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Community-Based Participatory Research Studies on HIV/AIDS Prevention, 2005-2014

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Abstract

The recent literature on community-based participatory research (CBPR) approaches to preventing HIV infection in diverse communities was systematically reviewed as part of the planning process for a new study.

Published HIV prevention studies that employed CBPR methods were identified for the period January 1, 2005 to April 30, 2014 using PubMed databases and MeSH term and keyword searches.

A total of 44 studies on CBPR and HIV or AIDS prevention were identified, of which 3 focused on adolescents, 33 on adults, and 8 on both adolescents and adults. A variety of at-risk populations were the focus of the studies including men who have sex with men, African American or Hispanic men, and African American or Hispanic women. Few studies focused on Asian/Pacific Islander or American Indian populations in the U.S. Six studies employed CBPR methods to address HIV prevention in church settings. Many of the studies were limited to formative research (ethnographic research, in-depth interviews of key informants, or focus groups). Other studies had a pre-/post-test design, quasi-experimental, or randomized design.

Additional CBPR studies and faith-based interventions are needed with adequate sample sizes and rigorous study designs to address lack of knowledge of HIV and inadequate screening in diverse communities to address health disparities.

Keywords: Acquired Immune Deficiency Syndrome; African Americans; American Indians; Asians and Pacific Islanders; Hispanics; Community-Based Participatory Research; HIV

Introduction

Over the past decade, a rich literature has developed on community-based participatory research (CBPR) approaches to preventing morbidity and mortality from human immunodeficiency virus (HIV) and acquired immune deficiency syndrome (AIDS) in diverse communities [1-65]. Studies to date have involved African American, Hispanic, Asian/Pacific Islander, and

white persons in the U.S., gay and bisexual men, intravenous drug users, sex workers, migrant workers, urban and rural residents, at-risk youth, and people from several countries around the globe. An increasing number of CBPR studies on HIV/AIDS prevention have used faith-based intervention approaches involving people identified through church congregations [4, 5, 9, 12, 18, 22, 23, 57, 62, 63].

Community-based participatory research methods are particularly useful for studying ways to prevent morbidity and premature mortality in population subgroups that are marginalized, stigmatized, or discriminated against in society, or who are otherwise unempowered. For example, CBPR approaches have been employed for health promotion research conducted in African American and Hispanic communities that face barriers to stopping the spread of HIV related to socioeconomic issues (for example, poverty and limited access to quality health care and education), distrust of the health care system, language barriers, and cultural differences from other groups that are targeted by service providers [65].

As part of the planning process for a CPBR study on HIV prevention among at-risk persons in the United States, a review was conducted of the published literature on this topic over the past decade. The goal of this literature review was not to determine whether CBPR is an effective approach for health promotion and addressing health disparities (which is already widely accepted) but rather to identify recent trends and developments in conducting CBPR research on the prevention of HIV in diverse populations including refinements and innovations in qualitative and quantitative research methods, frameworks, and educational interventions. The current article extends beyond previous reviews by including recently published studies and by including both qualitative and quantitative research.

Methods

Published studies that employed CBPR methods were identified using PubMed databases through MeSH term and keyword searches. Search terms included "community-based participatory research" and "HIV" or "acquired immune deficiency syndrome". Inclusion criteria consisted of English-language articles published from January 1, 2005 to April 30, 2014 that described community-based participatory research to address HIV prevention or screening. Both formative research on HIV involving focus groups or in-depth interviews and intervention studies that had a pre-/post-test, quasi-experimental, or randomized design were of interest. Pilot studies were included. Although a majority of the studies were conducted in the United States, CBPR studies on HIV prevention conducted outside the United States were also included. Studies that dealt with dental or oral health, treatment, hospice, or the evaluation of health services were not included. Studies conducted in a community setting that did not employ participatory research methods or community partnerships were also not included. For each article, authors, journals, year of publication, study population, geographic locality, methods, results, and limitations were identified.

Results

A total of 53 articles met the inclusion criteria. The 53 papers described 44 studies on CBPR and HIV or AIDS prevention. Of the 44 studies, 3 focused just on adolescents and the remainder focused on just adults (n = 33) or both adolescents and adults (n = 8) (Table 1). A wide variety of at-risk populations were the focus of published studies including African American men who have sex with men (n = 1), Hispanic men who have sex with men (n = 2), Hispanic families (n = 2), heterosexual African American adults (n = 2), African American families (n = 5), and members of racially and ethnically diverse communities (n = 1). Only a handful of studies (n = 2) focused on Asian/Pacific Islander or American Indian (n = 1) populations in the United States. A total of 6 studies employed CBPR methods to address HIV prevention in church congregations or other faith communities. Two of the published studies involved educational interventions in chat room settings. Many of the studies (n = 31) were limited to formative research (ethnographic research, in-depth interviews of key informants, or focus groups). Other studies had a pre-/post-test design (n = 7), quasi-experimental (n = 2), or randomized design (n = 4). As summarized in Table 1, many published CBPR studies are limited by small sample sizes, uncontrolled confounding, or the lack of a comparison group. Relatively few employed a rigorous study design such as a quasi-experimental study or a randomized trial. Although most of the studies were conducted in the United States, studies on CBPR and HIV prevention were also conducted in Yemen, Kenya, South Africa, Trinidad and Tobago, Great Britain, Canada, Australia, China, and the Philippines.

