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Behavioral HIV Prevention Interventions Among Latinas in the US: A Systematic Review of the Evidence

Jason Daniel-Ulloa^{1,2,3}, M Ulibarri⁴, B Baquero^{5,6}, C Sleeth^{5,7}, H Harig⁶, S D Rhodes⁸

¹Department of Community and Behavioral Health, College of Public Health, University of Iowa, CPHB, CBH N436, 145 Riverside Dr, Iowa City, IA, 52242, USA.

²University of Iowa, Prevention Research Center, Iowa City, IA, USA.

³Division of Public Health Sciences, Department of Social Sciences and Health Policy, Wake Forest School of Medicine, Winston-Salem, NC, USA.

⁴Department of Psychiatry, University of California, San Diego, La Jolla, CA, USA.

⁵Department of Community and Behavioral Health, College of Public Health, University of Iowa, CPHB, CBH N436, 145 Riverside Dr, Iowa City, IA, 52242, USA.

⁶University of Iowa, Prevention Research Center, Iowa City, IA, USA.

⁷University of Arizona College of Medicine, Tucson, AZ, USA.

⁸Division of Public Health Sciences, Department of Social Sciences and Health Policy, Wake Forest School of Medicine, Winston-Salem, NC, USA.

Abstract

Compared to White women, Latinas are 4 times more likely to contract HIV. In an effort to determine the overall state of the science meant to address this disparity, we reviewed the current HIV prevention intervention literature for U.S. Latinas. We searched 5 online electronic databases from their inception through July, 2014, for HIV prevention interventions including a majority sample of Latinas. Of 1041 articles identified, 20 studies met inclusion criteria. We documented study designs, participant characteristics, outcomes, theories used, and other intervention characteristics. Overall, HIV knowledge and attitudes were the predominant outcome; a small minority of studies included self-reported condom use or STD incidence. Strategies used to address cultural factors specific to Latinas and HIV included; lay health advisors, using ethnographic narratives, or using the Theory of Gender and Power, however few of the interventions adopted these strategies. This study identified several gaps in the intervention literature that need to be addressed. In addition to including more direct measures of decreased HIV risk (ex. condom use), more systematic use of strategies meant to address gender and cultural factors that may place Latinas at increased risk (e.g., gender inequity, traditional gender role norms such as *machismo* and *marianismo*, and relationship power dynamics).

Keywords

HIV; Prevention; Latina; Review; Hispanic

Background

Latino Health Disparities

Currently, Latinos in the United States (US) experience health disparities when compared to many other populations in the US. The proportion of the US population that is Latino has increased considerably during the past two decades. Between the 2000 and 2010 US Census, the Latino population grew by 43 %, making Latinos the largest ethnic/racial minority group in the US, and the Latino population continues to grow. Thus, if current health disparities experienced by this group are not addressed, these disparities will impact a greater number of Latinos, including an increasing number of Latinos with HIV/AIDS [1, 2].

HIV Transmission Among Latinas

Latinas in the US are up to four times more likely to contract HIV than white women, usually via sexual contact with an infected heterosexual partner [1]. The increased HIV risk for Latinas is most often related to their male partners having multiple sex partners [3-5]. Risk for Latinas also results from infection with other sexually transmitted diseases (STD), such as chlamydia and gonorrhea [6]. These STDs can facilitate HIV transmission [7, 8].

Risk factors related to HIV infection for Latinas are complex, involving intrapersonal, interpersonal, cultural/social, community, and organizational factors [9-12]. Intrapersonal and interpersonal factors include poor understanding of HIV transmission and prevention strategies, and of health screening services, including services for which they are eligible [13, 14]. Also, many immigrant Latinas do not have a basic understanding of human anatomy [13, 15]. They often report a lack of sex education from parents or schools, which can impact their understanding of protective behaviors or of risk perception. Beyond the educational factors, low levels of self-efficacy affects their use of condoms for HIV/STD prevention (and as a contraceptive), and low self-efficacy for communication with healthcare providers may affect their decisions about HIV testing [15, 16]. Furthermore, personal attitudes and beliefs may not support safer sex. Some Latinas consider the use of condoms less pleasurable (for both women and men), the discussion and negotiation of condom use inappropriate, and the possession of condoms as opening them to negative perceptions of others [14, 17, 18]. Latinas in Los Angeles, California, for example, have reported that police tend to view carrying condoms as evidence of commercial sex work [19]. Also, low rates of insurance that exist among Latinos can result in STDs, including HIV, being undiagnosed and left untreated longer than patients from communities with insurance and regular access to healthcare [20-22]. Finally, dependence on others for financial stability contributes to Latinas' inability to make decisions and exercise control over HIV-protective behaviors [13, 18].

