Published in final edited form as:
Curr Diab Rep. 2013 April ; 13(2): 163–171. doi:10.1007/s11892-012-0359-3.

The Role of Community Health Workers in Diabetes: Update on Current Literature

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Abstract

Community health worker (CHW) interventions have been found to be a promising strategy for improving diabetes outcomes, especially among low-income and racial and ethnic minority populations. This review serves as an update of the literature published since 2011 on CHWs' role in diabetes care. In our review of the most current literature, we noted several key areas of advancement. These areas include community-based participatory research (CBPR) approaches to intervention development and evaluation, analyses of the cost effectiveness of CHW interventions, evaluation of sustainability through integrated team-based approaches, thorough descriptions of characteristics and training of CHWs, and delineation of the scope of practice and most effective roles for CHWs.

Keywords

Community Health Worker (CHW); Type 2 Diabetes; Diabetes Self-Management; Diabetes Care Team; Community-Based Participatory Research (CBPR)

Introduction

Barriers to optimal diabetes management are complex, involving individual, community, and health system level factors. From poor access to care to lack of culturally tailored approaches, the barriers are often multifaceted. Moreover, ethnic and racial minorities experience a disproportionate disease burden and complications; thus interventions that

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effectively target underserved communities are especially important [1,2]. Community health worker (CHW) interventions have been found to be a promising strategy for improving diabetes outcomes as they not only address individual-level but often community-level factors as well. CHWs typically work in their own communities, share cultural, economic, linguistic and other characteristics with the patients they work with (including in some cases diabetes), and are able to build close, trusting relationships with communities because of a deep knowledge of that community [3]. They can serve as a vital link between health services and the community because of their unique knowledge, cultural competency, and close relationship with the community.

There is a growing body of evidence supporting the role of CHWs in diabetes care. CHWs serve in a variety of capacities, typically focusing on strategies to improve diabetes self-management. Norris et al identified five main roles of CHWs in their 2006 systematic review [4**]. These roles include patient care, education, support for care delivery provided by other health professionals, care coordination, and social support. At the time of that review, studies on CHWs in diabetes had found improved knowledge about diabetes, self-monitoring, self-care, and lifestyle changes compared to control groups or participants' baseline characteristics, depending on the study. Gaps that were noted in the evidence included the lack of data on health-related quality of life, health care utilization, and cost-effectiveness. There also had been few studies with a strong study design, such as randomization, that could demonstrate better internal validity. In addition, in terms of external validity, very little information had been provided on setting characteristics that led to successful implementation. Community based participatory research (CBPR) models were cited as potential facilitators for implementing and sustaining CHW interventions in real-life practices, yet few if any studies had explicitly adopted such approaches. Finally, little was known about the most effective training, support for, and characteristics of community health workers.

Since the publication of that systematic review, well-designed randomized controlled trials (RCTs) have provided evidence of improved glycemic control and other risk factor control from CHW interventions compared to usual care [5–7*, 8–11]. This review serves as an update of the literature in the last year on CHWs' role in diabetes care. In our review of the most current literature, we noted several key areas of advancement. These areas include community-based participatory research (CBPR) approaches to intervention development and evaluation, analyses of the cost effectiveness of CHW interventions, evaluation of sustainability through integrated team-based approaches, thorough descriptions of characteristics and training of CHWs, and delineation of the scope of practice and most effective roles for CHWs.

Community-Based Participatory Research (CBPR) Approaches

The use of CBPR to address a variety of health issues and social determinants of health has substantially increased in the last ten years. More recently, this has been seen in diabetes care as well. CBPR, by actively involving stakeholders in all stages of program development and implementation, contributes to the development of culturally appropriate measurement instruments and establishes mutual trust that enhances data collection, makes projects more effective, and contributes to sustainability by involving stakeholders from the beginning [12]. Using principles of CBPR, the REACH-Detroit community partnership in 2011 published findings from an RCT of a CHW-led diabetes self-management program targeting underserved Latino and African-American patients with type 2 diabetes that had been developed, implemented, and evaluated with full participation of community partners [5*]. During a 6-month delayed control intervention, 164 participants were randomized to a CHW intervention or delayed control, in which they received the intervention six months later. The

CHWs delivered empowerment theory-based diabetes self-management, healthy life style training, and support through culturally tailored group classes, one-on-one behavioral goal setting, and accompaniment to one clinic visit. Outcomes included physiologic measures, self-management knowledge, self-efficacy, physical activity, and dietary practices. Hemoglobin A1c (HbA1c) improved from 8.6% to 7.8% compared to no change in the control group at 6-month follow up. Self-management knowledge showed statistically significant improvements, with no significant change seen in either group's self-efficacy.