Discussion

The articles on CBPR and HIV prevention highlighted in this review document the important information obtained through participatory research methods in diverse populations. Some studies have employed a rigorous study design such as a quasi-experimental study or a randomized trial. However, many published CBPR studies are limited by small sample sizes, uncontrolled confounding, or the lack of a comparison group. The generalizability of study findings is often unclear. Nevertheless, in the more than 30 years since HIV was first recognized as a pressing public health concern, CBPR approaches have proved to be an effective and flexible approach for addressing HIV prevention in diverse population subgroups. Although CBPR studies were initially conducted mostly among men who have sex with men in large metropolitan areas such as New York and Los Angeles[43], the studies summarized in this review follow more recent trends in the epidemic such as increasing HIV infection rates among African Americans who

Table 1. Community-based participatory research studies on HIV/AIDS prevention, 2005-2014.

Study	Sample	Design	Results	Limitations	Other Information
Baptiste et al. [3]	140 families in South Africa and 16 families in Trinidad and Tobago	Focus groups and in depth interviews of key informants were completed as part of adaptations of the Collaborative HIV/AIDS Prevention and Adolescent Mental Health Project (CHAMP) intervention to two additional settings. After the curriculum and educational materials were piloted and revised, intervention trials with a pre-/post-test design were undertaken.	Both settings had promising results including high recruitment and retention rates (91% in South Africa and 93% in Trinidad and Tobago), and positive pre-/post-changes in parent and youth knowledge and attitudes about HIV/AIDS and frequency and comfort in talking about sensitive topics.	Non-randomized design	
Rhodes et al. [35]	719 men in five gay bars in North Carolina	Community-based rapid health assessment survey	About 34.8% of the men reported inconsistent condom use in the past three months, 11.4% reported ever having had a sexually transmitted disease, 3.6% reported being HIV seropositive, and 26% reported illicit drug use in the past 30 days. Hispanic men were less likely to have ever been tested for HIV.	Unclear generalizability	
Sadler et al. [49]	114 black African men and women in London	Cross-sectional self-administered anonymous survey with optional anonymous oral HIV test. A subset of participants completed an in depth interview as part of this pilot study.	The in depth interviews showed that respondents had positive views and experiences about participating in the study and that their understanding of the questionnaire was good. The response rate to the oral HIV test was 82%.	Small sample size, unclear generalizability	

Gao and Wang [17]	Gay men in Chengdu, China	Controlled study of the effectiveness of peer led health messages promoting condom use	The communication strategy effectively increased condom use with casual sex partners in the intervention group. There was no significant change in the comparison group.	Unclear generalizability	
Rhodes et al. [36]	285 sexually active gay or bisexual men, mean age 33 years, predominantly (80%) white	In this cross-sectional survey, data were collected using targeted intercept interviewing during North Carolina Pride Festival events.	About 38% of the participants reported the use of free condoms during their most recent sexual intercourse. Those who reported using free condoms were more likely to report increased age, dating someone special or being partnered, and having multiple male sexual partners in the past 3 months.	Lack of a comparison group, unclear generalizability	
Remple et al. [34]	49 indoor female sex workers in seven establishments in four cities in British Columbia	Peers (former and current female sex workers) were hired, trained, and supported as outreach workers.	The peer outreach workers participated in the development, implementation, and evaluation of the project. Outreach teams delivered harm reduction materials and provided education, support, and referrals.	Small sample size, lack of a comparison group, unclear generalizability	

Hallett et al. [19]	Users of online chat rooms in Perth, Australia	Six week trial of a peer-based online outreach program for the provision of mental and sexual health promotion to marginalized groups	There were several lessons learned: online group processes are unique due to the creation of personal networks and lack of face-to-face contact across large geographic areas; flexibility is needed to adapt to technological changes and online community flux; it can be challenging to distinguish peer education from therapeutic support when only using text-based communication; and Internet outreach can be time intensive.	Unclear generalizability	The intervention was part of the CyberReach program.
Johnson et al. [20]	American Indians in Baltimore, MD	Health needs assessment conducted to determine the HIV, substance abuse, and hepatitis prevention needs of urban American Indians. Both focus groups and surveys were completed. Community stakeholders and key informants were consulted during the planning phase.	The population's prevention needs, risk, and strengths were assessed. The social and cultural contexts in which health risk behaviors occur were also clarified.	Non-randomized design, unclear generalizability	The authors note that the findings of the assessment support the need for future HIV, substance abuse, and hepatitis programs for urban American Indians.
Shannon et al. [51]	206 female sex workers ages 14 and older who had used illicit drugs within the past month, many of whom are of First Nations, Metis and Inuit ancestry, in Vancouver, British Columbia, Canada	Prospective cohort study involving a baseline visit (93% response rate) with an interview questionnaire and HIV screening and 6 month follow-up interviews with interview questionnaires completed by peers and HIV and hepatitis C screening completed by a nurse. The screenings were supported by pre- and post-test counseling.	The development of this CBPR study (ongoing at the time the authors' manuscript was completed) provides important insights into the strengths and challenges of this partnership, including ethical considerations of community-based HIV prevention research among substance-using women (many of whom were underage) who engage in survival sex work.		The authors note that violence experienced by youth less than 18 years of age and exploitation of youths are major concerns in research with sex workers who are legal minors.

