Original Report: Health Inequities in Hypertension and Related Organ Damage

Barriers and Facilitators to Nurse Management of Hypertension: A Qualitative Analysis from Western Kenya

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Background: Hypertension is the leading global risk for mortality. Poor treatment and control of hypertension in low- and middle-income countries is due to several reasons, including insufficient human resources. Nurse management of hypertension is a novel approach to address the human resource challenge. However, specific barriers and facilitators to this strategy are not known.

Objective: To evaluate barriers and facilitators to nurse management of hypertensive patients in rural western Kenya, using a qualitative research approach.

Methods: Six key informant interviews (five men, one woman) and seven focus group discussions (24 men, 33 women) were conducted among physicians, clinical officers, nurses, support staff, patients, and community leaders. Content analysis was performed using Atlas.ti 7.0, using deductive and inductive codes that were then grouped into themes representing barriers and facilitators. Ranking of barriers and facilitators was performed using triangulation of density of participant responses from the focus group discussions and key informant interviews, as well as investigator assessments using a two-round Delphi exercise.

Results: We identified a total of 23 barriers and nine facilitators to nurse management of hypertension, spanning the following categories of factors: health systems, environmental, nurse-specific, patient-specific, emotional, and community. The Delphi results were generally consistent with the findings from the content analysis.

Conclusion: Nurse management of hypertension is a potentially feasible strategy to address the human resource challenge of hypertension control in low-resource settings. However, successful implementation will be contingent upon addressing barriers such as access to medications, quality of care, training of nurses, health education, and stigma. *Ethn Dis*. 2016;26(3):315-322; doi:10.18865/ed.26.3.315.

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Background

Hypertension, a major risk factor for cardiovascular disease (CVD),[1] is the leading global risk for mortality.[2] The global cost of suboptimal blood pressure is estimated at nearly $1 trillion over the next decade.[3] Unless adequately controlled, hypertension will continue to be responsible for significant morbidity and mortality worldwide.[4]

Hypertension awareness, treatment, and control rates are low in every region of the world.[5] Poor treatment and control of hypertension in low- and middle-income countries (LMICs) is due to lack of a widespread chronic disease management platform, inadequate access to essential cardiovascular medicines, and insufficient human resources.[6,7] In many LMICs, including Kenya, only physicians are authorized to manage hypertension.[8] However, sub-Saharan Africa has an insufficient physician workforce to contend with the dual burden of infectious and non-communicable, chronic diseases.[7,9] Therefore, task redistribution is an essential strategy to meet the human resource challenge of management of chronic diseases such as hypertension.

Task redistribution, in which specific tasks are redistributed among health workers of different levels of training, allows for more efficient use of available human resources for health.[10] Non-physicians have been effective in child health and HIV care in LMICs, as well as in non-

communicable disease management in high-income countries.[11-14] However, the barriers and facilitators of task redistribution of hypertension care from physicians to nurses in rural LMIC settings are not known. We therefore conducted a qualitative study to evaluate the specific factors influencing nurse management of hypertension in rural western Kenya. We embedded this study within an ongoing project aimed at evaluating the feasibility and impact of nurse management of hypertension in Kenya.[15]

Methods

Setting

The Academic Model Providing Access to Healthcare Partnership (AMPATH) was initiated in Kenya in 2001 and has established an HIV care system in western Kenya that serves more than 100,000 patients.[16] Based on that foundation, and in partnership with the Government of Kenya, AMPATH is expanding its clinical scope of work to include hypertension.[17] This study was conducted within the AMPATH catchment area in Kosirai Division, western Kenya. Kosirai Division has one rural health center staffed primarily by clinical officers (mid-level practitioners), and several, more decentralized, rural dispensaries that are staffed by nurses. The protocol has been approved by the institutional review boards of Mount Sinai and Moi University Schools of Medicine.

Design

We used a combination of qualitative research methods, including focus group discussions (FGDs) and key informant interviews, to identify the facilitators and barriers to nurse management of hypertension. This combination of techniques allowed us to merge the results of group dynamics and exchange with more in-depth one-on-one interviews. All sessions were conducted in a convenient location to participants and that protected the confidentiality of the discussion and information.

Participants

Focus Group Discussions

Focus group discussions were constituted to represent six different stakeholder groups: 1) nurses; 2) clinical officers; 3) physicians; 4) support staff in the dispensaries; 5) male patients; and 6) female patients. These focus groups were formed by purposive sampling to include a spectrum of age, sex, and occupation. Seven FGDs were conducted, after which we achieved content saturation.

