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Characteristics of Asian American, Native Hawaiian, and Pacific Islander Community Health Worker Programs: A Systematic Review

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Abstract

Community Health Workers (CHWs) are frontline health workers who often serve socially and linguistically isolated populations, including Asian American, Native Hawaiian, and Pacific Islander (AA and NHPI) communities in the United States (U.S.) and U.S. territories. We conducted a systematic review of the peer-reviewed literature to assess the characteristics of CHW programs for AA and NHPI communities in the U.S. and U.S. territories, generating a total of 75 articles. Articles were coded using eight domains: ethnic group, health topic, geographic location, funding mechanism, type of analysis reported, prevention/management focus, CHW role, and CHW title. Articles describing results of an intervention or program evaluation, or cost-effectiveness analysis were further coded with seven domains: study design, intervention recruitment and delivery site, mode of intervention delivery, outcomes assessed, key findings, and positive impact. Results revealed gaps in the current literature and point towards recommendations for future CHW research, program, and policy efforts.

Keywords

Community health worker; Asian American; Native Hawaiian; Pacific Islander

INTRODUCTION/BACKGROUND

Between 2000 and 2010, both Asian Americans (AAs) and Native Hawaiians and Pacific Islanders (NHPIs) experienced rapid growth, at rates of 45.6% (1) and 40.1% (2), respectively, with Asian Americans representing the fastest growing racial group in the United States (U.S.). Both groups share tremendous diversity, with over 24 AA and 20 NHPI ethnic subgroups represented in the U.S. Asian Americans and NHPIs have high rates of limited English proficiency (35%), though LEP rates among subgroups vary widely, with Vietnamese demonstrating greatest LEP among AAs (53%) and Tongans demonstrating greatest LEP among NHPIs (23%).(3,4) Studies have found that AA and NHPI communities report less positive interactions with their healthcare provider and experience greater

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difficulty in communicating with their doctors compared to White patients, and face numerous health disparities.(5–8) For this reason, professionals that bridge the gap between community members and health institutions, such as community health workers (CHWs), may be particularly effective as frontline health workers in socially and linguistically isolated and ethnically diverse AA and NHPI communities(9). Community health workers are referred to by several names, including community health educators, community aides, *promotoras*, and lay health workers. A fundamental attribute of CHWs is that they are indigenous to the community in which they work— ethnically, linguistically, socioeconomically, and experientially— providing them with a unique understanding of the norms, attitudes, values, and strengths of community members.(10–14)

Existing reviews of CHW programs have summarized the impact of CHWs on health outcomes and health behaviors and have demonstrated mixed evidence of their effectiveness in various settings (10, 11, 13, 15); however, there have been no systematic literature reviews on CHW programs focused in AA and NHPI populations. Given that CHWs offer a linguistically and culturally tailored model for health promotion and prevention, documenting the nature and characteristics of these programs for AA and NHPI populations can help practitioners, researchers, and policy makers understand gaps in current programming efforts for these two rapidly growing racial/ethnic groups. This analysis presents findings from a systematic review of the peer-reviewed literature on the characteristics of CHW programs for AA and NHPI communities.

METHODS

Search Strategy

The PRISMA method was followed to ensure a systematic process for the identification and inclusion of eligible peer-reviewed articles in the review.(16) Four databases, including Ovid MEDLINE(R), PsycINFO, CINAHL, and Web of Science were searched using cross-referenced terms for AA and NHPI and CHWs. Terms were identified using Census race and ethnicity subcategories for AAs(1) and NHPIs(2) and consulting a comprehensive list of CHW synonyms (See Table 1).(10–14)

Inclusion/Exclusion Criteria

Included articles met several criteria. Each article 1) was published between 1990–2014; 2) described a study or program based in the U.S. or U.S. Territories; 3) described activities directly associated with an AA and NHPI CHW intervention, formative research for an AA and NHPI CHW intervention, or an AA and NHPI CHW training program; 4) described a program that worked with adult populations; and 5) described a study or program in which at least 50% of participants were of AA or NHPI descent. Articles that did not meet these criteria were excluded. Case studies or program descriptions that did not include an evaluation, as well as conference abstracts or proceedings, were also excluded.

Search Outcome

Figure 1 demonstrates the review process. CHW synonyms cross-referenced with AA and NHPI search terms generated 553 records, excluding duplicate records. The records were

independently reviewed by two reviewers for inclusion. Discrepancies between reviewers were documented, discussed, and consensus was made, including a third reviewer, as needed. Of the generated records, 478 records were eliminated due to the exclusion criteria noted above. Examples of records that were eliminated included CHW studies based outside the U.S. or U.S. Territories, articles that recommended strategies involving CHWs but did not describe a particular CHW study, and student programs using peer educators. In addition, our review did not include CHW studies that reported a primarily non-Asian, multi-ethnic sample. Because a large part of the value of CHW programs is that it is a culturally and linguistically tailored approach, studies where CHWs worked with multi-ethnic populations may not reflect the true nature of CHW efforts.

The aforementioned search methodology resulted in 75 articles included in the review. A list of references included in the review is available upon request.

Data Extraction and Synthesis

The 75 articles were reviewed and coded independently by two reviewers using 8 domains that described key program characteristics, including: ethnic group, health topic addressed, geographic location, funding mechanism, type of analysis reported, prevention (primary/secondary) and management focus, CHW role, and CHW title. Articles were grouped by domain and numbers of articles in each domain were counted.

Articles which described an intervention or program evaluation, or cost-effectiveness analysis were further coded using 7 additional domains, including: study design, intervention recruitment site, intervention delivery site, mode of intervention delivery, study outcomes reported, key findings, and whether main study outcome findings were positive.

As with the abstract review, discrepancies between coders were reviewed and consensus was made, including by a third coder as needed. The domains, domain definitions, and corresponding categories are described in Table 2.

RESULTS

Table 3 presents a summary of the characteristics of all articles that were included in the review.

Ethnic Groups

The majority of articles represented studies or programs conducted in specific subgroups, with the Vietnamese, Chinese, and Korean communities among AAs and Native Hawaiian and Samoan among NHPIs most frequently represented. Some subgroups, such as the Asian Indian community, have only limited representation in the literature despite being the second largest AA subgroup in the U.S. Further, while it is encouraging that CHW programs are being implemented in some of the most linguistically isolated Asian communities, including the Bangladeshi, Cambodian, Laotian, and Hmong population, studies are limited in number. The lack of ethnic diversity represented among CHW programs is also notable in the NHPI community, with a limited number of studies conducted in the Chamorran, Chuukese, Marshallese, Micronesian, Tongan, and other PI communities.

