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Community-Based Participatory Research and Smoking Cessation Interventions: A Review of the Evidence

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SYNOPSIS

This article presents a review of the evidence on the use of community-based participatory research (CBPR) and smoking cessation interventions. An overview of CBPR is provided, along with a description of the search methods and quality scoring. Research questions are explored to determine: if CBPR improves the quality of research methods and community involvement in cessation intervention studies; and, cessation outcomes when using CBPR approaches. Results of the review are provided along with a comprehensive table summarizing all included studies. Strengths and challenges of the CBPR approach are presented with recommendations for future research.

Keywords

Smoking cessation; tobacco cessation; community-based participatory research; action research; participatory research

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The Public Health Service (PHS) Guideline, *Treating Tobacco Use and Dependence: 2008 Update* [1], provides recommendations for tobacco cessation interventions for smokers in clinical and healthcare settings. Although tobacco cessation interventions delivered to marginalized populations in community settings have increased in the past decade, the effectiveness of novel community-based approaches is still unknown [1]. Over the past decade, one of these novel approaches, community-based participatory research (CBPR), has increasingly received credibility as a promising approach to address disparities in health outcomes in marginalized communities.

CBPR is a partnership approach to scientific inquiry that involves collaboration among community members, community partners and academic researchers throughout the research process [2]. CBPR strives for maximum feasible community participation on a continuum [3], including identifying issues to be addressed, design and delivery of interventions, evaluation of data, and dissemination of results [4,5]. Principally, as an orientation to research, CBPR can be incorporated with any research design, from descriptive studies to randomized controlled trials [3]. Compared to traditional research that is driven by academic investigators, CBPR offers the potential to improve intervention design and implementation, facilitates participant recruitment and retention, increases the quality and validity of the research, enhances the use and relevance of data, increase the rate of knowledge translation, and creates a shorter loop between research activity and community adoption of evidence-based practices [6,7].

Despite the lauded benefits and increased utilization of CBPR, there are only a few systematic reviews assessing the evidence of this approach, and none to date that have examined the evidence of CBPR and tobacco cessation interventions. The purpose of this paper is to review the relevant literature on the use, quality, and effectiveness of CBPR for smoking cessation interventions. The following research questions guided this integrative review:

1. What is the evidence that a CBPR approach improves quality of research methodology and community involvement?
2. What are the cessation outcomes of CBPR developed smoking cessation interventions?

Methods

An integrative review [8] was conducted using the following databases: Pub Med, Medline (OVID), PyscINFO, and Cumulative Index of Nursing and Allied Health Literature (CINAHL) from the dates January 1995 to June 2011. The following search terms were used: “smoking” or “smoking cessation” or “tobacco” or “tobacco cessation” AND “community based participatory research” or “action research” or “participatory research” or “academic-community partnerships” or “institutional community partnerships”. Search terms were determined after reviewing existing CBPR literature and compiling associated key words and subject headings. Reference lists were also searched of included studies for articles published that were not revealed in the initial search and for additional papers by the included authors for other supportive documents of the CBPR processes.

The following inclusion and exclusion criteria were used:

Inclusion Criteria

1. smoking or tobacco cessation intervention;
2. data-based studies with cessation outcomes reported;

3. community partner identified; and
4. description of community-partner involvement in the planning and/or execution of research.

Exclusion Criteria

1. paper not available in English;
2. tobacco prevention studies; or
3. descriptive papers only with lack of reported cessation outcomes

Data Collection and Analyses

Two authors (JOA, SDN) independently reviewed the abstracts and articles for inclusion with 100% inter-rater reliability. Data extraction was conducted by using a standardized template developed by the research team to capture all relevant data. The template was reviewed by all members of the research team and consensus reached by discussion of team members.

Quality Scoring—The quality of the community participation and research methodology was scored using information available in the published articles. The tools used for quality scoring were originally developed by Viswanathan and colleagues [5] and adapted by Chen and colleagues [9]. The tool for quality of community participation [9] had two major domains: 1) nature of community involvement (selection of research questions, proposal development, financial responsibility for grant funds, study design, recruitment and retention of study participants, measurement instruments and data collection, intervention development and implementation, interpretation of findings, dissemination of findings, and application of findings to health concern identified); and, 2) evidence of community-based research elements (structure or mechanism for shared decision making, study designed to remove barriers to community participation, assessed social determinants of health (SDOH); addressed SDOH through design, research team flexibility, individual capacity building, community capacity building, dissemination to participants, application to health related intervention or policy change, and sustainability). Each item of the tool was scored from 1 in (insufficient information), 1p (poor), 2 (fair) or 3 (good). Scores were summed and averaged, with possible scores ranging from 1–3, with higher scores indicating higher community involvement [9].