While this study added to the growing evidence on clinical benefits of CHW programs, its most notable contribution was its use of CBPR methods to conduct a rigorous study design examining the effects of a CHW intervention for type 2 diabetes. The scarcity of RCTs of CHW interventions is often cited as a reason for considering evidence on the benefits of CHW interventions in diabetes inconclusive, and the RCT design strengthened the internal validity of the findings for all aspects of intervention design and implementation [13**]. The CHW intervention examined in this RCT was also based on evidence-based behavioral theories, a feature that had been missing or not described in many prior CHW interventions in the published literature [14**].

Another study published in 2011 that used CBPR methods was a targeted intervention for an underserved Latino population in Chicago conducted by Ruggiero and colleagues that showed promising results using CHWs to deliver the Diabetes Prevention Program (DPP) lifestyle intervention [15*]. This prospective non-randomized study used CBPR methods to develop and implement a DPP-based community-based intervention in 3 predominantly Latino neighborhoods. Patients were recruited through community screenings with eligible patients referred to the DPP intervention. Sixty-nine participants entered the intervention, and baseline, 6-month, and 12-month dietary, physical activity, and anthropometric data were collected. CHWs served as "Healthy Lifestyle Coaches (HLCs)", delivering the program through 16 group meetings at various community locations over a 12-month period. Participants showed improved physical activity and dietary scores as well as improved body mass indices (BMI), with a mean decrease of .91 kg/m2, and waist circumferences, with a mean decrease of 1.56 inches, at 6 months. The anthropometric improvements were not sustained at the 12-month follow-up, but most participants moved to the "action-maintenance" stage of the stages of change model for diet and physical activity. Though limited by sample size and study design, a strength of the study was the engagement of community partners and the variety of community settings in which the intervention took place.

Another community-based RCT published this past year, The Healthy-Living Partnerships to Prevent Diabetes (HELP PD), tested a CHW-led weight loss intervention based on the Diabetes Prevention Program versus usual care for a 24-month period [6*]. Thus far, only the 12-month results have been reported. The CHW-led intervention consisted of weekly group visits focused on diet and exercise education and counseling in the first six months. During the second six months, participants were contacted two additional times by CHWs, with one group session and one telephone contact. Primary outcomes included fasting blood sugar, insulin levels, and anthropometric measurements, which were collected at baseline, 6 months, and 12 months. Compared to enhanced usual care (two nutritionist visits over initial three month period), participants in the lifestyle intervention had significantly improved fasting glucoses (−4.3 vs −0.4 mg/dL) and weight loss (−7.1 vs 1.4kg).

The HELP PD study utilized various community settings for all group sessions (i.e. recreation centers and parks) and is one of the few documented studies solely utilizing CHWs, with dietitian oversight, to implement a community-based version of the DPP. Twenty-four month outcomes and cost analysis results are forthcoming.

Cost-Effectiveness Analyses

The lack of cost effectiveness data on CHW interventions has limited the ability of policy and program planners to examine the business case for the institution of CHW interventions in standard practice. A recent systematic review identified only nine studies from 1980 to 2008 that included information on the actual intervention, outcomes, and cost effectiveness [16**]. During that period, no CHW-led diabetes interventions reported costs and cost-effectiveness according to commonly accepted and standardized measures. Therefore, these studies did not meet the inclusion criteria for the systematic review. A study published this past year, by Brown and colleagues, however, specifically examines the long-term cost-effectiveness of a CHW-led lifestyle intervention for low-income Hispanic adults with type 2 diabetes [17*]. Participants from an ongoing community-based diabetes program over an 18-month period were included in the analysis. The program consisted of counseling, nutrition, and education classes and home visits. Based on level of HbA1c improvement at 18 months, projections were made for quality adjusted life years (QALYs) gained and costs associated with different HbA1c levels. Over a 20-year period, the cost of the CHW-based program was $33,319 per QALY gained, which is deemed cost-effective based on the conventional $50,000 cutoff per QALY gained in diabetic patients [18**].

