Are we asking too much? Addressing community health worker productivity

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Abstract

Background
Community health workers (CHWs) are increasingly recognized as a critical link in improving access to services and achieving the health-related Millennium Development Goals. CHWs are frequently called upon to address essential service delivery needs, and the number of tasks assigned to an individual CHW is steadily increasing. Given the financial and human resources constraints in developing countries, CHWs are expected to do more with less support. How much can be expected of CHWs before work overload and reduced organizational support negatively affect their productivity, quality of services, and in turn the performance of the community-based programs that rely on them? This article provides policy-makers and program managers with recommendations for improving CHW productivity as an important contributing factor to the effectiveness of community-based strategies.

Methods
A desk review of published and unpublished articles and reports on CHW programs in developing countries was conducted to analyze findings on factors influencing CHW productivity and provide recommendations for policy-makers. After an initial search for key terminology, a snowball technique was used where a reference in one article led to discovery of additional documents and reports.

Results
CHW productivity is determined in large part by the key factor of organizational support and provision of an enabling working environment. The working conditions encompass various
components—workload, supervision, and supplies and equipment—that affect the productivity of CHWs. We propose that when CHWs have a realistic number of tasks and clients, an organized manner of carrying out these tasks, a reasonable geographic distance to cover, the needed supplies and equipment, and the support of an effective supervisor, CHWs can function productively within at least minimum standards of quality.

**Conclusions**
As more countries look to scale up CHW programs or shift additional tasks to CHWs, it is critical to consider the elements that affect CHW productivity in the program design phase as well as implementation. An enabling work environment is crucial to maximize productivity. All the productivity factors of workload, supervision, and supplies and equipment need to be considered concurrently. This article provides recommendations to improve CHW productivity and the quality of the services they provide.
Background
Community health workers (CHWs) are increasingly recognized as an integral part of the health workforce needed to achieve the health-related Millennium Development Goals [1]. CHWs are a critical link in increasing communities’ access to services, especially for those people living in rural and underserved areas. Accordingly, the Global Health Workforce Alliance commissioned a systematic review to gather the latest evidence on wide-scale use of CHWs followed by a consultation meeting in April 2010 to review recommendations and reach agreement on key messages for country-level integration of CHWs into the health workforce.

CHWs are frequently called upon to address a number of essential service delivery needs, including maternal and child health, family planning, HIV/AIDS, malaria, and environmental health. As task-shifting becomes more widely implemented, CHWs have more tasks piled on to their list of job responsibilities. A multicountry study noted “an evolution over time, whereby CHWs typically take on additional responsibilities and skills, which are learned on-site” [2]. Given the serious financial and human resources constraints in developing countries, CHWs are expected to do more with less support. There is still no resolution to the longstanding debate on the question of how many functions an individual CHW can realistically and effectively perform within their approved scope of practice [3, 4, 5, 6]. Naturally, there is a limit to productivity such that when the workload is pushed beyond a certain level, CHW performance will suffer. How much can be expected of CHWs before the work overload and reduced organizational support negatively affect their productivity and the quality of their services, and in turn the performance of the community-based programs that rely on them?
Relatively little attention has been given to the issue of CHW productivity, although the “benefits of addressing productivity include greater efficiency, reduced workload, increased job satisfaction, and higher quality of care” [7]. As more countries and nongovernmental organizations incorporate CHW strategies into their health programs, the need for guidance on how to maximize investments in CHW programs in terms of productivity and its effect on quality grows.

This article provides policy-makers and program managers with guidance on the key considerations for improving CHW productivity as an important contributing factor to the overall effectiveness of community-based strategies. It also recognizes the importance of supporting efforts to fully integrate CHWs as an essential component of the health workforce team. The paper asserts that a holistic approach requires changes to the system so that CHWs are well integrated as members of primary health teams, and this in turn will then provide the supportive climate for well-chosen productivity interventions to succeed.

For the purposes of this article a CHW is defined as a “worker that performs a set of essential…health services who receives standardized training outside the formal nursing or medical curricula and has a defined role within the community and the larger health system” [8].