The tool [9] to score the quality of research methodology had 9 domains: research question, study population and external validity, control/comparison group, intervention/exposure, internal validity/fidelity, primary outcome measures, statistical analyses, blinding, and funding source. Scoring for this tool was the same as the quality tool described above, with possible scores ranging from 1–3, with higher scores representing higher quality and research rigor [9].

Search Results—A total of 247 abstracts were identified from the initial review. Of these, 108 were duplicates, and 122 did not meet the inclusion criteria, resulting in 17 papers for review. An additional hand search was conducted of reference lists with these included papers, yielding six additional papers, for a total of 23 papers, which described 11 cessation studies and associated CBPR partnerships.

Study Findings

Of the 11 studies, eight of these were cessation interventions targeted to adults and three to adolescents/young adults – see Table 1. All 11 studies were developed with a marginalized

community. Two studies engaged partnerships with low socioeconomic African American communities [10–15], three with Asian communities [16–22], two with American Indian communities [23–25], and one with a Native Hawaiian community [26–28].

Several studies used a CBPR approach to socio-culturally tailor the PHS Guidelines for individuals utilizing both behavioral counseling and pharmacotherapeutics [10–19, 23, 29]. Shelley and colleagues [21, 22] evaluated the effect of community-wide policy changes on cessation, in addition to a cadre of PHS based cessation programs and resources in the treatment community. Froelicher and colleagues [14, 15] enhanced their 5-week PHS guided intervention (i.e., counseling, nicotine replacement therapy) with tailored tobacco industry and media messages to reinforce tobacco industry targeting to the African American community. Santos and colleagues [26–28] implemented PHS recommendations for system level changes (i.e., 5 As - Ask, Advise, Assess, Assist, Arrange) in five health systems. Two studies used a CBPR approach to develop an internet-based cessation intervention: one for teens in school systems [30] and the other a tailored internet-based cessation for a national sample of Korean Americans [20].

Research Question #1: What is the evidence that a CBPR approach improves quality of community involvement and research methodology?

As guided by the inclusion criteria, all studies included academic or clinical investigators and community partners. Further, an advisory board or steering committee guided all intervention studies. It was evident in several studies that the original question and need for the tobacco cessation intervention originated from the community [10–15, 20, 23–25, 31,32]. In other studies, the origination was either unknown and/or originated from the academic or clinical partner. The partnerships were utilized to conduct needs assessment surveys (quantitative and/or qualitative) [10–15, 21, 22, 29, 31, 32], intervention development [10–19, 20, 21–23, 26–28, 30–32], recruitment of participants (10–28,30–32), intervention delivery [10–19, 21–28, 31, 32], evaluation [10–13, 16–19, 24–28,31,32], and dissemination [10–13, 16–19, 24, 25, 31,32].

The quality of community involvement varied, with quality scores ranging from 1.5 to 3 (highest score possible was 3). Those with lower community involvement scores tended to have challenges with participant recruitment and retention [14, 15, 29]. An exception was the study conducted by Horn and colleagues [24, 25] that tested a cessation intervention for Native American teens in school settings, and demonstrated high community involvement throughout the process (scored 3/3), yet only recruited 39% of the intended sample.

The studies with higher community scores were more likely to involve the community with dissemination [10–13, 16–19, 24, 25, 31, 32]. Dissemination in community settings was typically town hall forums or community meetings or workshops, advisory or steering groups, newsletters, and local media. Several studies implemented policy changes in the targeted setting [10–13, 21, 22, 26–28, 31, 32], which potentially may increase the likelihood of sustainability. Two of these authors [24, 25, 31, 32] described sustainability of the intervention post initial grant funding, as a result of leadership, systems and/or environmental changes, and governing infrastructures.