This is one of the few studies examining diabetes self-management programs that measures cost effectiveness using QALYs, which are widely accepted as the standard cost-effectiveness measurement. In addition, this study is unique in that it evaluated an ongoing, sustained community-based program, not an intervention specifically designed for this analysis. Currently cost analysis data is still limited, but several ongoing studies have cited cost analysis at part of their methods and forthcoming data analysis. For example, the COACH trial, described in more detail below, will include an analysis of the incremental cost of the intervention versus usual care from the view of cost to the health system [7*]. Cost-effective analysis of the HELP PD intervention will include the perspective of the health system and cost to society as well [19].

Team-based approaches and integration into formal health care teams

The importance of integration and sustainability of CHWs in the healthcare workforce has been emphasized throughout the CHW literature, yet until recently data on these questions have been limited [20]. Over the past year, several studies have contributed to an understanding of how best CHWs can be incorporated into health care teams. For example, in a 24-month statewide study of a CHW intervention to improve diabetes self-management, six community health centers (CHCs) in Massachusetts were randomized to include trained CHWs or usual care without CHWs [21*]. The study goal was to train and incorporate CHWs into health care teams, help engage patients in their healthcare encounters, assist patient in identifying community resources, and improve their self-efficacy. The study sample consisted of 1415 patients, with 494 patients in the CHCs that incorporated trained CHWs into their health care teams. CHWs interacted with patients through face-to-face, group, and telephone encounters. The primary outcome measured was self-management goal setting. This was assessed through CHW documentation of patients' self-reported ability to keep appointments and follow diet, blood sugar monitoring, and exercise recommendations. Results showed that, regardless of the patient's race, the intervention group was more likely than patients in control CHCs to set a self-management goal. The study contributes to the field through its description of the successful implementation of CHWs into a team-based care model.

The Community Outreach and Cardiovascular Health (COACH) RCT evaluated a nurse practitioner (NP)-CHW integrated team model for cardiovascular disease (CVD) risk

reduction, using CBPR approaches to design and implement the 12-month intervention and evaluation [7*]. 525 participants were enrolled if they had a diagnosis of CVD or type 2 diabetes and were randomized to the NP/CHW intervention group or an enhanced usual care group. The NP served as a case coordinator and supervised CHWs in the intervention group, which focused on therapeutic lifestyle changes, adherence to medications and appointments, and titration of medications. The intervention was algorithm driven, tailored to each participant's assessment of how far at baseline they were from meeting their goal; for example, a more intensive intervention was given to those participants far from goal versus those at goal. The NPs conducted the intervention, which included counseling, lifestyle modification, and medication prescription and titration. The CHWs met with participants individually to help identify barriers to adherence, emphasize instructions provided by NPs, and trouble shoot with participants on ways to improve adherence. CHWs and NPs interacted with participants in face-to face meetings as well as through telephone follow up, per algorithm, with a mean of 6±5 telephone visits and 7±3 in-person visits with the NP/CHW team over the 12-month study period. Primary outcomes included lipids, blood pressure, HbA1c, and perception of quality of care. After 12 months, the intervention group showed significant improvement in total cholesterol, LDL-C (mean was at guideline goal), triglycerides, blood pressure, HbA1c, and perception of quality of chronic illness care.

This study showed the efficacy of a team-based chronic care management approach that incorporated CHWs, with clearly delineated roles for NPs and CHWs on the team. Though the design was randomized, it was limited to patients from one health center, and providers took care of patients in both arms of the study. In addition, the health care center in the study was a patient centered medical home (PCMH), supporting the use of CHWs in the PCMH model for diabetes and other chronic illness care.

A third team-based model reported in 2011 consisted of CHWs supported by nurse care managers. Walton and colleagues reported on 18-month clinical outcomes of the five-year non-randomized CHW-led Diabetes Equity Project (DEP), a self-management education program at Baylor Health Care System in Dallas, TX [22*]. The published account also provided details on the process of recruitment, education level, and training requirements of the CHWs. The DEP targets medically underserved, predominantly Latino communities in Dallas. Participants are enrolled from five charity clinics affiliated with the Baylor Health System. The self-management curriculum is delivered by CHWs one-on-one over an eight-week period with four additional follow up visits at 3, 6, 9, and 12 months. The CHWs receive support and supervision by nurse care managers with clinic NP and physician back up if needed. In addition, the CHWs have access to a web-based diabetes management system to document results that are then faxed to primary care providers.