Other cultural and social factors, while less clearly understood, may also influence risk. Traditional gender role socialization such as marianismo, which enjoins women to remain

chaste, pure, and obedient to men, combined with machismo [23, 24], which prescribes that men be perceived as powerful and appear dominant [25, 26], may cause Latinas to feel less powerful than their partners in heterosexual relationships and further dissuade them from discussions about sex and sexual health [14, 27-29]. Fear of relationship conflicts may further influence Latinas' abilities to negotiate protection [30-32]. Especially among younger Mexican immigrants, an emphasis on sexual intimacy within marriage may cause Latinas to ignore evidence of infidelity [17, 33] or reduce their estimation of risk if they are in a relationship to avoid using condoms or other self-protective behaviors, which may reduce feelings of intimacy [17]. Other relationship factors can also increase risk for HIV infection. Imbalances in relationship power, lower educational attainment, and higher sexual and physical abuse by male partners have all been found to be negatively associated with condom use [27, 34].

Community-level factors also contribute to the disempowerment of Latinas in sexual decision-making. Whether documented or not, immigrant Latinas have reported fearing discovery and deportation and therefore avoiding formal systems of health care, which can then lead to low levels of exposure to preventive education and access to health services [26, 35]. Avoidance of the healthcare system and distrust of providers are significant barriers for this group [36]. At the organizational level, limited clinic hours, lack of bilingual and bicultural resources, and insufficient public transportation may affect access to HIV prevention resources (e.g., condoms, counseling, testing, care, and treatment [37, 38].

HIV Prevention Interventions

Although few interventions target Latinas specifically, behavioral interventions for HIV prevention have been shown to be effective in reducing risk for HIV among Latinos in general and for women of color [39-41] and one meta-analysis [42] that examined 7 interventions that specifically targeted Latinas also found evidence for the effectiveness of behavioral interventions in reducing HIV risk behaviors. These suggested that interventions targeting women should focus on relationships, negotiations skills and include multiple contacts. For Latinos, interventions that focus on normative perceptions and self-management skills would be most effective. In contrast, Ulibarri et al. [43] suggest that interventions based in personal choice and decision-making may not be effective for Latinas; thus, skills training that requires decision-making power may be ineffective for some. Albarracin et al. [41] also found modest support for the efficacy of lay health advisors in delivering HIV interventions to Latinas. Two recent and related papers [43, 44] suggested that HIV prevention for Latinas should include: using community-based participatory approaches to interventions that build on constructs relevant to the cultural context of Latinas (acculturation, fear of discovery, relationship power), an emphasis on dissemination and implementation, embed interventions within other Latina services and better screening for gender based violence.

Despite the recent reviews of HIV interventions, no one review has exclusively and systematically examined the factors and design elements of HIV intervention targeting Latinas in the U.S. specifically. Recently, several interventions have been evaluated and published that have used a variety of study designs, including pilot studies, non-controlled

longitudinal and a few randomized controlled trials that include larger samples of Latinas or were designed specifically for them. Thus, an examination of these interventions as a whole would help assess the degree to which factors that impact HIV risk among Latinas from the existing literature are targeted in current interventions.

Purpose

The purpose of this review is to qualitatively synthesize the available prevention intervention research designed to reduce HIV risk among Latinas in the US. We systematically reviewed published behavioral prevention interventions designed to reduce HIV sexual risk among Latinas in the US. We documented characteristics of these interventions related to participants, samples, and interventions; theoretical foundations; main outcomes; implementation and setting; formative work; and community engagement.

Methods

Data Sources and Search Strategy

This qualitative review [45] included a systematic literature search of five online electronic databases: PubMed, CINAHL, EBSCO Academic Search Premier, ProQuest, and PsycInfo. Databases were searched from their inception through July 2014. Each database was searched using the following Boolean terms and keywords: (Latino OR Latina OR Hispanic) AND (women OR woman OR female) AND (HIV OR AIDS OR “human immunodeficiency virus” OR “acquired immune deficiency syndrome”) AND (prevention) AND (intervention OR program). The search was not limited by language, but was limited to studies conducted in the US, but excluded studies conducted in US territories. The reference lists of articles were also searched manually and cross-referenced to identify additional citations.