**Methods**

A desk review of published and unpublished articles and reports on CHW programs in developing countries was conducted to analyze and organize findings on factors influencing CHW productivity and provide recommendations for policy-makers. After an initial search for
key terminology, a snowball technique was used where a reference in one article led to discovery of additional documents and reports to be reviewed.

Results and Discussion
A review of the literature presents a number of definitions for productivity ranging from the number of clients seen per day, time spent with clients [9], relationship between inputs and outputs, and ratio of outputs to inputs [10]. Very few studies focus specifically on the productivity of CHWs. However, we can extrapolate from the theories and perspectives describing the productivity of facility-based health workers.

A number of interrelated factors affect productivity. These include:

- Capacity (knowledge, skills, and attitudes)
- Motivation
- Organizational support or “opportunity to do the job well” (resources, physical and social environment, working conditions) [11, 12, 13].

While the capacity and motivation (both extrinsic and intrinsic) to do the work are also essential determinants of a CHW’s productivity, these are areas that have already been extensively covered in published literature. This paper will focus only on describing the category of organizational support for provision of an enabling working environment, which is conducive to high levels of productivity. This is a general term to describe the inputs needed from the institution employing CHWs and represents the conditions under which CHWs perform their duties. The working conditions encompass various components—workload, supportive supervision, and supplies and equipment—that affect the productivity of CHWs (see Figure 1).
“Working conditions, part of the broader human resources management system, are important in terms of creating the conditions for effective and efficient work, boosting morale, and reducing turnover and attrition” [14, 15]. Lack of attention to working conditions and human resources management is a key factor in the foundering of CHW programs [15]. One key message from the Global Health Workforce Alliance consultative meeting on CHWs emphasizes the need to “[e]nsure a positive practice environment, including regular and continuous supportive supervision, health and safety issues, CHWs information and communication needs, a clean environment, a manageable workload, and the availability of drugs, supplies, and equipment [16].”

When assessing CHW productivity, it is critical to pay attention to the quality of the target services. For example, if a CHW sees more and more clients but the services are rushed and of such poor quality that they have no effect, this would hardly be a case for improved productivity. A study of the working conditions of health extension workers in Ethiopia found that most work long hours, including on Sundays [15]. Establishing a balance between the three subcomponents that constitute a CHW’s working conditions will help make great strides in improving the quality of the services provided by CHWs. When CHWs have a manageable workload in terms of a realistic number of assigned tasks and clients to serve, an organized manner of carrying out these tasks, a reasonable geographic distance to cover, the needed supplies and equipment, as well as
the support and guidance of an effective supervisor, they can function productively within the limits of quality.

**Workload**
As described above, workload plays a defining role in the level of quality and productivity that can be expected of CHWs. Workload is a multifactorial concept that can be described by the interplay of the number and organization of tasks and the catchment area. The catchment area can be further divided into two equally important aspects: the number of households to be served and their geographic distribution (see Figure 2). To ensure a realistic workload all of the subcomponents must be considered in turn.

**Figure 2.**

**Number of tasks:** There is no known ideal or maximum number or mix of CHW job tasks that will ensure the highest level of CHW productivity. However, much has been reported both anecdotally and empirically regarding the consequences that too many responsibilities can have on CHW productivity and consequently on the quality of the services they provide. Evaluations have reported that CHWs often become “overwhelmed by a very broad range of tasks with negative effects on the overall quality of their performance” [17]. A qualitative study of lady health workers in Pakistan illustrated that the addition of responsibilities not in their job descriptions, such as involvement in polio eradication campaigns, loading and unloading of medicines, and transportation of stocks took valuable time away from their regular work [18].
Generalist CHWs, whose duties encompass a wide range of service delivery tasks, tend to have the heaviest workload in terms of the number of tasks they are asked to perform. However, this may not always be the case, especially for CHWs focusing on such specific yet comprehensive health areas as HIV/AIDS. A study of CHW contribution to HIV service delivery across five countries described more than 100 possible types of tasks divided across 12 categories of care, such as education, counseling and testing, follow-up, and psychosocial support [2]. The USAID-supported CHW Program Functionality Assessment Tool delineates a vast number of discrete tasks approved for CHWs within maternal and child health, reproductive health, nutrition, and HIV/AIDS, based on an extensive literature review of CHW scopes of practices from many countries around the world [19].

