

Adopting Task-Shifting Strategies for Hypertension Control in Ghana

Insights From a Realist Synthesis of Stakeholder Perceptions



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ABSTRACT

Background: The adoption, intention, initial decision or action to implement evidence-based strategies for hypertension control in real-world settings is a challenge in low- and middle-income countries. Although stakeholders are essential for the adoption of evidence-based interventions, data on how to engage them to improve uptake of these strategies is lacking. Using a realist synthesis of stakeholder perspectives, the authors describe a process for engaging stakeholders to identify facilitators and barriers to the adoption of an evidence-based task-strengthening strategy for hypertension control in Ghana.

Objectives: To identify stakeholder perceptions of the factors influencing the adoption of evidence-based task-shifting strategies for hypertension control in Ghana.

Methods: A realist evaluation of interviews, focus groups, and brainstorming activities was conducted to evaluate stakeholder perceptions of an evidence-based strategy designed to identify, counsel, and refer patients with hypertension for care in community health centers. Stakeholders included community health officers, administrators, and policymakers from the Ghana Health Service, researchers, and community health officers in community-based health planning services in the Kintampo region of Ghana. The study used a realist synthesis approach to thematically analyze the qualitative data generated.

Results: Sixty-two stakeholders participated in the study. They identified inner contextual characteristics such as the provision of resources, training, supervision, and monitoring as well as community outreach as important for the adoption of an evidence-based strategy in Ghana. The findings highlight how stakeholders are faced with multiple and often competing system strains when contemplating uptake of evidence-based strategies for hypertension control.

Conclusions: Through the application of a realist synthesis of stakeholder perceptions, the study identified factors likely to enhance the adoption of an evidence-based strategy for hypertension control in Ghana. The lessons learned will help shape the translation of evidence in real-world settings, and could be valuable in future planning to enhance the adoption of evidence-based strategies for hypertension control in LMICs.

Ghana, similar to other countries in sub-Saharan Africa, is experiencing an epidemic of cardiovascular diseases propelled by rapidly increasing rates of hypertension [1,2]. More than 1 in 5 Ghanaians has hypertension, which is the second leading cause of outpatient morbidity in adults older than 45 years in Ghana [1–3]. The adoption or action to utilize evidence-based strategies [4–7] for hypertension control is a challenge in low- and middle-income countries (LMICs) like Ghana [8]. Although evidence-based interventions (EBIs) exist for cardiovascular disease risk reduction, the ability of health systems in LMICs to ensure their effective and equitable uptake is lacking [9,10]. The adoption of EBIs for hypertension control has the potential to improve blood pressure control by enhancing quality, efficiency, and access to

evidence-based care [10,11]. Additionally, interventions that seek to influence hypertension control in low-resource settings are generally complex and dynamic and often dependent on the local context, stakeholder engagement, and other events beyond the control of the implementers, which can adversely impact their outcomes [12–14].

This problem may be addressed via stakeholder engagement: a process through which those responsible for implementing EBIs build transparent, meaningful, collaborative, and mutually beneficial relationships with affected groups to adopt the interventions [14–16].

The reasons why the adoption of EBIs often fails has little to do with its content and format, but rather is mostly due to complex decision-making structures [4,7,17]. Often, described as “critical for moving knowledge into

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action,” stakeholder engagement influences decision making that reduces this implementation gap [18]. The available published data highlights several potential roles that stakeholders play in knowledge translation. For example, stakeholders can help with translating contextual knowledge for health policy development; mobilize resources, leadership support, and communities to demand evidence implementation; and ultimately implement and sustain the evidence-based practices [15,19,20]. Stakeholders have the potential to optimize local capacity for expanding the reach of EBIs [15,20]. They can evaluate potential mechanisms via which EBIs could be improved to assist patients and to support health care workers, and caregivers in providing guideline-concordant care. As noted by Sauerborn et al. [21], evidence can only be relevant if it is known and used by key stakeholders themselves. However, in the dynamic and complex health systems settings in LMICs such as Ghana, stakeholders are not often involved in efforts to improve the uptake and sustainability of EBIs. Thus, many EBIs in LMICs fail to translate into meaningful patient care outcomes [22].

