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Community Health Worker Training Curricula and Intervention Outcomes in African American and Latinx Communities: A Systematic Review

Leslie B. Adams, PhD, MPH[1,2], Jennifer Richmond, PhD, MSPH[1,3], Sable N. Watson, MPH[1], Crystal W. Cené, MD, MPH[1], Rachel Urrutia, MD[1], Onome Ataga, MD[4], Phenesse Dunlap, MPH[5], and Giselle Corbie-Smith, MD, MSc[1]

Abstract

In recent years, community health workers (CHWs) have emerged as key stakeholders in implementing community-based public health interventions in racially diverse contexts. Yet little is known about the extent to which CHW training curriculums influence intervention effectiveness in marginalized racial and ethnic minority communities. This review summarizes evidence on the relationship between CHW training curricula and intervention outcomes conducted among African American and Latinx populations. We conducted a literature search of intervention studies that focused on CHW public health interventions in African American and Latinx populations using PubMed, PsycINFO, ERIC, CINAHL, EMBASE, and Web of Science databases. Included studies were quantitative, qualitative, and mixed methods studies employed to conduct outcome (e.g., blood pressure and HbA1c) and process evaluations (e.g., knowledge and self-efficacy) of CHW-led interventions. Out of 3,295 articles from the database search, 36 articles met our inclusion criteria. Overall, the strength of evidence linking specific CHW training curricula components to primary intervention health outcomes was weak, and no studies directly linked outcomes to specific characteristics of CHW training. Studies that described training related to didactic sessions or classified as high intensity reported higher percentages of positive outcomes compared to other CHW training features. These findings suggest that CHW training may positively influence intervention effectiveness but additional research using more robust methodological approaches is needed to clarify these relationships.

Keywords

African American, community health workers, health behavior, health disparities, health promotion, Latinx, training curriculum

Racial and ethnic minorities experience significant health disparities in the United States, resulting in higher morbidity and mortality than non-Hispanic Whites (Agency for Healthcare Research and Quality, 2018; Centers for Disease Control and Prevention, 2013). Specifically, African American and Latinx communities experience a disproportionate burden of chronic/preventable disease when compared to their non-Hispanic White counterparts (Murphy et al., 2018; National Center for Health Statistics, 2016). Although public health interventions focus on creating sustained changes at the community level (Braveman et al., 2011; Thornton et al., 2016), researchers conducting health promotion programs in racially diverse contexts often cite challenges in adequately reaching communities due to past sociohistorical experiences between minorities and the scientific community (Brandon et al., 2005; Scharff et al., 2010). To help address these challenges, community health workers (CHWs) have emerged as key members of an emerging segment of the health professional workforce charged with implementing and sustaining public health interventions as a means of establishing trust and creating sustainable health impacts in diverse populations (Martinez et al., 2011; Shah et al., 2014).

CHWs are broadly defined as "frontline public health workers who are trusted members of and/or have an unusually close understanding of the community served" (American Public Health Association, n.d.). Early CHW programs focused on health promotion among historically marginalized racial and ethnic communities, including African American

[1]University of North Carolina at Chapel Hill, NC, USA
[2]Johns Hopkins University, Baltimore, MD, USA
[3]Vanderbilt University Medical Center, Nashville, TN, USA
[4]University of Tennessee, Memphis, TN, USA
[5]Emory University, Atlanta, GA, USA

Corresponding Author:
Leslie B. Adams, Department of Mental Health, Johns Hopkins Bloomberg School of Public Health, 624 N. Broadway St., Baltimore, MD 21205, USA.
Email: ladams36@jhu.edu

and Latinx populations (Earp et al., 2002; Earp & Flax, 1999; Levine et al., 1994; Rhodes et al., 2007; Rosenthal et al., 2011; Swider, 2002). Since then, the CHW workforce has expanded to address health care provider shortages in rural and low-income populations (Perez & Martinez, 2008; Perry et al., 2014). CHWs are often characterized as indigenous to the communities in which they work and are known as "natural helpers" who support patients, researchers, health systems, and communities (Cornell et al., 2009; Terpstra et al., 2011). Additionally, CHWs are primarily based in community settings to serve as the liaison between health care consumers and providers to promote health among groups that are often systematically excluded from adequate care (Perez & Martinez, 2008). Thus, cultural and linguistic concordance is of upmost importance for CHWs to deliver sustained health care interventions that serve the needs of African American and Latinx communities (Jackson & Parks, 1997; Rhodes et al., 2007). As a result, CHW-led interventions are increasingly common features of public health intervention research.

Given the noted benefits of integrating CHWs into communities and health systems, it is not surprising that national policies have codified their role in health prevention discourse. Notably, the Affordable Care Act (ACA) included provisions to formalize the role of CHWs in the U.S. health care workforce by enhancing their ability to administer preventive services, participate in Medicaid programs, and contribute to innovative health care delivery models (Islam et al., 2015; Katzen & Morgan, 2014; Shah et al., 2014). More recently, formal health care organizations, such as local health departments, primary health care providers, and in some cases, state leadership, now invest resources and efforts in improving CHW skills and developing clear guidelines for training (Daaleman & Fisher, 2015; Rosenthal et al., 2010; Rutledge et al., 2018).

Despite the rapid integration of CHWs in health care delivery models, little is known about best practices for training this workforce to deliver optimal care. One potential rationale for this evidentiary gap may be the broad scope in which CHWs are characterized and utilized across intervention settings (Rosenthal et al., 2011; Swider, 2002). Indeed, scholars have widened the terminology of this workforce by using a diverse range of vocabulary, including but not limited to *promotoras*, patient navigators, lay health advisors, and community health advisors (Rosenthal et al., 2011). Each descriptor bears, to some extent, its own roles and responsibilities, but they share a common purpose to improve health outcomes in community-based interventions.

As emerging research continues to highlight racial and ethnic minority health disparities, CHWs will likely have an amplified role in national disease prevention efforts. Additional evidence is needed about common features of CHW training across this wide range of descriptors and about how these training features may be associated with intervention outcomes. This evidence could provide critical insight on training competencies needed to guide the evolution of this growing health care workforce and inform standardized training opportunities for this sector of the public health workforce. The purpose of this systematic review is twofold: (1) to synthesize features of CHW training curricula and (2) to summarize relationships between training curricula and primary and intermediary outcomes within CHW-led interventions in African American and Latinx communities. These data can then be used to inform the development of training guidelines for CHWs involved in public health interventions.