Study Selection

Three independent raters worked to identify the initial 1041 titles and abstract and selected the 73 articles for full review. The initial abstraction was conducted by a single rater, after duplications were removed a second rater worked together with the first to narrow down articles for full review. The second rater, independently, narrowed the results down to the final 20 interventions included. Disagreements were resolved through consensus. The 73 articles were reviewed by investigators (JDU, BB, SR) and disagreements were resolved through consensus as well.

To be included in this review, articles had to describe intervention components and include some form of outcome. Articles included for review if they were: (a) published in peer-reviewed journals, (b) documented an intervention (c) designed to promote HIV/AIDS risk reduction behaviors related to sexual risk (d) among HIV-negative Latinas (e) living in the US, and (f) included a sample of at least 51 % Latinas or was reported separately. We excluded studies that did not include women 18 years old or older; several studies were included that sampled Latinas under 18, but only if the sample included those 18 year old as well. Intervention studies with insufficient information for abstraction were excluded. Although some interventions were described in multiple published articles,

relevant information abstracted from each publication was combined in order to review each intervention study only once. Figure 1 details the study selection process.

Data Collection and Abstraction

Data were abstracted from 20 interventions by two investigator (BB, JDU) that met the study criteria using a using an instrument that supported both quantitative and qualitative documentation of each study. The interventions included in this review and their key characteristics are summarized in Table 1. Interventions were designated (1) a pilot study, as defined by the author (n = 3); (2) a longitudinal non-controlled single-arm study if the design included pre and post data and no control group (n = 5); (3) a non-equivalent group trial if the study included a non-equivalent control group (NEC; n = 4); and (4) a randomized controlled trail (RCT) if the study included at least two randomized arms with a pre-test and at least one post-test measurement (n = 8). Recruitment settings, level of community engagement, and formative work leading to the intervention are described in Table 2. In Fig. 2, the regional setting of each intervention is shown over a map of HIV rates across states. The base map was obtained using the CDC website: <http://www.cdc.gov/nchhstp/atlas/>.

Results

A total of 1041 abstracts were identified. Cross-referencing these articles yielded seven additional articles for review. Removing duplicates yielded 885 articles for abstract and title review. Of those 73 were selected for full text review. Of these 44 were excluded based on sample or intervention focus and an additional 9 were additional articles focused on an included intervention. Finally, 20 separate interventions met the complete inclusion criteria (see Fig. 1). However, the original Project Sepa [46, 47] was implemented in two separate locations and was reported in the tables separately but counted only once

Sample

Overall the participants in these studies represented a variety of demographic categories, with study samples varying by country of origin, gender, and ethnicity (see Table 1). Seven of the studies included Latinas under 18 years old [48-53]. Four studies included male partners [28, 48, 50, 51]. Seven studies included mixed ethnicity samples, in which Latina participants were usually combined with African American participants [48, 52-57]. A few studies reported the country of origin: six focused mostly on Mexican women [38, 50, 53, 58], one on Mexican and Puerto Rican women [46], and one on Dominican women [59, 60].

Intervention Implementation

The interventions varied from 1 or 2 brief sessions up to a yearlong series of education and group work [55]. Intervention delivery strategies included traditionally trained professionals but also a variety of community health worker models. For example, five studies used community health workers, peers, or *lay health advisors* to deliver the intervention [38, 50, 51, 59, 61] and two studies matched participants with intervention staff based on gender, ethnicity, and/or language [53, 56]. In these cases, community health workers, peers, or promotoras delivered or helped to deliver interventions that included tasks such as

health education, skills training, group discussions, and community outreach. Details on the intervention implementation strategies are in Table 1.

Theoretical Foundations

Social Cognitive Theory (SCT) was most often the theoretical basis of interventions [46, 48, 52, 62-64], in combination with other theories or models such as the Theory of Reasoned Action [48, 52, 62] or Integrated Motivation Behavioral Skills Model (IMBS) [28, 51, 61]. The Theory of Gender and Power (TGP) was used in three interventions [48, 62, 64]. Finally, no theory was specified in five interventions [54-57, 65] (see Table 1).