The quality of the research methodology varied, with quality scores ranging from 1.4 to 2.7. The seven studies with quasi-experimental or experimental designs [10–22, 24, 25, 30] scored 2.2 or higher. The remaining four studies were descriptive or observational studies with one group only [21–23, 29, 31, 32]. Eight studies measured abstinence rates at six months or longer [10–23, 29, 30], yet four of these eight studies [20–23, 30] did not biochemically validate self-report outcomes.

Research Question #2: What are the cessation outcomes of CBPR developed smoking cessation interventions?

As shown in Table 1, the cessation outcomes varied by study design, Intervention dosages and intensity, intervention content and delivery, study goals, resources, and duration. The two studies that scored 2.5 or higher quality scores for both quality in community involvement and research rigor demonstrated significant treatment outcomes for the six-month cessation compared to the control condition. For example, Wu and colleagues [16–19] partnered with the Asian Community Health Coalition in New York City, which was part of the larger Asian Tobacco Education and Cancer Awareness Research (ATECAR) Special Population Network [18]. A series of formative studies were conducted, with the team revising the study design and implementation over time, leading to the development of an intervention with tailored motivational interviewing counseling sessions, packet of self-help materials, and nicotine replacement therapy (NRT). The investigators worked with the coalition and community members to tailor the intervention to meet the cultural and linguistic needs of the Chinese American community. The 7-day point prevalence abstinence at six months was 67% in the treatment condition compared to 32% in the control condition [19].

Similarly, Andrews and colleagues [10–13] partnered with public housing officials and residents to develop a multi-level cessation intervention for African American women (i.e., *Sister to Sister*) in public housing neighborhoods. The original interest for the intervention was generated by a community partner, and over time, the partners developed an intervention with four major components: neighborhood-level component (two anti-smoking activities and one policy change); peer groups (behavioral counseling); 1:1 coaching sessions by community health workers; and NRT. The 7-day point prevalence abstinence at six months was 39% in the treatment condition compared to 11.5% in the control condition [12]. It is noteworthy that both of these studies adapted the PHS Guideline recommendations for the engaged community, as well as incorporated the local context of the community to develop and implement the intervention. Both of these studies were considered pilot studies for larger randomized trials, and based on these pilot data the *Sister to Sister* Intervention is currently being tested in a larger trial in 16 neighborhoods (NIH Grant # 5 R01HL090951-03, PI: J. Andrews).

Discussion

The review highlights several strengths of utilizing a CBPR approach and engaging with communities to develop, implement and evaluate smoking cessation interventions. First, a CBPR approach can be used by interprofessional academicians and diverse community partners to develop smoking cessation interventions with marginalized communities. CBPR can be effective in enhancing community input, building community capacity, and addressing barriers to health in study participants who have historically been underrepresented in research [33]. A CBPR approach with high levels of community involvement, as highlighted in this review, has been used successfully to partner with communities to conduct needs assessment surveys, develop interventions, recruit participants, deliver interventions, evaluate, and disseminate interventions. All studies included in this review had evidence of a community advisory or steering board to guide the processes of the research.

Another strength highlighted in this review, is that CBPR assists with the external validity challenges of traditional translational research, or translating specific findings from highly controlled trials to real world community interventions [4]. The majority of the studies in this review based their cessation interventions on the PHS Guideline recommendations, yet delivered these evidence-based modalities within diverse contexts, and situated the

intervention within cultural, environmental, and community factors. While the academic partners contributed expertise on the PHS Guideline and evidence-based approaches to cessation, the community partners contributed expertise on the local context applicable to the community. Further, as suggested by others [34], the complexity of interactions between the structure, processes, and goals of the intervention and those of the community itself, arise from and are strengthened by the knowledge of the community. This unique type of partnership, blend of expertise, and knowledge generation helps to transcend some of these challenges in translating evidence-based interventions into complex community settings [2, 33].

One of the major goals of CBPR is to enhance collective action for change [1], and several papers demonstrated evidence of systems level and/or policy change in the engaged community practice or community setting. Systems level changes and policy changes are more likely to be sustained over time, as compared to traditional research that often ends once grant funding is over. The involvement and mobilization of community members from the onset, and working through the complexities of institutionalization and sustainability of a health promoting intervention, are likely to foster community empowerment and social action over time [35–38]. Ideally, empowerment is both a process and an outcome of CBPR [39].