According to a literature review on CHWs, “despite the wide range of tasks that CHWs can do, they cannot do everything—their limited educational background and training mean that they can only be expected to perform a limited number of tasks that complement the work of health professionals” [20]. When there are too many tasks to perform CHWs may not perform them all but instead select a few that they prefer to do, ones that they do best, or those that are most feasible [17]. In particular “unpaid volunteers must have a limited set of tasks and not be expected to work more than a few hours a week; otherwise they tend to abandon their responsibilities” [21]. A study on the role of health surveillance assistants (HSA) in Malawi showed that they do not perform all the tasks in their job descriptions, which include a plethora of activities such as vaccination, growth monitoring, disease surveillance, health education, tuberculosis follow-up, family planning provision, treatment for common diseases, and supervision of traditional birth attendants [22]. An assessment in Pakistan showed that lady
health workers become stressed in their job because they have little say regarding their increasingly expanding job scope and are seldom consulted when their job description changes [23].

Figure 3 provides a graphical representation of the limitations of CHW productivity as a function of the number of tasks assigned on the quality of output. The quantity of services provided by CHWs can have an inverse effect on the quality of services delivered. In other words, the more services a CHW is expected to carry out, the more likely productivity will be hampered and quality of service provision will decrease.

Success is more likely when CHWs have a clear job description that defines a limited number of tasks [24]. CHWs can “perform better with clearly defined roles and a limited series of specific tasks than if they are expected to undertake a wide range of tasks or have an ill-defined role” [25]. Clearly defined roles, standardized protocols, and job aids should ensure that CHWs practice within the limits of what they can achieve and for which they have been trained [20]. In Oman, where community support group volunteers have a limited job description, their coverage was high; 80% of women surveyed reported contact with the volunteers [20, 26].

Figure 3.

Programs must “avoid over-burdening CHWs with competing priorities and expanding intervention” [25] without making concessions in other aspects of their work environment. For example, it may be possible to increase the range of services provided by CHWs if other
adjustments are made such as reducing the catchment population, increasing their capacity with training, and providing stronger support supervision. Programs must carefully assess and monitor the workload of CHWs and its effect on CHW motivation and productivity as more tasks are added to a CHWs list of job responsibilities [5].

Organization of tasks: Beyond the actual number of tasks assigned to a CHW, the organization of those tasks can assist in maximizing productivity. For example, if a task needs to be conducted only once or twice a year, such as providing deworming tablets, it does not have much impact on other tasks that are carried out on a more regular basis. Likewise, the manner in which CHWs are trained to carry out the various job tasks can influence productivity. For example, a modified version of systematic screening, used by facility-based professional health workers, could be adapted to increase the number of services provided at a single client visit. In this way the CHW would use a checklist, questionnaire, or other job aid to ask the client about health areas within the CHW’s scope of practice, in order to identify the client’s needs and where possible provide all the services or information within that visit or refer to the next level. Multicountry studies (with professional health workers) have shown that systematic screening can increase the number of services received per client visit by 9 to 35% [9, 27]. The screening approach could increase efficiency by decreasing the number of visits to the households, preserving clients’ time, and reducing transport and other costs.

Another strategy is to integrate services provided by CHWs to meet the broader health service needs of the community. A survey of community-based reproductive health agents in Ethiopia found that integrated service delivery appears to increase the amount of time that agents must
spend with each client [28]. Where productivity is defined as time spent with a client, this integrated delivery approach would increase productivity and possibly the satisfaction of clients and the quality of services.

**Catchment area:** The amount of work that a CHW’s catchment area entails depends also on the number of households each CHW is responsible for, the target group within the family (i.e., all family members, children only, women only), as well as the geographic distribution of those households. A critical question regards the optimal population size that a CHW could cover [29]. No set formula exists for the optimal number of households CHWs can feasibly serve with a minimum standard of care. There are countries such as Sri Lanka where a CHW covers as few as 10 households with maternal and child health services, while in India a CHW covers about 1,000 households (approximately 5,000 population, usually spread over five to 10 villages) [30]. The population coverage and the range of services offered at the community levels are vital in the design of effective CHW schemes, and it should be noted that the “smaller the population coverage, the more integrated and intensive the service offered by the CHWs” [29].