Intervention Outcomes

As shown in Table 1, interventions produced measured change in several intrapersonal factors related to HIV risk and protective behaviors. A change in knowledge related to HIV and AIDS [46, 48, 50, 51, 54, 55, 61, 64, 65] was observed in 10 of the 20 interventions. Changes in self-efficacy for condom use [64] and negotiating condom use [49, 64] behaviors were observed in two interventions. Four interventions produced changes in attitudes towards HIV risk behaviors [49, 61, 65], AIDS [56], and testing [54]. Changes in intention to communicate with a partner [58], to use a condom [48, 51], to get tested for HIV [51], and intentions towards sexual risk [46, 56] were also observed. Several studies (n = 6) produced on changes in beliefs about perceived HIV risk [50, 54, 57], HIV-related stigma [51], and in participants' perceived barriers to condom use [46, 64].

Half of the studies (n = 10) measured changes in interpersonal factors related to HIV risk and protective factors. Changes in efficacy, intention, and comfort related to communicating about condoms or safer sex with a partner were observed in several interventions [51, 56, 57, 62, 66]. Only two interventions observed changes in sexual decision-making power [64, 66]. Changes were observed in two other cultural factors: subjective norms for HIV prevention [58] and traditional gender norms or roles for sexual behavior [64, 66]. Changes in skills related to condom use, which included condom application and management skills [61], were observed in one study, although several studies included this skill building in the intervention.

Several (n = 8) interventions produced changes in behaviors related to decreasing HIV risk. Changes in frequency of condom use, in condom use at last intercourse, and in reports of partner condom use were observed [28, 46, 48, 57, 62, 64-66]. Finally, one intervention produced a difference between control and intervention group for STI infection [53], and two others increased HIV testing among intervention participants [38, 62].

Sites and Settings for Interventions

Recruitment sites varied between and within projects: twelve recruited from clinics or government offices (e.g., health departments) [28, 48, 49, 52-54, 56, 57, 61, 63-65], and five used community settings other than clinics [46, 51, 58, 59, 66]. All of the interventions were conducted in border or coastal states of the US. Studies were conducted in California (n = 7) coastal cities, the Great Lakes area (n = 3), the urban Northeast (n = 5), the Southwest (n = 2), Miami, FL (n = 3), and Georgia (n = 1). Note this adds up to 21 sites; Project

Sepe was conducted in Chicago and Florida (See Table 2; Fig. 1). These states represent the areas with the highest concentrations of Latinos, however, over the last 10–15 years Latinos have been moving into new areas, typically referred to as New Destination areas [67, 68]. Figure 2 shows the states HIV incidence rate for Latinos across US, as well as the number of interventions described in this review by state in which they were implemented. Many of the states with the highest rates of HIV were not represented in the literature and are more likely to be rural areas than urban. Although rates from areas like Iowa and Minnesota which are New Destination areas along with North and South Carolina, should be interpreted with caution due to low number of cases, Fig. 2 does demonstrate an overall bias in the literature of HIV interventions in traditional Latino settlement and urban areas. The Latino population in these areas continues to outpace the growth of White and other populations. Further, in New Destination areas and rural areas, healthcare struggles to meet the new demand and could represent a particularly vulnerable population.

Formative Research

All three of the pilot studies reported using formative research [49, 58, 61]. Two of the non-controlled interventions [66], one of the NEC interventions, [65] and six of the RCTs [28, 46, 48, 52, 53, 64] also reported using some type of formative research that was used in intervention development and study design. Typically, methods included focus groups and individual in-depth interviews.

Community Engagement

All three pilot studies [49, 58, 61] and all five non-controlled interventions [38, 50, 51, 55, 66] included descriptions of community involvement in the design or implementation of the intervention. Three of the four NEC trials [54, 62, 65] and three of the eight RCT [28, 48, 64, 69, 70] described engaging the community in the research process.

Gender Roles and Relationship Power

Wingood et al. [64] was the only study to assess for gender roles, relationship power, and self-efficacy to negotiate condoms. At 6-month follow-up, participants in the intervention were more likely to report consistent condom use in the past 30 and 90 days and at last sexual encounter than participants in the control group. There were also changes in several mediators hypothesized to be related to changes in condom use; however, these were not tested as mediators. Participants in the intervention also reported fewer traditional gender roles, greater feelings of power in their relationships, higher self-efficacy for negotiating safer sex, higher levels of knowledge related to HIV, and fewer perceived barriers to using condoms.