Shannon et al. [52]	Female sex workers in Vancouver, British Columbia, Canada	Focus groups were held with a total of 46 women as part of harm reduction and HIV prevention efforts	Based on thematic and content analysis, several factors were identified that mediate women's access to resources and ability to practice HIV prevention and harm reduction including pervasive violence, a lack of safe places, and the need to sell sex for drugs.	Lack of a comparison group, nonrandomized design	The authors note that high rates of violence have been described among street-level sex workers across the globe, including the murder, disappearance, and victimization of female sex workers in Canada.
Williams et al. [61]	26 black women in Toronto, Canada	Focus groups of women with African or Caribbean origins and interviews of 6 key informants	The participants suggested that there were individual, familial, and community risks associated with seeking prevention information and attempting to reduce exposure to HIV infection. They recommended educational, empowerment, and institutional change to create a supportive environment for HIV prevention.	Small sample size, lack of a comparison group, non-randomized design, unclear generalizability	
Shambley-Ebron [53]	African American adolescent girls	Focus groups and process evaluation of an 8-week educational intervention	Major themes that were identified included the need to know the truth, and internal, external, and spiritual resources.	Lack of a comparison group, non-randomized design, unclear generalizability	

Rhodes et al. [37]	222 heterosexual immigrant Hispanic men in rural North Carolina who belonged to soccer teams, mean age 29.8 years	Survey data in the controlled trial were collected at baseline and 18 months post-lay health advisor training. Lay health advisors from 15 soccer teams were trained to deliver an educational intervention to their teammates over 18 months. The goal of the intervention was to increase condom use and HIV testing and increase prevention behaviors. An additional 15 teams served as the control group.	Participants in the intervention group were more likely to report condom use (adjusted odds ratio = 2.3, 95% confidence interval 1.2-4.3) and HIV testing (adjusted odds ratio = 2.5, 95% confidence interval 1.5-4.3).	Unclear generalizability	The intervention was part of the Hombres Manteniendo Bienestar y Relaciones Saludables (Men Maintaining Wellbeing and Healthy Relationships) program. The theoretical framework was based upon social cognitive theory and empowerment education. Members of the control teams were offered the intervention as the study was completed.
Derose et al. [12]	17 community experts (70% were religious leaders) plus members of 73 congregations in Los Angeles County	In-person interviews of community experts, telephone screening interviews of members of 73 congregations, collection of congregational case studies, and congregational feedback sessions.	Many of the congregations reported benefits from the feedback sessions such as educating new members about the congregation's history of involvement in health and HIV/AIDS or obtaining a summary of their prior efforts for use in grant proposals and planning future activities.	Lack of a comparison group	The conceptual framework for this formative research study drew upon the diffusion of innovations theory and institutional theory.

Operario et al. [31]	36 African American men who have sex with men and women but who do not form an identity around their same sex behavior.	A pre-/post-test design was used to evaluate an intervention consisting of four individualized risk reduction counseling sessions. Participants were offered HIV testing and counseling (session 1); discussed sexual dynamics and risk behaviors with female and male partners (sessions 2 and 3); and reviewed motivations and situational triggers for unsafe sex and engaged in role-play exercises to reach personal risk reduction goals. The participants completed baseline and 3 month follow-up assessments of sexual risk behaviors and psychosocial factors.	Significant reductions were found in unprotected anal sex with male partners, fewer numbers of female and male sex partners, and decreased sex while under the influence of drugs. The men also reported significantly increased social support, self-esteem, and reduced loneliness at follow-up.	Small sample size	
Weiss et al. [59]	1,000 residents of St. Lucie County, FL	Telephone survey followed by the distribution of an educational DVD on HIV testing and prevention. More comprehensive sex education was also integrated into the school system.	The project created an opportunity to further refine and evaluate the methods used in disseminating health information into the public schools and community. This involved building mutual trust and an effort to share the responsibility for the education of youths about HIV risk reduction.	Lack of a comparison group	
Fortune et al. [16]	Young African American men	Face-to-face recruitment for an HIV prevention program followed by telephone enrollment and data collection.	About 58% of the young men were recruited for the prevention program, 77% were retrained for a follow-up survey at three months, and 65% of the initial enrollees were retained for the six month follow-up survey.		There were some initial challenges because of the time elapsed between recruitment and enrollment.

