


The Extent of Integration of Community Health Worker Programs Into National Health Systems: Case Study of Botswana

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Abstract

Background: The paucity of Human Resources for Health (HRH) is a major global health challenge. The World Health Organization (WHO) recognizes the potentials that Community Health Workers (CHWs) have in closing the gap of an inadequate supply of human resources for health (HRH). However, weak CHW integration into national health systems curtails effective implementation of CHW delivered high impact interventions in resource constrained settings. This study assessed the extent of integration of the CHW Recruitment, Education, and Certification (REC) component into the national health system's HRH building block, using Botswana's CHW program as a case study.

Methods: The study used mixed methods. Data collated from CHW training program documentary abstraction, five key informant interviews were analyzed thematically. Data collected through the survey with 123 CHWs were analyzed quantitatively. A recently developed Community Health Workers Program Integration Scorecard Metrics (CHWP-ISM) that comprises of the WHO building blocks and corresponding CHW integration metrics, with process, evidence, and status of integration parameters, was used to determine the extent of integration.

Results: An analysis of Botswana's CHW REC component using the CHWP-ISM scale showed that the component was 80% integrated into the national HS. Whereas the CHW training program was fully government sponsored and accredited, some aspects of the program's selection and recruitment criteria and training modalities were lacking integration. Although CHW training was exclusively offered at a local private training institute, findings from documentation reviews, interviewed KIs and the survey show that the training accreditation, regulation and funding was the responsibility of the central government.

Conclusion: The application of the CHWP-ISM scale to assess extent of CHW program integration into HS identified important CHW human resource integration gaps in CHW selection criteria and recruitment process as well non-inclusion of CHWs post-training accreditation by national accreditation board in government policy documents.

Keywords

health systems, health systems strengthening, community health workers, community health worker subsystems, child health outcomes, linkage, integration, human resources for health

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Open Access pages (<https://us.sagepub.com/en-us/nam/open-access-at-sage>).

-What do we already know about this topic?

We already know that, despite evidence validating the affirmative potential of CHWs in reducing preventable causes of child mortality through a range of CHW delivered high impact interventions (HIIs), weak integration of CHW programs into national health systems curtails effective implementation of HIIs. This integration weakness is particularly evident in resource constrained settings.

-How does your research contribute to the field?

This research shows that integrating CHW programs into critical components of national health systems is crucial to making the latter more functional, and thus contributes enormously to improved health outcomes.

-What are your research's implications towards theory, practice, or policy?

The results of this paper could be useful in informing policy makers, health ministries, donors, non-governmental organizations, program managers and implementers, public health practitioners, and other stakeholders in identifying integration gaps for CHW programs. Addressing the identified gaps could help to ensure the optimal functioning of CHW programs. Increased functionality of the CHWs could in turn strengthen health systems to improve health outcomes. This could help to further reduce the burden of morbidity and mortality in Sub-Saharan Africa.

Introduction

Although human resources for health are a vital component of health systems, its demonstrated shortages continue to plague public health systems around the world. The World Health Organization (WHO) defines human resource for health as “all people engaged in actions whose primary intention is to enhance health”.¹ The global health strategy estimated that in 2013, the shortage of health workers worldwide and in the African region was around 17.4 million and 4.2 million, respectively. In addition, a global decline of 17% to 14 million by 2030 was predicted.² The same study indicated that Africa had one of the largest needs-based shortages of health workers, and that this shortage could worsen by 2030 if prevailing trends in health workers’ production and employment were maintained.^{2,3} Out of the estimated global shortage of health workers of 14.5 million needed for Universal Health Coverage (UHC), the African region has the most severe shortage, estimated at 6.1 million by 2030.⁴ Sub-Saharan Africa (SSA) has seen the greatest shortage of health workers in particular. The SSA region, despite having slightly above 1.1 billion (14.6%) of the world’s population, accounts for 63% of 57 countries reported to have less than 23 health workers per 10 000 people globally.^{2,5}

Inadequacy in supply of human resources for health has been acknowledged as a barrier to the achievement of global health goals such as implementation of primary health care (PHC) and Universal Health Coverage (UHC),⁵ and by extension, achievement of the SDGs. Additionally, the shortage of human resources for health has negative bearings on virtually every facet of health in sub-Saharan Africa. This has also contributed to preventable morbidity and mortality including under 5 mortality. It is documented that under-five mortality rate (U5MR) is estimated at 41/1000 live deaths

globally and 75.6/1000 live births in Africa.⁶ In 2019 SSA had 6 countries with a U5MR of more than 100 deaths per 1000 live births.^{8,1}

According to the WHO, community health workers (CHWs) have the potential to close the gap of inadequate supply of human resources for health.⁷ The International Labour Organization (ILO) describes CHWs as health workers who provide health education and referrals for a wide range of services, and provide support and assistance to communities, families and individuals with preventive health measures and gaining access to appropriate curative health and social services.⁸ They create a bridge between providers of health, social and community services and communities that may have difficulty in accessing these services.⁸ Today, the WHO and the Global Health Workforce Alliance (GHWA) recognize CHWs as integral components of the health workforce needed to strengthen health systems and improve health outcomes.⁹ In addition, CHWs were acknowledged as an essential force that contributed to the achievement of the Millennium Development Goals (MDGs), and presently as prospective strategic contributors to the attainment of SDGs for health and universal health coverage in Low and Middle Income Countries (LMICs).^{7,10-15} There has been mounting evidence to validate the affirmative potential of CHWs in defying the current and projected preventable and treatable causes of child mortality through improved uptake of and access to a range of low-cost and simple CHW delivered high impact interventions (HIIs) for maternal and child health.^{7,16-23}