Methods

An a priori study protocol was submitted to PROSPERO (CRD42017070242), an international database of prospectively registered systematic reviews in health and social care, to guide implementation of the review. We included six databases in our review, including PubMed, PsycINFO, ERIC, CINAHL, EMBASE, and Web of Science. Original, empirical studies that focused on CHW public health interventions in African American and/or Latinx adult populations were examined for this review. To meet inclusion criteria, articles needed to describe characteristics of CHWs in the study, training details (e.g., length of training, topics covered, etc.), and participant recruitment processes. If studies included a comparator, the comparison group needed to also involve CHWs to assess whether differences between intervention and control groups were a result of training rather than the inclusion of CHWs alone, or there needed to be a pre-post comparison of outcomes in the CHW arm. We were guided by the RE-AIM Framework to support our inclusion criteria for outcomes (Glasgow et al., 1999). Specifically, we were interested in capturing reach (e.g., proportion of target population that participate in the intervention), efficacy (e.g., recording both positive and negative health outcomes), and implementation (e.g., the extent to which the intervention is implemented as intended in the real world) outcomes. Within the definition of efficacy, Glasgow and et al. (1999) categorize outcomes as biologic (e.g., A1C, blood pressure, etc.), behavioral (e.g., smoking cessation, eating patterns, etc.), and patient-centered quality of life (e.g., mental health, patient satisfaction, self-reported quality of life, etc.). We included reach, implementation, and efficacy-related outcomes in the inclusion criteria of our study to support a broad range of potential studies for our review. Thus, primary intervention outcomes of interest included change in study participant health (biologic, behavioral, and/or patient-centered outcomes) during the study period as well as intermediary process measures related to training effectiveness (e.g., reach and implementation outcomes). As specified by previous criteria set forth by Hill et al. (1996), all included interventions must have assessed outcomes after 3 months or longer.

Our searches were restricted to studies published after 2009 in the United States. Studies conducted prior to 2009 were captured in a previous peer-reviewed publication and, thus, omitted for this updated review (Viswanathan et al., 2010). We included a diverse range of study designs, including experimental and quasi-experimental designs, pre-post

Table 1. Inclusion and Exclusion Criteria.

Category	Inclusion criteria	Exclusion criteria
Population	CHWs addressing conditions among African American and Latinx communities	Studies with no racial/ethnic minorities; studies that do not include CHWs
Intervention	Study must include information on • CHW training elements (e.g., length of training, topics covered, etc.) • Description of CHWs • Recruitment procedures for CHW	Lacks description of training received by CHW
Comparator	If there is a comparator, it must include CHWs	Comparison programs that do not include CHWs
Outcomes	Study must include information on one or more of the following: • Outcomes on the effectiveness of training (e.g., self-efficacy to deliver intervention) • Process measures (e.g., proportion of CHWs completing training) • Number of community members reached/affected • Health outcomes among participants	Study does not include any health outcomes related to study goals or implementation
Geography	U.S. participants	Does not include U.S. participants
Time period	Articles published from 2009 to 2017	Articles published before 2009
Length of follow-up	At least 3 months	No follow-up or follow-up less than 3 months
Setting	CHW programs in health care setting or community setting	—
Publication language	English	Publications that are not in English
Study design and other criteria	Eligible study designs include • Randomized controlled trials • Pre-post studies • Quasi-experimental studies • Qualitative studies	Exclude • Comments/editorials • Case reports • Methods papers • Guideline articles • Meta-analyses • Systematic reviews

Note. CHW = community health worker.

designs, and qualitative studies. We excluded studies that (1) were published in languages other than English; (2) were not in line with our overall key questions; (3) omitted training descriptions; (4) included comparison programs without CHWs; (5) had a follow-up period less than 3 months; (6) were commentaries/editorials, case reports, methods papers, guideline articles, meta-analyses, or systematic reviews. Our inclusion/exclusion criteria can be found in Table 1.

Databases and Search Terms

We searched PubMed, CINAHL, PsycINFO, ERIC, Embase, and Web of Science databases for articles published between 2009 and 2017. Using the inclusion and exclusion criteria described, we worked with a health sciences research librarian to generate a Medical Subject Headings (MeSH) search strategy that included terms related to community health workers, training and curriculum, and African American and/or Latinx populations. Each abstract was independently reviewed by two trained researchers to verify whether the inclusion and exclusion criteria were met. If both reviewers concluded that the article should be included in the review, it was retained for full text review. For the full text review, two team members read each article and made a final decision about whether each article met our inclusion criteria using a standardized approach. If an article passed the full text review, the research team extracted key components of the article (described below) in the final phase of the screening process. Discrepancies between investigators were resolved by either a third reviewer or in consensus at team meetings.

Data Extraction and Synthesis

The final sample of included articles were analyzed using a standardized data extraction form developed by the research team. Using this form, team members extracted relevant data from each included article, including study characteristics, CHW training and intervention descriptions, and reported health outcomes. Included studies were characterized by intervention outcome to illustrate synthesized results. A *positive outcome study* indicates studies in which the intervention resulted in significantly improved health