Rios-Ellis et al. [48]	Hispanic families in southern CA	Spanish speaking, bicultural community health workers helped develop and then used an educational flip chart and materials to conduct HIV prevention. The intervention was designed to increase HIV/AIDS knowledge, to improve communication about sexual risk, and to augment intentions to use condoms and undergo HIV testing. A secondary purpose was to decrease HIV-related stigma.	Participants had significant increases in HIV knowledge, intention to practice safer sex and communicate sexual risk to partner(s), and intention to undergo HIV testing.		The intervention was part of the Protege tu Familia: Hazte la Prueba program.
Rhodes et al. [40]	21 Hispanic men who have sex with men in the rural Southeastern U.S. with limited English proficiency, ages 18 to 48 years. Two men self-identified as transgender.	Ethnographic in depth interviews	Themes that emerged included a lack of accurate information about HIV and prevention, the influence of social-political contexts to sexual risk, and barriers to healthcare services.	Uncertain generalizability	
Rhodes et al. [42]	1,851 gay or bisexual chat room participants, mean age 30 years.	Qualitative and quantitative data collection including online assessments, and data collected to evaluate an Internet-based health education intervention.	Theory-based analysis of transcripts from chat-room instant message discussions identified 13 thematic categories related to "chatter" characteristics, prevention needs, and intervention delivery. Chatters were looking for sexual partners, were not open about their sexual orientation, lacked basic information about HIV, had questions about how to be tested, and perceived a lack of community resources.	Non-randomized design, no comparison group	The intervention was part of the Cyber-Based Education and Referral/Men for Men (CyBER/M4M) program. CyBER educators had to understand the online culture, build trust, and deliver focused messages.

Rhodes et al. [47]	Gay or bisexual chat room participants, mean age 37.1 years (range 18 to 78 years). The majority of the sample self-identified as white	The intervention focused on the promotion of HIV testing within a chat room setting. Using a quasi-experimental single group study design, cross-sectional data were collected from "chatters" at pre-test (n=346) and post-test (n=315) to evaluate the intervention.	The educational intervention significantly increased self-reported HIV testing among chatters, increasing rates from 44.5% at pre-test to nearly 60% at post-test (P < 0.001).		The intervention was part of the CyBER/testing program which originated from the CyBER/M4M intervention study.
Rhodes et al. [45]	142 heterosexual, immigrant Hispanic men in North Carolina, mean age 31.6 years	Randomized controlled trial of a small group HIV prevention intervention with four modules designed to increase condom use and HIV testing. The control group received a cancer education intervention. Survey interview data were collected before randomization and at 3 months follow-up with a 98% retention rate.	Participants in the HIV preventive intervention group were more likely to report consistent condom use and receiving an HIV test.	The generalizability is uncertain	The intervention was part of the Hombres-2 Manteniendo Bienestar y Relaciones Saludables (Men Maintaining Wellbeing and Healthy Relationships-2) program. The theoretical framework was based upon social cognitive theory and empowerment education.
Ferre et al. [15]	African American families in Los Angeles, CA.	The project evolved from a partnership between a community advisory board, academic institution, and federal health agency to an independent community organization.	Multiple health problems in the community have been addressed including preterm birth, HIV, asthma, depression, and diabetes		The research was part of the Healthy African American Families (HAAF) project. The participatory process builds on existing resources and community resiliency and on cooperative action and community activism within the African American community.

Morisky et al. [26, 27]	Female bar workers and their male customers in the Philippines.	Quasi-experimental study involving education and structural/environmental behavioral interventions. Three interventions designed to reduce sexual risk were compared with each other and with usual care. Peer educators and bar managers from 110 establishments were trained to increase knowledge of HIV and of condom use, change attitudes about risk reduction, and provide HIV and STD testing referrals, and to increase condom use skills.	Only female bar workers in the combination peer educator and manager training intervention significantly increased condom use from baseline to 2-year follow-up. Condom use was significantly associated with higher HIV knowledge, attendance at a prevention class, and being taught how to use condoms properly.		
Griffith et al. [18], Williams et al. [61, 62]	Members of African American church congregations in Flint, MI. Faith leaders from 20 churches provided HIV education to 212 adolescents ages 13 to 19 years. The initial pilot reached out to 12 churches and 2 community-based organizations; a total of 59 sessions were conducted with a total of 245 young people. Seven churches provided 15 adult training sessions with a total of 151 adults.	Multilevel intervention study aimed at increasing HIV/AIDS awareness, reducing risk behaviors, and reducing HIV-related stigma. During planning phase, six focus groups were conducted in two churches. The intervention involved training faith leaders (particularly pastors' spouses) to address HIV/AIDS and youth sexual risk.	The themes that emerged from the focus groups included different perspectives about the role of churches in providing sexual health education. Study findings indicate that faith leaders who participate in specific and ongoing HIV prevention education training can be useful sexual health resources for youth in church settings. Eight of 12 pastors who responded to a brief questionnaire indicated that the educational intervention had a medium or high overall impact.	Non-randomized design	