Geographic Location

CHW programs are not geographically distributed across the U.S., but are concentrated in areas with the largest AA and NHPI populations. CHW programs for AA communities were concentrated in the Western region of the U.S. (48/75 articles), with the majority based in California. However, Northeastern regions, where there is also a substantial density of AAs, had relatively limited representation in the CHW literature, with most studies concentrated in New York. Further, no articles described CHW programs in New Jersey or Texas, home to a substantial AA population.(1) For NHPI communities, the majority of articles represent studies based in Hawaii and the U.S. Territories (with most articles generated from one study conducted in American Samoa). Only 3 articles represent studies conducted in California,(17–19) which has the largest populations of NHPIs in the mainland U.S., and no studies were conducted in states such as Texas, Florida, or Utah, home to substantial NHPI populations.(2)

While existing programs are located in areas with large AA and NHPI communities, these populations are also growing rapidly in non-traditional settlement areas where culturally and linguistically appropriate community resources may be scarce and the need for CHW programs is greater. Studies with AA and NHPI communities were poorly represented in the Midwest and South, despite having the fastest rates of AA and NHPI growth in the last decade.(20, 21)

Primary/Secondary Prevention and Management Focus

The majority of articles described prevention programs (53/75 articles), primarily early detection of cancer through screening. There were a limited number of studies addressing disease management (20/75 articles), and none focused on addressing social determinants of health and access to healthcare.

Funding Mechanism

Most programs were federally funded (56/75 articles), in particular by the National Cancer Institute, and state and private funding for these programs was limited.

Health Topic

The majority of articles focused on cancer disparities (41/75 articles), the leading cause of death among AAs and NHPIs, with breast and cervical cancer as the top two focus areas. However, hepatitis B and liver cancer, which disproportionately affect AAs, were only addressed in 5 articles.(22–26) The growing burden of heart disease, diabetes, and associated risk factors such as hypertension and obesity are reflected in the growing number of studies reporting CHW interventions in these health topic areas (24/75 articles). Other leading health issues in this population, however, including maternal or child health, injury, and HIV/AIDS, were poorly represented in the literature or not at all.(27)

There are few CHW programs addressing mental health, another significant disparity area for AAs and NHPIs.(28) Few CHW studies addressed modifiable risk factors such as obesity, physical activity, or nutrition, or systems level issues such as access to care.

CHW Title and Role

We found that few studies (24/75 articles) are using the CHW or promotora title in describing the health professionals who are delivering programs or interventions. Instead, the majority of studies utilize a range of terms, including lay outreach workers, patient navigators, or health educators. The CHW/promotora title was utilized in 24 of the reviewed articles, and CHWs were most often employed to engage in health education and counseling (51/75 articles), recruitment and outreach (33/75 articles), and to conduct study or program follow-up with community members (39/75 articles); CHWs also had multiple roles across studies.

CHW Intervention, Program Evaluation, or Cost-Effectiveness Analysis Characteristics

Table 4 enumerates characteristics of a subset of articles that represented a CHW intervention, program evaluation, or cost-effectiveness analysis. Forty-seven of the seventy-five articles described an intervention or health program evaluation, and only two described a cost-effectiveness analysis. Of these articles, approximately half (26/49 articles) reported randomized control trial study designs, and all but two articles assessed clinical, behavioral, or program evaluation outcomes. These two articles represented an intervention protocol and a description of the cultural translation process for an intervention (29, 30). The majority of articles reported community-based recruitment, including 33/49 articles that reported community-based recruitment only and an additional 5/49 articles that reported both community- and clinic-based recruitment. The majority of articles reported intervention delivery within community settings, including 31/49 articles that reported a community-based intervention delivery site and an additional 12/49 articles that reported both community- and clinic-based intervention delivery. Articles reported an approximately even distribution of intervention delivery through one-on-one counseling with the CHW, group education delivery, or a combination of both. Analysis of main study findings demonstrates more than half (25/49) of the articles reported statistically significant positive study findings for the main study outcome. There were limited studies on training and capacity-building efforts for CHWs (11/75 articles).

Table 5 contains a summary of all articles that described an intervention or health program evaluation, or cost-effectiveness analysis, including study design, geographic location and target ethnic group of the intervention, mode of intervention delivery, key findings from each study, and whether key study findings were positive. Multiple articles representing one parent study were organized into a study family.

DISCUSSION

The findings from our systematic review demonstrate that there is a robust literature on CHW programs in AA and NHPI communities. However, the review suggests several areas of expansion for CHW efforts. First, an increased number of CHW programs that target specific AA and NHPI ethnic subgroups, particularly those subgroups with high rates of limited English proficiency that are currently underrepresented in the literature, should be supported. Community health worker programs included in this review do not adequately address the ethnic and cultural diversity in AA and NHPI populations. Community health

workers provide contextualized, culturally-relevant health promotion strategies, and ensuring that programs are developed for specific subgroups is important. Second, CHW programs should be geographically expanded to reach the growing AA and NHPI populations across the country and affiliated territories. Third, our review suggests that CHWs are underutilized in addressing a range of health issues, including mental health disparities, HIV/AIDS, and occupational health/injuries in both AA and NHPI communities, and can be more widely used to address some of the unique leading causes of morbidity and mortality in particular AA and NHPI subgroups (for example, hepatitis B in Chinese and Korean communities or diabetes in South Asian and NHPI communities). In addition, few studies assessed CHWs' roles in addressing social determinants of health. CHWs are natural community leaders, who share understanding of the life circumstances and social context that have an impact on health and disease vulnerability of community members; as such, they may be in a unique position to influence social factors such as social connectedness, social capital, and social support. Our review suggests that CHWs are being underutilized in these capacities.

Several of our findings have important implications for the movement towards the professionalization of CHWs and integrating CHWs into the healthcare workforce. Given the paucity of articles on training efforts for CHWs generated from our review, there should be increased efforts to document and evaluate systematic, core-competency based training of CHWs in AA and NHPI populations. In addition, our findings suggest that increased efforts should be made to utilize the CHW title in describing individuals who carry out CHW roles. Importantly, the roles carried out by CHWs were fairly consistent across studies, with the majority of programs reporting that CHWs are engaging in health education and counseling, recruitment and community outreach, and follow-up with program/study participants. As such, standardization in the CHW title and aligning that title with roles will both advance recognition of the unique contributions of this workforce as well as our understanding of CHWs' varied roles and effectiveness across disease conditions, contexts, and communities. The standardization of the CHW title and role will continue to be particularly important as CHWs have an increasingly prominent role in the Patient Protection and Affordable Care Act (PPACA) and other policy initiatives.(31–33)

It is encouraging that the majority of articles described studies employing CHWs in community settings, speaking to their potential for bridging communities to healthcare systems. However, our review also revealed a limited number of articles that report clinic-based recruitment and implementation for CHW programs, underscoring the lack of integration of CHWs within clinical settings and clinical teams.(34) Policy efforts to encourage the development of the CHW workforce within the clinic setting – such as those outlined in PPACA(31, 32) – would provide opportunities to increase clinic-based recruitment and program implementation in AA and NHPI populations and support long-term sustainability of CHWs. Additionally, increasing the number of programs employing both clinic- and community-based recruitment may increase the scope and reach of CHW research or program efforts. Relatedly, our review suggests that CHW programs largely focus on prevention efforts, an important means of combating health disparities in these populations. CHWs are well suited to address contextual factors that affect health; therefore, increasing the number and scope of programs that address issues such as access to

healthcare or health promotion is important. For example, CHWs may play an expanded role in facilitated health insurance enrollment in coming years, as well as in serving to link communities to clinical settings.