However, the implementation of the HIIs in resource constrained settings is curtailed by weak integration of CHWs into national health systems amongst other restraints.²⁰ HRH must be strengthened for UHC to be achieved.^{1,14} An UNAIDS report estimated that, “2 million CHWs are needed by 2020 to

help close the human resource gap for health and accelerate progress towards achievement of health targets in SDG 3".²¹

Botswana, a landlocked country in Southern Africa with a population of slightly above two million people²⁴ and a Gross Domestic Product (GDP) of 17.70 billion US dollars in 2019²⁵ is no exception to the twin public health challenges of high child mortality and paucity of human resources for health. The country has embraced the UHC principles as evidenced by the facts that, the public sector predominantly provides health care services to more than 80% of the population, and patients only pay a nominal fee, and no-one is denied services if unable to raise the nominal fee while 95% of the total population live within 8 km from a health facility.²⁶ Botswana's under 5 mortality rate (U5MR) target for 2001 was 45.5 per 1000 live births, but the estimated rate for the same year was 74 deaths per 1000 live births.²⁷ During the 2015 review of MDGs, Botswana was documented among countries that actually attained the target of reducing U5MR by two thirds, from 57/1000 live births in 1990 to 19/1000 per live deaths in 2015.²⁷ In addition, Botswana is reported as 1 of the 5 countries that recorded a remarkable decline of 46% in the overall health burden from 2005 to 2015, due to notable investments in CHWs.³

To address the increasing child and maternal mortality rates, the Ministry of Health supported by UNICEF developed the Accelerated Child Survival and Development (ACSD) strategy.²⁸ The MoHW's ACSD strategy recommended the implementation or scaling up of several cost effective Community-based High Impact Interventions (HIIs) identified by the Lancet series and other globally accepted sources as scientifically proven to significantly reduce child mortality.²⁹ One of the HIIs was the development of the Community Support Strategy (CSS) for maternal and child health.³⁰ In accordance with its mandate to reduce preventable childhood deaths, MoHW began piloting the CSS strategy in the districts of Bobirwa, Tutume, Ngami, Okavango, Gantsi, and Kweneng West in 2014. To identify low performing districts for priority implementation of the CSS, districts performance was measured according to certain indicators and the above named health districts were selected. For the pilot, the CSS recommended hiring of trained CHWs. A training institute offering the required CHW training as a 1 year package was selected to train the candidates.

It has been stated that the CSS strategy promotes efficient delivery of Community-based health services and community mobilization to participate in health care by CHWs.³⁰ Its aims include saving lives through strengthening health-community linkages, improving health outreach in hard-to-reach places and up-scaling the implementation of high impact interventions. The main focus of the CSS strategy was home and community empowerment and engagement in health management. Community outreach through the CSS was to be undertaken by the newly trained CHWs.

CHW REC is one of the key indicators for the integration of CHW programs into the HRH function of health systems.

Other indicators include clear job descriptions, work scope, performance standards, motivational structure (in cash or other types of recognition), supervision, support and mentoring. CHW training is widely recognized for its contribution to health systems strengthening.³¹ A review of literature commissioned by "m-Powering Frontline Health Workers," through USAID, to identify, synthesize, and analyze research studies on CHW training in Sub-Saharan Africa pointed to the need for more research on CHW training programs.^{32,33} To this end, the proposed study aims to fill this knowledge gap on how CHW subsystems can be integrated into national health systems. More specifically, the aim of the study is to examine the CHW REC and to determine the extent to which the Botswana's CSS REC component is integrated into the national health system. Although there are other components of the CHW integration, this paper focuses specifically on REC. Other components, for example, remuneration, supervision, and others, will be reported in other papers associated with this study.

Methods

Study Design

Although the study was qualitative and employed a case study design, both qualitative and quantitative data were collected for triangulation purposes. Thus, both quantitative and qualitative data sources were employed. Data triangulation was used to make full meaning of the rich empirical data from our case study. Thus, data were used to extract meaning and yield converging data points from the case study that would have otherwise been hidden if either qualitative or quantitative data were collected and used. Most quantifiable data, however, were only used for descriptive statistics.

Study Participants

Five key informants were purposively sampled for the purpose of gaining deeper insights into the training component of Botswana's CHW program through in-depth interviews. This was done between the months of July and October 2019. The inclusion criteria comprised obvious first-hand knowledge of the training component of Botswana's CHW program, mainly based on job placement/designation within MoHW, the training provider, and other departments closely linked to the program. The key informants were also selected on the basis of their availability for interviews. This approach has been preferred over other qualitative interviews—such as focus group discussions—as it offers the opportunity to obtain more candid and in-depth answers. It also avoids group dynamics that often prevent some participants from fully expressing their own opinions on certain issues.