Berkley-Patton et al. [4, 5]	Members of African American church congregations ages 18 to 64 years in Kansas City, MO	Evaluation of an HIV awareness and screening intervention delivered by church leaders about twice a month over a 9-month period. Four African American churches were randomized to intervention or comparison groups. Intervention churches received religiously tailored HIV education, testing, and compassion messages and activities (sermons, church bulletin inserts, brochures, testimonials). Comparison churches received non-religiously tailored HIV information. Participants completed surveys at baseline, 6 months, and 12 months. Four focus groups with church leaders were completed along with surveys of church members.	No significant differences were found between intervention and comparison groups for the individual HIV items or composite scores assessed at baseline, 6-month and 12-month assessments. Church members were highly exposed to the intervention; 91% reported receiving HIV educational brochures, 84% heard a sermon about HIV. Most (87%) believed that the church should talk about HIV and 77% believed that the church should offer HIV screening.	There was significant attrition at 6 and 12 months.	This project implemented and evaluated the Taking It to the Pews (TIPS) intervention which focuses on HIV testing and reduction of stigma, rather than condom use.
Al-Iryani et al. [2]	52 participants in poor, vulnerable areas of Aden, Yemen	Five focus groups and 15 in depth interviews conducted as process evaluation of a community peer education program for at-risk youth.	Factors that contributed to the implementation of the peer education program for HIV prevention had been community participation, mobilization of targeted communities, and capacity building of those included in the intervention. Impact evaluation revealed improved HIV knowledge and risk perception and decreased stigma and risky behavior.		Existing community-based organizations played a key role in building trust with the targeted communities and linking HIV peer education intervention to other community services.

Coker-Appiah et al. [8], Corbie-Smith et al. [10], Lloyd et al. [24]	Residents of two African American communities in Edgecombe and Nash counties in rural North Carolina. There were 94 initial focus group participants and 37 key informants. Additional focus group participants (n=38) were between the ages of 16 and 24 years.	The project included 11 initial focus groups plus 37 interviews of key informants and 4 additional focus groups with youths. A staged approach to community-academic partnership (initial community mobilization, establishment of organizational structure, capacity building for action, and planning for action) was used to develop culturally sensitive, feasible and sustainable interventions to prevent the spread of HIV.	Youth focus group participants agreed on the importance of providing HIV prevention information early and often. Participants believed early education would improve decision-making skills. Participants identified people ideally suited to be intervention leaders: peer educators, respected community adults, and persons living with HIV/AIDS. Stakeholders identified as key collaborators included members of youths' social networks (e.g., family, friends, teachers, religious leaders), and popular figures from television, music or sports that young people try to emulate.		The Project GRACE consortium included more than 94 individual community members and representatives of local community-based organizations, health, social service, and faith-based organizations. A governing structure of a steering committee was used to emphasize equal partnership, collective decision-making and active participation of all members.
Weeks et al. [58], Liao et al. [21], Nie et al. [29]	Female sex workers ages 16 and older in four towns in southern China. A total of 445, 437, and 290 women were interviewed at three time points.	Ethnographic formative research was initially completed. The study consisted of an evaluation of an HIV prevention intervention consisting of the distribution of female condoms and male condoms at sex establishments, and outreach staff education about safer sex. Three serial cross-sectional surveys were conducted at baseline and after each of two six-month intervention phases.	At the first and second post-intervention surveys, 83.3% and 81.7% of women reported knowing about female condoms and 28.8% and 36.6% had used female condoms at least once.	Lifetime female condom use was assessed but some explanatory variables were measured in the past 30 days	

Cashman et al. [7]	43 Hispanic women ages 19 to 64 years in central North Carolina	Four focus groups	The findings revealed a lack of knowledge about sexual health, shame and embarrassment related to clinical exams and conversations about sex, and misinformation about disease transmission. The participants recognized the importance of testing for HIV and sexually transmitted infections.	Uncertain generalizability, lack of a comparison group	
Wong et al. [64]	445 Asian/Pacific Islander men in the U.S. aged 18 ≥ years who have sex with men	Behavioral and serological data on Asian/Pacific Islander MSM were collected via 7 community-based organizations in 7 cities	Perception of being at risk of HIV was the number one reason for testing behaviors. For first time testers, structural barriers (language barriers with health professionals) and fear of disclosure (sexual orientation not known to parents) were deterrents for testing in the past.		