Besides highlighting strengths, this review also highlights several challenges of using CBPR. First, CBPR is utilized in varying degrees of the established principles of “ideal CBPR” frequently reported by Israel and colleagues [2]. For example, one of the major principles of CBPR is that the community is involved with all phases of the research process. However, there was evidence that the original research question was derived from the community in only six of the 11 studies. Less than half of the studies documented the community’s involvement with dissemination and even fewer discussed plans for sustainability of the intervention. As others report, [38] adherence to the ideal CBPR model is very challenging for these partnerships. The process of defining the community itself can be complex, whether it may be from a small geographically defined community that may be too small to adequately recruit participants for a clinical trial, in contrast to a community that is diffuse and larger, making it difficult to establish meaningful and representative partnerships [38].

Another challenge highlighted by the Froelicher study [14, 15] in this review and others in the literature [3, 38, 40] is the navigation of the Institutional Review Board (IRB) process for community-based studies. Navigating the IRB for CBPR studies is often time consuming. Either a lack of understanding and/or differing interpretations of the institutional and federal IRB regulations by IRB administrators and investigators may impede the process. There remains controversy about appropriate criteria for evaluating CBPR proposals and the associated ethical implications [3]. Until these controversies are resolved and consensus is reached, this area will likely remain a challenge for CBPR partnerships.

The time involved in developing relationships, building trust, and sustaining intervention effects is another frequently documented challenge in the conduct of CBPR [2, 4, 6, 7, 36, 39] and as noted in this review. Partnerships may take several years to develop, the development and feasibility testing of interventions take considerable time with these unique partnerships, which then is compounded with the challenges to sustain grant funding or other financial resources over many years. Several partnerships in this review had weathered this process and demonstrated a 10-year or longer relationship [10–13, 16–19]. However, the time factor can be problematic on many fronts, especially for the junior investigator attempting promotion and tenure status, changes in leadership in both the academic and community setting, and other transitions and unforeseen obstacles that may occur [13, 38].

This can be especially difficult in marginalized communities where both residents and involved partnering organizations may be transitory [13].

This review highlights the challenge of maintaining the rigor of academic preferred research designs (i.e., randomized controlled trials) and the “dance” of incorporating community preferences, which typically do not involve research, but rather services and programs in the community [4, 36, 38]. Seven of the 11 studies incorporated a quasi-experimental or experimental design, yet only three of these seven met other commonly accepted cessation treatment outcome criteria of reporting at least 6-month abstinence rates that are biochemically verified [41,42]. Increasingly, investigators support the practice that experimental designs may not always be feasible or appropriate to adequately test the effectiveness of community-based interventions [3, 34]. For example, observational studies, as utilized by four of the included studies in this review, are becoming increasingly recognized as a practical and ethical alternative to randomized controlled trials that allows for strong causal inference [34, 43, 44].

Community interventions are complex interactions, expensive, and labor intensive. Although this review did not assess the funding level for these partnerships and intervention studies, CBPR developed interventions are often unfunded or underfunded due to the complexities in which they are administered and within the prevailing political, social, and environmental interactions in which they occur [34]. Several partnerships and studies included in this review, discussed the challenges of not only sustaining the partnership, but also the funding over time to continue and to sustain the cessation intervention [13, 24, 25, 31, 32].

Besides strengths and challenges, this review also highlights the need for additional research. For example, several studies highlighted contributors to success in their partnership, such as “champions” and leaders at multiple levels within the community and engaged organizations who continue to facilitate the work and keep the partnerships mobilized [13, 16–18, 24, 25]. Shared decision-making, communication processes, and mutual interest in the intervention were also frequently mentioned [13, 24,25, 31, 32]. These variables and others have been recently described in the literature as CBPR partnership readiness indicators [45,46]. While the concept of CBPR partnership readiness and related tools are emerging, additional research is needed to better understand how and why some partnerships are effective and others are not, as well as an improved understanding of levels of readiness and how to leverage partnership readiness (i.e., from partnership initiation to social action and policy change) for CBPR partners and their interventions.

Of the 11 studies included in this review, the two scoring highest in community involvement and research quality, demonstrated promise for effective cessation outcomes utilizing this approach [10–13, 16–19]. However, both of these studies were conducted with limited number of participants (i.e., 103–111 participants) and were pilot studies for larger randomized trials. The ability to sustain the partnerships, sustain the effects of the interventions, and promote policy and social action, are important aspects of CBPR to be achieved, yet little evidence exists on how to accomplish this. Further, is it possible to scale up a CBPR developed cessation intervention shown to be effective in one community to other heterogeneous communities for a randomized controlled trial? If the intervention is replicated in other communities, what additional CBPR processes need to be undertaken with the new communities to facilitate the buy-in, ownership, and adoption of the intervention? Further research will be needed to understand and guide best practices for these processes.