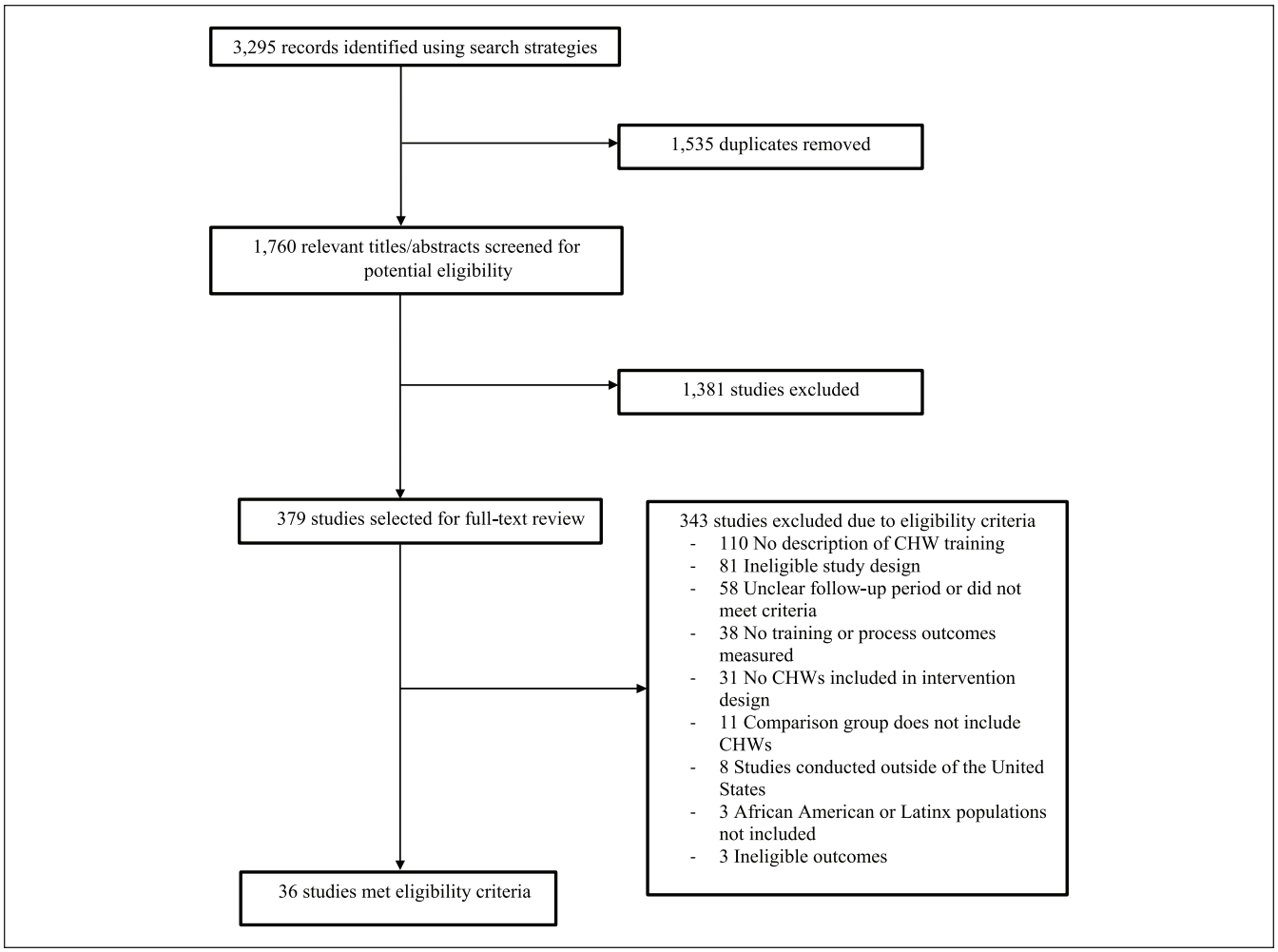

Figure 1. PRISMA diagram of included studies.

outcomes (e.g., reduced body mass index [BMI]) and/or process outcomes (e.g., improved fidelity to intervention protocol) in the target population. Studies with no significant differences following the CHW intervention were designated as *null outcome*. A *mixed outcome* study was indicated if there was either a combination of positive, mixed, and/or null findings across outcome measures. A *negative outcome* study refers to studies in which the intervention resulted in a worsened health or process outcome (e.g., increased BMI or reduced knowledge).

To assess the intensity of CHW training in each intervention, the research team identified and classified training features that signaled high resource utilization (e.g., one-on-one, face-to-face, 1 hour per session or more, 3 or more months' duration, three or more interactions, and tailored materials). Studies were then rated using categorical designations of training intensity: low intensity (one or none of the aforementioned training elements included), moderate intensity (2–3 training elements included), and high intensity (4–6 training elements included). This assessment was derived from the previously published review of CHW interventions and was adapted a priori by the research team to maintain continuity with accumulated findings on this topic (Viswanathan et al., 2010). To confirm whether reported outcomes from CHW-led studies varied by the training characteristics, we conducted Fisher's exact tests of independence due to its appropriateness in examining small sample size associations between CHW training and outcomes. Given the heterogeneous nature of the studies, we also conducted a narrative, descriptive synthesis of the extracted data to understand the relationship between CHW training features and intervention outcomes (Dixon-Woods et al., 2005). One qualitative study was excluded in this analysis due to complexities of synthesizing relevant findings from life-story interviews (Vissman et al., 2009).

Results

Study Selection

Figure 1 illustrates the PRISMA diagram for the systematic review. The initial search of selected databases yielded 1,760

Table 2. Characteristics and Overview of Included Studies ($n = 36$).

Study	Study design	Study purpose	Sample size (intervention group/ control group)	Theoretical framework	Race/ethnicity of study population	Target health outcome(s) of intervention	Key results for main intervention outcomes[a]	Process measure outcomes	Key aspects of CHW training/training intensity[b]
Andrews et al. (2012)	Randomized control trial	To test the effectiveness of using lay health advisors to increase organ donation among church members	622/632	—	African Americans	Organ transplant registry	No effect on donations between intervention and control group	No effect on attitudes	Didactic session/Low
Ayala et al. (2017)	Pre-post design	To assess a promotor-facilitated healthy lifestyle intervention	442/N/A	Social cognitive theory and ecological framework	Latinx	Obesity-related outcomes including a fitness test, blood pressure, waist circumference, weight, BMI, and physical activity	Positive effect on blood pressure, clinical hypertension, waist circumference, weight, and BMI	N/A	Didactic session; booster trainings; role playing/ Moderate
Ayala (2011)	Pre-post design	To assess a *promotor*-based physical activity (PA) intervention to improve fitness and health indicators	337/N/A	Transtheoretical model	Latinx	Obesity-related outcomes including blood pressure, waist circumference, weight, BMI, aerobic fitness, and depression	Mixed results. Positive effect on blood pressure, waist circumference, depression, and fitness tests. No effect on weight and BMI.	Negative effect on self-efficacy, positive effect on readiness to engage	Didactic session; role playing/Moderate
Brown et al. (2011)	Mixed methods (pre-post design and qualitative)	To describe a health promotion program for residents living in New York City public housing	172/N/A	—	African American and Latinx	Health care utilization	N/A	Positive effect on knowledge	Didactic sessions; role-playing; interpersonal skill-building/Moderate
Cherrington et al. (2015)	Pre-post design	To evaluate an 8-week peer support program to reduce obesity among Latinx immigrants	22/N/A	Self-determination theory	Latinx	Obesity-related outcomes (weight loss, dietary practices, caloric intake, physical activity) and depression	Mixed results on obesity-related outcomes: No effect on weight loss, positive effect on dietary practices, caloric intake. Positive effect on depressive symptoms.	N/A	Motivational interviewing, interpersonal skill-building, role-playing, and didactic sessions/ Moderate
Cornell et al. (2009)	Pre-post design	To describe a theory-based intervention designed to reduce cardiovascular disease risk among rural African American women	19/N/A	Community empowerment, diffusion of innovations, social cognitive theory	African American	Cardiovascular risk activities (tobacco cessation, physical activity, nutrition)	N/A	Positive effect on self-efficacy, knowledge, and behaviors related to giving advice to others	Didactic training, skill practice/High
deRosset et al. (2014)	Pre-post design	To test a community-based feasibility study to promote use of prenatal multivitamins among Spanish-speaking Hispanic women in North Carolina	303/N/A	—	Latinx	Daily multivitamin consumption	Positive effects on multivitamin use	Positive effect on awareness and knowledge of folic acid consumption	Didactic sessions/High
English et al. (2010)	Mixed methods (pre-post design and qualitative)	To examine a community-academic perinatal tobacco cessation program for low-income, predominately African American and Hispanic women	208/N/A	Social cognitive theory, theory of planned behavior	African American and Latinx	Tobacco cessation	N/A	Positive effects on fidelity to protocol, confidence, attitudes and beliefs, and intentions	Didactic sessions, booster trainings, motivational interviewing, role-playing/High
Faridi et al. (2010)	Nonrandomized control trial	To test the impact of a Community Health Advisor (CHA) diabetes prevention intervention in urban African American communities	121/N/A	—	African American	Physical activity, dietary pattern	No effect in physical activity, dietary patterns, anthropometric measures, or social support between groups	Mixed results. No effect on knowledge and self-efficacy for participants. Positive effect on diabetes knowledge for CHAs.	Didactic sessions and role playing/High
Flores et al. (2017)	Pre-post design	To examine the impact of the Promotora de Salud model in a folic acid study in North Carolina	1,426/N/A	—	Latinx	Folic acid use	Positive effect on folic acid and multivitamin consumption	Positive effect on awareness and knowledge of folic acid benefits	Didactic sessions/ Moderate
Ford-Paz et al. (2015)	Mixed methods (pre/post and qualitative)	To determine feasibility of a community–academic collaboration focused on mental health promotion among Latinx adolescents	5/N/A	—	Latinx	Depression	Positive effect on referrals for mental health care	Positive effect on CHW depression knowledge and mental health literacy	Didactic sessions, cultural competency training/ High
Fouad et al. (2010)	Pre-post design	To assess the impact of a community-based intervention to increase mammography screening among African American women in Alabama	1,513/N/A	Empowerment theory, the stages of change model	African American	(Cancer) mammography screening	Positive effect on more regular mammography screening	N/A	Didactic sessions and booster trainings/High
Fouad et al. (2014)	Randomized control trial	To test a CHA model to improve clinical trial participation	359/273	Empowerment theory	African American	Clinical trial participation	Positive effect on clinical trial visits and total appointments	N/A	Didactic sessions and role-playing/High
Fraser et al. (2009)	Mixed methods (pre-post design and qualitative)	To assess the efficacy of a prostate health curriculum designed to train Black barbers to deliver prostate cancer control messages to their customers	92/N/A	—	African American and Latinx	Prostate cancer screening	N/A	Positive effect on prostate cancer knowledge and willingness to discuss information	Didactic sessions and role-playing/Moderate