Bermudez Parsai et al. [6]	Hispanic parents in a city in Arizona between the ages of 32 and 45 years	4 focus groups and input from key informants and community stakeholders (16 parents/guardians, 10 school personnel, and 5 educators)	Focus group participants provided feedback on curricular materials for a parent education program aimed at preventing and decreasing adolescent drug use and risky sexual practices. Key informants and stakeholders identified community needs and the core elements of existing curricula. Five key themes emerged from the focus groups: 1) my child doesn't like school, 2) you must study, 3) I want to know more about drugs, 4) I do not know how to speak with my children about drugs, and 5) youths don't have anything to do after school.	Uncertain generalizability, lack of a comparison group	The development of the educational intervention (Familias: Preparando a la Nueva Generacion) was guided by eco-developmental theory.
Rhodes et al. [41]	88 men who have sex with men (28 African American, 33 Hispanic, 21 white, and 6 biracial men) ages 18 to 60 years in North Carolina	Nine focus groups	Several themes related to HIV risk were identified including low knowledge of HIV and sexually transmitted illnesses, particularly among Hispanic MSM and MSM who use the Internet for sexual networking, and stereotyping Hispanic MSM as less likely to be HIV infected. Intervention approaches were also identified including developing culturally appropriate programs, using social media used by informal networks of MSM, and promoting HIV prevention within the context of intimate relationships.	Nonrandomized design, uncertain generalizability	

Coleman et al. [9]	African Americans in church congregations in South Carolina. The initiative funded 24 churches in the first year and 34 churches in the second year.	A framework for HIV education and stigma reduction projects was developed with in depth interviews of 8 pastors, 4 technical assistance providers, and 2 project champions. In addition, 22 care team members aged 26 to 82 years participated in 6 focus groups. A team conducted evaluations as part of a state-wide initiative of the South Carolina HIV/AIDS Counci,l which provides support to faith-based organizations to develop and implement local HIV/AIDS prevention programs for their congregations and communities.	The framework calls for the identification of individuals (members of each congregation and church leadership) who are passionate about addressing HIV/AIDS, and provides mechanisms (health ministries) through which these individuals can organize and implement efforts to address HIV/AIDS, and areas for capacity building.	Lack of a comparison group	The framework was developed as part of the Fostering AIDS Initiatives that Health Project (Project FAITH). The intervention programs implemented by individual churches varied considerably.

Rhodes et al. [43]	Hispanic women in North Carolina	The project used a multi-step process to develop an educational intervention to prevent HIV. Lay health advisors (comadres) were trained to deliver the intervention. To develop the intervention, Latina participation in an existing partnership was increased, the health-related needs and priorities of Latinas were explored, behavioral theory (social cognitive theory) was blended with Latinas' lived experiences, a conceptual model was designed for the intervention, training modules were developed, and the intervention was pre-tested and revised.	The intervention was pretested by female Spanish-speaking members of the intervention team. Revisions were made to the intervention activities based on the extensive feedback. The resulting intervention included six 60 to 90 minute group sessions: an initial meeting that establishes each comadre's role as a lay health advisor with her social network members, and meetings in which each comadre teaches Latinas about the correct use of condoms, how to overcome communication barriers with sexual partners, how to overcome communication barriers with providers, the process of seeking healthcare services at local facilities, and what it is like being an immigrant Latina in the U.S. (to build positive self-images and further supportive and healthy relationships).		The intervention was part of the Mujeres Juntas Estableciendo Relaciones Saludables (MuJEReS, Women United Establishing Healthy Relationships) program.
Martinez et al. [25]	75 bisexual men (25 black, 25 Hispanic, 25 white) in the Midwestern U.S.	Semi-structured interviews	Lack of culturally appropriate resources were identified as a barrier. Family and community relationships were important in terms of disclosing or not disclosing their bisexuality. Alcohol and other substances were often used while engaging in sex.	Small sample size, lack of a comparison group, and uncertain generalizability	

Wingood et al. [63]	Young African American Women at churches in Atlanta, GA	Using the ADAPT-ITT model, the faith-based intervention was adapted from a CDC evidence-based HIV prevention intervention for young African American women.	Results show that fidelity to intervention implementation (97%) and participant attendance to both sessions (92%) were high. The HIV risk behaviors targeted by the faith-based intervention matched the participants' HIV behavioral risk profile.	Lack of a comparison group, uncertain generalizability	
Akintobi et al. [1]	African American youth ages 12 to 18 years in Atlanta, GA	Focus groups and self-administered surveys to evaluate the effectiveness of an abstinence education program that included stress management and creative arts.	Significant increases in the understanding of abstinence benefits and risks of sexual activity were found. Youth identified goal-setting and refusal skills as the most important program components. The integration of hip-hop music was cited as a reason for sustained participation.	Non-randomized design	The study evaluated the 2 HYPE Abstinence Club intervention.
Yancey et al. [65]	201 heterosexual African American men and women ages 18 to 44 years who resided in Atlanta, GA	Randomized controlled trial of the effectiveness of an HIV risk reduction intervention involving 7 2-hour sessions conducted over 7 consecutive weeks	Significant intervention effects were found on reducing sexual behavior risk (P = 0.02), improving HIV risk knowledge (P = 0.006), and increasing conversations between sexual partners about sexual risk reduction (P = 0.001).	The retention rate among the participants randomly assigned to the intervention group was 81.7%, compared to 49.4% in the control group	The project was part of HIV/AIDS Risk Reduction Among Heterosexually Active African American Men and Women: A Risk Reduction Prevention Intervention (HIV-RAAP).