Given the significance of stakeholders’ involvement with knowledge translation, the goal of this study was to build on our earlier work on stakeholder perceptions and identify factors that facilitate or hinder the adoption and sustainability of EBI for hypertension control in Ghana [14,23]. In our previous work, we explored stakeholders’ perceptions of a cluster-randomized trial of task-shifting strategy for hypertension control (TASSH) in 32 community health centers and district hospitals in Ghana [14]. We highlighted the importance of stakeholders’ knowledge and awareness of TASSH, reasons for participating or not participating, and the perceived benefits and drawbacks of the program [14]. In the current study, we sought to identify stakeholders’ perceptions of factors influencing the adoption of TASSH within the community-based health planning and services (CHPS) zones, which represent the “ground level” of the Ghana Health Service (GHS). Gathering knowledge from diverse stakeholders involved in the implementation of TASSH may provide clearer articulation of the potential facilitators and barriers to the adoption of TASSH in the CHPS zones.

METHODS

Design, setting, and participants

We employed a realist approach to identify the context in which hypertension management occurs within the CHPS zones to explore the mechanisms that may facilitate or hinder the adoption of an evidence-based strategy for hypertension control (TASSH) in the CHPS zones. Realist synthesis aims to understand the context and “unpack” the mechanisms by which complex interventions work (or the reasons for their failure) in specific contexts and settings [24]. In so doing, realist evaluations view critical linkages between contexts (i.e., characteristics of CHPS zones), mechanisms (i.e., hidden processes or entities that are

sensitive to the context and may influence adoption of TASSH), and outcomes (i.e., the range of effects such as adoption of TASSH over time) [24]. Through a realist lens, actions change contexts and activate certain mechanisms, leading to specific health outcomes [25]. Using this framework, we interviewed key stakeholders from all levels of the GHS at the national, regional, and community levels in Ghana. A purposive sampling approach was used to select participants with the main criterion being involvement in research, design, or implementation of health interventions in Ghana. The selected participants included directors and policymakers of the GHS, nurses (those who participated in the cluster trial of TASSH), and community health nurses or officers, who provide care to population in the CHPS zones. The community health officers (CHOs) are from CHPS zones in 6 contiguous administrative units within the Brong-Ahafo Region, namely Kintampo North Municipality, Kintampo South District, Nkoranza North District, Nkoranza South Municipality, Techiman North District, and Techiman Municipality. The study area has a total of 179 CHPS zones that serve a total population of 626,495. The setting is predominantly rural and multi-ethnic, and the population mostly engages in subsistence farming [26]. Directors and policymakers are representatives of the GHS. The GHS is the public-sector service agency and Ministry of Health is the civil service ministry for sector policymaking coordination, monitoring, and evaluation. GHS is responsible for the implementation of government’s health policy and regulation of state-run health institutions (government hospitals, clinics, and health centers). The previously trained TASSH nurses are from various health centers and hospitals in the Ashanti Region of Ghana. Together, these stakeholders are representative of the urban and rural mix of health centers that participated in the TASSH trial.

Data collection

Data were obtained from interviews, focus groups, and brainstorming activities that comprised open-ended questions designed to elicit the participant’s perceptions of the barriers and facilitators of using TASSH to identify, counsel, and refer patients to health centers for their care. The brainstorming and interview guide was developed, reviewed, and refined by the research team. Stakeholders were asked about factors that will promote or hinder the uptake of TASSH by CHOs. In-depth interviews and brainstorming activities were conducted with participants and lasted an average of 45 min. Each focus group discussion lasted approximately 60 to 90 min. Four focus discussions were held separately with the GHS directors and policymakers as well as with the nurses and CHOs. The focus group discussions centered on the priorities of the CHPS zones, and the feasibility of aligning TASSH with the ongoing duties of CHOs at the CHPS zones. Informed consent was obtained from all participants. Data collected were secured in a safe location and accessible only to the

TABLE 1. Descriptive data for nurses and GHS directors participating in the uptake of a task-strengthening strategy for BP control in community health planning services in the Brong-Ahafo Region of Ghana

