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Challenges Facing Successful Scaling Up of Effective Screening for Cardiovascular Disease by Community Health Workers in Mexico and South Africa: Policy Implications

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Abstract

The integration of community health workers (CHWs) into primary and secondary prevention functions in health programs and services delivery in Mexico and South Africa has been demonstrated to be effective. Task-sharing related to adherence and treatment, from nurses to CHWs, has also been effectively demonstrated in these areas. HIV/AIDS and TB programs in South Africa have seen similar successes in task-sharing with CHWs in the areas of screening for risk and adherence to treatment. In the area of non-communicable diseases (NCDs), there is a policy commitment to integrating CHWs into primary health care programs at public health facilities in both Mexico and South Africa in the areas of reproductive health and infant health. Yet current programs utilizing CHWs are not integrated into existing primary health care services in a comprehensive manner for primary and secondary prevention of NCDs. In a recently completed study, CHWs were trained to perform the basic diagnostic function of primary screening to assess the risk of suffering a CVD-related event in the community using a non-laboratory risk assessment tool and referring persons at moderate to high risk to local government clinics, for further assessment and management by a nurse or physician. In this paper we compare the experience with this CVD screening study to successful programs in vaccination, reproductive health, HIV/AIDS, and TB specifically to identify the barriers we identified as limitations to replicating these programs in the area of CVD diagnosis and management. We review barriers impacting the effective translation of policy into practice, including scale up issues; training and certification issues; integrating CHW to existing primary care teams and health system; funding and resource gaps. Finally, we suggest policy recommendations to replicate the demonstrated success of programs utilizing task-sharing with CHWs in infectious diseases and reproductive health, to integrated programs in NCD.

Keywords: Cardiovascular disease; Community health workers; Community health

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Introduction

The burden of non-communicable diseases in Mexico and South Africa

The burden of non-communicable diseases (NCDs), including cardiovascular disease (CVD), has been shown to be disproportionately affecting populations in low- and middle-, income countries (LMIC). In Mexico in 2012, NCDs accounted for 69.2% of the top ten leading causes of death, and in this subset of deaths, CVD (ischemic heart disease, stroke, hypertensive heart disease) accounted for 54% of deaths, diabetes mellitus (DM) for 36.4%, and chronic obstructive pulmonary disease (COPD) for 9.6% [1,2]. In 2012 NCD accounted for 19.7% of the top ten leading causes of death in South Africa, with CVD (ischemic heart disease, stroke, hypertensive heart disease) accounting for 71% of deaths and DM for 29% of deaths, respectively [3]. The epidemiologic transition of disease shifting from largely infectious to more chronic conditions has been occurring in many LMIC and this, in turn, means that the burden of NCDs and CVD will increase over

the next quarter of a century [4]. Some of the leading risk factors for NCD (obesity, high blood sugar, high blood pressure) are more highly prevalent in the adult populations of Mexico and South Africa, respectively, compared to their geographical regions as defined by the World Health Organization (WHO) [2,3]. Early screening for undiagnosed CVD and other NCDs in community based-settings as recommended by the WHO can play a key role in reducing the increasing morbidity and mortality in LMIC [5,6]. Further, we believe that the demonstrated success of programs utilizing task-shifting to community health workers (CHWs) as a means to increase vaccination coverage and improve reproductive health in Mexico, and diagnosis and treatment for HIV/AIDS in South Africa, can inform efforts to increase primary screening for CVD in LMIC, in addition to providing lessons regarding successful scaling of CVD screening programs.

Millennium Development Goals (MDGs) 4 and 6: Progress in Mexico and South Africa

Infectious diseases such as HIV/AIDS and contagious, but preventable, childhood diseases were significantly impacting morbidity and mortality in populations in LMIC at the turn of the 21st century. In response, these areas were incorporated into the Millennium Development Goals (MDGs) for 2015 [7-9]. Global support, advocacy, and planning efforts have provided governments with comprehensive approaches to tackle to address these issues. The WHO developed detailed strategic plans in order to successfully meet the MDG goals for vaccination [9,10] and for the diagnosis, treatment, care, and prevention of HIV/AIDS [11-13].

There are no analogous frameworks or strategic plans in place for NCDs and, despite the increasing burden on populations in LMIC, NCDs were not included in the Millennium Development Goals. If these were available for NCDs, it would facilitate a more rapid, effective response to address this burden.

Lessons from HIV/AIDS (South Africa) and immunization and reproductive health (Mexico) programs that utilize task-shifting to CHWs

A key component to the successful progress toward MDGs 4 and 6 has been the utilization of lay or informal health workers, including community health workers (CHWs). CHWs have been shown to play effective roles in the delivery of health services for HIV/AIDS in Sub-Saharan Africa, including South Africa, where approximately 68% of the existing cohort of CHWs is assigned to HIV/AIDS and TB programs [14]. Schneider et al. describe the growth of task-shifting to CHWs in this area in South Africa as occurring "organically" [15] and this has led to increased uptake and quality of HIV services, reduced waiting times at clinics, and also helped to reduce the stigma associate with seeking treatment [16]. CHWs have been shown to be effective at increasing the uptake of immunization of children [17] in Mexico where the Universal Immunization Program (UIP) has been shown to play a significant role in the significant reduction of almost two-thirds in mortality amongst children under the age of five, along with the introduction of oral rehydration therapies, increased educating about good sanitation [18], and providing expanded coverage during National Immunization Weeks campaigns [19].