DiStefano et al. [13, 14]	Young adult Pacific Islanders in Southern California (n=95)	Focus groups of Chamorro and Tongan young adults (n=34) and parents who had at least one child (n=35), interviews of key informants (n=21, community leaders and providers of medical care, mental health, and social services), and analysis of pre-/post-test data from capacity-building trainings.	Several these were identified from formative research including misinformation, concerns about premarital pregnancy, restricted intergenerational communication, family shame and privacy, religious and cultural norms, barriers to accessing health care resources, parents' role in prevention, community vs. individual responsibility, and family and cultural pride. In training sessions on basic biomedical and epidemiologic education on HIV and HPV, there was a significant increase in participants' scores from pre- to post-test on a 15-item evaluation instrument that assessed knowledge covered in the training ($P < 0.001$).	Non-randomized design	
Sanchez et al. [50]	83 Hispanic migrant workers, Miami, FL	Focus groups	The workers were interested in participating in the cultural adaptation of an evidence-based HIV prevention intervention.		The focus groups were part of Project Salud.

Rhodes et al. [38]	Hispanic men who have sex with men, in North Carolina	The project used a multi-step process to develop an educational intervention to prevent HIV. Lay health advisors (navegantes) were trained to deliver the intervention. To develop the intervention, Latino MSM participation in an existing partnership was increased, the health-related needs and priorities of Latino MSM were explored, behavioral theory was blended with Latino MSM' lived experiences, a conceptual model was designed for the intervention, training modules were developed, and the intervention was pre-tested and revised.	The intervention was pretested by Spanish-speaking members of the intervention team. Revisions were made to the intervention activities based on the feedback. The resulting intervention included four modules to train Latino MSM to serve as lay health advisors.		The intervention was part of the HOLA program for Latino MSM.
Puffer et al. [33]	Members of 100 families across four churches in rural communities in the Nyanza Province of Kenya	A pilot randomized controlled trial of a church-based HIV prevention educational intervention	Results are pending		The intervention focused on poverty, emotional support, and skills and communication related to HIV prevention
Lightfoot et al. [23]	African American adolescents in three church congregations	Eight focus groups were conducted pre- and post-intervention to obtain input about the educational intervention.	Recommendations for maintaining the intervention's core elements and enhancing its cultural authenticity included: incorporate faith tools, build pastor capacity, strengthen parent-child communication skills, and expand social support for parents and youth.	Uncertain generalizability, non-randomized design	An evidence-based HIV prevention intervention, Focus on Youth (FOY)+IMPACT, was used

live in rural areas of the southern United States, increasing rates among African Americans and Hispanics in different urban and rural areas of the United States, increasing disparities among young adults who are African American (particularly men who have sex with men), and increasing rates among women.

As a collaborative approach to research, CBPR equitably involves all partners in the research process [5]. The CBPR approach often involves partnerships between academic and community organizations with the goal of increasing the value of the research product for all partners [10]. In the past, social scientists and researchers who focused on disease prevention tended to approach studies of social phenomena and community problems with an "outsider's approach" which distanced the research from the participants' daily lives. The "outsider's approach" was questioned by Kurt Lewin (1947) and Paulo Freire (1994), who proposed more participatory and inclusive approaches to research. Current perspectives seek to address the complexity of the human experience and the differential power that sometimes exists between academic researchers and research participants [10]. CBPR is linked

to other social justice-informed approaches to research that attempt to empower communities to address the root causes of inequality and identify their own problems and appropriate solutions [13]. The CBPR approach strives to acknowledge and implement the participants' needs, behaviors, and beliefs concerning their well-being [5,10]. CBPR takes into account the strengths and insights that community and academic partners bring to framing health problems and developing solutions. As noted by Corbie-Smith, et al. [10], minority communities should not be viewed as deficient as all communities have unique strengths and resources that should be supported and built upon in order to increase community capacity and design sustainable health interventions.

Several studies identified in this review show that evidence-based HIV prevention interventions can be successfully adapted for new cultural groups without compromising fidelity to the core intervention components [50]. For example, the Familias: Preparando a la Nueva Generacion parent curriculum developed by Parasi et al. (2011) draws upon to efficacious programs for addressing drug use and risky sexual behaviors among youth while also incorporating perspectives of the local community. Many of the studies identified in this review illustrate how community members are often quite interested in playing a role in CBPR and helping to ensure that the educational interventions that are developed are tailored to the needs of their community. For example, Sanchez et al. [50] noted that the "Latino migrant workers wanted to participate in the cultural adaptation that would result in an intervention that was culturally relevant, respectful, response to their life experiences, and aligned with their needs."