However, this finding also suggests a missed opportunity and the potential need to evaluate CHW effectiveness in disease management programs. CHWs are uniquely positioned to provide culturally and linguistically tailored disease management strategies and can serve as a source of peer support. Increasing the number of CHW programs focused on secondary prevention and disease management in AA and NHPI communities may be beneficial. In our current healthcare context, CHW programs are almost entirely funded by grant programs. Our study finding that the majority of CHW programs are funded by federal grants has significant implications. First, state-based funding agencies, which may have a better understanding of local populations, should increase CHW programming efforts in AA and NHPI populations. More importantly, however, efforts to enhance the sustainability and scalability of CHW programs must be connected with reimbursement mechanisms for their service. New payment models promoted by the PPACA offer new opportunities to fund and sustain CHWs.(31) Further documentation of the cost-effectiveness of CHWs (our review found only two such articles) will be important in advancing this policy agenda, which has also been advanced in other reviews of the CHW literature(34).

Finally, our systematic review indicates that the current body of literature on CHW programs in AA and NHPI communities demonstrates increasing rigor in terms of study design. Although a full quality assessment of CHW effectiveness is beyond the scope of this paper, our findings demonstrate that a substantial number of CHW programs report positive main outcome findings that are statistically significant. Thus, CHWs should continue to play a role in improving the health of AA and NHPI communities.

CONCLUSION

Viswanathan and colleagues' review of CHW programs reported that CHWs may serve as a means of improving outcomes for underserved populations for some health conditions. However, the authors recognized the need for further research and assessments to fully evaluate the scope and effectiveness of CHW interventions.(11) Our analysis represents the first systematic review of CHW efforts in AA and NHPI communities.

Some limitations of this review should be noted. First, our review does not include an assessment of CHW programs or studies in development that may not be represented in the peer-reviewed literature. We suspect that there are a considerable number of local and state-wide CHW efforts that are not reported in the peer-reviewed literature; however, an accurate assessment of these programs is beyond the scope of this analysis. Peer-reviewed publications in scientific journals remain an important source of information on CHW research and programmatic activities, and efforts should be made to more consistently and comprehensively report on CHW programs in such publications. Similarly, descriptions of CHW programs or case studies without an evaluation component were not included.

Despite these limitations, the results of our review help to fill a gap in the current literature by characterizing CHW programs in AA and NHPI populations and pointing to targeted areas for future research to assess the efficacy and effectiveness of CHWs for a diversity of health/disease content areas, geographic settings, and ethnic groups. Continued efforts towards documenting existing CHW programs in these communities, understanding the mechanisms through which CHWs improve health outcomes for AAs and NHPIs, as well as increasing the scope and breadth of programs for these populations are important means of strengthening the scientific knowledge base for CHW research, programs, and policies.

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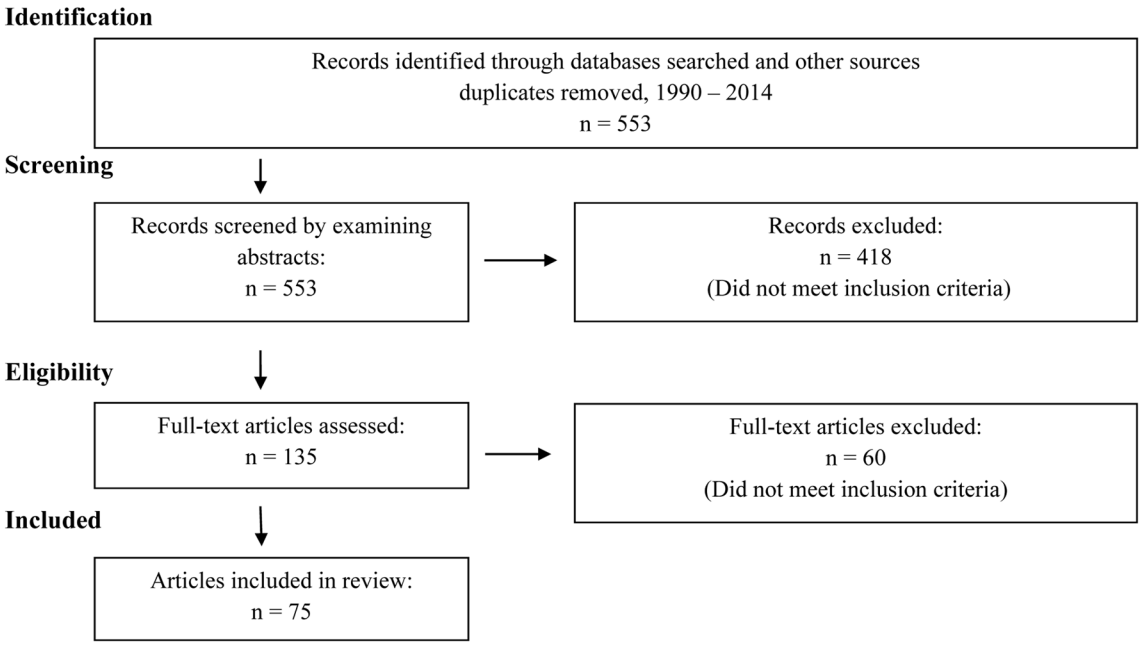

FIGURE 1.
Results of Literature Search

TABLE 1

Review Search Terms

Community Health Workers Search Terms
community aide
community health advisor
community health advocate
community health aide
community health educator
community health navigator
community health representative
community health specialist
community health worker
Community Health Workers/
Health Educators/
health educator
health paraprofessional
health promoter
lay health worker
lay health educator
lay health advocate
outreach worker
outreach educator
peer educator
promotora
patient navigator
Asian[a] American[b] and Native Hawaiian & Pacific Islander[c] Search Terms
Afghani
Asian
Asian Americans/
Asian American
Asian Indian
Bangladeshi
Bhutanese
Burmese
Cambodian
Carolinian
Chamorro
Chinese
Chuukese
Fijian
Filipino or
Pilipino

Guamanian
Hmong
I-Kiribati
Japanese
Korean
Kosraean
Maldivian
Mariana Islander
Marshallese
Melanesian
Micronesian
Native Hawaiian
Nepalese
Nepali
Ni-Vanuatu
Okinawan
Pacific Islander
Pakistani
Palauan
Papua New
Guinean
Philippino
Pohnpeian
Polynesian
Salpanese
Samoan
Singaporian
Solomon Islander
Sri Lankan
Tahitian
Taiwanese
Thai
Tongan
Tokelauan
Vietnamese
Yapese

[a] "Asian" refers to a person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent.