The 18-month evaluation of the program revealed that most of the 806 participants completed the curriculum in about one year. Baseline HbA1c was 8.7% and improved to 7.4% one year after baseline. In addition, patients reported high levels of satisfaction with the program. Thus, like many similar interventions, there was a positive change seen, but they went further and also provided a detailed description of the recruitment and training of CHWs and their approach to integrating CHWs into the primary care clinics. A notable limitation to this study is the study pre-post study design, with no control group.

Guidance for recruitment and training of CHWs

Often the backgrounds and characteristics of CHWs are missing in descriptions of interventions, which can limit generalizability [4**,14**,23**]. Recently, a number of studies have reported detailed CHW characteristics and details of the recruitment process and training of CHWs. Walton and colleagues provided a detailed description of their hiring

and training process for the DEP intervention (mentioned above) [22*]. They explain that the CHW position was posted as a “diabetes health promoter”, with the requirements of a high school diploma and Spanish fluency, and a medical assistant background was strongly preferred. Candidates were ranked on a series of behavioral characteristics including communication, compassion, self-motivation, capacity to learn, teamwork, integrity and quality. Once hired, they completed the 160-hour Texas Community Health Worker Training and Certification Program. They were also required to complete an additional 50 hours of diabetes and self-management instruction. A posttest was administered to measure skills and knowledge gained during training. In addition, based on state requirements in Texas, CHWs must complete 20 additional hours of training yearly for maintenance of certification.

The Central Massachusetts Area Health Education Center’s Outreach Worker Training Institute and the University of Massachusetts recently reported findings from their mixed methods evaluation of the development and implementation of a diabetes self-management CHW two-day certificate course [24*]. This course is based on the transtheoretical model of the stages of change and addresses general core competencies of CHWs including interpersonal skills, organization and documentation as well as diabetes-specific competencies such as nutrition and complications of diabetes. Additional training included conference calls every six weeks to address ongoing needs of CHWs and barriers encountered when integrating CHWs into formal care teams. Detailed characteristics of the recruitment process are discussed as well as characteristics of the 10 CHWs that completed the training program. In addition, supervisor training for oversight of CHWs was included. The training program resulted in similar improved knowledge and skills in diabetes self-management to previously published studies, but most notably, valuable recommendations are provided on the development of CHW training programs [25]. These include the importance of full-time CHW employment to prevent “role confusion”, focus on reinforcement of concepts, and the importance of “content expert” clinical faculty that demonstrate collaboration with CHW faculty.

Colleran and colleagues recently published their results of an innovative strategy to train CHWs based on Project ECHO’s (Extension of Community Healthcare Outcomes) telemedicine approach [26*]. This program consisted of two 2-day onsite trainings, one at baseline and one at three months, as well as six months of weekly “teleECHO sessions”, which were done via online video conferencing. The use of distance learning is a novel strategy that allowed CHWs from across the state to participate in training and save on cost of travel and time. This allowed for the training to be given free of charge to CHWs. Detailed descriptions of CHWs’ characteristics as well as distance from the host site, University of New Mexico, are provided. Evaluation of the program included pre-post testing and focus groups. The test administered is also provided as an appendix for reference. In addition to allowing for more flexibility in training sessions, this course allowed for a longer period of training through the use of web-based courses. Participants described their training as an opportunity to learn about new research and resources for better diabetes management and to understand medications and providing medication information to patients, among many other things. Though this strategy would require access to a web-based technology, it could be a potentially cost effective and flexible method to provide in-depth, ongoing training for CHWs.

CHW roles and scope of practice

Wide variability in the roles and scope of practice of CHWs has made evaluation of CHW effectiveness difficult. CHWs are often incorporated in multi-component interventions, without evaluation of the CHW role alone, or comparison of effectiveness between CHW

roles [4**,14**,23**,27*]. While this remains an area needing further examination, some recent publications are beginning to evaluate the most appropriate and effective roles and scope of practice for CHWs.