This study also examined program documents obtained with the permission of MoHW and the training provider

where the CHWs were trained. These included admission, curriculum and program implementation, as well as integrated learning documents. We focused on these documents because they contained details of course modules, duration, examination procedures, and other data that were central to our research.

The third method of collecting data was a questionnaire survey. The survey targeted a population of 250 CHWs who had previously trained under CSS at a private but Botswana Qualification Authority (BQA) accredited college from October 2013 to September 2016. One hundred and sixty-eight (168) sample size out of 250 CHWs was determined using Yamane's formula ($n = \frac{N}{1 + Ne^2} + 10\%$) for the estimation of sample size. Where n was the desired sample size (168), N was the population of interest (250), e is the marginal error of precision. A stratified random sampling techniques was employed to select study participants for the questionnaire survey. All CHWs positioned in the targeted six health districts in Botswana (Bobirwa, Tutume, Ngami, Okavango, Gantsi, and Kweneng West) had a chance to complete the questionnaire, that is, random samples were selected from each stratum (health district). The main objective for the survey was to provide information that would corroborate, expand and quantitatively offer better understanding of data collected from KIs and document abstraction on the training component of Botswana CSS. The questionnaire was designed to collect information about CHWs' demographic characteristics such as age, gender, educational status before recruitment and motivation to join the CSS program, apart from their attitudes and opinions about the training component of CSS.

Procedure

Documentary abstraction was done using Botswana CSS training program documents. The reviewed documentation included the MoHW CSS records, admission records, training documents like curriculum, teaching and learning policies, and work integrated learning documents like trainees' logbooks and manuals. Data on the training component of Botswana CSS were abstracted in line with the recruitment, education and certification (REC) theme in CHWP-ISM scale.³⁴ This was generally the first step in collating available data and informed the material content of KIIs and the survey as it was used to collect and review existing research data and reports before determining what additional information was to be collected.

The study's key informant population was mapped out and sample key informants who were knowledgeable and closely linked to the CSS program were selected purposively. In order to ensure that different perspectives were captured, the selection of KI took into account diversity in representation and background, and therefore the study participants were selected from government departments and relevant institutions. Most interviews were face-to-face. However, two of the five participants were not physically available for face-to-face

interviews. Thus some two interviews were done by telephone. An interview tool prepared in advance to ensure that all questions were addressed was used for the interviews. The tool contained an outlined script and a list of open-ended questions related to the training component of the CSS. Thus, the interview schedule included probes to guide conversations. Before beginning the interview, all key informants were verbally informed about the study as well as voluntary nature of their participation in the study. In addition, they were informed that their names or any other potentially identifying information in the audio recordings was not going to be used in the final study report and subsequent publications. They were assured that their responses will be kept confidential. With permission from interviewees, interviews were digitally recorded and later transcribed verbatim. Participants were informed of their right to consent to the interview, and either written or oral consent was offered. The verbal consent implied that the interviewer read/explained a verbal version of the consent form (i.e., the information sheet) and that the participants gave their verbal consent instead of written consent. This was particularly the case with telephone interviews, where it was impossible to physically provide information sheets to subjects. Participants had the opportunity to ask questions. Follow-up "thank you" notes were sent to the participants upon interview completion. Interview information was then used for onward analysis, after ensuring data quality and checking for any inconsistency across interviews with regards to forgotten or omitted, additional and contradictory information.

For the questionnaire survey, a stratified random sampling was performed to select the participants from the CSS pilot project using CHW deployment data. No participant identifying information was collected. The survey tool was pre-tested on a smaller sample of 11 CHWs in one health district in Botswana (which was not part of the targeted health districts, which were Bobirwa, Tutume, Ngami, Okavango, Gantsi, and Kweneng West). The feedback from the pre-test exercise however showed that survey questions, structure and instructions were sufficiently clear except for some questions that needed rephrasing. The average time taken to complete the survey was found to be 20 minutes. In both the pre-test and main study, the questionnaires were hand delivered to participants and self-administered. A spreadsheet was developed for the quantitative data to tally the responses to each question.

Data Analysis

For the qualitative data collected from KIIs: we first transcribed the raw interview data by listening to taped recordings, reading transcripts, and studying notes made at point of interview. Key ideas and recurrent themes were listed. Documentary abstraction provided the textual data that complimented KII data. The data obtained was

broken down into sub-units and coded. The NVivo software was used to aid in the coding process. Codes were arranged into themes by drawing on the newly developed CHWP-ISM integration items. The CHWP-ISM contains 5 core elements for assessing the extent of CHW program integration into national health system at policy level. The five core elements are the WHO's health systems building block, corresponding CHW program component, process, evidence, and status of integration.³⁴ For the purpose of this study, the integration parameters and indicators for WHO's human resources for health building block and CHW's recruitment, education and certification program component were extracted from the scorecard.³⁴

Scoring based on the CHWP-ISM scale was done according to the criteria as presented below. A "Yes"/tick was assigned if evidence for the occurrence/presence/execution of any of the stated indicators were presented and/or corroborated through the three means data were collected. Otherwise a "No"/X score was assigned.