[b] Each individual AA Subgroup was searched in combination with "and American" or "and immigrant".

[c] "Native Hawaiian or Other Pacific Islander" refers to a person having origins in any of the original peoples of Hawaii, Guam, Samoa or other Pacific Islands.

TABLE 2

Domains and Corresponding Categories

Domain	Definition	Subcategories	
Geographic Location	Region in which CHW intervention took place. When geographic setting was undefined in the article, author's affiliation used as a proxy.	• West • Northeast • U.S. Territories • Midwest • South • National/Multiple States	
Ethnic Group	Ethnic Group of the target population for the CHW intervention, as identified in the article. Ethnic group categories are based on defined 2010 Census sub-group categories for AA and NHPI.	• Asian Indian • Bangladeshi • Cambodian • Chamorro • Chinese • Chuukese • Filipino • Hmong • Japanese • Korean	• Laotian • Marshallese • Micronesian • Native Hawaiian • Pacific Islander • Samoan • Thai • Tongan • Vietnamese • Multi-ethnic
Funding Mechanism	Funding source for the intervention. If study had multiple sources of funding or combinations it was indicated as such.	• Federal • Multiple Sources • Private • State	
Health Topic	The primary health topics that the CHW intervention addressed.	• Cancer • Diabetes/CVD • Hepatitis B • Mental Health • Smoking Cessation • Maternal/Child Health • Health Access/Utilization • HIV/AIDS • Occupational Health/Injury	
Primary/Secondary Prevention and Management Focus	Whether the CHW intervention focused on preventing disease, managing or treating illness, or addressing determinants of health.	• Primary prevention • Secondary prevention & disease management • Both primary prevention and Secondary prevention & disease management • Other	
CHW Title	Terms used to identify CHWs.	• CHW/Promotora • Other	

Domain	Definition	Subcategories
CHW Role	Activities in which CHWs are involved, as described in the article.	• Health Education and/or Counseling • Follow-up • Recruitment/Community Outreach • Data Collection • Patient Navigation and/or Referral to Services • Other/Undefined
Type of Analysis Reported	Descriptive focus of the article.	• Intervention or health program evaluation • Formative Research • Training/Capacity Building • Cost-effectiveness analysis
Study Design	Study design reported in the article (articles coded as intervention or health program evaluation or cost-effectiveness analysis only).	• Randomized Control Trial • One group/No comparison • Non-randomized control trial • Other
Intervention Recruitment Site	Where participant recruitment occurred (articles coded as intervention or health program evaluation or cost-effectiveness analysis only).	• Community-based • Clinic/Hospital-based • Both
Intervention Delivery Site	Where the intervention occurred (articles coded as intervention or health program evaluation or cost-effectiveness analysis only).	• Community-based • Clinic/Hospital-based • Both • Undefined
Mode of Intervention Delivery	Intervention format (articles coded as intervention or health program evaluation or cost-effectiveness analysis only).	• One-on-one education & counseling • Group education & counseling • Both
Study Outcomes Reported	Clinical, behavioral, or program evaluation outcomes were assessed (articles coded as intervention or health program evaluation or cost-effectiveness analysis only).	• Yes • No
Positive Main Study Outcome Reported	The study's main study outcome, as described by the authors, achieved the desired effect (e.g. Increase in breast cancer screening) among participants in the CHW arm or program	• Yes, statistically significant finding • Yes, non-statistically significant finding • Yes, statistically significant finding in both CHW and non-CHW arms/programs • No • N/A

TABLE 3

Characteristics of all papers reviewed (n = 75).

Study Characteristic	Description	Number
Geographic Location*	West	48
	Northeast	16
	U.S. Territories	7
	Midwest	2
	South	3
	National/multiple sites	0
Ethnic Group*	Asian Indian	2
	Bangladeshi	4
	Cambodian	8
	Chamorro	2
	Chinese	12
	Chuukese	3
	Filipino	10
	Hmong	3
	Japanese	1
	Korean	11
	Laotian	4
	Marshallese	2
	Micronesian	1
	Native Hawaiian	12
	Pacific Islander	3
	Samoan	10
	Thai	2
	Tongan	1
	Vietnamese	15
	Multi-ethnic	2
Funding Mechanism	Federal	56
	Multiple Sources	9
	Private	5
	State	5
Health Topic*	Cancer	41
	Diabetes/CVD	24
	Hepatitis B	5
	Mental health	3
	Smoking cessation	2
	Maternal/child health	1
	Health access/utilization	0

Study Characteristic	Description	Number
	HIV/AIDS	0
	Occupational health/injury	0
Primary/Secondary Prevention and Management Focus	Primary Prevention	53
	Secondary Prevention & Disease Management	16
	Both Primary Prevention and Secondary Prevention & Disease Management	4
	Other	2
CHW Title	CHW/promotora	24
	Other	51
CHW Role*	Health education and/or counseling	51
	Follow-up	39
	Recruitment/community outreach	33
	Data collection	24
	Patient navigation and/or referral to services	24
	Other/Undefined	13
Type of Analysis Reported	Intervention or health program evaluation	47
	Formative research	15
	Training/capacity building	11
	Cost-effectiveness analysis	2

* Multiple categories may have been selected.

TABLE 4

Characteristics of intervention/health program, evaluation, or cost-effectiveness/analysis papers (n=49).