Finally, it is difficult to truly assess the “CBPR effect” of cessation interventions. Cessation intervention studies conducted with marginalized communities, regardless of CBPR or traditional approach, often vary in content, delivery, duration, and study design, making comparisons of outcomes a challenge [47]. As Buchanan and colleagues noted [3], to adequately test the CBPR effect, the ideal research design would be a cluster randomized trial that compared communities randomized to the CBPR process to a comparison condition of a traditional researcher-initiated investigation. This type of investigation, however, would be extremely complex and likely not practical [3].

There are several potential limitations of this review. The data compiled for this review, including quality scores, were derived from available published literature only. CBPR processes may not have been described in detail due to restrictions in publications (i.e., page limits). Further, the search strategy identified only articles published in peer-reviewed journals, and other dissemination materials from authors may have been excluded.

Conclusions

Although the quality of community involvement and research rigor varies, a well designed CBPR approach is showing promise in working with marginalized and “hard to reach communities” to promote cessation outcomes. A CBPR approach provides strengths in overcoming challenges in translating evidence into real-world settings, contextualizing the intervention, and sustaining long-term behavior change. Challenges, such as time requirements, complexities of the partnership and processes, IRB procedures, maintaining research rigor, and scaling up CBPR efforts to adequately test effects of interventions exist. This review provides a baseline of evaluation for current efforts of CBPR-developed smoking cessation interventions and recommendations to guide future intervention development and evaluation efforts.

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Table 1

Summary of Studies Included in Review

Reference/ *Major Paper	Purpose	Community Partners	Sample/Setting	Approach/Design	Intervention	Cessation Outcomes	Quality Comm. Involvement	Quality Research	Comments
Andrews et al., 2005 [10] Andrews et al., 2007 [11] *Andrews et al., 2007 [12] Andrews et al., 2011 [13]	Develop, implement, evaluate cessation intervention in public housing "Sister to Sister"	Housing Authority; Advisory CAB Board; Lay members	N=103 AA women Setting: 2 public housing neighbor- hoods in Southeast US	- Described partnership development - Intervention development: Focus groups, key informant interviews, grounded theory study, quantitative surveys Design: Quasi- experimental with 2 groups	Multi-level intervention: -Community health worker 1: interaction weekly × 12 weeks - Group counseling via nurse × 6 weeks - Nicotine patches × 6 weeks - Neighborhood activities/policy CL: Written cessation materials at baseline and group attention weekly × 6 weeks	- 6 mo cessation 27.5% TX vs. 5.7% CL (OR= 6.1–23.1) - 7 day point prevalence @ wk 12, 24 = 49%, 39%, 39% in vs. 15%, 7.6%, 11.5% CL -validated via CO	2.8	2.6	-Met 100% recruitment goals -6 month retention rate: 87.5% -Neighborhood level policies -Randomized cluster design being conducted in 14 neighborhoods in 2 states; n=406 women
*Bryce et al., 2009 [29]	Develop, implement, evaluate a midwife intervention to assist pregnant women and partners to quit smoking "Community Action on Tobacco for Children's Health (CATCH)"	Local health board; midwife; steering group.	N=79 (65 women 14 male partners) Low SES pregnant smokers ≤ 25 yrs and partners Setting: Hospital maternity unit in West Scotland	-Described partnerships -Needs assessment conducted; training pregnant smokers Design: Descriptive study with 1 group	- Motivational interviewing by nurse midwife; - Multiple modalities offered (1:1, couple, or group) - NRT; - Home follow-up (Duration of intervention not clear)	-3 mo cessation= 20.3% -12 mo cessation = 12.7% -validated by CO	1.65	1.5	-289 smokers eligible (recruitment goals unclear) -88% retention at 3 mo -47% retention at 12 mo
Burton et al., 2004 [21] *Shelly et al., 2008 [22]	Estimate the effect of a tailored multicompo nent community- based	Community based organizations; CAB	N= 2537 adults in baseline interview (pre-test); 1384 from original cohort	-Household interviews, focus groups prompt mobilization Design: Pre-test, post-test quasi-experimental	-Both communities exposed to tobacco control public policy changes over 2 year period (10-03 to 9-05) -However, only	-From 2002 to 2006 overall smoking prevalence among Chinese immigrants declined from 17.7% to 13.6% (relative 23% decrease) -After controlling for	2.0	2.4	-City wide policies -Sustainable