Nurses	
Previous participants of the TASSH program	
Yes	14 (25.93)
No	40 (74.07)
Sex	
Male	25 (46.30)
Female	27 (50.00)
Missing	2 (3.70)
Age, yrs	30.60 ± 2.73
Occupation	
Enrolled nurse	10 (18.52)
Community health officer	13 (24.07)
Degree nurse	2 (3.70)
Community health nurse	27 (50.00)
Staff nurse	2 (3.70)
Degree	
CCHN	39 (75.00)
HND/BSN with or without CCHN	4 (7.69)
Other	9 (17.31)
Coursework	
Laboratory procedures	1 (1.85)
Pharmacology	23 (42.59)
Lifestyle counseling for patients	7 (12.96)
Multiple course work	23 (42.59)
Requirements to practice	
Final exams and practical	4 (7.41)
Nurses and Midwifery Council licensure exam	37 (68.52)
Both	13 (24.07)
Years of practice	
≤1	12 (22.22)
>1	42 (77.78)
Years post-graduation	5.79 ± 2.25
Frequency of patient BP measurement	
In all patients	43 (81.13)
Only in patient with uncontrolled/controlled HTN	10 (18.87)
Frequency of controlled patients with HTN seen	
<30%	22 (40.74)
≥30%	29 (53.70)
Missing	3 (5.56)
GHS directors	
Sex	
Male	6 (75.00)
Female	2 (25.00)
Age, yrs	49.2 ± 9.52

(continued)

TABLE 1. Continued

GHS directors	
Training	
Physician	1 (12.50)
Specialized physician	3 (37.50)
Nursing/midwifery	1 (12.50)
Other	3 (37.50)
Values are n (%) or mean ± SD.	
BP, blood pressure; BSN, bachelor of nursing science; CCHN, certificate in community health nursing; GHS, Ghana Health Service; HND, Higher National Diploma; HTN, hypertension; TASSH, task-shifting strategy for hypertension control.	

study team. Ethical approval was obtained from the Institutional Ethics Committee of Kintampo Health Research Centre (KHRCIEC/2017-23), School of Medical Sciences/Komfo Anokye Teaching Hospital Committee on Human Research, Publication and Ethics (CHPRE/AP/418/17), and the GHS Ethics Committee (GHSERC004/08/17).

Data analysis

All interviews, brainstorming activities, and focus group discussions were recorded, and transcribed verbatim into Microsoft Word documents and Excel files for editing. Thematic analysis techniques guided by a realist lens were used to identify emerging themes from the data that highlight the contexts and mechanisms that may influence the adoption of TASSH. In the first step, 3 members of the research team (J.I., D.O., and J.G.) read all of the transcribed data and relevant documents to identify categories of emerging issues with regard to the potential facilitators and barriers to adopting TASSH in Ghana. Next the study team analyzed the data to identify categories of emerging themes according to the type of the stakeholder. Inductive thematic analysis was used to assess how themes converged among different stakeholders participating in the study. The 3 authors (J.I., D.O., and J.G.) met after coding the data to discuss the coding process, and discrepancies in coding were discussed until consensus was reached. Quotes from the data were used to illustrate each important theme identified. Credibility and internal validity of the data were assured via use of multiple data sources (individual interviews, brainstorming, and focus discussions) that allowed for triangulation of data.

RESULTS

Sixty-two stakeholders (8 GHS directors and policymakers, 14 previously trained nurses, and 40 CHOs) participated in this study. About 50% of the nurses and CHOs were women. The average age of participants was 31 years. Among the nurses and CHOs, 78% had at least 1 year of practice, with an average of 6 years' post-graduation (see Table 1). Of the 8 GHS directors and policymakers, 75% were men, with an average age of 49 years. They were

TABLE 2. Challenges, barriers, facilitators, and solutions to adopting TASSH in Ghana