Adaptations

The interventions in Project SAFE [53] and Project SEPA [46] were adapted and re-implemented [47, 71]. For simplicity, we combined them with the original intervention. As they were not original interventions, they were included in the total count of interventions.

Project SAFE [53, 71, 72] was originally tested using 3–4 small group sessions (1 h per week) and produced differences in STD infection rates between groups 12 months

post-intervention. In a second application of Project SAFE [71], an optional five additional support group sessions were offered, but the extra sessions did not appear to significantly reduce risk beyond the original intervention.

Another intervention, Project SEPA [46], was originally tested with Mexican and Puerto Rican women in Chicago and produced increased self-reported condom use and HIV knowledge and better partner communication. Project SEPA was adapted for and targeted to Latinas in Florida by adding content to address substance use and intimate partner violence and dropping one of the intervention sessions [47]. Results were similar to the first implementation.

Discussion

The purpose of this review was to systematically assess behavioral HIV-prevention interventions focused on reducing sexual transmission risk for HIV among Latinas in the US. The study aimed to identify and explore the factors and strategies emphasized in interventions targeting HIV among Latinas and examine this in the context of what factors literature suggests are important to address. In total, 20 interventions were reviewed. The categories used to evaluate these interventions were based on factors hypothesized to be related to HIV risk as stated by the current literature and included factors such as lack of HIV-related knowledge, low levels of reproductive health education, real and perceived barriers to healthcare, psychosocial and knowledge factors related to condom use (self-efficacy, communication skills, etc.), real and perceived discrimination and fear of healthcare providers, cultural norms of sexuality, and gender norms, and issues surrounding relationships (e.g., intimacy and imbalances in power). Although not tested in experimental designs, several researchers have suggested that to be effective, interventions should also be theoretically based [41, 73], should consider the use of lay health advisors to deliver the intervention [41], and should include women in the community in the development and implementation of interventions [27]. The majority of studies in this review relied on knowledge and attitudes about HIV, and few attempted to utilize strategies to address gender and cultural factors believed to be important in addressing HIV risk among Latinas. This makes it challenging to determine what is and is not working in reducing HIV incidence in Latina communities.

Overall, this review indicates that there are large gaps in the evidence. The interventions evaluated from the literature to date rely heavily on mediating factors associated with risk behavior (e.g., HIV knowledge). The majority of these studies do not measure behaviors such as condom use or HIV testing, and only Shain et al. [53] reported differences in STD infection rates between groups.

Samples

Previous research has suggested that HIV interventions should specifically target Latinas as opposed to including them in interventions with women from other ethnic groups, as Latinas may have different experiences with HIV risk than others. For example, differences in immigration status, language, sexual health education and cultural contexts [27] may place Latinas in unique situations that must be addressed in interventions specifically tailored for

them in order to reduce their HIV risk. Two interventions targeting a multi-ethnic sample analyzed results separately by Latina and African American, but neither was adequately powered for the sub-group analysis. The project by Roye et al. [52], did not find a difference in reported condom use, although there was a larger overall effect size of the intervention for Latinas. Flaskerud and Nyamathi [56] observed that Latinas showed greater improvements in AIDS knowledge, attitudes towards AIDS, and HIV knowledge than African Americans included in the study. This evidence suggests that Latinas and African American women may react differently to interventions targeting attitudes and behaviors, possible due to less exposure to sexual health education for Latinas. Thus, when exposed to certain educational strategies, Latinas may benefit more from the education than African American woman who have previously been exposed to the same intervention.

Also, previous research has suggested that Latinos may differ in several key characteristics by generation (ex. acculturation, education,) [5, 74]. The reviewed studies did not distinguish between generations of Latinas, which may affect how interventions should be framed and thus potential outcomes. For example, a study of men suggested a difference in HIV risk factors between foreign-born and US-born Latinos [75]. Currently, a majority of Latinos living in the US are foreign-born, although that is changing [76, 77]. Nevertheless, foreign-born Latinas and US-born Latinas represent large populations that may differ by several important factors related to HIV, especially language barriers, education, access to health care, and relationship power [14, 23, 27-29]. None of the interventions explicitly targeted or distinguished between foreign-born or US-born Latinas. Future work must assess what constructs, intervention activities, and components are necessary to address Latinas born inside or outside of the US.