1. CHW selection criteria and recruitment process as indicated by evidence that
 - 1.1. Entry level educational qualification was considered as part of selection criteria
 - 1.2. Community membership/residency was part of selection criteria for purposes of cultural sensitivity
 - 1.3. The community was involved in CHW recruitment, such as in candidate screening or recommendation
 - 1.4. Personal attributes on the part of potential CHW recruits was part of selection criteria
 - 1.5. If gender, specifically female gender, was prioritized as a selection criterion
2. Government sponsorship for CHW training as indicated by the evidence that
 - 2.1. Government fully funded the tuition fees for CHW training
 - 2.2. Government sponsored book and stationery allowance for CHWs undergoing training
 - 2.3. Government sponsored accommodation allowance for CHWs undergoing training
 - 2.4. Government sponsored transport allowance for CHWs undergoing training
 - 2.5. Government sponsored stipend for CHWs undergoing training
3. CHW Training Program Accreditation was done as evidenced by
 - 3.1. Government requirement that CHW training institutions be accreditation by the national accreditation board (BQA)
 - 3.2. Government requirement that CHW Training curriculum is approved and accredited by BQA
 - 3.3. Government requirement that CHW Trainers be accredited by BQA

- 3.4. Government requirement that includes CHWs post-training accreditation be done by BQA
- 3.5. Government provides guidance on CHWs post qualification academic and career progression pathways
4. CHW Training Modalities as indicated by documented evidence that
 - 4.1. Government provides guidance on duration of CHW training
 - 4.2. Theory-focused knowledge/classroom component of CHW training is mandatory
 - 4.3. Practice-focused skills/field-based component is mandatory
 - 4.4. Additional in-service/Ongoing/refresher/continuous training are described in policy documents
 - 4.5. End of course competency-based evaluation and certification is described in policy documents

For quantitative questionnaire data, summary statistics were done using SPSS and tabulated.

Results

Sociodemographic Characteristics

One hundred and twenty-three questionnaires were returned in the main study, achieving 73% response rate. CHWs who completed the questionnaires had done their work integrated learning in the six CSS piloting health districts namely: Gantsi, Ngamiland, Okavango, Tutume, Bobirwa, and Kweneng West.

Of the 123 CHWs who participated in the survey, 37% were men, while 63% were women. Their ages ranged from 20 to 39 years. They were all employed by the government through the MoHW and had worked as CHWs for more than a year. All CHWs had undergone a 1-year long CHW preservice training which was sponsored the government through the Ministry of Youths, Sports and Culture (MYSC). They attended CHW training programs between 2013 and 2016.

Summary statistics are provided in [Figure 1](#)

Selection Criteria for Preservice Training

The majority of the survey respondents singled out educational level as the criterion that was stipulated in the selection criteria for recruitment into the CHW training program. On further probing on this issue when doing key informant interviews, all interview participants indicated that the minimum educational level required was the Botswana Government Certificate of Secondary Examination (BGCSE). Documentation review of the admission criteria at the accredited training institute further qualified the specific points of BGCSE qualification as the minimum entry points into the certificate qualification. In addition to the educational

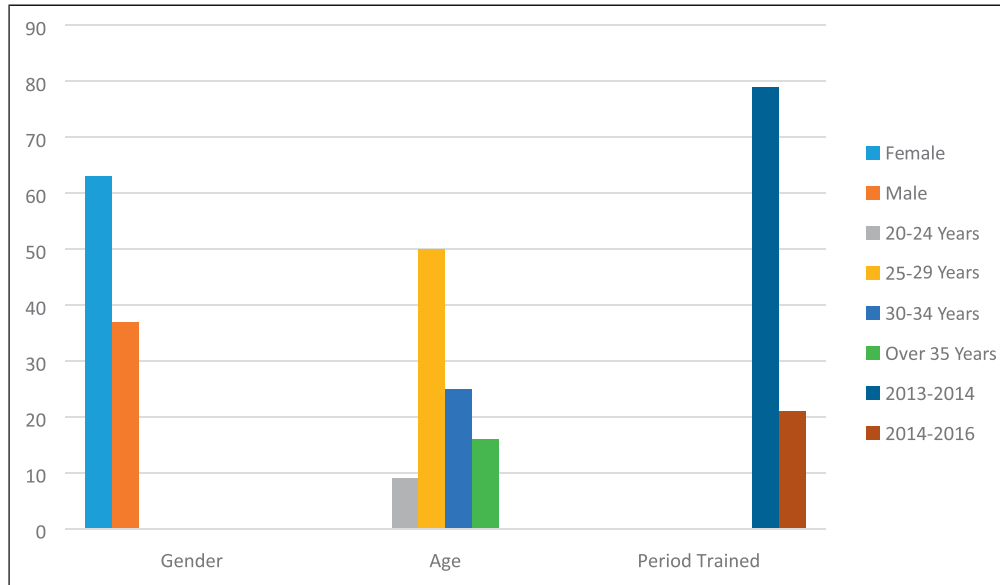


Figure 1. Summary of sociodemographic characteristics of study participants.

level criterion, candidates were selected from the lowest performing health districts in terms of child health outcomes.