Key Informant Interviews

Key informant interviews were conducted with local chiefs/political leaders (three) and clinical officers in various leadership positions (three). After these six key informant interviews, content saturation was achieved.

Procedures

For all qualitative sessions, we developed and pilot-tested moderator guides (available from the corresponding author), which were used by trained moderators fluent in the local languages. The moderator used the guide to lead a discussion on chronic health conditions, the health care options for these conditions, and facilitators and barriers to nurse management of hypertension in the community. Participatory techniques were used to elicit emotional elements and promote group interactions.[18] All sessions were audio-recorded, transcribed, translated into English, and back-translated to ensure accuracy of the translation.

Analysis

Content analysis of the transcripts was performed by pairs of investigators, and inter-rater reliability was confirmed using a threshold average kappa statistic of .6 for double-coded quotations. We used both deductive (*a priori*) and inductive (emerging) codes.[19] *A priori* codes included: patients' trust of nurses, nurses' knowledge regarding hypertension management, nurses' level of motivation, geographical access to different levels of health facility, and perceptions and concerns regarding drug supply. The coded items were grouped together into distinct themes, and relationships among these themes were formulated. Content analysis was performed with Atlas.ti 7.0 software package.

We subsequently used a two-round Delphi method involving eight colleagues with expertise in hypertension management, health care in Kenya, and behavioral research, to rank the barriers and facilitators identified in the content analysis. The Delphi method is a consensus technique that collects expert opinions through several rounds of surveys or interviews, and is characterized by anonymity, iteration, controlled feedback, and statistical group response (expression of the degree of consensus within a group).[20] For the first round, we requested each Delphi participant to indicate the top

five to ten barriers and facilitators from among all the factors identified in the content analysis. For the second round, we presented each participant with the sum total of anonymous votes for all barriers and facilitators from the first round, and requested each participant to again indicate the top five to ten. After two rounds, we summed the tally for each barrier and facilitator. We then generated a list of the top 10 barriers and facilitators according to the Delphi exercise.

Identified barriers and facilitators were sorted for importance by triangulation of total participant response density from the FGDs and key informant interviews, as well as the rank-order derived from the Delphi exercise.[21] Sociodemographic characteristics of participants were summarized using descriptive statistics.

Results

A total of 57 participants (33 women, 24 men) participated in the seven FGDs, along with six key informant interviews (one woman, five men); Table 1 provides demographic and stakeholder information for all participants. We identified a total of 23 barriers and nine facilitators to nurse management of hypertension in this setting, spanning the following categories of factors: health systems; environmental; nurse-specific; patient-specific; emotional; and community (Table 2). While several of the identified themes were clearly either barriers or facilitators, a few could be classified as one or another depending on the specific circumstance. For instance, "patient-provider relationship"

Table 1. Breakdown of focus group discussions and key informant interviews by participant category

Activity	Title	Males	Females
Focus group discussions	Nurses	2	7
	Physicians	5	0
	Support staff	2	6
	Patients	11	16
	Clinical officers	4	4
Key informant interviews	Clinical officers	2	1
	Chiefs	3	0
Total		29	34

Table 2. Barriers and facilitators to nurse management of hypertension identified by category; total frequency presented.

Category	Barriers	n	Facilitators	n
Patient	Asymptomatic nature of hypertension	58	Patient satisfaction/patient as consumer[a]	58
	Patient satisfaction	51	Nurse should be primary provider[a]	25
	Patient knowledge and perception of hypertension	49	Trust[a]	17
	Financial resources of the patient[a]	43		
	Doctor should be primary provider[a]	31		
	Follow-up and linkage to care	30		
	Compliance	30		
	Cure disease vs symptom relief	28		
Nurse	Inadequate training of health care personnel	21	Nurse factor- empowerment, ability to treat	42
	Work overload	20	Nurse confidence[a]	15
Health System	Access to drugs[a]	211	Coordination/integration of health systems[a]	86
	High cost of chronic disease care[a]	95	Positive patient provider relationship	30
	Non-allopathic care	68		
	Difficulty of treating chronic disease patients	50		
	Access to health care resources or facilities	36		
	Supply chain of medications[a]	30		
	Limited human resources for health	23		
	Negative patient provider relationship	20		
	Overcrowded facilities	17		
	Politics and corruption	11		
Environmental	Geography/terrain	20		
Emotional	HIV stigma[a]	16	Mortality and death concerns	31
Community	Lack of health education[a]	26	Importance of community[a]	17

a. Indicates Delphi top rank.

was considered a barrier if the relationship was described as poor or the communication was unpleasant, but was considered a facilitator if the relationship was described as positive and the communication was empathetic.