Although, in general, the largest proportion of the burden of HIV is felt in metropolitan areas, rural areas do share a proportion of that incidence, especially in the southern US. There are specific problems for rural Latino communities related to HIV. For example, rural cases of HIV are often first diagnosed at a later stage (concurrent with AIDS diagnosis), and rural residents may have more difficulty accessing necessary services once diagnosed [78, 79]. The rural context may be particularly difficult for women [76]. For example, states like North Carolina, which is among several southern states showing increases in the Latino population that outpaces the rest of the country [76], also has high rates of HIV and STD infection, as well as HIV diagnoses in Hispanics/Latinos and other foreign-born persons. Latinas in North Carolina are more likely to be dual diagnosed with HIV and AIDS [78] than all other ethnic groups monitored. For Latinas in these rural areas, lack of access to healthcare, acculturation, economic dependence on their partners, language barriers, and discrimination may put them at particular risk for HIV, widening the HIV disparities of this group [80-84]. Further, as Latinas move into areas which have not traditionally experienced Latino immigration, often referred to as “New Destination” communities [85], HIV rates may be high, although raw numbers of cases are low CDC NCHHSTP Atlas, 2014. However, none of the interventions reviewed were conducted in the rural areas of the United States, as shown in Fig. 2. Future effective interventions that target rural Latinas living in these communities must be conducted to reduce HIV related disparities among Latinas.

Intervention Implementation

Several studies have demonstrated the effectiveness of using lay health advisors in behavioral intervention in Latino samples [86]. Although many of the interventions used some sort of version of lay health advisor or community health worker strategies for intervention delivery, there was little consistency between the strategies from one study to the next. For example, Project SAFE [53, 71, 72] used ethnicity-matched facilitators and Project SEPA [46, 47] used bilingual, bicultural Latinas trained as HIV educators and counselors. However, only a few studies specifically used lay health advisors or community health workers [38, 50, 51, 59, 65]. The roles and training of these women varied across interventions. For the most part, lay health advisors in these studies were used primarily as education disseminators and to provide a bridge between the community and healthcare agencies and the community [87]. As several risk factors associated with HIV risk are based on lack of knowledge and access to care, lay health advisors may be an important bridge between community women and healthcare services while providing sexual and health education [87]. Considering the difficulty that many Latinas have accessing needed healthcare services [83, 88, 89]. It is likely that well-developed lay health advisors models that include this bridge role will be more effective than lay health advisors utilized solely as information and education disseminators.

Theoretical Framework

The use and evaluation of theoretical models and frameworks are important to establishing effective interventions [27, 90]. Several theoretical frameworks or models were used to develop the interventions. However, five of the studies [54-57, 65] in this review did not describe a theory, and at least one intervention [66] technically applied a theory post hoc; however, the researcher worked with the community organization that developed the intervention to determine the implicit theories used and then matched those to an existing theory. Although prominent theories such as SCT and TRA were used, several interventions used a collection of constructs from multiple theories. Several studies used the IMB model, which was developed specifically for HIV intervention, but it is not clear how well this model works for women or Latinas, as the model was developed in men who have sex with men populations [90]. The only theory used in the interventions in this review that was developed specifically among female populations was the Theory of Gender and Power [91]. That theory was used in 3 interventions [48, 62, 64]. More research needs to be conducted using well-developed theoretical models that account for the unique factors that influence HIV infection among Latinas living in the US. It is not clear from this review that this has been accomplished.

Measured Outcomes

The most commonly measured HIV related variables were knowledge, attitudes, and beliefs. Few of the studies reviewed moved beyond these mediating variables to examine the impact on condom use or other HIV risk reduction behaviors (e.g., testing). An important step forward would include linking mediating variables such as knowledge, attitudes, and self-efficacy to behaviors more proximal to HIV related risk (e.g., condom use). Thus, it is

difficult to determine at this point which of these mediating variables are important in reducing HIV infection among Latinas.