Given the success of immunization and HIV/AIDS programs utilizing CHWs, there are lessons to be learned from this success, which can also be applied to the WHO strategy to combat the emerging epidemic of NCDs. In part, the WHO strategy identifies CHWs as a key part of overcoming the severe human resource shortages that are part of the landscape in LMIC [6].

The impact of severe human resource shortages on addressing the burden of NCDs

A common characteristic of low- and middle-income countries such as Mexico and South Africa are the severe human resource shortages available to serve in the health sector and this directly impacts the success of programs designed to help meet the MDG goals. A widely proposed solution to these shortages in personnel has been to shift tasks requiring less formal skill sets from trained health professionals to lay health workers such as community health workers (CHWs). Yet, there is very little evidence available regarding the most effective programs for screening, detection, initiation of treatment that uses task-shifting to CHWs to overcome the human resource constraints in the fights against NCD in LMIC [20].

We will focus on the lessons learned about such task-shifting from a recent trial we conducted in Mexico and South Africa, successfully training CHWs to perform primary screening for cardiovascular risk disease (CVD) in community settings using a non-invasive risk screening tool [21-25].

Current evidence for utilizing CHWs in programs for NCDs

In the United States CHW-delivered interventions to reduce heart disease have been shown to be effective [26], as has their ability to positively impact the self-management of hypertension, especially in under-served communities [27] and in US-Mexico border regions the use of CHWs as health promoters leading educational programs for cardiovascular disease has also been effective [28-30]. The inclusion of CHWs as part of multi-disciplinary teams managing diabetes has been shown to positively affect health outcomes, as well as being cost-effective [31,32]. Similarly, there is evidence that task-shifting to CHWs for diabetes and hypertension management in South Africa can be effective [33] and also highly cost-effective [34].

In its recommendations for improving access to high quality, affordable health care for the most vulnerable, the WHO outlined a plan for improving primary health care systems [35]. A key component of these recommendations is integrating CHWs into primary health care teams and clinical settings to increase the coverage of care available in the absence of adequate numbers of formally trained health professionals. Shifting primary screening functions for CVD from trained professionals at health clinics to CHWs working in community settings has the potential to improve detection, initiation of appropriate and timely treatment, and improve health outcomes at the population level. In addition, if shifting the function of primary screening for CVD to CHWs proves to be effective, it then becomes necessary to also assess the barriers and facilitators to successfully scaling programs

utilizing this task-shifting to the population level. Missing from the body of available evidence is data on whether CHWs can be successfully utilized to conduct primary screening for CVD risk in community settings.

To investigate whether CHWs can effectively conduct primary screening for cardiovascular disease (CVD) in community settings, we recently conducted a trial in Bangladesh, Guatemala, Mexico, and South Africa to determine the feasibility of task-shifting this primary screening function [22-25] the CHW Supplemental Trial, in the National Heart, Lung and Blood Institute (NHLBI)/United Health Centers of Excellence Network [1].

Trial evidence for the effectiveness of shifting primary screening tasks for cardiovascular disease (CVD) to CHWs: The CHW Supplemental Trial

In 2012, we conducted a multi-center trial in Bangladesh, Guatemala, Mexico, and South Africa to determine primarily if CHWs could screen for CVD as effectively as physicians or nurses, using a non-invasive, non-laboratory based screening tool in community settings [21,22]. In addition, we also investigated to what extent persons who were at high risk and consequently provided with a referral letter to schedule a visit with a physician or nurse at the closest health center for further evaluation, followed through with scheduling and attending such a visit [23]. The study results showed that CHWs can be trained to conduct primary, non-invasive screening for CVD risk in community settings as effectively as the trained health professionals, with a mean level of agreement between CHW and health professional risk score calculations of 96.8% [22] Out of all the persons determined to be at high risk for CVD by CHWs during the screening process, only 37% followed up with scheduling a visit with a health professional, despite the provision of a referral letter for this purpose [23]. Utilizing qualitative inquiries, we explored the reasons for this, as well as the CHW's experiences conducting the screenings in the community. We found that the lack of effective supervisory mechanisms impacts CHWs' performance in the field and also makes effective assessment of their performance difficult to measure [24,25]. The quality of CHW recruits and retention of effective CHWs are significantly impacted by issues of remuneration and career development. CHWs are expected to operate as part of primary care health teams but their integration into these settings have not been clearly operationalized at the health care practice level, resulting in non-uniformity in the utilization and integration of CHWs in primary care settings. These findings are consistent with the evidence for programs utilizing CHWs for management of HIV/AIDS, reproductive health, and immunization programs.