Study Characteristic	Description	Number
Study Design	Randomized Control Trial	26
	One group/no comparison	13
	Non-randomized control trial	8
	Other	2
Intervention Recruitment Site	Community-based	33
	Clinic/hospital-based	11
	Both	5
Intervention Delivery Site	Community-based	31
	Clinic/hospital-based	4
	Both	12
	Undefined	2
Mode of Intervention Delivery	One-on-one Education & Counseling	17
	Group Education & Counseling	14
	Both	18
Study Outcomes Reported	Yes	47
	No	2

TABLE 5

Summary of Intervention & Cost Analysis Study Findings (if outcomes assessed)

Parent Study	Study	Study Design	Ethnic Group & Geographic Location	Mode of Intervention Delivery	Key Findings	Positive Main Study Outcome Reported
Breast Cancer Screening Intervention in Southern California Chamorro Community	Tanjasiri et al. 2008	Non-randomized control trial	Chamorro; West	Group	The intervention did not increase women's knowledge, attitudes, or screening behaviors.	No
Breast Cancer Screening Intervention in Southern California Hmong Community	Tanjasiri et al. 2007	Non-randomized control trial	Hmong; West	Group	The education intervention significantly increased knowledge, attitudes, behavioral intention (for women) and support (for men) from pretest to posttest. For women, there were significant increases in knowledge of risk factors (p<.0001) and positive attitudes toward breast cancer and prevention (p=.02). Women significantly increased their intention to get both a clinical breast exam and mammogram in the next year. For men, there were significant increases in knowledge of risk factors (p<.0001) and positive attitudes (p=.02), as well as beliefs concerning support for women (p<.0001).	Yes, statistically significant finding
Breast Cancer Screening Intervention in California Korean Community	Maxwell et al. 2010	RCT	Korean; West	Individual	Among women who completed the survey at 6-month follow-up, self-reported completion of follow-up procedures was 97% in the intervention arm and 67% in the control arm (p<.001). Based on an intent-to-treat analysis of all women who were randomized and an assumption of no completion of follow-up exam for women with missing outcome data, self-reported completion of follow-up was 61% in the intervention arm and 46% in the usual care control arm (p<.069).	Yes, non-statistically significant finding
Breast Cancer Screening Intervention in Maryland Korean Community	Han et al. 2009	One group/no comparison	Korean; South	Both individual & group	Rates of breast cancer screening behaviors significantly increased at 6-months (p< .001); changes between pre- and post-intervention were 31.9% for mammography, 23% for clinical breast examination and 36.2% for breast self-examination. Modesty toward screening significantly decreased over time, but we did not find any significant differences in breast cancer knowledge and beliefs before and after the intervention.	Yes, statistically significant finding
Breast and Cervical Cancer Screening Intervention in Southern California Southeast Asian and Pacific Islander Communities	Ngoc Nguyen et al. 2008	Program Evaluation	Cambodian, Laotian; West	Both individual & group	Community Health Navigators (CHNs) provided informational and instrumental support as functions of their advocacy and navigation work, which were effective in getting Cambodia and Laotian women screened. CHNs also provided affective and emotional aspects of support necessary to convey empathy and respect and to establish trust with community members.	N/A
Breast and Cervical Cancer Intervention in Northern California Vietnamese Community (a)	Bird et al. 1998	Non-randomized control trial	Vietnamese; West	Group	In the intervention community, recognition of screening tests increased significantly between pre- and post-intervention surveys: clinical breast examinations (CBE), 50 to 85%; mammography, 59 to 79%; and Pap smear, 22 to 78% (p=.001 for all). Receipt of screening tests also increased significantly: CBE, 44 to 70% (p=.001); mammography, 54 to 69% (p=.006); and Pap smear, 46 to 66% (p=.001). Best-fitting logistic regression models, adjusting for pre-intervention rates and significant covariates, also showed statistically significant odds ratios for the intervention effect (p<.0001).	Yes, statistically significant finding
Breast and Cervical Cancer Intervention in Northern California Vietnamese Community (b)	Lam et al. 2003	RCT	Vietnamese; West	Group	At post-intervention, significantly more Lay Health Worker Outreach (LHWO) + Media Education (ME) women understood that HPV and smoking cause cervical cancer. The number of women who had obtained a pap test increased significantly among women in both LHWO+ME and ME groups, but substantially more in the LHWO+ME group. Significantly more LHWO+ME women said they intended to have a Pap test.	Yes, statistically significant finding in both CHW and non-CHW arms/ programs
	Nguyen et al. 2006	RCT	Vietnamese; West	Group	Overall response rate was 56%. Pap test receipt increased in intervention (77.5% to 84.2%, p<0.001), but not in comparison community (73.9% to 70.6%, p>0.05). In multivariate analyses, intervention was associated with increased Pap test receipt (OR 2.02, 95% CI 1.37–2.99). Other factors associated with increased Pap testing were longer U.S. residence, having health insurance, having a regular site of care, having a respectful physician, having a non-Vietnamese or a female Vietnamese physician, and recalling exposure to Vietnamese-language media about Pap testing. Factors associated with reduced likelihood of Pap test receipt were age 65 years and older, never married, less than high school education, and income below poverty level.	Yes, statistically significant finding
	Mock et al. 2007	RCT	Vietnamese; West	Both individual & group	Cervical cancer testing increased among women in both the combined intervention (65.8% to 81.8%; p<.001) and media-only (70.1% to 75.5%; p<.001) groups, but significantly more in the combined intervention group (p=.001). Among women never previously screened, significantly more women in the combined intervention group (46.0%) than in the media-only group (27.1%) obtained tests (p<.001). Significantly more women in the combined intervention group obtained their first Pap test or obtained one after an interval of more than 1 year (became up-to-date; 45.7% to 67.3%, respectively; p<.001) than did those in the media-only group (50.9% to 55.7%, respectively; p=.035).	Yes, statistically significant finding in both CHW and non-CHW arms/ programs
	Nguyen et al. 2009	RCT	Vietnamese; West	Both individual & group	The Lay Health Worker (LHW) + Media Education (ME) group increased receipt of mammography ever and mammography in the past 2 years (84.1% to 91.6% and 64.7% to 82.1%, p<.001), while the ME group did not. Both ME (73.1% to 79.0%, p<.001) and LHW+ME (68.1% to 85.5%, p<.001) groups increased receipt of clinical breast exam (CBE) ever, but the LHW+ME group had a significantly greater increase. The results were similar for CBE within 2 years. In multivariate analyses, LHW+ME was significantly more effective than ME for all four outcomes, with ORs of 3.62 (95% CI=1.35, 9.76) for mammography ever; 3.14 (95% CI=1.98, 5.01) for mammography within 2 years; 2.94 (95% CI=1.63, 5.30) for CBE ever; and 3.04 (95% CI=2.11, 4.37) for CBE within 2 years.	Yes, statistically significant finding
Cervical Cancer Screening Intervention in Pennsylvania Chinese Community	Wang et al. 2010	Non-randomized control trial	Chinese; Northeast	Group	In the 12-month interval following the program, screening rates were significantly higher in the intervention group (70%) compared to the control group (11.1%). Hierarchical logistic regression analyses indicated that screening behavior was associated with older age (OR=1.08, 95% CI=1.01–1.15, p<.05). Women with poorer English language fluency (OR=0.30, 95% CI=0.10–0.89, p<.05) and who did not have health insurance were less likely to obtain screening (OR=0.15, 95% CI=0.02–0.96, p<.05). Among health beliefs, greater perceived severity of disease was positively associated with screening behavior (OR=4.26, 95% CI=1.01–18.04, p<.05).	Yes, statistically significant finding