(continued)

Table 2. (continued)

Study	Study design	Study purpose	Sample size (intervention group/ control group)	Theoretical framework	Race/ethnicity of study population	Target health outcome(s) of intervention	Key results for main intervention outcomes[a]	Process measure outcomes	Key aspects of CHW training/training intensity[b]
Heisler et al. (2014)	Randomized control trial	To compare outcomes of a community health worker (CHW) and tailored, interactive web-based tool (iDecide) among low-income patients with diabetes	93/95	—	African American and Latinx	Diabetes	No effect on medication adherence or A1c levels	Mixed results. No effect on knowledge and self-efficacy. Positive effect on satisfaction with information.	Motivational interviewing and booster training/ High
Johnson & Van Hecke (2015)	Pre-post design	To evaluate training for an African American faith-based community health program for autism spectrum disorder (ASD) awareness	12/N/A	Self-efficacy theory	African American	Autism spectrum disorder	N/A	Positive effect on CHW attitudes, self-efficacy, confidence, and knowledge about ASD	Didactic session/ Moderate
Josiah Willock et al. (2015)	Pre-post design	To assess a community health worker intervention to reduce heart disease risk among African American women	21/N/A	Participatory approach to adult learning	African American	Cardiovascular disease	N/A	Positive effect on CHW confidence. No effect on CHW heart health knowledge.	Didactic sessions, role-playing, peer sharing and listening, booster sessions/Moderate
Kane et al. (2016)	Pre-post design	To evaluate a community health worker-led, clinic-based diabetes self-management and education program in Hispanic communities	885/N/A	—	Latinx	Diabetes	Positive effect on blood glucose (HbA1c), blood pressure, and quality of life	Positive effect on diabetes knowledge and confidence in managing diabetes	Didactic sessions, motivational interviewing/Moderate
Gutierrez Kapheim et al. (2015)	Pre-post design	To evaluate a community health worker intervention to reduce asthma in public housing communities	59/N/A	—	African American and Latinx	Asthma	Positive effect on child asthma control, caregiver quality of life, need for medication, health care utilization, and environmental home triggers	N/A	Didactic sessions, motivational interviewing, role-playing/High
Margellos-Anast et al. (2012)	Pre-post design	To implement and evaluate a community health worker model's effectiveness in reducing asthma morbidity and improving quality of life for African American children	70/N/A	—	African American	Asthma symptoms, asthma-related health resource utilization and activity-limited days, caregiver asthma-related quality of life, asthma-related triggers, medication administration	Positive effect on asthma symptoms frequency, asthma-related health resource utilization, activity-limited days, asthma-related triggers, and medication administration	Positive effect on asthma-related knowledge and caregiver's self-efficacy to manage child's asthma	Didactic sessions, continuing education sessions/High
Martin et al. (2011)	Pre-post design	To assess whether intensive asthma medication training improved medication instruction abilities among community health workers	11/N/A	—	Latinx	Asthma medication administration technique	Positive effect on asthma medication administration technique	Positive effect on asthma medication knowledge	Didactic sessions, role playing, group brainstorming/High
McCloskey et al. (2011)	Mixed methods (e.g., qualitative interviews and pre-post assessment of intervention participants)	To examine the LA VIDA diabetes intervention program as an approach to reduce racial/ethnic disparities among Hispanic individuals	Intervention participants: n = 246 for clinical assessment of HbA1c; n = 119 for follow-up questionnaire on diabetes knowledge and behavior Control: N/A	—	Latinx	Diabetes	Positive effect on HbA1c among intervention participants. Positive effect on some diabetes-related behaviors (e.g., checking feet) but not others (e.g., testing blood sugar).	N/A	Didactic sessions, on-the-job training/shadowing, ongoing workshops/ Low
Prezio et al. (2013)	Randomized control trial	To evaluate the impact of a community health worker–led diabetes education program among uninsured Mexican Americans with diabetes	90/90	Social cognitive theory	Latinx	Diabetes (HbA1c)	Mixed results: Positive effect on HbA1c. No effect on blood pressure, BMI, or lipid status.	N/A	Didactic sessions, written examination, clinical observation/Moderate
Resnicow et al. (2010)	Cluster randomized control trial	To assess the efficacy of a lay health advisor intervention to increase organ donation among African American hair salon clients	1,338/1,347	—	African Americans	Organ donation status and enrollment in an organ donation registry	Marginally significant positive effect on organ donation status; positive effect on enrollment in organ donation registry	Positive effect on pro-donation beliefs and altruism attitudes. No effect on cultural responsibility attitudes.	Didactic sessions/High
Rothschild et al. (2014)	Randomized control trial	To assess whether a community health worker intervention improved glycemic control among Mexican Americans with diabetes	73/71	Self-management theory and social cognitive theory	Latinx	Diabetes-related HbA1c and blood pressure control	Positive effect on HbA1c and physical activity. No effect on blood pressure control, glucose self-monitoring, adherence to medications, or diet.	N/A	Didactic sessions and ongoing training/High