Furthermore, the over-reliance on individual-level factors is not likely to result in changes in HIV infections rates communitywide [10, 92]. Effective interventions must account for the environment in which the behavior occurs. For HIV among Latinos, this includes social and cultural views, beliefs about intimacy, and the role of sexual partners in reducing risk. For example, research demonstrates that US Latinas' feelings about intimacy and committed relationships prevented them from using condoms [17, 33], and that power imbalances in relationships may limit the strategies that Latinas might use to protect themselves (e.g., condom use). Several studies [48, 62, 64] utilized constructs from the Theory of Gender and Power, which includes constructs related to relationship power and gender roles and norms. Interventions developed and tested by Wingood et al. [64] focused on perceptions of gender roles, perceived barriers of condom use, self-efficacy in negotiating condom use, and relationship power. The intervention developed and tested by Amaro et al. [62] also provided some evidence of the effectiveness of empowerment-based interventions that utilize concepts of the Theory of Gender and Power. Few of the reviewed studies measured these social and cultural level factors; the few that did provide a starting point for more effective interventions that could affect the social and cultural factors that impact HIV risk and health promoting behaviors for Latinas.

Limitations

There are some limitations to this study. This review focused on studies and interventions conducted in the US. This limits generalizability to US samples, however, as this was the purpose of the review. The conclusion of this review, however, should not be generalized to Latina populations in Puerto Rico or other countries. This study did not also explicitly link intervention activities to study outcomes. In an effort to get a broad range of interventions we did not limit interventions based on any common outcomes making it difficult to make any conclusions about how activities produce outcomes. Nevertheless, any conclusions of the effectiveness of specific intervention components should be viewed with caution. Finally, we did not include conference papers in the review and this may have resulted in a less than comprehensive list of interventions, however, as we have a fairly broad range of articles, it is unlikely that conference papers would have added significantly to this review.

Conclusions

Compared to interventions focused on other groups vulnerable to HIV infections, relatively little is known about how to reduce the risk of HIV among Latinas. In fact, a recent meta-analysis identified only 6 randomized controlled trails that focused on reducing Latina HIV risk [42]. Although there is evidence that these behavioral interventions do work, few include many of the factors that previous formative research suggests are important (ex. relationship power and negotiation or using gender specific theoretical frameworks). First, however, there are some technical aspects of future studies that would increase our knowledge base is included. Recruiting Latino only samples may not be feasible, but subgroup analyses of intervention effects on Latinas should be reported when possible; to be

meaningful, this will require sample size calculations based on these subgroup analyses. In addition, subgroup analyses should explore differences by country of origin and immigrant generation, to begin to distinguish between which interventions work for Latinas as a whole and which meet the prevention needs of Latina sub-groups. Second, the use of lay health advisors or community health workers needs to be better defined, documented, and assessed in relation to non-health worker strategies. Third, theories specific or adaptable to the environment and culture of US Latinas need to be developed, evaluated, and then rigorously applied to intervention development, implementation, and evaluation. Fourth, future studies should continue to examine factors such as knowledge as mediators and not as outcomes. As with HIV research in general, more consistent use of outcome measures of HIV risk and protection are required both to establish replicable effectiveness and to provide the ability to compare across studies. Finally, the use of community engagement in research leads to some benefits in the research, including recruitment, cohort maintenance, and cultural appropriateness [93]. Using and documenting the level of involvement of community members should be a priority in establishing the usefulness of this approach.