“The candidates were selected mainly from hard to reach areas in the country’s six lowest performing health districts. To identify low performing districts for implementation of the CSS pilot, the performance of all health districts was measured according to selected child health indicators. This measuring resulted in Bobirwa, Tutume, Ngami, Okavango, Gantsi and Kweneng West being identified and the CSS pilot commenced in those six districts in May 2014”. (KI 1)

Training Sponsorship

All (123) the survey participants indicated that their training was initiated and fully sponsored by the government through the collaborative effort of MoHW and Ministry of Youths Sports and Culture (MYSC). The CHW Training Program Government sponsorship specifications included fully paid tuition fees, monthly living allowance during entire 12 months training period, transport allowance, book allowance, stationary, 2 pairs of uniforms, and a CHW tool kit for use during the internship component of the training. Interviews with key informants from the MoHW revealed that CHW training was offered by a tertiary private college that is accredited and regulated by the government through BQA.

Further interviews with MoHW and training college officials revealed that, to prepare the candidates to implement CSS, a curriculum focusing on community IMCI and community engagement, implementation guidelines and monitoring tools were developed by a MoHW-Training college team. It was further disclosed that the CSS implementers were trained in 3 cohorts spanning through 2013 to 2016.

“In October 2013, 300 candidates began the -year CHW training program, followed by another 160 CHW candidates in In April 2014 and the last group of 49 began the CHW training program January of 2015”. (KI 2)

Training Modalities

The reviewed curriculum and implementation plans reviewed revealed that training modalities included the CHW course structure; curriculum content; and competencies, teaching approaches; teaching aids; practicum/field-based training proceedings; program assessment, monitoring and evaluation.

In addition, reviewed documentation and interviewees at the training institution showed that CHW training course is at level 5 of the BQA National Curriculum Qualification ratings, which means it is a certificate level program. The training duration is 1 year, comprising of 6 months of theory-based learning and 6 months of field-based learning. One of the KIs also articulated how that institutional capacity to provide training and national accreditation was considered in pegging the training duration by the curriculum development team.

“6 months of the training period are allocated to classroom work conducted at the college, followed by another 6 months of community internship during which they are attached to MoHW community health facilities. The institution that was chosen to train the CHWs had been running other one year long level 5 qualifications comprising of both theory and practical based learning” (KI 3)

Table 1 below is a representation of the CHW training course structure as reviewed from records of the training institute.

CHW Training Content and teaching approaches. Reviewed curriculum documents showed that the modules covered by the CHWs during their theory-based training included: Fundamentals of health; Principles of Public Health; Introduction to Epidemiology; Health Promotion and Education; Sexual and Reproductive Health; Community/Home Based Care; Family and Community Study; Infant and Young Child Feeding; School Health; Community Nutrition and Healthy Lifestyle and Communicable and non-communicable diseases. The curriculum content and practicum-based learning expectations were designed to articulate into the MoHW prescribed job descriptions and competencies as CHWs implementing the country's CSS strategy.

Documentation review of the teaching plans revealed that the program used interactive/participatory adult learning methods of teaching were employed. These include group discussions, role plays, simulations, small group work, demonstrations, brainstorming, visual aids, case studies, and field visits. The teaching aids used were charts, models for breast feeding, Oral Rehydration Salts (ORS) mixing bottles, mid-upper arm circumference (MUAC) tapes, projectors, laptops, and students' manuals.

Work integrated learning. All the survey participants and documentation review indicated that the CHWs were deployed to work in communities where they had been selected from for 6 months long field-based learning. During the internship period, CHWs trainees were attached to MoHW health facilities for supervisory purposes but their daily activities comprised of daily delivery of home and school health oriented and community-based services/interventions.

“The interns report to their health facilities by 7.30am (normal working time). 7.30- 9.30am they assist with facility work. By 10.00am each working day they are required to be at work in the communities. They systematically and routinely visit 3 homes each day. The household and community visits are done to address household practices that are key to child survival growth and development. The interns are also required to develop community profiles including a map of their implementation area” (KI 4)

The interviewees and reviewed documents also divulged that the MoHW provided the interns with a CHW toolkit during their field-based training comprising of bags, MUAC tapes, ORS and zinc packets, pre-measured water bottles, deworming tablets, condoms, and information sheets for health talks like pamphlets for use in schools, homes and community forums.

The documentation review showed that standardized tools were used for monitoring and reporting the field-based learning. These included the facility daily register and logbook, which fed into the monthly facility report which fed into the monthly district report that would be used to compile an all implementing districts report by the training institute to the MoHW. Besides the above reporting system, the field-

Table 1. Course Components of the CHW Training Program.

Item	Description
Theory component of training program	6 Months
Practicum component of the training program	6 months
Qualification granted	Level 5—certificate

Source: Training Provider CHW Program documentation.

based learning also had a well-established supervision hierarchy comprising of facility-based staff for daily supervision, field-based preceptors who provided technical assistance fortnightly and a collaborative team of faculty members from the training institute and MoHW team that conducted monthly support visits.