Based on the evidence for successes in HIV/AIDS, reproductive health, and vaccination programs in Mexico and South Africa, and the evidence from the CHW Supplement Trial, we propose five recommendations for successfully integrating programs that utilize CHWs for primary, community-based screening for CVD into existing primary care systems at the population level. This experience could potentially serve as a model for primary screening for other NCDs such as diabetes.

Recommendations for policy considerations

1. Based on successes with task-shifting primary and secondary prevention in HIV and immunization efforts, strengthen training for CHWs to conduct primary, non-invasive CVD screening and provide a first link in a referral pathway to the health clinics for persons at high risk.
2. Training materials, delivery of training, and the evaluation of the training provided, should incorporate assessments of effectiveness in all stages of program design, implementation, and evaluation.
3. Training for supervisors – both health professionals and administrative staff – is a critical element in the planning, implementation, and evaluation of task-shifting programs that utilize CHWs so that supervisors can both understand and leverage the strategic input of CHWs.
4. Reducing the burden of CVD can appropriately include task-shifting of primary, community-based screening by CHWs and clear strategies for implementing the integration of CHWs into existing primary care teams at health care facilities would ideally be part of the integration design.
5. Review of current and proposed models of CHW certification in each setting is warranted as a core strategy to maximizing the sustainability of policies that are in place to offset human resource deficiencies by task-shifting various functions to CHWs in primary care settings.

Discussion

In the CHW Supplemental Trial, we demonstrated that CHWs can effectively screen for CVD in community settings, across different settings in LMICs. Surka and colleagues expanded on our work by comparing the effects of training to use our paper tool versus training to use a mobile-phone application version of the tool, showing that with the latter training time, screening time, and calculation errors are further significantly reduced [36]. Despite these successes, substantial challenges remain in terms of successful scaling of interventions such as our trial. Issues of remuneration, respect from formally trained health professionals, and lack of clear career paths are threats to retaining CHWs, especially skilled ones, in the health care system [16,37,38]. In South Africa, there has been a call to expand legal frameworks to allow more tasks to be shifted to non-physician health care workers as a means to address the rising burden of NCDs [39]. The failure to utilize task-shifting to CHWs has been identified specifically as a barrier to providing quality, affordable care to the chronically ill in South Africa [40]. We also identified barriers to effective referral to local health centers, issues related to training, issues related to effective supervision, selection of trainees, compensation, and clear definition of potential career paths for CHWs. These findings are consistent with the recognized tension between the need for integrating primary health care services in LMIC to include the use of CHWs for task-sharing, and the barriers presented by certain aspects of the current health care systems to this proposed inclusion [41,42]. Though health professionals appreciate the community knowledge and relationships that CHWs bring to health services delivery, some

also devalue the quality of work done by CHWs due to their lack of formal training, and even perceive CHWs as a threat to their authority and validity of their own training [42]. These challenges also impact the quality and effectiveness of the supervision of the CHWs as management skills are not taught in nursing or medical schools, but these health professionals are assigned supervisory responsibilities [43-45]. In addition to the lack of managerial skills, lack of adequate time to handle the high patient loads at health clinics preclude health professionals from spending enough time on supervision. New, innovative mechanisms for supervision are needed to enhance the effectiveness of CHW and provide relief to trained health professionals but evidence regarding effectiveness is sparse [46,47]. Selection, training, and compensation of CHWs must all be addressed proactively when designing community-based health services programs, as these all directly impact the scalability and sustainability of programs, independent of whether the setting is in LMICs [48,49] or high-income countries [50].

In 2009/2010 spending on HIV/AIDS and tuberculosis (TB) programs amounted to approximately $1.2 billion USD, yet only 2.8% of this money was spent on human resource capacity-building, including training [13] If issues of CHW training, retention, and effective supervision are to be addressed adequately, the proportion of fiscal resources to address human resource challenges needs to be increased substantially. The additional resources would need to include budgets for sustainable training and certification paths for CHWs. Drawing on the experiences of HIV/AIDS, immunization, and reproductive health programs, identifying supporters in advocacy groups in the communities to promote support of programs integrating CHWs into screening for NCDs could help to move international resources where it is needed [51,52].

The evidence for task-shifting of certain functions such as screening to CHWs in HIV/AIDS, reproductive health, and immunization [17,19,53] identifies clear facilitators and barriers to scaling successful programs to the population level. Our CHW Supplemental Trial illustrates that the same issues - including effective supervision, ill-defined career paths, remuneration - impact the task-shifting of primary screening for CVD from health professionals to CHWs [24,25]. The commitment of governments and private sector donors provided significant funding to develop successful programs for early screening, detection, and treatment of HIV/AIDS – despite the significant challenges posed by lack of adequate numbers of formally trained health professionals – in large part through the utilization of task-sharing with CHWs [54]. We hope that the evidence presented here will allow key stakeholders, including policy makers, to proactively apply the lessons learned from programs geared toward meeting MDGs 4 and 6, as well as from the CHW Supplemental Trial, to inform the translation of task-shifting policies into programs that have improved health outcomes for the population, are sustainable over the long term, and also prove to be professionally satisfying to CHWs.

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Conflict of Interest

The authors report no relationships that could be construed as a conflict of interest.

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