(continued)

Table 2. (continued)

Study	Study design	Study purpose	Sample size (intervention group/ control group)	Theoretical framework	Race/ethnicity of study population	Target health outcome(s) of intervention	Key results for main intervention outcomes[a]	Process measure outcomes	Key aspects of CHW training/training intensity[b]
Sánchez et al. (2014)	Pre-post design	To report on a process evaluation of a promotora de salud intervention aimed to help Latinx participants manage hypertension	96/N/A	Social support and social cognitive theories	Latinx	Hypertension-related self-reported behaviors related to salt and sodium, cholesterol and fat, and weight control. Readiness to change (exercise readiness, fruit and vegetable readiness, intention to reduce fat in diet, salt and sodium readiness, and total readiness).	High/medium dosage of participant attendance had a positive effect on salt/sodium and cholesterol/fat behaviors (compared to low dosage). Dosage was not associated with weight behaviors. High/ medium dosage of participant attendance had a positive effect on total readiness, intention to reduce fat in diet, and salt and sodium readiness. Dosage was not associated with exercise or fruit/ vegetable readiness.	High dosage of participant attendance had a positive effect on perceived availability of community resources, but there was no effect of a medium dosage when compared to low dosage.	Didactic sessions, train-the-trainer approach/ Moderate
Santos et al. (2014)	Cluster randomized control trial	To describe the feasibility of web-based training for peer CHAs compared to a traditional in-person classroom approach	6 churches, 12 CHAs/8 churches, 16 CHAs	Dual coding theory	African Americans	Cancer Note: Article focuses on feasibility of web-based training in the context of early cancer detection	N/A	Minimal differences between intervention and control groups for some outcomes, (e.g., CHA satisfaction with training and presenting breast/prostate cancer workshops). Notable differences in other outcomes (e.g., the web-based training group was less likely to report that the training was well organized but more likely to report confidence in presenting colorectal cancer workshops).	Intervention group: web-based training portal that delivered didactic sessions. Control group: Same training as intervention group delivered in-person Moderate
Schwingel et al. (2017)	Mixed methods (pre-post design and qualitative)	To evaluate a promotora-led program designed to improve physical activity, nutrition, and stress management for Latinas	34/N/A	Transtheoretical model, social cognitive theory, RE-AIM	Latinx	Nutrition, depressive symptoms, physical activity	Positive effect on nutrition and emotional well-being/ depression. Mixed results for physical activity: Positive effect on participants classified as physically active. No effect on moderate to vigorous physical activity minutes per week.	Qualitative interviews indicated a positive effect on promotoras' motivation and feelings of preparation for program delivery.	Didactic sessions, hands-on practice/High
Smith & Kruse-Austin (2015)	Pre-post design	To evaluate the acceptability of a Community Mental Health Ambassador training	6/N/A	—	African American and Latinx	Mental health stigma, attitudes, and literacy among the Community Mental Health Ambassadors	N/A	Positive effect on mental health stigma, attitudes, and literacy.	Training manual development based on literature review and development through a community partnership, pilot testing of training manual, didactic sessions/Moderate
Swider et al. (2010)	Pre-post design	To describe the training and evaluation of a promotora diabetes self-management intervention	10/N/A	Adult learning theory	Latinx	Diabetes	N/A	Positive effect on promotora knowledge level and competency in intervention delivery	Didactic sessions, role playing, use of Freirean educational method, tailored training to meet promotora needs, built on life experiences, bidirectional feedback between trainers and promotoras, ongoing training/High

(continued)

Table 2. (continued)

Study	Study design	Study purpose	Sample size (intervention group/ control group)	Theoretical framework	Race/ethnicity of study population	Target health outcome(s) of intervention	Key results for main intervention outcomes[a]	Process measure outcomes	Key aspects of CHW training/training intensity[b]
Tang et al. (2014)	Randomized control trial	To compare the effectiveness of a peer leader vs. a community health worker telephone-based outreach intervention in sustaining improvements in HbA1c levels among Latinx adults with diabetes	60 (peer leader group)/56 (community health worker group)	Empowerment theory	Latinx	Diabetes (HbA1c)	Peer leader group: positive effect on HbA1c reduction and maintenance at 18 months. Positive effect on maintenance of improvements in blood pressure and waist circumference. Community health worker group: Mixed results. Positive effect on HbA1c reduction that was attenuated by 18 months. No effect on blood pressure maintenance at 18 months. Positive effect on maintenance of improvements in blood pressure and waist circumference.	Peer leader group: positive effect on maintenance of improvements in diabetes social support and diabetes distress. Community health worker group: Positive effect on maintenance of improvements in diabetes social support and diabetes distress.	Peer leader training: didactic sessions, motivational interviewing, practice applying skills using experiential learning. Community health worker training: didactic sessions, community outreach training, home visit experiences, cultural competency training, motivational interviewing. High intensity
Thompson et al. (2014)	Pre-post design	To evaluate a community health worker intervention aimed to increase cervical cancer screening among Hispanic women	162/N/A		Latinx	Cervical cancer screening	Positive effect on receipt of Pap test	Positive effect on some but not all knowledge and attitude items.	Didactic sessions, role playing, opportunities to practice, booster session/Moderate
Valen et al. (2012)	Pre-post design	To evaluate a community health worker diabetes education program among Hispanic individuals with diabetes	4 community health workers; 3 program participants/N/A	Self-efficacy theory	Latinx	Diabetes (HbA1c)	No effect on program participants' HbA1c. Note: All results based on descriptive statistics given the small sample size.	Positive effect on CHW diabetes knowledge. Positive effect on program participants' diabetes knowledge and self-efficacy.	Didactic sessions/High
Vissman et al. (2009)	Qualitative	To characterize the roles of male lay health advisors (Navegantes) who were part of an intervention designed to reduce sexual risk among Latinx men who are immigrants	9/N/A		Latinx	Sexual risk	N/A	Participants described key functions and facilitators of serving as a lay health advisor (e.g., clarifying misperceptions). Authors conclude that study provides preliminary evidence about the feasibility and potential effectiveness of a lay health advisor approach to reach Latinx men.	Didactic sessions/Low
Williams et al. (2009)	Mixed methods (pre-post design, and qualitative)	To describe results from a feasibility and process study of a cancer prevention intervention among African American women	161/N/A	Human ecological perspective	African American	Breast cancer prevention	N/A	Positive effect on cancer literacy	Didactic sessions/High
Woodruff et al. (2010)	Randomized two-group trial	To describe CHA characteristics, recruitment, training, retention, and performance in two randomized tobacco control interventions for Latinx individuals.	Intervention 1: 17 CHAs, 67 intervention participants Intervention 2: 18 CHAs, 132 intervention participants Control: N/A	Social cognitive learning theory, health belief model, theory of reasoned action, self-regulation/ self-control, and subjective culture/ interpersonal relations	Latinx	Tobacco control	Intervention 1: Positive effect among intervention participants regarding adult report of environmental tobacco smoke exposure and children's hair nicotine levels. Intervention 2: Positive effect among intervention participants on past-week smoking abstinence and number of cigarettes smoked.	Intervention 1: Mixed results among CHAs—positive effect on some environmental tobacco smoke exposure psychosocial outcomes but nonsignificant effect on others. Among program participants, positive effect on environmental tobacco smoke knowledge. Intervention 2: Mixed results among CHAs—positive effect on some environmental tobacco smoke exposure psychosocial outcomes but nonsignificant effect on others. Positive effect on intervention participants' smoking cessation knowledge.	Intervention 1: Educational and behavioral-rehearsal, role playing Intervention 2: Didactic sessions, role-playing, skill building, motivational interviewing, and ongoing mastery testing High intensity