“CHWs interns community engagement initiatives were monitored and supported fortnightly by the Technical Assistants who were attached to each implementing district. MoHW and training institute CSS implementation team would also conduct collaborative monthly support visits to the implementing districts for monitoring and support, whilst their daily activities were monitored continuously by the facility manager and staff on daily basis” (KI 5)

Training Program Assessment and Certification

Program Assessment comprised 40% from theory-based learning evaluated by faculty members and 60% field-based performance evaluation by both practicum preceptors and faculty members. Classroom-based learning was evaluated using written tests, assignments and oral presentations, while field-based learning was assessed using daily logbook activities, monthly reports, health needs assessment reports and community profiling reports. CHW trainees who successfully satisfied all the requirements of both theory and practical components of the training program are awarded a competency-based certificate in Health Education Assistants and were hired by MoHW as CHWs.

50% of surveyed CHWs indicated that they had not received additional training besides the initial 1-year CHW training while the other 50% of the respondents had received in-service training. The KIs also confirmed that additional training in the form of either refresher, ongoing or in-service training is one of the areas that the CHW program needs to improve on.

“Once the CHW enters the system they are attached to different health facilities and one can say that there is in-service training, on programs such as TB management, depending on whatever training will be going on per time. Otherwise there is no well scheduled additional training that is mandatory to all CHWs by specific time after their initial training.” (KI 2)

Using the newly developed and validated CHWP-ISM to score Botswana's CSS CHW program, [Table 2](#) below

indicates the scores of the CHW training into the HRH critical function of the health system. Whereas CHW training program was fully government sponsored and accredited, some aspects of the program's selection and recruitment criteria and training modalities lacked integration. The few indicators of integration that were missing are lack of policy guidance on community involvement in CHW recruitment process like screening of candidates, use of personal attributes and female gender prioritization as part of selection criteria and CHWs post-training accreditation by the national accreditation board. All in all, based on the evidence of integration gathered from documentation review, key informant interviews and surveys, which was mapped onto the CHWP-ISM,

Botswana's CHW training component was 16/20=80% integrated into the human resources for health building block of the national health system.

Discussion

We set out to examine Botswana's CHW training program and determine the extent of its integration into the country's HRH health system building block. Components of the training program explored are CHW candidate's selection criteria for preservice training, training sponsorship and other modalities like the course structure, curriculum content, and competencies, teaching approaches, teaching aids, practicum/

Table 2. Botswana CSS REC score results using CHWP-ISM.

CHW Program Component	Integration Parameter	Code	Integration Indicators	Yes	NO
I.CHW recruitment, education and certification	1.1 CHW selection criteria and recruitment process	X1	1.1.1 policy documents stipulate entry level educational qualifications as part of selection criteria	✓	
		X2	1.1.2 policy documents include community membership/residency as part of selection criteria	✓	
		X3	1.1.3 policy guidance on community involvement in CHW recruitment process like screening of candidates		✓
		X4	1.1.4 policy documents mentions personal attributes as part of selection criteria		✓
		X5	1.1.5 policy documents include female gender prioritization as part of selection criteria		✓
	1.2 government sponsorship for CHW training	X6	1.2.1 government funds full tuition fees for CHW training	✓	
		X7	1.2.2 government sponsors book and stationery allowance for CHWs undergoing training	✓	
		X8	1.2.3 government sponsors accommodation allowance for CHWs undergoing training	✓	
		X9	1.2.4 government sponsors transport allowance for CHWs undergoing training	✓	
		X10	1.2.5 government sponsors stipend for CHWs undergoing training	✓	
	1.3 CHW training program accreditation	X11	1.3.1 government policy requires that CHW training institutions be accreditation by a national accreditation board	✓	
		X12	1.3.2 government policy requires that CHW training curriculum is approved and accredited by a national accreditation board	✓	
		X13	1.3.3 government policy requires that CHW training providers accreditation by a national accreditation board	✓	
		X14	1.3.4 government policy includes CHWs post-training accreditation be done by national accreditation board		✓
		X15	1.3.5 policy provides guidance on CHWs post qualification academic and career progression pathways	✓	
	1.4 CHW training modalities	X16	1.4.1 government policy documents provide guidance on duration of CHW training	✓	
		X17	1.4.2 theory-focused knowledge/classroom component be made mandatory in policy documents	✓	
		X18	1.4.3 practice-focused skills/field-based component be made mandatory in policy documents	✓	
		X19	1.4.4 additional in-service/Ongoing/refresher/continuous training be made mandatory in policy documents	✓	
		X20	1.4.5 end of course competency-based evaluation and certification is mandated by policy documents	✓	

field-based training proceedings, program assessment, monitoring and evaluation. The section's discussion is categorized according to WHO suggestions and recommendations for CHW training: selection for preservice training; criteria to determine duration of preservice training; competencies in curriculum for preservice training; modalities of preservice training; competency-based certification.³⁵⁻³⁷