This can be graphically depicted as a productivity curve whereby the quantity of services assigned is a function of the size of the catchment area. As the number of households a CHW is expected to target in a community increases, the quantity of services they will be able to effectively provide to clients will diminish. Conversely, if a CHW has a small and focused assignment of households, they will likely witness an increase in productivity because the CHW will be able to fulfill a greater number of service needs in the same time period.
How far apart the households are, how much geographic area they cover, the type of terrain, and whether reliable transport is available all affect how well CHWs are able to meet their performance expectations. When catchment areas are too large, CHWs may have difficulty finding the time or transportation needed to visit all the assigned households [5]. As compared with facility-based providers who spend unproductive time waiting for clients [7, 9], CHWs log unproductive time getting to the client or arriving at the household to find the client absent.

HSAs and senior HSAs in Malawi cover wide catchment areas, on average five to 10 kilometers for HSAs and 10 to 20 kilometers for senior HSAs [22]. Catchment areas where families live spread out over wide distances, with difficult terrain to cross, or where CHWs are not provided with appropriate transport increases the time spent on the road and decreases productivity. CHWs participating in the delivery of a community-based newborn care intervention package in Bangladesh’s Sylhet District “attended less than 5% of all births because of their high workload, travel distances, and difficulty receiving timely notification of deliveries” [31].

**Figure 4.**

Programs must take care to monitor the catchment area assigned to CHWs to ensure that they can satisfactorily reach all the targeted members within the specified geographic area with a standard level of quality of care.

**Supportive supervision**

To be successful CHW programs require regular and reliable support and supervision [3, 4, 5]. Offering CHWs supportive supervision within the structures and functions of the health team
demonstrated better outcomes [2]. Yet supervision is often one of the weakest links in a CHW program [3]. Quality of supervision matters a great deal: ineffective supervision contributes to low CHW morale and poor productivity [32]. The following are a few examples:

- Supervision of CHWs in Zambia’s Kalabo District did not have a positive impact on performance because the quality was poor and almost half the CHWs did not experience any benefit from the supervision visits [33].
- An evaluation in Nigeria found that the majority of CHWs were not engaging in such critical components of the primary health care program as home visiting due in part to inadequate or infrequent supervision [32].
- In a few of the CHW programs in the Global Health Workforce Alliance review, supervisors were formal health staff from the health services who may not properly understand the CHWs’ roles and may resent the additional task of supervision [1].
- In some evaluations that have documented weak supervision in national CHW programs, the CHWs do not even know who their supervisors are or what they can expect from them [34].

Many health professionals lack the background to provide a supportive environment for CHWs [25]. The traditional supervisory approach that most are familiar with is more of a bureaucratic exercise, often is of limited value, and relies on a “policing” function that solely penalizes workers. What is needed is a change toward a more participatory and enabling supervisory approach that helps CHWs identify their challenges and implement solutions, and even considers using alternative technologies such as mobile phones and peer-to-peer support to create a two-
way flow of information and communication. The Joint Learning Initiative Paper on CHWs in Africa emphasizes the following proposals to strengthen the supervisory approach:

“Clear strategies and procedures for supervision and the activities with which supervisors will be charged should be well defined. The skills need to be taught so that health personnel, CHWs and community health committee members know what is expected of them as supervisors. Supervision should be taught to be undertaken in a participatory manner. Top-down mechanistic supervision emphasizes the social distance between supervisor and supervisee and leads to communication breakdowns and ultimately to program damage. The guidelines for supervision should include a list of supervisory activities. The most important element of supervision is ensuring the two-way flow of information. It is also vital that the supervisor acts as a role model so that their behavior can be copied [34].”

**Supplies and equipment**

In order to carry out their tasks effectively, CHWs need a regular replenishment of supplies, medicines, and equipment. Unfortunately, this is another weak link [3]. When the supply of needed materials is disrupted not only will productivity decrease but there may be other equally detrimental consequences.

