE

Determinants of Unmet Medical Needs Among Hypertensive Patients

Kapkatet Sub-County Hospital, Kericho County, Kenya

INSTRUCTIONS TO RESPONDENT**:** Your responses will be kept strictly confidential and will be used only for academic purposes. Please tick (✔) or circle the appropriate answer, or write where required.

SECTION A: SOCIO-DEMOGRAPHIC (PREDISPOSING FACTORS)

1. Age (in years): _____

2. Sex: ☐ Male   ☐ Female

3. Marital Status: ☐ Single   ☐ Married   ☐ Widowed   ☐ Divorced/Separated

4. Highest Level of Education Completed:

☐ No formal education

☐ Primary

☐ Secondary

☐ College/Technical

☐ University

5. Area of Residence: ☐ Rural   ☐ Urban

6. Household Size (number of people): _____

7. Religion:☐ Christian   ☐ Muslim   ☐ Other (specify): _____

SECTION B: SOCIO-ECONOMIC AND ACCESS FACTORS (ENABLING FACTORS)

8. Employment Status:

☐ Unemployed

☐ Self-employed

☐ Casual laborer

☐ Employed (formal)

☐ Retired

9. Average Monthly Household Income:

☐ < KES 5,000

☐ 5,000–9,999

☐ 10,000–19,999
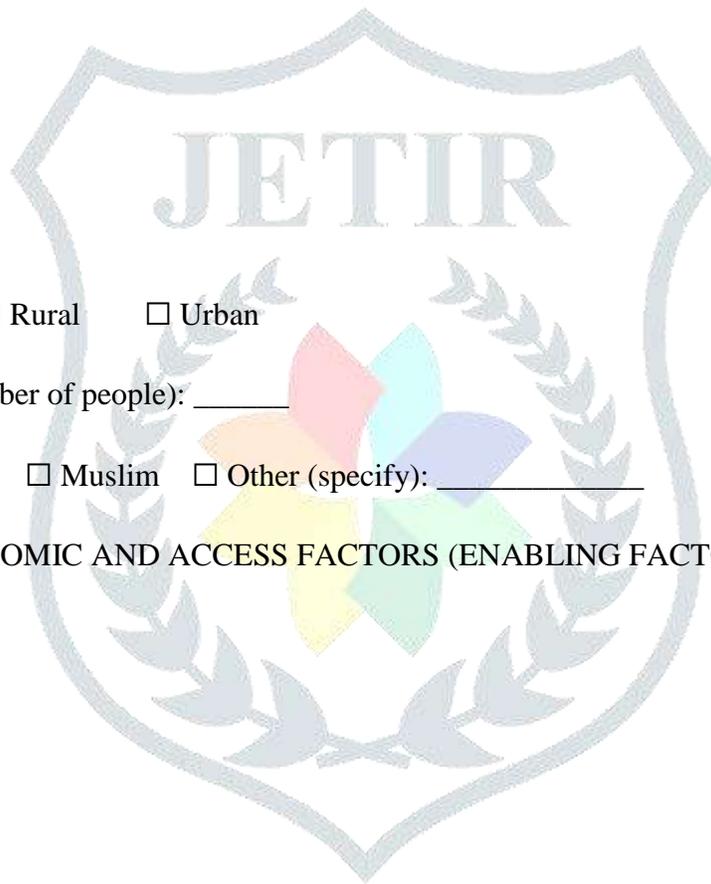
☐ 20,000–29,999

☐ ≥ 30,000

10.   Do you have active Social Health Authority (SHA) insurance coverage?☐ Yes   ☐ No

11.   How far is your home from the nearest health facility?

☐ < 1 km

☐ 1–5 km

☐ 6–10 km

☐ > 10 km

12.   Primary means of transportation to the clinic:

☐ Walking

☐ Motorbike (boda boda)

☐ Public transport (matatu)

☐ Private vehicle

13.   Do you regularly experience difficulty paying for clinic visits or medication? ☐ Yes☐ No

14.   Are antihypertensive drugs usually available when you visit the clinic? ☐ Always   ☐ Sometimes   ☐ Rarely   ☐ Never

SECTION C: CLINICAL & HEALTH STATUS (NEED FACTORS)

15.   How many years have you lived with hypertension?

☐ < 1 year

☐ 1–5 years

☐ 6–10 years

☐ > 10 years

16.   Do you have any chronic comorbid conditions? (Tick all that apply)

i.Diabetes

ii.Chronic kidney disease

iii.Heart disease

iv.Stroke

v.None

vi.Other (specify): _____

17. How would you rate your overall health status? ☐ Very good   ☐ Good   ☐ Fair   ☐ Poor

18. Do you experience any of the following symptoms of psychological distress?

i.Frequent worry or stress?   ☐ Yes ☐ No

ii.Persistent sadness or low mood?   ☐ Yes ☐ No

iii.Sleep problems?   ☐ Yes ☐ No

iv.Loss of interest in daily activities? ☐ Yes ☐ No

19. Have you ever missed medication in the past 3 months?

☐ Yes   ☐ No If Yes, why? _____

SECTION D: HEALTH SERVICE USE

20. How often do you visit the hypertension/NCD clinic?

i.Monthly

ii.Every 2–3 months

iii.Twice a year

iv.Once a year or less

21. Do you have a scheduled follow-up plan with a clinician? ☐ Yes   ☐ No

22. Have you ever missed a scheduled follow-up clinic visit? ☐ Yes   ☐ No

If Yes, state the reason(s): _____

SECTION E: UNMET MEDICAL NEEDS (PRIMARY OUTCOME)

23. In the past 12 months, was there a time when you needed to see a doctor but could NOT? ☐ YES   ☐ NO

24. If YES, what were the reasons? (Tick all that apply)

☐ The cost was too high

☐ Distance to facility was too far

☐ No money for transport

☐ Facility had long queues

☐ Facility was closed

☐ Medication was unavailable

☐ Mild or disappearing symptoms

☐ Cultural or religious reasons

☐ Family did not support the visit

☐ Fear of diagnosis or bad news

☐ Other (specify): _____

25.   Did you experience complications during the period of unmet need?

☐ Yes   ☐ No

If Yes, specify: _____

SECTION F: PATIENT PERCEPTIONS & BELIEFS

26.   Do you believe hypertension is a serious health condition? ☐ Yes   ☐ No

27.   Do you think hypertension can be controlled with medication and lifestyle change?

☐ Yes   ☐ No

28.   Do cultural, spiritual, or family beliefs influence your decision to seek care?

i.Yes

ii.No

If Yes, explain: _____

29.   Are you satisfied with the current quality of hypertension services at this facility?

i.Very satisfied

ii.Satisfied

iii.Neutral

iv.Dissatisfied

v.Very dissatisfied

SECTION G: RECOMMENDATIONS FROM PATIENTS

30.   What improvements would make it easier for you to access hypertension care?

   i. Lower cost of care

  ii. Outreach clinics/mobile clinics

 iii. Shorter waiting times

 iv. More drug availability

  v. Better communication from healthcare providers

 vi. More SHA support/insurance coverage

vii. Community health worker follow-up

   Other (specify): _____

31.   Any additional comments or suggestions?