Selection for Preservice Training

In selecting CHWs for preservice training, WHO recommends that the health systems use selection criteria such as minimum educational level, membership of and acceptance by the target population, gender equity and personal attribute. The findings show that CHW trainees were selected based on their educational level, which is minimum of 32 points at BGCSE. This stipulation of minimum educational level as selection criterion resonates with review findings in other SSA countries like Ethiopia³⁸⁻⁴⁰ Ghana,⁴¹⁻⁴⁴ Malawi,⁴⁵⁻⁴⁸ Nigeria,⁴⁹ and Zambia.^{40,48,50,51} Although there were more females than males selected into the program, most study participants indicated that gender, was not specified as a condition for this selection. This finding contrasts other CHW programs in the region where female gender inclination as a selection criterion was specified for Ethiopia^{38-40,52,53} and Zambia.^{48,50,51} Gender mix was indicated for Malawi⁴⁸ and Rwanda.^{54,55}

Membership of and acceptance by the target community as suggested by WHO,³⁶ resonates with findings in Botswana's CHW program as interviews revealed that the CHW trainee candidates had to be selected from prescribed lowest performing health districts. In addition, they were deployed to their respective low performing districts during their field-based learning as part of the government's pilot phase of the CSS implementation. Ethiopia,^{38,39} Malawi,^{45,48,56} Rwanda,^{40,54,55,57} and Zambia^{40,50,51,58,59} all have local residency as a requirement for selection to their CHW programs. WHO discouraged the use of age (save for labor and national educational policy considerations) and marital status as conditions for selection.³⁶ This was in sync with findings that show that Botswana's selection criteria did not specify marital status and age. However other countries in the region such as Ethiopia,⁴⁰ Ghana,⁴³ Nigeria,⁴⁹ Rwanda,^{40,55,57} and Zambia^{40,48,50,51} specified minimum age admissible into the program.

Criteria to Determine Duration of Preservice Training

Some of WHO's commendations on the criteria for determining "duration of preservice training like scope of work and anticipated responsibilities and role, competencies required to ensure high quality service delivery, social, economic, and geographic circumstances of trainees and institutional capacity to provide the training" were evidenced in this study. The documentation review and interviews revealed that the community support strategy for maternal and

child health scope of work, paired with its responsibilities influenced the team curriculum developers to deem 1-year long appropriate for candidates to have acquired the competences required for its implementation. In addition, the collaborative effort between MoHW and MYSC to fully fund all aspects of the 1-year long training program is testament to the Botswana government's consideration of the CHW trainees' social, economic and geographic circumstances.

Lastly, the 1-year duration of program resonated with BQA's level 5 qualifications that were already being offered by the training institution, which is also a testimony that institutional capacity to provide training and national accreditation was considered in pegging the training duration. The UNAIDS reiterated the need for year-long training to enable CHWs to perform multiple tasks, as opposed to a single intervention. Other CHW programs in SSA have the same duration as Botswana's CHW training, while some differ. Initial training duration for Ethiopia's HEWs^{39,40,53,60} and Zambia's CHAs^{40,48,50,51,59,61-63} is 1 year, Ghana's Community Health Officers (CHOs) is 2 years,^{41,43,64} Malawi's HSAs is 12 weeks,^{47,48,56} Nigeria's Junior Community Health Extension Workers (JCHEWs), Community Health Extension Workers (CHEWs) and CHOs^{49,65-67} is 2 to 3 years.

Although CHW training was facilitated by a private training institute, findings from documentation reviews, interviewed KIIs and the survey participants show that the CHW training accreditation, regulation, and funding was the responsibility of the Botswana government through the collaborative efforts of the Ministry of Education and BQA, the Ministry of Health and Wellness and the Ministry of Youths, Sports, and Culture. These findings are not farfetched from practices in other reviewed CHW programs in the region. In Ethiopian HEWs are trained through the Technical Vocational Education and Training institutions^{39,40,52,53} in Ghana CHOs are trained at accredited health training institutions,⁴¹ Malawi's HSAs are trained at PHC training centers,⁴⁸ Nigeria's JCHEWs and CHEWs are trained through state schools health technology, while CHOs are trained at state teaching hospitals,^{66,68} Rwanda's ASMs and Binomes are trained by MOH⁵⁷ and Zambia's CHAs are trained at existing MOH training institutions by MOH senior management team.^{51,58} This resounded with endorsements from research, that governments must assure that a fundamental set of skills and information is provided to CHWs, given the extensive role that they CHWs play in primary care.^{7,69}

Competencies in Curriculum for Preservice Training

CHWs are reputed to play a vital role over time in extending service coverage and reaching remote and hard-to-access populations into national health systems.^{2,7,13,20,23,70-72} However, to facilitate this unique public health opportunity offered by CHW programs, WHO proposed key competencies that are also reflected in Botswana's CHW training curriculum. Some of WHO's suggested core