Note. CHW = community health worker; BMI = body mass index; N/A = not applicable.

[a]Key results for main intervention outcomes refers to primary health outcomes associated with the focal goal of the CHW intervention.

[b]Training intensity refers to additive components of CHW training for each paper. Studies were rated using categorical designations of low intensity (one or no training elements included), moderate intensity (2–3 training elements included), and high intensity (4+ training elements included) training protocols.

Table 3. Study Characteristics of Included Studies ($n = 36$).

Study Characteristic	*n* (%)
Study Design	
Pre-post	19 (52.8)
Randomized trial	8 (22.2)
Mixed methods	8 (22.2)
Qualitative	1 (2.8)
Evaluation type	
Process	10 (27.8)
Formative	1 (2.8)
Outcome	8 (22.2)
Process + Outcome	16 (44.4)
Intensity ($n = 36$)	
Low	3 (8.3)
Moderate	14 (38.9)
High	19 (52.7)
Training feature	
Didactic lessons	35 (97.2)
Booster trainings	8 (22.2)
Theory guided	19 (52.7)
Motivational interviewing	7 (19.4)
Experiential learning	17 (47.2)
Cultural competency training	2 (5.6)
Health outcomes measured	
Obesity	6 (16.7)
Tobacco	3 (8.3)
Hypertension/cardiovascular disease	7 (19.4)
Diabetes	8 (22.2)
Cancer	5 (13.9)
Asthma	3 (8.3)
Mental health	6 (16.7)
Other	7 (19.4)

original articles; 379 articles were included for full text review and 36 were included in the final synthesis.

Characteristics of Included Studies

Characteristics of included studies are described in Tables 2 and 3. Of the 36 included studies, 44.4% ($n = 16$) of studies conducted both outcome and process evaluations of the CHW intervention. The remaining 19 studies consisted of 10 process evaluations (28%), eight outcome evaluations (22%), and a single formative evaluation (Santos et al., 2014). The majority of interventions employed pre-post study designs ($n = 19$, 52.8%), followed by mixed methods ($n = 8$, 22.2%) and randomized designs ($n = 8$; 22.2%). One study randomized two CHW-led groups to different interventions (Woodruff et al., 2010). Total sample size of included studies ranged from 5 to 2,685 participants.

Of the 36 total studies, the majority ($n = 19$, 52.7%) of CHW trainings were classified as high intensity, followed by 14 moderate-intensity trainings (38.9%) and 3 low-intensity trainings (8.3%). Didactic sessions were a common feature of all but one included study (Heisler et al., 2014; $n = 35$, 97.2%), followed by experiential learning activities, such as role-playing and shadowing ($n = 17$, 47.2%). Additional training features include booster trainings ($n = 8$, 22%), motivational interviewing ($n = 7$, 19.4%), and cultural competency ($n = 2$, 5.6%). Overall, 19 (52.7%) studies were guided by a theoretical framework, such as social cognitive ($n = 8$) and empowerment theory ($n = 3$).

Overall, CHW-led interventions included in the review spanned a wide range of physical and mental health conditions. The largest number of studies focused on diabetes ($n = 8$, 22.2%) or cardiovascular health ($n = 7$, 19.4%) outcomes. Other commonly targeted health outcomes included obesity-related measures ($n = 6$, 16.7%; e.g., physical activity, BMI, etc.), mental health ($n = 6$, 16.7%), cancer ($n = 5$, 13.9%), and asthma ($n = 3$, 8.3%). Additional topics included organ donation, multivitamin consumption, sexual activity, and health care utilization.

Do CHW Intervention Outcomes Vary by Training Features?

The results from the Fisher's exact tests determined that no training features were significantly associated with intervention outcomes. Given the null quantitative findings, we qualitatively examined the relationships between CHW training features and intervention outcomes across all studies. Figure 2 summarizes this analysis. Of note, Vissman et al. (2009) was excluded due to the study's qualitative design.

Overall, of the 35 remaining studies, 54.3% ($n = 19$) of studies had positive outcomes associated with CHW interventions (e.g., improved HbA1c levels following the intervention), followed by 42.9% yielding mixed outcomes (e.g., improved HbA1c but no changes in BMI or blood pressure), and a single study with a null association postintervention (Andrews et al., 2012). CHW intervention studies that included didactic training sessions for CHWs had a higher percentage of postintervention positive outcomes (54.2%, $n = 19$ of 35 didactic training studies) than mixed (40%, $n = 14$) or null findings (2.9%, $n = 1$). Additionally, a greater percentage of high training intensity studies had positive intervention outcomes than moderate or low training intensity studies: 61% ($n = 11$) of the 18 high-intensity studies had positive intervention outcomes compared to 58% ($n = 7$) of the 12 moderate-intensity studies and 50% ($n = 1$) of the 2 low-intensity studies. High training intensity studies also had a slightly lower proportion of mixed intervention outcomes than the studies with moderate intensity trainings (38.9% vs. 41.7%, respectively). Experiential learning trainings yielded varied results, with 47% of these studies yielding positive outcomes ($n = 8$ of 17 studies that included experiential learning) and 64% yielding mixed outcomes ($n = 9$ of 17 studies that included experiential learning). In contrast, of the 18 studies *without* an experiential learning training component, 61.1% ($n = 11$) yielded positive outcomes, 33.3% ($n = 6$) yielded mixed outcomes, and 5.6% ($n = 1$) yielded