Information about the transmission of HIV and how HIV/AIDS can be prevented is available from the U.S. Centers for Disease Control and Prevention (CDC) [66]. HIV is transmitted via certain body fluids—blood, semen, pre-seminal fluid, rectal fluids, vaginal fluids, and breast milk—from a person who has HIV. These fluids must come in contact with a mucous membrane or damaged tissue or be directly injected into the bloodstream (from a needle or syringe) for transmission to occur. In the United States, HIV is spread mainly by having anal or vaginal sex with someone who has HIV without using a condom or taking medicines to prevent or treat HIV (CDC) [66]. Anal sex is the highest-risk sexual behavior. Vaginal sex is the second-highest-risk sexual behavior. Sharing needles or syringes, rinse water, or other equipment (works) used to prepare drugs for injection with someone who has HIV. HIV can live in a used needle up to 42 days depending on temperature and other factors. HIV may be spread room mother to child during pregnancy, birth, or breastfeeding. Recommendations to test all pregnant women for HIV and start HIV treatment immediately have lowered the number of babies who are born with HIV (CDC) [66].

HIV-related stigma impedes efforts to develop, implement and disseminate HIV education. In addition, HIV stigma contributes to reduced rates of HIV testing and engagement in treatment by African Americans [4]. An increasing number of programs have shown that religiously tailored HIV education can effectively address HIV and HIV-related stigma in diverse communities. Examples include The Balm of Gilead's National Black Church Week of Prayer for the Healing of AIDS, Broward County's Churches United to Stop HIV, the Black Faith-Based Health Initiative, 2009, the Metropolitan Community AIDS Network, and Churches United to Stop AIDS [4]. Two of the faith-based studies successfully addressed HIV stigma as part of the intervention activities. The results of these studies indicates that CBPR activities conducted in church settings can successfully mobilize faith communities to positively influence their members to extend compassion and support for people at-risk of HIV and those living with HIV and assist in advocacy efforts to eliminate injustices and discrimination against people living with HIV [4].

The contributions made by faith organizations are critical to addressing the HIV/AIDS epidemic in diverse communities in the United States and in other countries. The AIDS National Interfaith Network, The Balm in Gilead, Inc., and the National Coalition of Pastors' Spouses provide HIV/AIDS training and resources to African American faith communities[18]. Numerous other faith organizations and institutions are addressing HIV prevention, access to screening and treatment, and otherwise providing assistance to people living with HIV at the local level. The black church in the United States has long played an important role in addressing social and economic injustices. Poverty, discrimination, and other injustices are part of the contextual factors that contribute to the spread of HIV in the African American community [10]. As noted by Derose et al. [12]"congregations are often the last to leave distressed neighborhoods, thereby shouldering much of the burden of meeting community needs, and they can raise awareness about community problems and resources." The collective efforts of faith organizations at the local, regional, and national level are helping to address pronounced health disparities such as the relatively high HIV rates among African Americans.

Several of the studies identified in this review employed CBPR approaches to prevent HIV among sexual minorities such as gay men, bisexuals, transgendered people, and African American men who have sex with both women and women but who do not identify around their same sex behavior. Although gay communities in the United States and other countries made major reductions in high-risk sexual behaviors in the 1980s and early 1990s, rates of HIV and sexually transmitted diseases have increased in the United States since the mid-1990s [36]. Epidemiologic studies showed that, by 2006, many new HIV infections were occurring among young men who have sex with men, particularly among those who are African American or Hispanic. Results from recent epidemiologic studies underscore the severity of the HIV epidemic among men who have sex with men [36]. Several of the studies included in this review used CBPR approaches to prevent HIV among men who have sex with men. Some of the studies developed and examined the effectiveness of educational interventions conducted in chat room settings [19,41]. CBPR approaches for preventing HIV and encouraging HIV testing are evolving as new technologies such as the Internet and the rise of social media are changing ways in which people identify sex partners or seek information about how they can reduce their risk of sexually transmitted infections.

Only a handful of the studies identified in this review used CPBR approaches to develop and implement HIV prevention interventions tailored for American Indians, Asians or Pacific Islanders in the United States [13,20,64]. The number of Asian and Pacific Islanders in the United States is rapidly growing. Asian and Pacific Islanders are more likely than all other racial/ethnic groups in the United States to be diagnosed with AIDS at the time of HIV diagnosis [64], underscoring the need for more CBPR studies on HIV prevention among Asian and Pacific Islander subpopulations.

Four of the studies included in this review used CBPR methods to successfully develop and implement interventions to protect sex workers and their clients from HIV infection [27,29,51,58]. Sex workers are an extremely vulnerable population who are at-risk for HIV, substance abuse, violence, and other health disparities. The low socioeconomic status of women in many societies increases the vulnerability of women to HIV and places them at risk for health disparities [27].

In summary, CBPR studies have been conducted in the past decade to address the increasing HIV infection rates among African Americans who live in rural areas of the southern United States, increasing rates among African Americans and Hispanics in different urban and rural areas of the United States, increasing disparities among young adults who are African American (particularly men who have sex with men), and increasing rates among women. World-wide, women account for over half of new HIV cases. Additional CBPR studies and faith-based interventions are needed with adequate sample sizes and rigor study designs to empower communities to address lack of knowledge of HIV and inadequate HIV screening in diverse communities in the United States and other countries that suffer from health disparities and preventable morbidity and mortality.

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