competencies that are evidently highlighted in the CHW curriculum are, “promotive and preventive services, identification of family health and social needs and risk; integration within the wider health-care system in relation to the range of tasks to be performed in accordance with CHW role, including: referral, collaborative relation with other health workers in primary care teams, patient tracing, community disease surveillance, monitoring, data collection, analysis and use; social and environmental determinants of health; providing psychosocial support; interpersonal skills related to: confidentiality, communication, community engagement and mobilization; and personal safety”.³⁵ The documentation review at the training institute and CSS implementation offices showed that the specific modules in the CHW curriculum that conspicuously speak to the WHO suggested competences include Fundamentals of health; Principles of Public Health; Introduction to Epidemiology; Health Promotion and Education; Sexual and Reproductive Health; Community/Home Based Care; Family and Community Study; Infant and Young Child Feeding; School Health; Community Nutrition and Healthy Lifestyle and Communicable and non-communicable diseases. These also resonate with competencies required for CSS implementation whose aims was maternal and child mortality reduction through delivery of basic health care promotion, guidance, and education at homes and community forums. In addition, the systematic routine home and community visitation during field-based learning created the much-needed platform of community engagement, mobilization and empowerment. The core competent of promotive and preventive services, identification of family health and social needs and risk in particular, is unique in the sense that it runs across other CHW programs in SSA like Ethiopia’s HEWs,^{38-40,52,53,60,73,74} Ghana’s CHOs,^{41-44,64} Malawi’s HSA’s,^{45-48,56,75-77} Nigeria’s JCHEWs, CHEWs and CHOs,^{49,65-68,78} Rwanda’s Binomes and ASMs^{40,54,55,57,79,80} and Zambia’s CHAs.^{40,48,50,51,58,59,61-63} It is worth noting though that the CSS implementers’ scope of practice does not include the curative services, hence CHW curriculum does not have the WHO’s³⁷ additional diagnostic and treatment competency.

Modalities of Preservice Training

One of the recommendations of WHO regarding CHW preservice training is the need for striking a “balance of theoretical focused knowledge and practical focused skills, with priority emphasis on supervised practical experience”.³⁵ This commendation was evident from the reviewed documentation of the training institute and further validated by CHW participants who confirmed that the 1-year training comprising 6 months of classroom-based learning and another 6 months of field-based learning. Furthermore, the CHW interns’ daily supervision by facility staff, fortnightly by district based Technical

Assistants and the collaborative periodic supervisory support visits by the MoHW and training institute CSS implementation team demonstrates Botswana’s emphasis on supervised practical experience during field-based learning.

Yet another CHW training implementation consideration forwarded by WHO, which is in sync with CHW training is the use of dynamic teaching methodologies as means to make the CHW training more appealing and effective.³⁶ This study findings show that CHW trainees were trained using different teaching approaches including group discussions, role plays, simulations, small group work, demonstrations, brainstorming, visual aids, case studies and field visits. Additionally, comprehension of concepts was enhancing with the use of variety of teaching aids such as charts, models for breast feeding, ORS mixing bottles, MUAC tapes, projectors, laptops and students’ manuals. Both theory and field-based training for the CHW training program was delivered through face-to-face instructional modalities, as encouraged by WHO approbations for CHW preservice training.

The WHO’s commendation to prioritize training in or near the community wherever possible³⁵ could not be attained for CHW classroom-based learning because the accredited institution that trains CHWs only has capacity for a central campus for the theoretical component. However, the recommendation is implemented during field-based component of the training as CHW interns are deployed back to their communities for work integrated learning. Lastly, under CHW preservice training modalities, the WHO suggests training delivery “and provision of learning materials in a language that can optimize the trainees’ acquisition of expertise and skills”.³⁷ Although most of CHWs training content and material was in English as the language of instruction, the documentation review showed that there some learning materials provided by the MoHW for some specific topics that were delivered in local language. In addition, the majority of information sheets and pamphlets with health information that CHWs get from MoHW for health talks at household and community forums are printed in the local language.

Limitations of the Study

Our study had several limitations. First of all, the CHWP-ISM scale was developed locally without prior validation. As such, the instrument may merit examination in other countries to assess generalizability as a scale to assess the integration of CHW into health systems. Also, we used a self-reported questionnaire, and response bias could have affected the answers. Future studies are needed to further test the questionnaire among different populations to achieve more valid results. Finally, although we used Yamane’s sample estimation formula to estimate the sample size used in the questionnaire survey, more rigorous quantitative analysis was impossible, as

the collected data were mainly qualitative. The study would benefit greatly if further research was conducted that more deliberately leverages power calculations to analyze data.

Conclusion

We set out to appraise how Botswana's CHWs recruitment, education and certification is integration into the country's health system and to determine the extent of integration into the country's HRM HS building block.

A shortage of health personnel is known to contribute to weaker health systems. However, increased use of CHWs can help to strengthen health systems and reduce the health workforce gap by providing preventive, curative, and referral services. CHW REC program component was used to determine the extent of CHW integration into the national health systems in Botswana. As evident in the discussion of our findings and other CHW programs in the region, CHW REC practices and modalities like duration, location, content, approaches of CHW training vary greatly across programs, making it difficult to identify specific characteristics of REC that are known to increase the likelihood of CHW success. The WHO's recent health policy and system support to optimize community health worker programs suggested recommendations for CHW REC. Botswana's CHW REC meets most of the commendations as evidenced in the study findings.

These findings could be useful in informing policy makers, ministries of health, donors, non-governmental organizations, program managers and implementers, public health practitioners and other stakeholders to identify gaps in integration. Addressing the identified gaps could help support CHW programs to function maximally in the country and region at large. Increased CHWs functionality could in turn strengthen the health care systems to improve health outcomes. This could contribute to further reduction of burden morbidity and mortality in Sub-Saharan Africa.

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Ethical Statement

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