Challenges for Stakeholder Engagement	Structural Barriers	Overcoming Challenges for Stakeholder Engagement	Overcoming Structural Barriers With Facilitators
<ul style="list-style-type: none"> • Lack of communication between the CHPS zones and the district community health centers and hospitals. • Cultural and language barriers (i.e., engaging with hard-to-reach communities) 	<ul style="list-style-type: none"> • Limited availability of essential tools such as blood pressure monitors, weighing scales, and tape measures to properly screen patients for hypertension in the CHPS zones. • Limited availability of accurate reporting forms for proper documentation; referral forms; monetary incentives (as a form of motivation); and manpower at CHPS zones. 	<ul style="list-style-type: none"> • Engage key stakeholders from all levels of the GHS at the national, regional and community levels in Ghana. GHS is responsible for the implementation of government's health policy and regulation of state-run health institutions (government hospitals, clinics, and health centers). • Stakeholders' knowledge and awareness of TASSH, reasons for participating or not participating, and the perceived benefits and drawbacks of the program. • Community engagement as a "DURBAR" (community meetings or reception to encourage community engagement in Ghana). 	<ul style="list-style-type: none"> • Provision of equipment and tools as well as financial incentives were needed to enhance the quality of the duties of the CHOs and nurse. • Regular training and refresher/ routine trainings on hypertension screening and counseling at the CHPS zones. • Development of protocol guidelines that are specific to CHO training and ensuring CHO adherence to protocol guidelines. • Build coordination among CHPS zones, implement regular reviews, increase reporting and monitoring of CHOs' daily activities, and conduct quarterly check-ins of uptake of duties at each zone.

CHO, community health officer; other abbreviations as in Table 1.

mostly trained physicians, and 1 was a trained nurse/midwife (see Table 1). In the following sections, we describe the context of care at the CHPS zones followed by themes highlighting the mechanisms through which TASSH can be adopted as part of routine care within CHPS and GHS. Additionally, Table 2 highlights challenges and structural barriers with stakeholder engagement and strategies for overcoming these challenges with adopting task-shifting strategies for hypertension control.

Context of care at the CHPS zones

From task-shifting to task-strengthening of duties for hypertension control. Stakeholders mostly described the context of care for hypertension management within the CHPS zones in positive terms. Enhancements in the quality and relevance of tasks performed by the CHOs and nurses dominated discussions about how best to adopt evidence-based strategies for hypertension control within the CHPS zones. In particular, the CHOs and nurses stated that the duties that are being shifted from the physicians or nurses to the CHOs are actually largely routine tasks that are part of their duties. Examples include blood pressure measurement and health education.

Perspectives of CHOs and nurses. CHOs and nurses viewed themselves as "change agents" working at the CHPS zones, conducting home visits to the patients' homes and in community settings to help patients manage and control

their illness. As such they were of the opinion that acquiring the knowledge and skills needed to implement TASSH will make them more effective in carrying out their duties as CHOs and nurses. In describing their duties, participants stated that they all provide "frequent home visits, blood pressure screening of adults in the CHPS zones, health education and communication about hypertension control."

To augment their skills to implement TASSH, some participants suggested that efforts should be made to "intensify and strengthen their current duties" so that it aligns well with the goal to "identify, counsel, and refer" patients with hypertension. The following are some quotes: "The intervention would help strengthen my normal duties...and everyday work by providing the needed logistics and drug information to clients with hypertension."

Another shared, "the detailed and specialized initiative to identify, counsel, and refer patients, will help promote my routine actions on hypertension."

In describing how the strategy to "identify, counsel, and refer" patients fit with the CHOs' and nurses' routine duties, some participants shared the following:

[The intervention - "identify, counsel, refer"] fits very well since we check vital signs of clients that visit the facility.

It fits well and will not cause interruption since I already do home visit activities in my [CHPS] zone and educate the communities about their health.

The intervention will intensify my knowledge on how to identify hypertensive client and measures to take.

Perspectives of GHS national directors and policymakers. Executives of the GHS were of the opinion that the CHOs' main functions were the promotion and maintenance of health and prevention of illness for all citizens. As a result, any efforts to ensure that they adopt TASSH should build on their current duties. One participant stated the following:

Task-shifting often implies asking personnel to do extra work. Yet, blood pressure measurement should not be seen as an additional work given that it is already a normal practice for the nurses or community health officers. What we need is to ensure quality in the services they already provide.