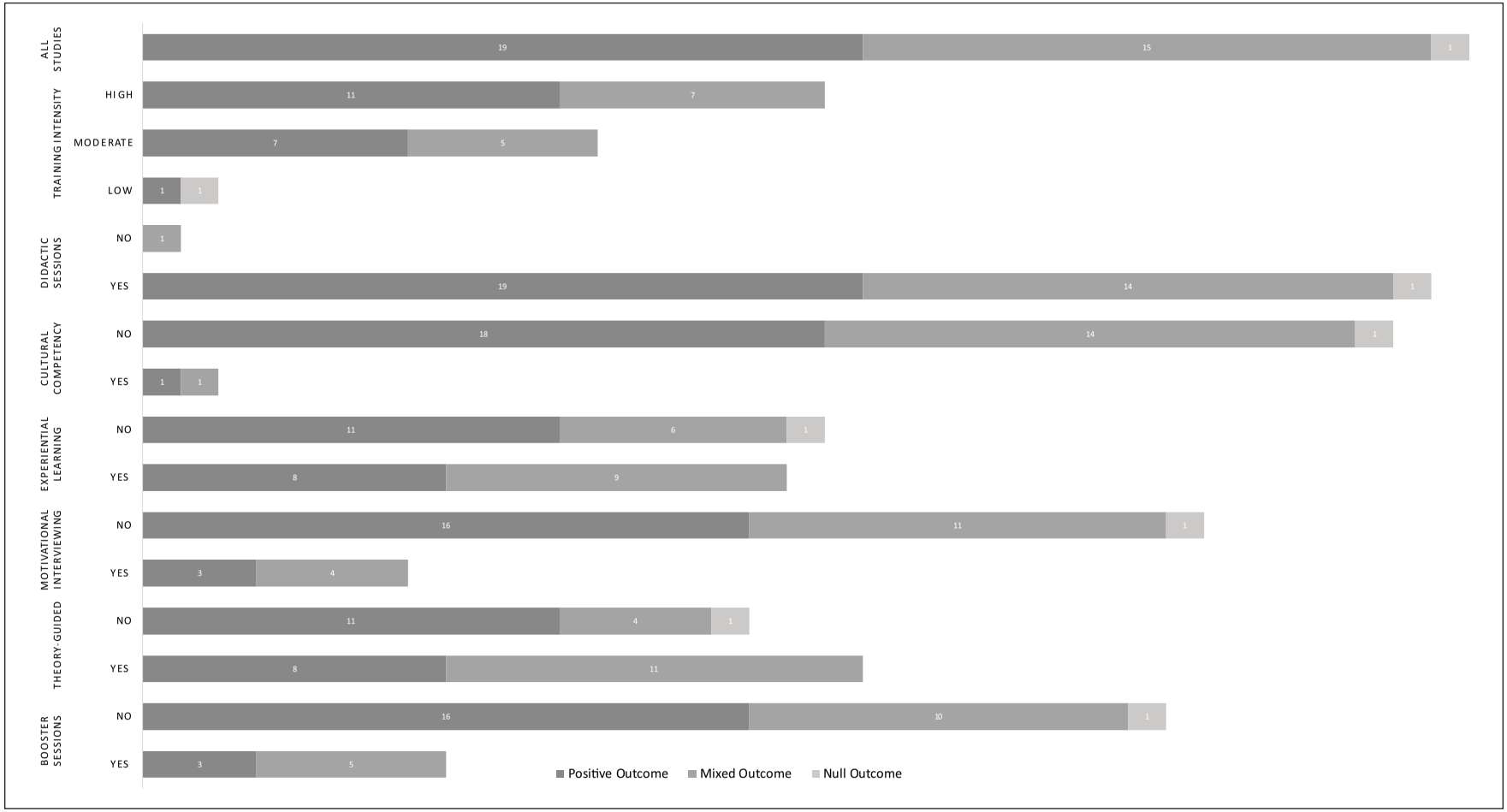

Figure 2. Relationships between CHW training features and outcomes ($n = 35$).[a]

Note. A *positive outcome study* indicates studies in which the intervention resulted in significantly improved health outcomes. A *mixed outcome* study was indicated if there was either a combination of positive, mixed, and/or null findings across outcome measures. A *negative outcome* study refers to studies in which the intervention resulted in a worsened health or process outcome (e.g., increased BMI or reduced knowledge).

[a]Vissman et al. (2009) is excluded from this analysis.

null outcomes. Of the seven studies using motivational interviewing in their CHW training curriculum, 42% ($n = 3$) yielded positive outcomes and 57.1% ($n = 4$) yielded mixed outcomes. Theory-guided studies ($n = 19$) had a higher percentage of mixed outcomes ($n = 11$, 57.9%) than positive outcomes ($n = 8$, 42.1%). Finally, of the eight trainings using booster sessions in their CHW training curriculum, 37.5% had positive outcomes ($n = 3$) and 62.5% ($n = 5$) had mixed outcomes.

Additional details on study outcomes stratified by race/ethnicity can be found in the Supplementary Materials. Overall, among the 25 studies that focused on health outcomes, 17 studies were focused on Latinx communities, six included African Americans, and two focused on both populations. The majority of the 17 Latinx-specific CHW interventions yielded positive results ($n = 9$, 53%), followed by seven studies (41%) with mixed outcomes and a single study (6%) with no intervention effect. Similarly, of the six CHW interventions within African American communities, four studies (67%) yielded positive outcomes and two studies (33%) with no effect. Studies including both African American and Latinx populations yielded mixed results with two studies reporting a positive and null effect of the CHW intervention, respectively.

CHW studies reporting process outcomes illustrated a similar pattern among Latinx communities, with the majority of the 13 total studies reporting process outcomes in a positive direction ($n = 8$, 61.5%). Of the nine total studies based in African American communities, results were more sporadic, with four (44%) positive outcome studies, four mixed outcome (44%) studies, and one study (11%) with null effect. Five studies including both African American and Latinx populations yielded four positive and one mixed outcome (80% and 20% of the combined African American and Latinx studies, respectively).