Parent Study	Study	Study Design	Ethnic Group & Geographic Location	Mode of Intervention Delivery	Key Findings	Positive Main Study Outcome Reported
Cervical Cancer Screening Intervention in Pennsylvania Korean Community	Fang et al. 2007	Non-randomized control trial	Korean; Northeast	Both individual & group	At baseline, 17% of participants reported having had a Pap test in the previous year. At 6 months post-intervention, 83% of women in the intervention group had obtained screening compared with 22% in the control group, chi2 (1) = 41.22, p<.001. Multivariate logistic regression analyses indicated that participation in the intervention was associated with screening (p<.001). Fewer psychosocial barriers (e.g., discomfort at having a stranger perform Pap) and greater self-efficacy was associated with screening (p<.05).	Yes, statistically significant finding
Cervical Cancer Screening Intervention in Washington Cambodian Community	Taylor et al. 2002	RCT	Cambodian; West	Both individual & group	The proportion of women in the intervention group reporting recent cervical cancer screening increased from 44% at baseline to 61% at follow-up (+17%). The corresponding proportions among the control group were 51 and 62% (+11%). These temporal increases were statistically significant in both the intervention (p<.001) and control (p=.027) groups.	Yes, statistically significant findings in both CHW and non-CHW arms
Cervical Cancer Screening Intervention in Washington Chinese Community	Taylor et al. 2002	RCT	Chinese; West	Individual	A total of 402 women responded to the follow-up survey (83% response rate). Of these, 50 (39%) of the 129 women in the outreach group, 35 (25%) of the 139 women in the direct mail group, and 20 (15%) of the 134 women in the control group reported Pap testing in the interval between randomization and follow-up data collection (p<.001 for outreach worker versus control, p=.03 for direct mail versus control, and p=.02 for outreach worker versus direct mail). Intervention effects were greater in Vancouver than in Seattle.	Yes, statistically significant finding
	Thompson et al. 2007	RCT/Cost Effectiveness	Chinese; West	Individual	A greater percentage of women who received the outreach intervention had a Pap test than women who received mailed materials or women who were in the usual care arm. The intent-to-treat cost for each additional woman to be screened for a Pap test was $ 415 in the Outreach arm and $ 676 for the Direct Mailing arm. The outreach worker intervention, though more expensive overall, was more cost-effective than the mailing intervention.	N/A
Cervical Cancer Screening Intervention in Washington Vietnamese Community	Scoggins et al. 2010	RCT/Cost Effectiveness	Vietnamese; West	Individual	For all Vietnamese women, regardless of prior history of screening, the cost per intervention was $104.0 (95% CI: $89.6–$118.4). The change in quality-adjusted life days per intervention was 1.26 (95% CI: −5.43–7.96), resulting in an incremental cost-effectiveness ratio (ICER) of $30,015 per quality-adjusted life year. The probability that the ICER exceeds $100,000 is 9.1%.	N/A
	Taylor et al. 2010	RCT	Vietnamese; West	Individual	Three quarters of the women in the experimental group completed a home visit. Ever-screened experimental group women were significantly more likely to report Pap testing (p<.02) and to have records verifying Pap testing (p<.04) than were ever-screened control group women. No significant differences between the trial arms for women who had never been screened.	Yes, non-statistically significant findings
Clinic Trials Health Education Intervention in Pennsylvania Chinese Community	Ma et al. 2014	One group/no comparison	Chinese; Northeast	Group	Fifteen of 21 measures of clinical trial knowledge showed significant changes post the intervention (p<.05). Education remained the sole demographic factor increasing clinical trial knowledge in multivariate analysis.	Yes, statistically significant finding
CRC Screening Intervention in California Filipino Community	Maxwell et al. 2013	RCT	Filipino; West	Both individual & group	Of the data included for analysis (n =123), 118 reported receipt of a fecal occult blood test (FOBT) only since the intervention, 1 reported receipt of an FOBT plus a colonoscopy, and 1 reported receipt of a colonoscopy only. Thus, a total of 120 out of 123 participants (98%) reported receipt of any colorectal cancer screening test.	Yes, statistically significant finding
CRC Screening Intervention in Northern California Chinese Community	Nguyen et al. 2010	One group/no comparison	Chinese; West	Group	Knowledge of colorectal cancer, its causes, and its screening increased significantly. Receipt of first colorectal cancer screening test increased from 0.0% at baseline to 55.7% for fecal occult blood tests, 7.1% for sigmoidoscopy, and 7.1% for colonoscopy.	Yes, statistically significant finding
CRC Screening Intervention in Northern California Vietnamese Community	Walsh et al. 2010	RCT	Vietnamese; West	Individual	1358 individuals (718 Latinos and 640 Vietnamese) completed the follow-up survey. Self-reported fecal occult blood test (FOBT) screening rates increased by 7.8% in the control group, by 15.1% in the brochure group, and by 25.1% in the brochure/telephone counseling group (p<0.01 for differences between each intervention and usual care and for the difference between brochure/telephone counseling and brochure alone). For any CRC screening, rates increased by 4.1% in the usual care group, by 11.9% in the FOBT/brochure group, and by 21.4% in the brochure/telephone counseling group (p<0.01 for differences between each intervention and usual care and for the difference between the basic and the enhanced intervention).	Yes, statistically significant finding
CRC Screening Intervention in Michigan Asian American Community	Wu et al. 2010	One group/no comparison	Multi-ethnic; Midwest	Individual	Evaluation data from 304 participants in an evidence-based educational intervention showed significantly increased knowledge and attitudes about the importance of screening. Follow-up conducted between 6 and 12 months showed that 78% of those receiving the educational intervention had been screened in the last 12 months, compared with the 37% who had ever been screened with any of the tests prior to the study.	Yes, non-statistically significant findings
CRC Screening Intervention in Oregon Asian American Community	Carney et al. 2014	RCT	Multi-ethnic; West	Group	The intervention had the greatest influence on the Chinese subgroup, which had improved scores relative to the control group for perceived behavior control and intentions (pre- vs. post-intervention change: control group, −0.16; intervention group, 0.11; p=.004), behavioral beliefs on cancer screening (pre- vs. post-intervention change: control group, −0.06; intervention group, −0.24; p=.0001), and attitudes toward behavior (pre- vs. post-intervention change control group, 0.24; intervention group, 0.35; p≤.0001). The intervention had no effect on behavioral beliefs about cancer, control beliefs, or perceived behavioral control (reliance on family). Intention to stay up to date for cancer screening increased in 2 study groups (Chinese and Vietnamese), though these increases were not significant.	Yes, statistically significant finding
CRC Screening Intervention in Pennsylvania Korean Community	Ma et al. 2009	Non-randomized control trial	Korean; Northeast	Both individual & group	There was a significant difference (p<.05) between the post-intervention and control groups in awareness of colorectal cancer (CRC) risk factors. There was also a significant improvement in the pre–post across Health Belief Model measures in the intervention group for perceived susceptibility (p<.05) and benefits and barriers to screening (p<.001). At baseline, 13% of participants in the intervention group and 10% in control group reported having had a CRC cancer screening test in the previous year. At the 12-month post-intervention follow-up, 77.4% of participants in the intervention group had obtained screening compared to 10.8% in the control group.	Yes, statistically significant finding