In describing the services performed at the CHPS zones, participants stated that CHOs often

Take blood pressure reading, but do not know how to act on the reading.

One participant shared the following:

At the CHPS level, there are no guidelines for hypertension control and most screening occur in a haphazard fashion. Although there are standard treatment guidelines at the primary care level, the CHPS zones will need specific metrics of operation, particularly as some of the zones are already having counseling patients for hypertension at the clinics, in the marketplaces, and during home visits on weekends.

In determining how to enhance nurses and CHOs' contributions to the management of hypertension, 1 participant shared the following:

Start by re-stating the duties of the community health officers and community health nurses as laid out by the GHS. Take the tasks and duties related to blood pressure control and emphasize those that have been largely ignored and ensure that they are routinely monitored.

Mechanisms for adopting TASSH in CHPS zones

Analysis of the qualitative data revealed 4 themes illustrating stakeholders' perceptions of the mechanisms that may influence the adoption of TASSH across GHS CHPS zones. The themes include: 1) the provision of resources; 2) access to adequate training; 3) supervision and monitoring; and 4) community outreach activities.

Provision of resources: Perspectives of CHOs and nurses on the mechanisms of TASSH adoption at the CHPS zones. This refers to availability of the tools needed for implementation of TASSH such as valid blood

pressure monitors, weight scales, stadiometers for height measurement, and care coordination tools. Overall about 53.2% of stakeholders described the importance of the provision of resources in a variety of way. The perceptions of the CHOs and nurses as well as those of the GHS executives with respect to the various mechanisms are outlined in the following sections.

Majority of the CHOs voiced the need for the availability of tools in the form of blood pressure monitors, weighing scales, and tape measures to properly screen patients for hypertension in the CHPS zones. Other forms of equipment mentioned include the provision of flipcharts and posters. They also highlighted the need for fuel subsidies to support transportation via power motorbikes, which will help facilitate home visits to distant communities within the CHPS zones. For example, a CHOs stated,

“Some communities are far from the referral facilities and the means of transport is also scarce and expensive” and sometimes there is a “lack of motor bike to visit client.”

To provide collegial support, another nurse mentioned,

Lack of funds to enable CHO's to visit their co-workers periodically.

All nurses also highlighted the need for availability of administrative space for the CHOs within the CHPS zones to screen their patients as another factor that requires support. In addition to availability of financial resources and tool kits, the CHOs and nurses also mentioned logistics as a barrier, which if not addressed, could potential hinder their ability to perform their duties. Although they did not provide a definition of “logistics” it can be assumed to mean coordinated efforts such as registry and database to facilitate communication and referral between CHPS zones and community health centers. Logistics was prominent during the discussion of patient referrals to community health centers, procedure for effective communication with physicians to make sure that the patients referred were seen at the health centers. Other logistics issues raised include availability of accurate reporting forms for proper documentation; provision of referral forms, provision of monetary incentives as a form of motivation, and increased manpower at CHPS zones.

The GHS executives also agreed that ready availability of equipment and tools as well as and financial incentives were needed to enhance the quality of the duties of the CHOs and nurses. For example, 1 GHS director mentioned that there was

Lack of equipment and transport and lack of funding for fuel etc.”

A GHS director suggested that the lack of resources makes it difficult to provide quality care to patients. Another voiced the need for “standard/standardized

equipment” across all CHPS zones. Yet, another said there was a need for “policy in prescribing logistics.”

More training. Participants voiced the need for more training in the management of hypertension and blood pressure measurement; there was consensus among 36 (58.1%) of the stakeholders on the need for training workshops to address basic and important skills in management of hypertension. Majority agreed that regular training and retraining on hypertension screening and counseling is important prior to, and during implementation of TASSH across CHPS zones.

According to the nurses and CHOs, the training they received as part of the evidence-based TASSH program increased and strengthened their knowledge of hypertension. Specifically, it helped them understand what hypertension is, causes of hypertension, and their ability to identify hypertensive patients, and counsel and refer them for treatment at the community health centers. One CHO described the benefits of participating in the TASSH training as follows:

Broadening my understanding on hypertension acquiring skills on hypertension management.