In Pakistan, “poor supply caused embarrassment and made lady health workers suspect in the eyes of the community because they were accused of selling drugs and contraceptives in the market” [18]. CHWs need the trust of the community; when this is compromised CHWs become ineffective. In Kalabo District, Zambia, one of the two most important factors behind the dysfunction of the CHW program was the shortage of drugs [33].

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The cost of travel is an important determinant of CHW effectiveness [35] and should be factored in when considering how the supplies, materials, and equipment that CHWs need will be replenished. For example, lack of transport prevented some HSAs in Malawi from covering some of the villages in their catchment areas and from obtaining drugs and other needed supplies from their respective health centers [22].

**Conclusions**

As more countries look to scale up CHW programs or shift additional tasks to CHWs, it is critical to pay attention to two critical factors: a) the overall system within which the CHW works and b) the elements that affect CHW productivity. Both must be considered in the design phase as well as throughout implementation of the program. There are five factors that will produce a system that is more likely to support CHW productivity: strong policy and leadership support, clarifying key elements of the role, engaging communities in all aspects of the CHW role, managing the CHW input effectively, and integrating CHWs into primary health care teams.

An enabling work environment is crucial to maximize the productivity of CHWs. There is no one element that is more important than another. Rather, all the productivity factors of workload (number and organization of tasks, and number and distribution of households), supportive supervision, and supplies and equipment need to be considered concurrently. Any combination of too many job responsibilities, extended catchment areas, lack of transport, interrupted supplies and equipment, and weak supervision can cause a reduction in CHW productivity levels. Each
factor should not be considered independently of the others. For example, supportive supervision without provision of the needed supplies and equipment will not be enough. Likewise, limiting the number of job tasks to a manageable number while demanding an overwhelming geographical and household coverage target will limit a CHW’s productivity.

The following are recommendations for policy-makers, program planners, and researchers:

- Understand the broader policy, leadership and management framework within which CHW programs operate and address the systems issues that affect CHW productivity.
- Conduct operations research to determine the ideal number or highest limit of tasks as well as target coverage to ensure a maximum level of CHW productivity.
- Involve CHWs in the decision about whether to add new services to their portfolio and if so, which service delivery tasks would be highly demanded and most effective.
- Employ the observational technique of time-use studies to understand how CHWs use their time to carry out assigned duties and what obstacles they encounter to develop interventions for increased productivity and efficiency.
- Develop and orient CHWs to time management and task organization guidelines for improved time usage and job efficiency.
- Improve the supervisory system to support CHW performance and productivity, provide recognition and feedback, assist in problem-solving, and link CHWs to the formal health sector. Seek CHW feedback on what is working and what needs to be improved in their support system or work environment.
- Explore the feasibility of the use of mobile technologies to improve connectedness and communications with CHWs and as a complement to supportive supervision. Mobile
phones can also improve in-service training opportunities as well as enable CHWs to
more efficiently order needed supplies or refer patients.

- Ensure consistency in the provision of supplies, equipment, and transport fundamental to
  CHW tasks.
- Strengthen human resources management systems to facilitate a standard level of
  working conditions that enable good performance.
- Reward CHW productivity and performance via public recognition, increased
  compensation, bonuses, increased access to training, promotion or other appropriate
  means.

**Competing interests**
The authors declare that they have no competing interests.

**Authors' contributions**
WJ analyzed the results of the literature review and wrote the journal article. KT conceived of
the study and assisted in critical thinking and technical revision. Both authors read and approved
the manuscript.

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**Illustrations and Figures**

Figure 1: Working conditions as a key determinant of CHW productivity

Figure 2: Components of CHW workload

Figure 3: CHW productivity curve: service quality as a function of service quantity

Figure 4: CHW productivity curve: service quantity as a function of catchment area
Figure 2

CHW Workload

NUMBER OF TASKS

ORGANIZATION OF TASKS

CATCHMENT AREA
Number of Households
Geographic Distribution
Figure 4

The diagram illustrates a relationship between Quality of Services Delivered and Quantity of Services Delivered. The graph shows a downward curve, indicating a negative correlation: as the quantity of services delivered increases, the quality of those services decreases.