

Training of Community Health Workers: Recognition of Maternal, Neonatal and Pediatric Illness

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Abstract

Question: This study seeks to identify the most effective methods by which to train community health workers (CHW) to improve the recognition and treatment of acute medical conditions in pregnant women, infants and children in low and middle income countries (LMIC). **Background:** LMIC suffer the greatest burden of maternal, infant and childhood mortality – mostly as a result of infectious disease. **Significance:** Data already exists in the literature that training of and intervention by CHW has the potential to reduce maternal, neonatal and childhood mortality rates. **Rationale:** What is less standardized, however, are the methods by which the community health workers are trained. **Methods:** Data in the form of peer-reviewed and published articles were collected using three public databases and specific search terms. Greater than 300 articles were found using the specific search terms. Those articles were then processed through a series of inclusion and exclusion criteria resulting in a cohort of papers which were then individually analyzed for content. **Results:** CHW Training programs are exceptionally broad in their scope, training patterns and follow-up. **Conclusions:** With the lack of standardization of training programs there is paucity of data in the literature to confidently state that one type of training program is more effective when compared to another. What can be said however is that shorter initial training programs with follow up seem to be just as effective as longer term programs. **Impact:** The impact of this study is a call for more standardized research into this area of medicine.

Introduction

Utilizing CHW to respond to the increased mortality rates in pregnant women, neonates and children has many advantages. First, the utility of CHW is very broad – they can be trained to do a variety of tasks in a multitude of settings.

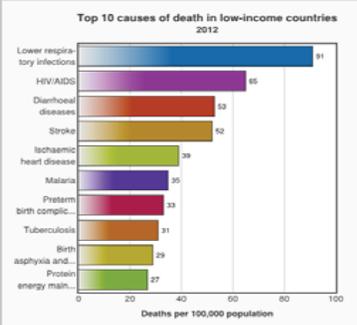


Figure 1: Causes of Death in Low Income Countries.

Second, they are part of the community that they serve, giving them more incentive to stay. This is different from physicians and nurses who may leave after their training for jobs elsewhere. Training of and intervention by CHW has the potential to reduce maternal, neonatal and childhood mortality rates. Less widely accepted, however, are the methods by which the community health workers are trained. The following examines selected studies to highlight the characteristics of successful CHW training programs as well as recommendations for future projects and studies based on those previous training programs.

Methods

Three databases were used to collect data for this project. Data were collected periodically from January of 2014 through March of 2016 by searching specific terms on Ovid, EMBASE and PubMed. The specific terms used were: "Community health workers, maternal health, neonatal health, childhood health, training program, neonatal emergencies, maternal emergencies, emergency care, pneumonia, infections, TB, malaria, hemorrhage, diarrhea, post-partum." The collected papers were read, excluded/included based on specific criteria (Table1), then critically analyzed for information. Over the course of the initial data collection over 300 articles were collected. At that time a basic screen for English language and relevance to the topic was applied and the total number of articles fell to 76. With the application of the inclusion and exclusion criteria this number was reduced to 15 articles appropriate for this systematic review. Article selection process is seen in Figure 2. Once the articles were collected they were critically analyzed for training methods, assessment of CHWs and impact of the training programs on the CHW and the communities in which they trained and worked.

Inclusion Criteria	Exclusion Criteria
- Study performed in low or middle income country.	- Study published before year 2000.
- Paper includes specific information regarding training program.	- Study performed in a resource rich setting.
- Study focuses on CHW training with respect to maternal, neonatal or childhood illness.	- Study does not describe training methods.

Table 1: Table of Inclusion and Exclusion Criteria.

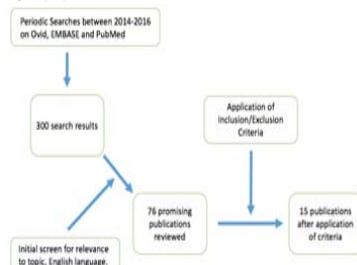


Figure 2: Flowchart demonstrating the study collection and paper selection.

Results

The results of this study are summarized in Table 2, below. After critical analysis of all 15 publications included in the study, it becomes clear that of training programs are incredibly diverse. These four aspects of training programs appear to be the most variable between the studies. Size of the training program, length of the training program, training assessment and follow-up refresher courses. The largest study was the Nelson 2012 article in which over 700 CHW and 72 CHW trainers were trained which stands in contrast to the smallest study by Anand which in 2004 studied the training of 15 CHWs. The length of the training programs included in the study was also variable, but to a lesser extent – the length of the training programs had a range of 1 day of training to one month of training.