Another CHO stated that the training helped him to

Know high blood pressure, it has enabled me to know how to check BP, it has enabled me to know good counseling strategies, I acquired more knowledge on hypertension.

The CHOs also voiced the concern that a 2-day training was not enough time for them to understand all the information required for hypertension control. They requested the need for an increase in the number of training days, more role-plays, built-in teaching aids, and more visual demonstration during each teaching session. Other comments made with respect to the training included the need to extend the training to all CHPS zones. One CHO suggested,

Train other health staff on TASSH to build friendly relationship between you and patient and other staff.

Another CHO stated that

To be able to share the knowledge with and train other staff as well so that when you are not around the program doesn't die.

This may be a sustainable way of ensuring continued maintenance of TASSH uptake beyond the end of the program. CHOs suggested that after the TASSH training, they should be provided with certificates of completion similar to continuous medical education credits.

All 8 GHS national directors agreed that CHOs require some level of training in hypertension knowledge in order for the successful implementation of TASSH activities (identify, counsel, and refer). Some voiced the need for

on-the-job training for CHOs; others described training in the form of capacity building.

One stakeholder suggested, “Training/capacity building at all levels”; another proposed, “Training of CHPS nurses on logistics to be used especially BP operations”; and others highlighted the need for the development of protocol guidelines that are specific to CHO training and ensuring CHO adherence to protocol guidelines. Overall, they all agree that CHOs need more training. One national stakeholder suggested the need for incorporating hypertension management into the CHO curriculum.

Supervision and monitoring. One major factor highlighted by 27 (43.5%) of stakeholders was the need for more oversight at each level of care, including but not limited to supervisory visits and check-ins with CHOs at CHPS zones by supervisors.

The CHOs and nurses stated that there is a lack of communication between the CHPS zones and the district community health centers and hospitals. They voiced their concern for the need for more supervision, monitoring and evaluation of CHOs’ duties across CHPS zones. For example, 1 CHO stated,

There should be effective supervision and monitoring to correct any mistakes.

One nurse mentioned that poor relationship exist between supervisors and CHOs due to a lack of or ineffective communication. In addition, CHOs lamented the lack of consistent feedback on patients referred to the community health centers. One CHO stated, “No feed backs from referral facilities.”

Finally, the CHOs expressed that motivation from supervisors and higher-trained personnel would help their productivity. One nurse mentioned that motivational packages for trainees and trainers could be a major factor in facilitating effective coaching of the CHOs.

GHS national directors and policymakers suggested that there is a need to build coordination between CHPS zones, implement regular reviews, increase reporting and monitoring of CHOs’ daily activities, and conduct quarterly check-ins of uptake of duties at each zone. These activities were identified as facilitators to the adoption of TASSH across CHPS zones. For example, 1 stakeholder suggested, “Strengthening of referral system in the hospital to ensure collaboration between the community health nurse,” and another recommended “Support for effective coaching/supervision.”

Community outreach. Almost one-third (29%) of the stakeholders mentioned community outreach in the form of community engagement and participation as important aspect for adoption of TASSH at the CHPS zones.

Stakeholders described community outreach as a “DURBAR” (community meetings or reception to encourage community engagement in Ghana). They described this as a great platform and an important avenue

to get the message of hypertension control to the community.

According to a CHO,

Organizing community durbar, educating them on TASSH and screen as well as counseling & moving from church to church, mosque to mosque for education of TASSH.

Another type of community engagement mentioned was via increased routine home visits (as a form of follow-up visit), which could sensitize the community to the importance of hypertension management and provide opportunity for health education. That said, the CHOs highlighted some barriers to community outreach including cultural and language barriers. An example of a statement that expressed this point is: “*Language barrier especially communicating with Fulani men.*”

This CHO described this as a major barrier to sharing information about hypertension, which could slow down or hinder the uptake of TASSH in his CHPS zone.

The GHS directors and policymakers described community outreach as “other stakeholder involvement.” For example, 1 stakeholder suggested the involvement of the National Health Insurance Scheme in Ghana. He believes that engaging the National Health Insurance Scheme director is an effective strategy to gain insight into the structure of the national insurance scheme and how that may impact access to care at the community health centers and district hospitals for patients upon referral from the CHPS zones.