Barriers

Health system barriers, while not specific to nurse management of hypertension per se, were felt to impact the potential success or failure of a nurse management program. The major barrier overall was concern regarding access to medications, described primarily by nurses and patients. Participants repeatedly reported stockouts and unaffordability of hypertension medications. Concerns about cost of chronic disease care went beyond the cumulative cost of lifelong medications, to include the costs associated with consultation, laboratory testing, and transportation. Given the reality of low financial resources in the form of wealth or income, high costs were felt to constrain the success of any type of hypertension management program, whether nurse-related or not.

"No I don't forget, I run out of medication and now you know people's pockets are different […] Now when I come here they say it's not there [medications], we go and buy and you don't even have transport [funds] to travel. The other day I took a bit of my transport [funds] so I can buy some medicine because I had been told it was too high [blood pressure]." (Female patient, FGD #7)

Nurse-related barriers included inadequate training and excessive workload, both of which were more frequently reported by nurses. Nurses felt that they had not received sufficient training for them to feel fully confident while independently managing patients with hypertension. In addition, they expressed concern about an already overwhelming workload in the context of their current duties, and fear about additional duties related to hypertension management.

"It takes a lot of time even to manage one client, yet most of our facilities you find that you might be there alone and you have lot of patients […] when the queue is very long you become emotional." (Nurse, FGD #1)

The primary patient-related barrier was the asymptomatic nature of hypertension, which, in combination with generally low knowledge or awareness of hypertension, was felt to be a barrier to care-seeking in general. This perceived lack of health education was felt to be widespread among community members. Participants felt that this was also related to patients believing in alternative etiologies for hypertension, such as being bewitched. Given the availability and popularity of non-allopathic care, participants felt that patients would preferentially seek care with non-allopathic practitioners. This would lead to low engagement with the formal health care system, and would negatively impact the potential success of any hypertension program, including the nurse management of hypertension program.

"They may believe that maybe I was bewitched, so in the health facility they will not get a cure, so they believe that this cause of the disease deserves to be treated somewhere else other than the facility." (Nurse FGD #1)

In addition, patients expressed a strong preference for being taken care of by doctors rather than nurses. While nurses could have a role in hypertension management, that was felt to be relegated to tasks such as blood pressure checks and education. Patients also expressed a strong desire to receive high quality of care, while other stakeholder groups did not mention this issue. In the spirit of "patient as consumer," low patient satisfaction—whether due to type of provider, poor patient-provider relationship, or inefficient care delivery processes—would serve as a barrier to a nurse management program for hypertension.

"Time. They don't want to keep time. They arrive at 10 and then go for lunch til 2 pm. And when you fail to come, they say "What, what?" That is not a nurse. Time. We want somebody who keeps time." (Male patient, FGD #6)

An additional barrier, from an emotional perspective, was stigma related to HIV. Individuals, primarily patients and community leaders, described two components of this stigma: 1) fear of being tested for HIV; and 2) not wanting to receive hypertension care at a facility that also provides HIV care, due to fear of being labeled as having HIV.

"I say "how will I go and sit with AIDS people in a queue?" […] I fear going there because people will say I am part of them [have HIV] […] I ask myself "what do these people want from me in AMPATH? I don't have AIDS" […] I went there saying I don't want to be seen like I have it [HIV]." (Female patient, FGD #5)

Geography and difficult terrain was reported as a notable environmental

barrier, again threatening the success of any type of health care delivery program and not specific to nurse management of hypertension per se. Participants reported that long distances to the nearest health care facility would be a challenge for patients attempting to seek care. Similarly, difficult terrain, combined with limited transportation options, would make it difficult for patients to access health facilities.

Facilitators

While patients and nurses expressed frustration with the current care delivery system, many expressed hope that care integration would result in improved implementation of a nurse management of hypertension program, by improving quality of care, care transitions, and patient-provider communication. In addition, patients reported that they generally trust the nurses in the rural health facilities, as the nurses are usually well-known members of their community. This increased trust could enhance patient-provider communication, increase patient satisfaction, and subsequently promote the success of a nurse management program.