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	smoking cessation intervention within context of state and city-wide tobacco control initiatives		completed 2 nd interview Chinese immigrants living in New York City; (post-test) Setting: TX Community: Flushing, Queens, NY CO Community: Sunset Park, Brooklyn, NY		Flushing received additional linguistically and culturally-specific community-level tobacco control interventions (public education, social marketing, posters, brochures; access to language specific cessation resources)	socio-demographic characteristics, there was an absolute 3.3% decrease in smoking prevalence attributed to policy changes with an additional absolute decline in prevalence of 2.8% in the intervention community relative to the control community -Self report			
Braun et al., 2006 [26] Braun et al., 2006 [27] *Santos et al., 2008 [28]	Test effect of a compre- hensive tobacco cessation protocol that has been institutiona- lized in 5 Native Hawaiian Health Care Systems (NHHCS)	Imi Hale- Native Hawaiian Cancer Network represent atives; commu- nity outreach workers; Depart- ment of Health; others	-Clinics developed list of all smokers in past 6 months in 5 settings; randomly selected 30 charts at each site for review Setting: Five Native Hawaiian Health Care Systems (NHHCS)	-Described partnership development; -Intervention development; statewide surveys, inventory cessation services; groups, interviews Design: Observational	-Culturally tailored AHRQ protocols for smoking cessation in 5 health systems -Offered brief, intensive, and systems interventions based on 5As.	-80%- 100% of NHHCS clients asked about tobacco use -57%-100% clients received brief intervention -21/50 (42%) clients completing intervention remained abstinent at 3 months -self report	2.1	1.7	- Varying levels of adoption of intervention at 5 sites -6 years to develop protocol -System changes yield likelihood of sustainability
*Daley et al., 2010 [23]	Develop, implement, evaluate pilot culturally tailored cessation intervention in urban and reservation communities "All Nations Breath of Life"	Native American commu- nity members	N=108 Native American adult smokers Setting: Urban and reservation Native American communities in Kansas	-Described intervention development: -Focus groups; pilot testing with 4 iterations of the program; Intervention testing Design: Descriptive with one group.	Intervention has 5 components: -Group support weekly × 9 groups -Individual phone counseling with motivational interviewing × 12 weeks -educational curriculum -pharmacotherapy (participant choice) -participant incentives	-65% cessation at program completion - 6 mo cessation = 25% -Self report	1.8	1.4	- Recruitment target/eligibility unknown -No retention rates reported

Reference/ *Major Paper	Purpose	Community Partners	Sample/Setting	Approach/Design	Intervention	Cessation Outcomes	Quality Comm. Involvement	Quality Research	Comments
*Froelicher et al., 2010 [14] Malone et al., 2006 [15]	Investigate whether tobacco industry documents in a cessation program contextuali ze the social justice implication s of tobacco promotion could assist AA quit smoking “Protecting the hood against tobacco (PHAT)”	San Francisco African American Tobacco Free Project; and the Bayview and Hunter's Point neighborhoods	N=60 AA smokers Setting: Public clinic adjacent to large AA neighbor- hood in San Francisco	-Intervention development included focus groups, town hall meetings, community survey Design: RCT	TX: 5 week intervention program plus tailored tobacco industry and media messages (i.e., to reinforce tobacco industry targeting, community empowerment, and social justice) plus phone support; NRT available CL: standard 5 week cessation intervention, NRT available	-6 mo cessation = 13.6% TX vs 11.5 CL - 12 mo cessation = 15.8 TX vs 5.3 CL -Validated by salivary cotinine	1.55	2.2	-Recruitment goal= 270 participants -Difficulty with recruitment -37% retention at 12 mo
*Horn et al., 2005 [24] Horn et al., 2008 [25]	Test an adapted American Lung Association program for American Indian Teen Cessation “American Indian Not On Tobacco Program; AINOT”	Tribal partner organizat ion, other local, state, national partners; CAB	N=74 (54 TX and 20 CO) American Indian smokers 14–19 years old Setting: North Carolina American Indian community; 10 schools	-Described partnership development; -Demonstrated CBPR principles throughout study Design: Quasi- experimental with 2 groups	AINOT Intervention: 10 sessions, 1 hr per week, up to 4 booster sessions over 3 months in group setting CL: Brief intervention (15 minute classroom session)	- 3 mo cessation: ITT 18% TX vs. 10% CO (NS) -28.6% males (n=6) in TX vs. 14.3% (n=1) males in CL reported cessation; no females reported cessation -Self report	3	2.3	-Recruitment goal =200 youths; -Challenge to recruit expected sample in time frame -58% retention rates