Convergence among stakeholders for adoption of TASSH

All stakeholders agreed on the need for the provision of resources, particularly the need for blood pressure monitors to be provided to CHOs to screen patients. There was no discordance on the need for availability of resources at the CHPS zones, particularly for transportation, and other tools needed to carry out their duties. In addition to this, provision of more training was the most common theme among nurses, CHOs, and GHS stakeholders. All stakeholders agreed that there is a critical need for CHO training in screening and management of hypertension. They expressed that such training should be built into the CHOs’ routine activities. National stakeholders did not as commonly mention supervision and motivation. For example, while CHOs valued the need for supervision and monitoring, the GHS stakeholders barely considered it to be a critical factor for adoption of TASSH at the CHPS zones. Finally, with respect to the theme of community outreach, the CHOs had a different perspective than the GHS stakeholders did. While CHOs described community outreach as engaging patients and members of the local community, the GHS stakeholders described outreach as engaging other policymakers like the national insurance health scheme in Ghana. Community outreach was the only discordant theme among all stakeholders.

Overall, the nurses, CHOs, and GHS national directors and policymakers all agreed that adoption of TASSH is possible if there are adequate resources (i.e., blood pressure monitors, scales, stadiometers, etc.), training and retraining of staff, active supervision, and community outreach or other policymaker involvement to ensure buy-in from all stakeholders and all levels of the GHS.

DISCUSSION

We conducted a realist synthesis of interviews, focus groups, and brainstorming activities to evaluate stakeholder perceptions of an evidence-based strategy for hypertension control. The proposed program, TASSH, was designed to help CHOs “identify, counsel, and refer” patients with diagnosis of hypertension at the CHPS zones to community health centers. This approach provided insight into the context and mechanisms, which might influence the adoption of TASSH. Results from interviews with 62 stakeholders yielded a major theme on the context of hypertension care at the CHPS zones and 4 mechanisms via which TASSH can be adopted at the CHPS zones.

In Ghana, the minimum qualification criteria for a CHO to administer primary care services at CHPS compounds (CHPS compounds are specific structures within the CHPS zones) is a minimum a secondary school degree and a mandatory 2-week training on health promotion and disease prevention [27]. The major health focus at the CHPS zones is maternal and child health, vaccination, and treatment of malaria [28]. According to stakeholder interviews, CHOs are trained to take blood pressure as part of their training but this practice is not necessarily emphasized in the daily activities. From our findings, knowledge of hypertension varied among the health providers, and therefore, stakeholders suggested that more training on hypertension via workshops would facilitate the adoption of TASSH into CHOs’ routine practice.

About 44 % of stakeholders (mostly nurses) stated the need for increased supervision and monitoring as critical to the adoption of TASSH. Stakeholders often described this as motivation for the nurses and CHOs to adopt TASSH activities at the CHPS zones. In this regard, stakeholders described the need for senior officers to visit and monitor the work of the nurses and CHOs periodically or at least provide some form of oversight of their duties at the CHPS zones. However, providing supervision may be challenging because most CHPS zones are typically headed by only 1 CHO or, sometimes, a CHO and an enrolled nurse, who may not have the competencies to provide adequate supervision of the CHOs [27]. The current protocol at the CHPS zones require that all reporting goes directly into the electronic district health information management system without feedback to the nurses [29].

The provision of resources was another theme identified by 53% of the stakeholders, who stated that there was a need for functional blood pressure monitors to allow the CHOs properly and consistently screen patients.

Identifying patients at risk for hypertension is one of the goals of TASSH. Therefore, the provision of valid monitors to nurses and CHOs is essential for the successful adoption of TASSH. Considering the study's findings of the demand for training in hypertension screening, detection, and referral, policymakers should emphasize the need to incorporate noncommunicable disease management into routine practice at the CHPS zones.