"The nurse who is there they know personally because they have been interacting maybe in the market […] When somebody works somewhere for quite a period, they'll know, they'll just know that this person is a neighbor. They feel like they are being treated by a neighbor." (Clinical officer, Interview #2)

Nurses expressed confidence in their ability to serve as primary clinicians in the management of hypertension, as long as they received sufficient training. In addition, they felt that being offered the ability to treat hypertension and make management decisions would empower them, increase their confidence, and increase pride in their work. These mechanisms were all felt to enhance the success of a nurse management of hypertension program.

Participants from all stakeholder groups agreed that the primary emotional facilitator was fear of mortality. Since hypertension is perceived as a "silent killer," individuals felt that this fear helps to stimulate care-seeking behavior.

"I feel it is very important to control the hypertension especially very early, because it is a silent killer. What I mean by silent killer is that it's a disease that can kill even without your knowledge […] So it is very important for us to control it." (Clinical Officer, FGD #2)

In addition, participants felt that the importance of community would be a strong facilitator of this program. Participants expressed the perception that healthier individuals contribute to stronger communities, and that this would incentivize health care-seeking behavior. Community members also felt that they would support hypertension patients to engage in the care system.

"I know it will also affect somebody's ways of working, so if you control hypertension, people will work, people can be comfortable that they are safe, and from there the entire community will be healthy." (Community leader, Interview #5)

In general, the Delphi process results were consistent with the findings from the qualitative analysis, with a few notable exceptions. "Seriousness of disease is reflected by the level of provider" was ranked as a significant barrier in the Delphi process, but was not frequently mentioned by participants. Conversely, issues such as non-allopathic care, asymptomatic nature of hypertension, and "patient as consumer" were not ranked highly in the Delphi process, but featured prominently in the participant transcripts. With respect to facilitators, Delphi participants highlighted factors such as "relief in diagnosis" and "importance of hypertension prevention," whereas those did not feature significantly in the content analysis. Similarly, "nurse empowerment" and "concerns about mortality" featured more prominently in the content analysis than in the Delphi exercise. Given that the remainder of the results were similar, we have reported here the results of the content analysis.

Discussion

In this qualitative study from western Kenya, we used FGDs to identify numerous barriers and facilitators to the implementation of a nurse management of hypertension program. These factors were categorized as health system, patient-related, nurse-related, community, emotional, or environmental. Our analysis provides new insights into task redistribution for hypertension care that may be relevant for other low-resource settings. To the best of our knowledge, this is the first report describing perceptions of a diversity of stakeholders, including clinicians, patients, and auxiliary staff.

Due to the high burden of CVD, and the low physician-to-patient ratio in LMICs such as Kenya, it is crucial to explore alternative approaches to improve access to hypertension care among the population. Task redistribution has been successfully implemented for HIV/AIDS care in parts of sub-Saharan Africa as an effective method of improving access to quality care in the context of low human resources for health.[22] Our current study from rural western Kenya adds to the current literature, by assessing whether task redistribution is feasible for hypertension management.

Our approach consisted of targeting a diversity of participant groups, using a combination of FGDs and key informant interviews, and analyzing the results with both content analysis and a Delphi exercise. This approach allowed for triangulation across stakeholder groups, study procedures, deductive and inductive content coding, as well as analytic approaches. Triangulation is a process of comparing the results from two or more distinct analytic approaches or sources of data, to enhance construct validity and trustworthiness of inferences.[23,24] Given the largely congruent and consistent results across the different methods and participants, triangulation helps to increase the validity and trustworthiness of our results. To be sure, there were some notable differences across participant groups, as well as when comparing content analysis versus the Delphi exercise. These differences reveal the diversity of stakeholder perspectives, and also highlight the importance of ensuring representation of a wide spectrum of participant backgrounds in qualitative research. In addition, this process stimulates further areas of inquiry that can be pursued in future research in similar settings worldwide.

The health system factors were the most salient barriers, including access to medicines, high cost of chronic disease care, supply chain considerations, and human resources. Access to medicines, the most commonly cited barrier, is composed of supply-side (availability) and demand-side (affordability) considerations. On the supply side, there are frequent and repeated medication stockouts of the essential medicines contained on the national formulary.[25] CVD medicines are even less reliably available, especially for rural populations. On the demand side, nearly 50% of the Kenyan population lives below the poverty line, with a substantial portion earning less than one US dollar a day.[26] High medication expenditures as a percentage of income, coupled with the longevity of hypertension treatment, makes affordability challenging for this demographic, and has been shown to be the primary reason patients are non-adherent with their medication regimen.[27] While respondents acknowledged that integrated health systems could provide better continuity of care among different levels of care, there was deep and widespread concern about health systems factors that could threaten the success of the nurse management of hypertension program.