Parent Study	Study	Study Design	Ethnic Group & Geographic Location	Mode of Intervention Delivery	Key Findings	Positive Main Study Outcome Reported
CRC Screening Intervention in Washington Chinese Community	Tu et al. 2006	RCT	Chinese; West	Individual	The intervention had a strong effect on fecal occult blood test (FOBT) completion (intervention group, 69.5%; control group, 27.6%), and the adjusted odds of FOBT slightly increased to over 6-fold greater in the intervention arm compared with the control arm. No effect modification by age, gender, language, insurance, or prior FOBT was found.	Yes, statistically significant finding
Diabetes Management Intervention in America Samoa	DePue et al. 2013	RCT	Samoan; US Territories	Both individual & group	At 12 months, mean HbA1c was significantly lower among CHW participants, compared with usual care, after adjusting for confounders (b = 20.53; SE = 0.21; p=.03). The odds of making a clinically significant improvement in HbA1c of at least 0.5% in the CHW group was twice the odds in the usual care group after controlling for confounders (p=.05). There were no significant differences in blood pressure, weight, or waist circumference at 12 months between groups.	Yes, statistically significant finding
	DePue et al. 2013	Program Evaluation	Samoan; US Territories	Both individual & group	In the intervention sample (n = 104), 74% (SD = 16%) of planned intervention visits occurred, guided by an algorithm-based protocol. Higher risk participants had a significantly lower dose of their weekly assigned visits (66%) than those at moderate (74%) and lower risk (90%). Twenty-eight percent of participants moved to a lower risk group over the year. Estimated intervention cost was $656 per person. Participants with less education were more likely to attend optimal percentage of visits.	N/A
	Hamid et al. 2014	RCT	Samoan; US Territories	Individual	Adjusted incidence rate ratios (RR) for primary care physician visits were significantly higher in the community health worker relative to the usual care group (RR=1.71; 95% CI, 1.25–2.33). There was no main intervention effect on emergency department utilization, but visits in the prior year modified the intervention effect on emergency department visits. Increased primary care physician utilization was associated with greater decreases in HbA1c (b=−0.10, SE=0.04, p=0.01).	Yes, statistically significant finding
	DePue et al. 2010	RCT	Samoan; US Territories	Individual	Outcomes not reported.	N/A
Diabetes Management Intervention in Hawaii	Sinclair et al. 2013	RCT	Native Hawaiian, Pacific Islander, Filipino; West	Group	There were significant baseline adjusted differences at 3 months between the intervention and wait list control group in intent-to-treat (p<.001) and complete case analyses (p<.0001) for A1c, understanding (p<.0001), and performing diabetes self-management (p<.0001).	Yes, statistically significant finding
Diabetes Management Intervention in Hawaii Native Hawaiian and Samoan Community	Beckham et al. 2008	Non-randomized control trial	Native Hawaiian & Samoan; West	Individual	The mean baseline HbA1c for all eligible participants was 10.9 ± 0.8%. The 80 participants who completed CHW intervention had a 2.2 ± 1.8% (p<.01, compared with baseline) mean reduction in HbA1c, compared with a 0.2 ± 1.5% reduction for those without CHW intervention.	Yes, statistically significant finding
Diabetes Management Intervention in Marshallese Ebeye Community	Reddy et al. 2009	One group/no comparison	Marshallese; West	Group	After 6 months, statistically significant improvements were seen in the percentage of participants with blood pressure < 130/80 mmHg and weight loss of at least 10 pounds since their last visit. Minor trends toward improvement were observed in participation with; statin treatment, self-monitoring of blood glucose goals set, and nutritional counseling.	Yes, non-statistically significant findings
Diabetes Management Intervention in New York Bangladeshi Community	Islam et al. 2013	One group/no comparison	Bangladeshi; Northeast	Both individual & group	Improvements were seen in diabetes knowledge, exercise and diet to control diabetes, frequency of checking feet, medication compliance, and self-efficacy of health and physical activity from baseline to 12 months. Additionally, there were decreases in A1C, weight, and BMI. Program evaluation revealed a high acceptability of the intervention, and qualitative findings indicated that CHWs helped overcome barriers and facilitated program outcomes through communal concordance, trust, and leadership.	Yes, non-statistically significant finding
	Islam et al. 2014	RCT	Bangladeshi; Northeast	Both individual & group	Outcomes not reported.	N/A
Diabetes Prevention Intervention in Hawaii Filipino Community	Leake et al. 2012	RCT	Filipino; West	Group	Overall program attendance for the experimental and wait-listed control groups was 88% and participant satisfaction was high with 93% very satisfied.	N/A
Diabetes Prevention Intervention in Hawaii Native Hawaiian and Pacific Islander Community	Mau et al. 2010	One group/no comparison	Native Hawaiian, Pacific Islander; West	Group	In the pilot study, 239 participants were enrolled and after 12 weeks (post-program), mean weight loss was −1.5 kg (95%CI −2.0, −1.0) with 26% of participants losing ≥3% of their baseline weight. Mean weight loss among participants who completed all 8 lessons at 12 weeks was significantly higher (−1.8 kg, 95%CI −2.3, −1.3) than participants who completed less than 8 lessons (−0.70 kg, 95%CI −1.1, −0.29).	Yes, statistically significant finding
	Keawe'aimoku Kaholokula et al. 2012	RCT	Native Hawaiian, Pacific Islander; West	Both individual & group	Both Lifestyle Program (PLP) and Standard behavioral weight loss maintenance program (SBP) participants achieved significant weight loss maintenance (p ≤ . 05). Among participants who completed at least half of prescribed sessions, PLP participants were 5.1-fold (95% CI = 1.06, 24; p=.02) more likely to have maintained their initial weight loss than SBP participants.	Yes, statistically significant finding in both CHW and non-CHW arms/ programs
Diabetes Prevention Intervention in New York Asian Indian Sikh Community	Islam et al. 2014	Non-randomized control trial	Asian Indian; Northeast	Both individual & group	Changes were significant for the treatment group in weight, BMI, waist circumference, blood pressure, glucose, physical activity, food behaviors, and diabetes knowledge, and between group differences were significant for glucose, diabetes knowledge, portion control, and physical activity social interaction.	Yes, statistically significant finding
Diabetes Prevention Intervention in New York Korean Community	Islam et al. 2013	RCT	Korean; Northeast	Both individual & group	In this small pilot study, changes were seen in weight, waist circumference, diastolic blood pressure, physical activity nutrition, diabetes knowledge, and mental health. Qualitative findings provide additional contextual information that informs ways in which CHWs may influence health outcomes.	Yes, non-statistically significant finding
Hepatitis B Intervention in California Hmong Community	Chen et al. 2013	RCT	Hmong; West	Individual	Intervention group participants were more likely to report receiving serologic testing for HBV (24% vs. 10%, p=.0056) and showed a greater mean increase in knowledge score (1.3 vs. 0.3 points, p=.0003) than control group participants. Multivariable modeling indicated that self-reported test receipt was associated with intervention group assignment [OR 3.5; 95% CI 1.3–9.2], improvement in knowledge score (OR 1.3 per point; 95% CI 1.02–1.7), female gender (OR 5.3; 95%	Yes, statistically significant finding