Discussion

Our systematic review identified 36 intervention studies that contributed to the literature on CHW training curricula and outcomes in African American and Latinx communities. The present study notably builds on the previous review by Viswanathan et al. (2010) by including studies that were published in the years that followed major health policy reforms in the early 2010s, such as the ACA, aimed at expanding the role of this workforce. Consistent with Viswanathan and colleagues' review, our study found that although, qualitatively, CHW interventions yielded improved health outcomes across a wide range of conditions, we were unable to find direct associations between CHW training and intervention outcomes.

One potential rationale for our findings is that there were few studies that included randomized, control designs to adequately test statistical relationships between training curricula and outcomes. Of note, we found that only 9 out of 36 total studies in our review included control groups, of which eight studies included randomization. Of these, only two randomized control studies compared outcomes between CHW-led groups. The first study, led by Tang et al. (2014), found that although both the peer-led and CHW-led interventions resulted in reduced HbA1c levels among study participants at 6 and 12 months, only the peer led group reported maintained HbA1c improvements at the 18-month time point. In addition to receiving a similar training curriculum to the CHW group, peer leaders in this study also received experiential training and had a shared lived experience of diabetes, which may be a distinguishable, but unexplored, aspect of the findings. The second study compared two sets of randomized CHW interventions aimed at tobacco cessation in local Latinx communities (Woodruff et al., 2010). Results from this study determined that both CHW trainings resulted in enhanced knowledge and attitudes toward tobacco cessation, but reported variations in self-efficacy between both groups, which yielded a classification as a mixed outcome study. Authors attribute these differences to training and maintenance differences between the two CHW groups, but did not go into further detail about which training features may have yielded this outcome.

Noted gaps in synthesized associations between training curricula and intervention outcomes also highlight opportunities for more rigorous methodological designs in future studies. Given the lack of comparative studies, forthcoming interventions should employ robust comparative, and ideally randomized, study designs to fully evaluate the impact of CHW training components compared to no training or usual care. The factorial design may be one such approach to evaluate the direct impact on training of individual curriculum elements by testing the main and interactive effects of each component on health outcomes (Baker et al., 2017; Montgomery et al., 2003). For instance, CHW studies can assess the additive effect of role playing and motivational interviewing as components of their training curricula, compared with motivational interviewing alone to assess dose-effects of CHW training on intervention outcomes. Indeed, there is precedence for this approach in extant global health literature focused on people of African descent. One study conducted by Kambarami et al. (2016) employed a 2×2 factorial design to assess the independent and additive effect of a CHW-led pregnancy health behavior intervention in Zimbabwe. They found that CHWs receiving more supportive supervision in training and intervention delivery had higher fidelity scores (e.g., higher task performance on lesson delivery), compared with those receiving more hands-off, operational supervision. Additional published protocols also outline approaches to this design in low resource settings, which could provide promising results for adapted studies with African American and Latinx populations residing in the United States (Sando et al., 2014; Shrestha et al., 2011; Yousafzai et al., 2014).

Although a quantitative relationship between training curricula and health outcomes was not established in our study, we found several qualitative trends that warrant additional attention. Studies that included didactic sessions and high-intensity trainings that included four or more resource intensive elements, such as in-person or one-on-one trainings, as part of their training curriculum had higher percentages of positive outcomes than other CHW training features. One potential concern of this high-intensity approach is the increased costs associated with delivering a more resource intensive CHW training for a given intervention. Undoubtedly, one of the initial benefits of engaging lay community members was the notion that CHWs would result in cost savings that offset current health care expenditures related to poor health outcomes and as a solution to persistent health care workforce shortage issues (Balcazar et al., 2011; Witmer et al., 1995). Future studies could focus on exploring the cost-benefit ratio of providing more intense training for CHW workers. Additionally, an emphasis on assessing the appropriate "dosage" of CHW training curricula, stratified by study population and context, may clarify the extent to which training intensity may improve health outcomes in intervention studies.

Our review also emphasizes the necessity for building community capacity to address health needs in diverse cultural settings. Only two studies included in our review incorporated cultural competency training into their respective CHW curricula, which were both aimed at reducing health disparities in Latinx communities (Ford-Paz et al., 2015; Tang et al., 2014). Specifically, suggestions for future directions from Ford-Paz et al. (2015) emphasized CHW selection and training attributes to expand on in future mental health promotion studies, such as ethnic and generational similarity to Latinx youth, emphasis on culturally relevant risk factors, and incorporating family as a core cultural value. These results highlight the promise of cultural tailoring in future research, but less is known regarding which aspects of the training process are most salient for successful public health program implementation in African American and Latinx communities. To move research beyond the current review, we suggest enhanced reporting on the CHW training process in future public health intervention studies. These suggested improvements address many of the gaps that were found in the review; notably, the lack of details regarding training quality, credentials and background of training facilitators, and additional details on the recruitment of CHWs with shared characteristics with the target population across multiple axes of identity (e.g., race/ethnicity, gender, socioeconomic status, etc.).

Our findings have several limitations. First, our search criteria were constrained by the varied descriptions of CHWs that are described in the literature (e.g., *promotoras*, patient health navigators, etc.). Due to variability in which CHWs are described, it is possible, despite collaboration with a health science librarian, that we did not capture an exhaustive list of publications encompassing this type of intervention. Second, our eligibility criteria were restricted to the inclusion of peer-reviewed publications and may be subject to publication bias, which may bias our findings away from the null. Indeed, the majority of studies in our review reported favorable intervention effects. However, our findings did not yield significant associations between training curricula and intervention outcomes due to the broad nature of outcomes and study designs included in our review. Finally, our conclusions did not capture the full heterogeneity of Latinx populations. As a result, our synthesis may not be generalizable to specific ethnicities within the Latinx community.

Conclusion

Our systematic review illustrates key evidentiary gaps in the field to inform effective training for CHWs working with African American and Latinx communities. The present study demonstrates the continued need for not only creating, but adequately disseminating evidence-based CHW curricula. In particular, there is a need for more rigorous methodological approaches that pinpoint the differential impact of training approaches to support the community health needs of African American and Latinx populations. Interventionists should consider incorporating recommendations from this review particularly in the design and implementation phases of future studies, including but not limited to (1) developing and reporting on CHW training curricula, (2) incorporating factorial or other randomized designs to assess the effect of training on outcomes, and (3) formalizing successful training protocols to build more foundational knowledge on evidence-based CHW approaches. Overall, the positive health outcomes yielded from our review suggest that CHW-led public health interventions may have largely favorable effects among racial and ethnic minority populations. Additional evidentiary support that quantifies the effect of these CHW-led programs will provide policymakers and other health care governing bodies with more support for formalizing the role and training of CHWs within community-based health care systems and beyond.

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ORCID iDs

Leslie B. Adams https://orcid.org/0000-0003-4956-271X

Sable N. Watson https://orcid.org/0000-0002-1659-278X

Supplemental Material

Supplemental material for this article is available online.

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