Similarly, the patients' discussions reinforced a resounding notion that any hypertension management program would need to address concerns related to quality of care, patient satisfaction, and patient-provider communication. Both patients and health care providers expressed concern that either patient- or provider-related trust components[28] could adversely affect the patient-provider relationship and serve as a barrier. This type of concern for inefficient and poor quality service delivery, as well as patient-provider relationship, has been reported as important for linkage and retention to HIV care.[29] It is likely an important factor to consider for hypertension (and other chronic disease) management programs, especially in the context of task redistribution involving different cadres of health workers. In Kenya, there are three levels of nurses in the public sector: certificate (39.2%), diploma (57.8%), and degree (3.0%).[30] While we did not observe any differences in perception by nursing level, this is an area of potential future inquiry.

Lack of health education at the community level can manifest as barriers to individual care-seeking behavior. Among various subpopulations in Kenya, multiple studies have reported that less than 25% of individuals have knowledge of causes, risk factors, symptoms, and management options of hypertension and other cardiovascular risk factors.[31,32] Lack of health education can prevent individuals from pursuing treatment or negatively impact adherence to their care. Improved public awareness of hypertension would be important within rural communities to encourage engagement of the health care system.

The need for improved hypertension training for nurses has been reported previously in the sub-Saharan region.[33] Evidence has shown that appropriate training of community health workers and nurses can effec-

tively increase hypertension knowledge and clinical skills. By empowering these health care professionals through appropriate hypertension training, it is possible to increase confidence,[34] consequently creating an improved patient experience and possibly improved clinical outcomes.

Emotional factors, specifically HIV stigma, have been reported to adversely impact linkage to hypertension care.[35,36] It is possible that the HIV stigma reported in this community was related to the history of AMPATH providing primarily HIV care in the local health facilities. HIV stigma can be countered by appealing to other emotional factors such as mortality concerns, as expressed by participants. In addition, it is possible that, given the importance of community expressed by the entire spectrum of study participants, community-based approaches could confront HIV stigma as well as facilitate engagement with the care system.

The information gathered in this study has informed the development and implementation of AMPATH's nurse management of hypertension program in western Kenya. Specifically, the results presented here have increased the program's attention to both barriers and facilitators of such a program. If shown to be effective in terms of improvement in hypertension management, we anticipate that this approach may be relevant to similar programs in other low-resource settings worldwide, while taking into account contextual and cultural factors.

One limitation of our study includes the potential for limited generalizability, since we recruited participants from a specific geographic area in western Kenya. However, by recruiting participants from diverse backgrounds and across the stakeholder spectrum, we anticipate that the findings will be relevant to other low-resource settings in diverse geographic areas. Second, we did not record individual-level demographic information for the quotations and transcripts; hence, we are unable to report individual-specific information for each quotation. Rather, we view the data as arising from a collective session, not from any one individual within the session. Given the qualitative nature of the study, it is not possible to definitively conclude that certain factors are indeed relevant to the implementation of a nurse management of hypertension program. However, the purpose of this study was to uncover potential factors, themes, and issues that could be hypothesis-generating to be subsequently tested in a larger population.

Conclusion

Hypertension treatment and control rates are low worldwide, particularly in low-to-middle income countries. Task redistribution and the central involvement of nurses in hypertension management can be a plausible strategy for improving blood pressure control. Using a qualitative approach, we were able to identify barriers and facilitators to a nurse management of hypertension program, across multiple categories: health system, patient-related, nurse-related, community, emotional, and environmental. In addition to informing the development and implementation of AMPATH's nurse management of hypertension program, our analysis provides new insights and methodological approaches that may be relevant to other low-resource settings worldwide.

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Conflicts of Interest

No conflicts to report.

Author Contributions

Research concept and design: Vedanthan, Kamano, Kimaiyo, Inui, Horowitz, Fuster; Acquisition of data: Vedanthan, Tuikong; Data analysis and interpretation: Vedanthan, Tuikong, Kofler, Blank, Naanyu, Kimaiyo, Inui, Horowitz, Fuster; Manuscript draft: Vedanthan, Tuikong, Kofler, Blank, Kamano, Naanyu, Kimaiyo, Inui, Horowitz, Fuster; Acquisition of funding: Vedanthan; Administrative: Tuikong, Kofler; Supervision: Vedanthan, Naanyu, Kimaiyo, Fuster

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