Parent Study	Study	Study Design	Ethnic Group & Geographic Location	Mode of Intervention Delivery	Key Findings	Positive Main Study Outcome Reported
					CI 1.7–16.6), and having seen a doctor in the past year at baseline (OR 4.8; 95% CI 1.3–17.6). The most often cited reason for testing was a doctor's recommendation. CI 1.7–16.6), and having seen a doctor in the past year at baseline (OR 4.8; 95% CI 1.3–17.6). The most often cited reason for testing was a doctor's recommendation.	
Hepatitis B Intervention in New York Foreign-born Population	Perumalswami et al. 2013	One group/no comparison	Multi-ethnic; Northeast	Individual	Of 1603 persons screened, 76 had HBV and 75 had HCV. Screening for HCV based on traditional risk factors would have missed 67% of those who tested positive. Of the 76 persons with HCV infection, 49 (64%) received a medical evaluation. Of the 49 HCV-infected persons evaluated, treatment was recommended in 11 and begun in 8 (73%). Of the 76 persons with HBV infection, 43 (57%) received a medical evaluation. Of the 43 HBV-infected persons evaluated, treatment was recommended and begun in 5 (100%).	N/A
Hepatitis B Intervention in Washington Cambodian Community	Taylor et al. 2013	RCT	Cambodian; West	Individual	At follow-up, 15% of men and 31% of women reported they had received a HBV test (p=.09). HBV-related knowledge levels increased significantly among both men and women. With respect to HBV testing barriers, women were more likely than men to cite knowledge deficits, and men were more likely than women to cite logistic issues.	Yes, non-statistically significant findings
	Taylor et al. 2013	RCT	Cambodian; West	Individual	Among participants with follow-up data, 22 % of the experimental group and 3 % of the control group reported HBV testing (p<.001). The experimental and control group testing difference remained significant in an intent-to-treat analysis. The experimental group was significantly more likely than the control group to know that Cambodians have higher rates of HBV infection than whites, HBV cannot be spread by eating food prepared by an infected person, HBV cannot be spread by sharing chopsticks, and HBV cannot be spread by shaking hands.	Yes, statistically significant finding
Hepatitis B Intervention in Washington Chinese Community	Taylor et al. 2009	RCT	Chinese; West	Individual	Twenty-two (15%) of the 142 experimental group participants reported hepatitis B testing following randomization into the trial, compared to 17 (10%) of the 177 control group participants (p=0.21). At follow-up, a higher proportion of individuals in the experimental arm than individuals in the control arm knew that hepatitis B can be spread by razors (p<.001) and during sexual intercourse (p=.07).	Yes, non-statistically significant findings
Hypertension Management Intervention in Hawaii Filipino Community	Fernandes et al. 2012	One group/no comparison	Filipino; West	Group	At 12 months, significant improvements were seen in health behaviors, knowledge, and self-efficacy in managing chronic diseases. Findings showed decreases in total cholesterol from 186.25 mg/dl to 170.88 mg/dl (p=.001), low-density lipoprotein from 114.43 mg/dl to 103.04 mg/dl (p=.013), and fasting blood glucose from 117.95 mg/dl to 109.07 mg/dl (p=.034). Although these changes were statistically significant, they are small and not clinically meaningful in reducing CVD risk. The high-density lipoprotein was 3.3 mg/dl lower (worse) at 12 months (p=.003), mean values for blood pressure, BMI, and waist circumference increased.	Yes, statistically significant finding
Hypertension Management Intervention in New York Filipino Community	Ursua et al. 2014	One group/no comparison	Filipino; Northeast	Both individual & group	By the end of the intervention, significant changes were exhibited for systolic and diastolic BP, weight, and BMI (p<.01). Significant changes were not seen for medication adherence and appointment keeping, however, CVD knowledge and self-efficacy related to diet and weight management all improved significantly (p<.01). Qualitative findings provided additional information on the acceptability, feasibility, and efficacy of the intervention.	Yes, statistically significant finding
Prenatal Care Intervention in California Southeast Asian Community	Mattson et al. 2006	One group/no comparison	Cambodian, Laotian; West	Both individual & group	The majority of women were satisfied with the project, particularly the interpretation and education in native languages, and encouraged others to seek care.	N/A
Smoking Cessation Intervention in Hawaii Native Hawaiian Community	Santos et al. 2008	One group/no comparison	Native Hawaiian; West	Both individual & group	After 18 months, the intervention partner sites were at different stages of protocol adoption. More successful sites were more likely to have several champions for the program and administrative support for staff training, new programs, and integrating the Tobacco User Guide Sheet into client charts. They also showed greater success in getting smokers to set a quit date and remain smoke free for 90 days.	N/A
Smoking Cessation Intervention in New York Chinese Community	Kwong et al. 2009	One group/no comparison	Chinese; Northeast	Individual	In the process evaluation, valuable information about the components of interventions that worked well and challenges participants faced during their quit attempts was gathered from participants, doctors and the health educator. Sixteen participants (13.9%) successfully quit smoking.	N/A