In addition to training, the stakeholders mentioned transportation as a concern under the provision of resources theme. Often CHOs travel long distances to a variety of communities to conduct home visits and a major barrier to this is the lack of fuel to power their motorbikes or the expense of traveling via public transportation to places that at times might be inaccessible depending on the season. Thus, to enhance the adoption of TASSH, provision of fuel or stipends for CHOs to travel far distances to administer care is crucial.

Finally, about 29% of stakeholder identified the need for community outreach as a major theme.

CHOs already conduct home visits, as such they are well known to community members. When CHOs in particular were surveyed, they mentioned the need for a DURBAR—these are annual community festivals involving community leaders and key influencers in the community.

Stakeholders described DURBARs as an avenue for the dissemination of information about TASSH to key members of the community, which may facilitate the adoption of TASSH activities.

Community outreach has the potential to break down cultural and language barriers, and demystify the causes, effects, and treatment of hypertension [30]. Also, to ease the continued adoption of TASSH, stakeholders suggested that there should be frequent community sensitization days for hypertension control. This channel of communication may be an effective avenue via which community members receive regular education about hypertension and the importance of visiting a CHPS compound to get screened and receive necessary follow-up care.

In the TASSH trial that we implemented in 32 community health centers in the Ashanti Region of Ghana from 2012 to 2017 [14,31,32] stakeholders also mentioned similar themes of training, availability of resources, supervision and monitoring, and community outreach as important aspects of any program to address hypertension control in Ghana. Our previous work conducted in Ghana noted similar contextual challenges mentioned by stakeholders. For example, in a previous focus group study we conducted with nurses in Ghana, they described the need for home visits to patients' homes as a form of community outreach to increase knowledge about hypertension management. Other issues raised by the nurses include leadership support from higher-ranking officers such as site directors and provision of valid blood pressure monitors. They acknowledged that these factors helped them carry out their duties to implement the TASSH trial [14].

A major strength of the study was that multilevel stakeholders were surveyed to gain insight into their perspectives on the adoption of TASSH. The stakeholders surveyed included directors involved in policy formation at the national level of the GHS, former participants of the previous TASSH trial [23], and CHOs who are the target population for implementing TASSH at the CHPS zones. This ensured that multiple perspectives at different levels of health care delivery were accurately captured.

This study adds to the implementation science published data for LMICs in 3 different ways. First, while there are growing numbers of studies on factors that influence the adoption of evidence-based public health interventions, few of these are conducted in LMICs. Understanding how interventions are adopted in low-resource settings such as Ghana may shape potential mechanisms by which evidence-based interventions receive widespread uptake. Second, the adoption of any evidence-based practice is a complex, multilevel process with intended and unintended consequences at the individual, provider, and health systems levels. Yet, there is little empirical research that elucidates how the contextual features of the health systems in LMICs affect the adoption of evidence-based practices. Engaging the end users in discussions on evidence-based strategies may expand the reach and impact of the evidence-based intervention. Last, given the fact that individual stakeholder views may be incorrect or incomplete, our approach to stakeholder engagement may help key stakeholders evaluate and resolve conflicts, as well as assess multiple desirable and undesirable outcomes that influence the adoption of the proposed evidence-based practice.

Study limitations

First, the surveys provided to stakeholders were often long and required extensive responses in writing, which affected the completeness of the survey particularly among the CHOs. Second, the survey questions were in English, and perhaps comprehension was a challenge, so some participants required that some of the questions on the survey be explained to them at times in the local dialect of Twi and at other times in English.

CONCLUSIONS

In conclusion, the lessons learned will help shape the translation of evidence-based interventions in real-world settings, and could be valuable in future planning, to facilitate the adoption of TASSH in other LMICs. However, further work is required to evaluate the impact and subsequent implementation of these findings to reduce hypertension in Ghana. Future studies should be conducted to observe the implementation of TASSH at the CHPS zones to further understand the challenges that may exist in real-world settings. In Ghana and throughout sub-Saharan Africa, there is a paucity of empirical evidence on stakeholder involvement to ensure adoption and sustainability of evidence-based interventions for hypertension

control like TASSH. Our findings address an important gap in implementation science by examining stakeholder's perspectives of the factors likely to facilitate or hinder adoption of TASSH across CHPS zones and community health centers in Ghana through a realist approach.

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