Ayala and colleagues conducted a systematic review of CHW roles utilized among Latino communities [27*]. They focused on the roles of educator-only and educator providing a bridge to other services. They analyzed a total of 61 CHW programs, 33 educator-only and 28 educator plus bridge, with chronic disease management being the most commonly targeted health issue. Conclusions were limited because many of the programs studied lacked rigorous design and outcome data. However, educator-only programs were shown to reach more participants and, since 2004, employ nearly all CHWs as staff, a trend not found in educator plus bridge programs. A recent increase in chronic disease management interventions is hypothesized to have led to the more formal integration of CHWs into systems of care as paid employees. Few differences were found between roles in intervention delivery; however, educator plus bridge programs had more one-on-one contact than educator-only programs. Despite limited outcomes, this review is unique in its study of CHWs by role, an area often cited as a major weakness in CHW evaluation.

A recent study conducted in New York by Findley and colleagues set out to better understand how and for whom CHWs are most effective by building a consensus between CHWs and employers on training standards, certification procedures and scope of practice [28*]. They conducted a non-randomized, CBPR study that made CHWs and their employers equal partners in determining the research questions, methods, analysis and interpretation of the study. Two waves of surveys elicited responses from 226 CHWs and 44 employers. Nearly all CHWs were willing to complete additional training if needed for scope of practice standards, and the majority (93%) of employers agreed that standardized training would improve CHW effectiveness. Consensus on scope of practice roles included outreach and community organizing, case management/care coordination, home visiting, health education/coaching and system navigation; and related skills were defined for each role.

In order to delineate workplace standards and state credentialing requirements, defining scope of practice for CHWs will be necessary [28*]. Though recent studies have highlighted certain areas, further study is needed to better understand the most effective role and scope of practice of diabetes-focused CHWs.

Conclusion

CHWs are a widely recognized tool for improvement of diabetes self-management and outcomes [14**]. With their in-depth knowledge of their community, they are able to provide culturally appropriate services to communities that are medically underserved. The literature on the roles and outcomes of CHW interventions for diabetes care has overall shown great potential. However, these roles and primary outcomes have varied greatly, making it difficult to draw conclusions about their overall effectiveness.

Recently, there has been a growing body of literature describing innovative CHW interventions (see Table 1 for summary of recent studies). Notably a focus on community-partnered interventions has led to effective interventions with greater potential to be sustained as the community partners are involved in every step of the intervention development, implementation, and evaluations. These studies have also identified potential populations in which the strategy is more appropriate, namely medically underserved communities. Recent literature has also demonstrated that rigorous study design can be done while still adhering to principles of CBPR. In addition, studies over the past year have

provided crucial cost-effectiveness data that had been lacking in the literature for CHW interventions in general, and specific to diabetes. The shift towards cost evaluations is a necessary component for working to sustainably integrate CHWs into health care teams and programs, especially using widely accepted standards for cost-effectiveness analysis. Also, as team-based strategies are now being widely adopted, CHWs as members of the diabetes care team could be an effective outreach strategy. In our review, recent studies have provided useful data on ways to improve communication and integration of CHWs into the healthcare team. In addition, training of CHWs was previously not well described, and this has been addressed in recent literature describing innovative approaches and recommendations for training, including comprehensive certificate courses and distance learning strategies [4**]. Lastly, recent reports have sought to better define the scope of practice of CHWs in diabetes care, an important consideration for states considering certification programs.

Though recent literature on CHWs in diabetes has added to a growing body of evidence that supports their efficacy, there are still areas that require further evaluation. Sustainability of CHWs continues to be an issue, as most interventions are still grant-funded and of limited duration. Thus, cost-effectiveness evaluations are necessary to provide evidence of return on investment. In addition, the majority of interventions still do not employ rigorous study designs, thus ability to establish the efficacy of an intervention compared to alternative approaches is still limited. Recent studies have demonstrated the feasibility of rigorous study design for community interventions, but these designs have been limited to certain populations. Rigorous evaluation of CHW interventions in vulnerable and medically underserved populations is needed. Another limitation is the wide variability in the role of the CHW across programs. It is still unclear what roles CHWs best serve in diabetes care; further description of the characteristics, scope of practice, and role of CHWs in interventions may help clarify this important question.

Overall, recent studies continue to add to the growing body of evidence that supports that use of CHWS in diabetes care. CHWs are important members of diabetes care teams and can effectively reach underserved populations. Though positive outcomes have been seen, further research is needed to support the sustainability of their work in diabetes care.