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Ma et al., 2004 [16] Ma et al., 2005 [17] Ma et al., 2006 [18] *Wu et al., 2009 [19]	Develop and test culturally tailored smoking cessation program for Chinese American Smokers	Asian Tobacco Educa- tion and Cancer Aware- ness Research Special Popula- tion Network; Asian Community Health Coalition	N=122 Asian American smokers Setting: New York City	-Described partnership formation -Feasibility testing -Comprehensive CBPR model Design: Experimental; pre-post test design with 2 groups	-TX: 4 individualized counselor led motivational interviewing sessions and NRT -CL: 4 health education groups	-6 mo cessation 67% TX vs. 32% CL -validated by CO	3.0	2.7	- Met recruitment goals -88% retention at 6 months -Planning larger RCT
*McDonnell et al., 2011 [20]	Develop, implement, and evaluate online cessation program tailored for Korean Americans “Quitting is Winning”	Korean CAB in California	N=1112 Korean American smokers; 88% men Setting: Recruited via ads in major newspapers and websites in the Korean American Community in US	-Described partnership formation -Conducted in- depth interviews; -Intervention development Design: RCT	TX: Online self help based on Stop Smoking Center program; cognitive behavioral self - help program based on stages of change with 6 sections CL: mailed booklet version of online program; Both materials translated into Korean	-At 50 weeks, no difference in 30-day cessation between the internet group (11%) vs. booklet (13%) -Quitting was higher among participants in intervention group who completed the online program (26% vs. 10%) who did not complete -self report	1.7	2.6	- 2 ½ year recruitment period -48% completed assessments in TX and 57% in CL
Mendenhall et al., 2008 [31] *Mendenhall et al., 2010 [32]	Develop, implement and test an intervention that engages local media and providers to reduce on-campus smoking at Job Corp “Students against Nicotine and Tobacco	Students, teachers, and administ- rators in Minnie- polis/ St. Paul Job Corp Corps	200–250 students on campus on average, with 6–18 mo residency; 40% smoke Setting: Job Corp Campus in Minneapolis/ St Paul	-Described partnership development; -Intervention development: surveys, focus groups, Implementation of system wide changes Design: Cross-sectional with prevalence surveys every 3 months	Several system wide changes on campus involving: 1) fighting stress and boredom (alternative activities) 2) changing physical environment 3) changing policies 4) revising smoking cessation education and support	-No change in overall smoking prevalence on campus -Increasing number of students report smoking less cigarettes per day ($p < .018$) -Self report	2.4	1.5	-Policy changes - Sustainable beyond grant funding

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*Woodruff et al., 2007 [30]	Addition SANTA” Test internet based teen cessation intervention “Breathing room study”	School partners	N= 136 teen smokers Setting: 14 high schools randomized to TX or CL in San Diego county	-Partnership development; -Contributions to recruitment, study design, materials Design: Randomized cluster design (7 schools per condition); analyses by individuals	TX: Seven 45- minute Internet based, virtual reality world combined with motivational interviewing over 7-week period CL: Measurement only	-TX participants were more likely to report abstinence during past week immediately post intervention (35% vs. 22% P < .01), yet no differences at 12 months (38% vs. 29%). -Only number of times quit was significant at 12 months (2.4 vs. 1.7, p < .05) -Self report	2.4	2.5	- Target recruitment unknown; 300 students showed interest, 200 eligible -73% retained

CL = Control
CO = Comparison
NRT = Nicotine Replacement Therapy
CAB= Community Advisory Board
ITT= Intent to treat
RCT = Randomized Controlled Trial