Author (Year)	Location	Number Trained	Training Methods	Length of Training	Assessment of Training	Results
Nelson 2012	South Sudan	33 FHW	Needs assessment	5 days	No	NA
Nelson 2012	South Sudan	708 FHW, 72 trainers	Pictorial checklists and physical exam training	8 days for trainers, 5 days for FHWs	Yes, OSCE assessment with pre & post-exam	Mean OSCE scores were increased 3-3 months after training for maternal assessments while mean OSCE scores were unchanged 3-3 months post training for infant assessments.
Luchman 2008	Nigeria	32 CHW	Classroom, simulation and clinical training	4 days, 6 hours each	Yes, written exam and clinical observation, management compared to physician diagnosis and treatment.	Better able to assess and classify the child and begin proper treatment for malaria, measles, diarrhea and pneumonia.
Kelly 2001	Kenya	336 CHW	Classroom training with refreshers and protocols, video and clinical training	3 weeks with 1 week refresher course	Yes, clinical observation and interviews.	CHW post training clinical assessment scores did not improve after refresher course
Ramer 2008	India	30 CHW	Group discussions, video demonstration and role play	5 days, 8 days	Yes, written examination	Post-training scores were increased identically for 5-day vs 8-day training
Purice 2013	Bangladesh	179 CHW	Practical training regarding acute malnutrition, monthly supervision visits and refreshers	2 days	Yes, monthly supervision, monthly supervision visits and refreshers	89% of CHW had 100% correct free case management of acute malnutrition post training
Chinn 2012	Myanmar	23 CHW	Educational flipchart training in recognition of malaria	2 days	Yes, written test.	Increased diagnosis and proper treatment of malaria, no decrease in time to treatment.
Kalyango 2012	Uganda	125 CHW	Clinical scenarios, case reviews and written exams	6 days	Yes, meeting with supervisors and written exams.	Training improved recognition of malaria and PNA.
Chaudhary 2005	India	54 CHW	Follow-up refresher courses after initial training with group discussion, video demonstration and role playing	1 day after initial 5-day refresher course	Yes, record reviews, observation and supervisor interview	Follow-up refresher courses or shorter observation help increase retained knowledge
Anand 2004	India	15 CHW	Classroom training, video demonstration and clinical teaching	3 days with a refresher training 1 month later	Yes, pre-training and post-training interviews	Training improved CHW knowledge and management – no mortality benefit in region.
Rose 2005	Kenya	114 CHW	30 days of lectures, reviewing case scenarios and role playing, 5 days of clinical practice	35 days initial training with 6-8.5 day refresher course 3 months later	Yes, clinical observation and interviews.	Training increased trained quality, refresher course did not improve retention.
Thompson 2008	Armenia	87 CHW	Classroom based teaching of clinical signs, symptoms and basic public health principles.	16 hours	Yes, Evaluation of health history of the community in which trained workers lived.	Increase community's health literacy of food feeding, immunization rates, and HIV awareness in community.
Hamer 2012	Zambia	18 CHW	Lectures, role playing, supervised clinical practice and hands-on training with malaria lab test.	5 days with 2 day refresher course 6 months later	Yes, Practical skills assessment	CHW can accurately diagnose and treat malaria with rapid diagnostic tests.
Fird 2003	Bangladesh	120 CHW	Classroom lectures concerning signs and symptoms of acute respiratory infections and record keeping training	3 days with 1 day refresher 1 month post training	Yes, CHW diagnosis compared with physician diagnosis.	CHWs are able to accurately diagnose and refer patients to higher levels of care.
La Loo 2010	South Africa	65 CHW	Classroom based training of growth chart completion, recognition of child abuse and having mother bond with their babies.	1 training	Yes, supervised home visits	Statistically more infants reached normative weight in the group reached by the CHW

Table 2: Summary of all papers included in the study.

Assessment of training was performed in all of the studies examined - this was the one metric that was consistent across the training programs. The only difference between some of the training programs was that several of the training programs assessed their trainees before training, after training and a period of time later to evaluate for long term retention of the material. Refresher courses after training was a common element that was a key component in one third of articles selected. In each of the 5 articles a refresher course of variable length was administered anywhere from one month to three months later.

Discussion and Conclusions

With the lack of standardization of training programs there is paucity of data in the literature to confidently state that one type of training program is more effective when compared to another. However, what can be concluded is that training programs that are shorter in duration or greater in class number do not seem to be any less effective than longer programs with fewer participants. This allows us to suggest favoring shorter duration training programs as they will save money and allow for greater numbers of CHW to receive training. In addition, assessment of training was a factor in every training program, as a result it is difficult to comment on whether or not this was of benefit as there are no studies without assessment to make comparisons. However, assessment of the CHW is one of the only ways to evaluate CHW learning, so it is likely important and necessary. Limitations to this include data quality. Many papers regarding training of community health workers were excluded from this study as the articles did not describe the methods by which the community health workers were trained. This is a function of no existing standardized training of CHW. Future studies should be performed in which one training program with identical training techniques, lengths, focuses are taught in different regions. The impact that this study has on the literature is as follows: Training programs of shorter duration seem to be as effective as their longer counterparts. Finally, there is a clear need for more robust, standardized and geographically and culturally diverse training programs in order to more effectively study training methods.

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