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Table 1

Summary of Study Characteristics and Unique Contributions

Unique Contributions to Literature	Source	Population and Setting	Study Design and Key Elements of Intervention	Outcomes
CBPR and description of behavioral theories of intervention	Spencer M; Rosland AM; et al. [5*]	164 African-American and Latino adults with type 2 diabetes in southwest and east Detroit, MI	6-month RCT to test effectiveness of a CBPR intervention for improving glycemic control.	Decrease in HBA1C from 8.6% at baseline to 7.8% at 6-month follow up and improved self-reported diabetes understanding
CBPR methods to deliver DPP lifestyle intervention	Ruggiero L; Castillo A; et al. [15*]	3 large Latino populations in southwest Chicago at risk of type 2 diabetes	12-month non-randomized prospective study of a DPP, community-based intervention	Improved physical activity and dietary scores and improved BMI (< .91 kg/m2) and waist circumference (<1.56 in.) at 6 months
Community-based study solely utilizing CHWs with dietitian oversight	Katula JA: Vitolins MZ; et al. [6*]	Sample in Forsyth County, NC with fasting glucose from 95–125 mg/dL, and a BMI ≥25 and ≤39.9 kg/m2	24-month RCT testing a CHW-led weight loss intervention based on the Diabetes Prevention Program	Improved fasting glucoses (−4.3 vs −0.4 mg/dL) and weight loss (−7.1 vs 1.4kg) compared to control
Examination of long-term cost-effectiveness of CHW intervention using QALYs	Brown HS; Wilson KJ; et al. [17*]	46 low-income Hispanic adults from Laredo, Texas with type 2 diabetes	18-month non-randomized study of cost-effectiveness of CHW-led lifestyle intervention	Cost-effective ($33,319/QALY gained) based on the conventional $50,000 cutoff per QALY in patients with diabetes
Successful implementation of CHWs into team-based care model	Hargraves JL; Ferguson WJ; et al. [21*]	1415 patients from 12 community health centers in MA (494 patient from 6 centers in intervention)	24-month RCT incorporating CHWs into health care teams	Intervention group was more likely to set self-management goals
Team-based chronic care management incorporating CHWs	Allen JK; Dennison-Himmelfarb CR; et al. [7*]	525 patients with CVD or type 2 diabetes from 2 community health centers in Baltimore, MD.	12-month RCT using NP-CHW integrated team model for CVD risk reduction	Significant improvement in total cholesterol (difference, −19.7 mg/dL), LDL-C (−15.9 mg/dL), triglycerides (−16.3mg/dL), systolic blood pressure (−6.2 mmHg), HbA1c (−0.5%) and perception of quality of care
Team-based approach that also provided detailed description of recruitment and training	Walton JW; Snead CA; et al. [22*]	100 uninsured or underinsured adult patients with type 2 diabetes from 5 charity clinics at Baylor Health Care System in Dallas TX.	5-year non-randomized study using CHWs supported by nurse care managers to provide diabetes self-management education	18-month results showed improved HbA1c (8.7% to 7.4%) and high levels of satisfaction with the program
Description of a diabetes self-management CHW certificate course	Ferguson WJ; Lemay CA; et al. [24*]	10 CHWs from 6 community health centers in MA (part of Hargraves et. al study above)	Non-randomized study of 2-day certificate course with follow-up trainings for CHWs	Improved knowledge and skills in diabetes self-management, and recommendations for CHW training programs
Development of an onsite and video-conference based training program	Colleran K, Harding E; et al. [26*]	23 diverse CHWs from across New Mexico	Non-randomized study training program for CHWs	New knowledge, skills and confidence for participants. The distance learning strategy allowed for extended training of a diverse group of participants
Study of CHWs by role (educator-only or educator + bridge)	Ayala GX; Vaz L; et al. [27*]	61 CHW programs in Latino communities	Systematic review of the roles of CHWs in Latino communities	Educator-only programs reached more participants and employed nearly all CHWs as staff; increased

Unique Contributions to Literature	Source	Population and Setting	Study Design and Key Elements of Intervention	Outcomes
				contact in educator + bridge.
Consensus on CHW scope of practice between CHWs and employers	Findley SE; Matos S; et al. [28*]	226 CHWs and 44 employers from New York	Non-randomized study surveying CHWs and employers on the CHW scope of practice	Nearly all CHWs willing to complete additional training; 93% of employers agreed standardized training would improve effectiveness; 5 roles identified for CHWs