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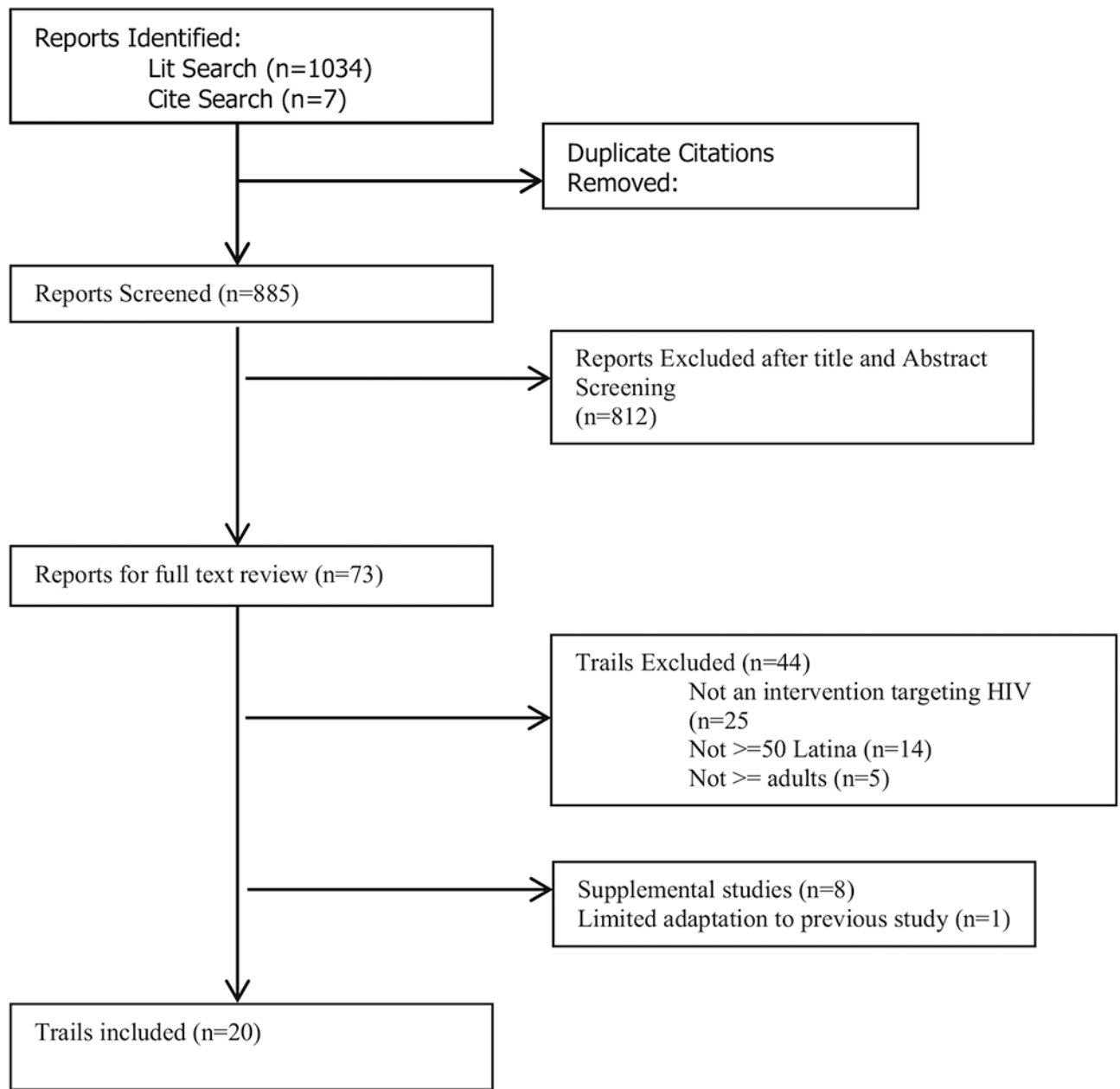


Fig. 1.
Selection of interventions for inclusion

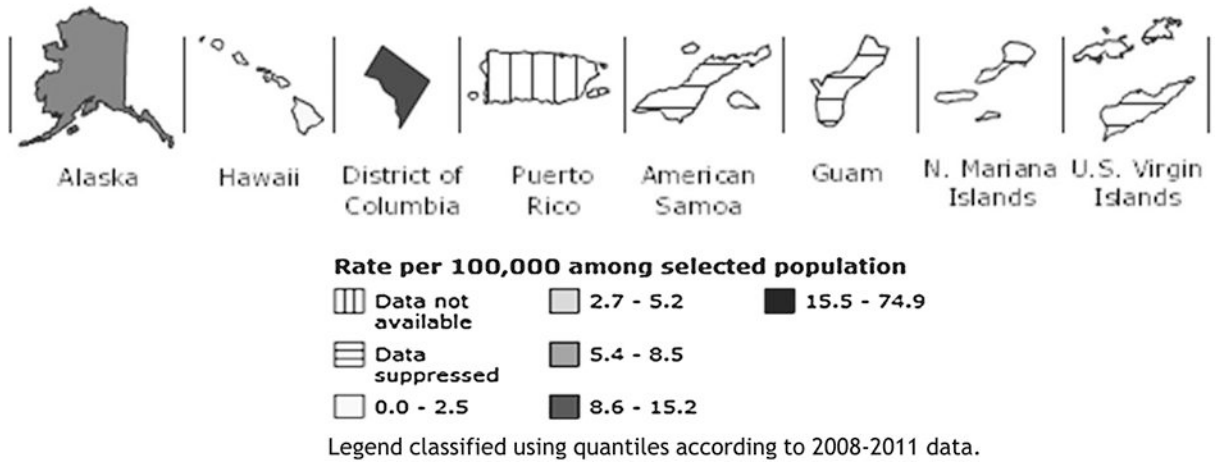
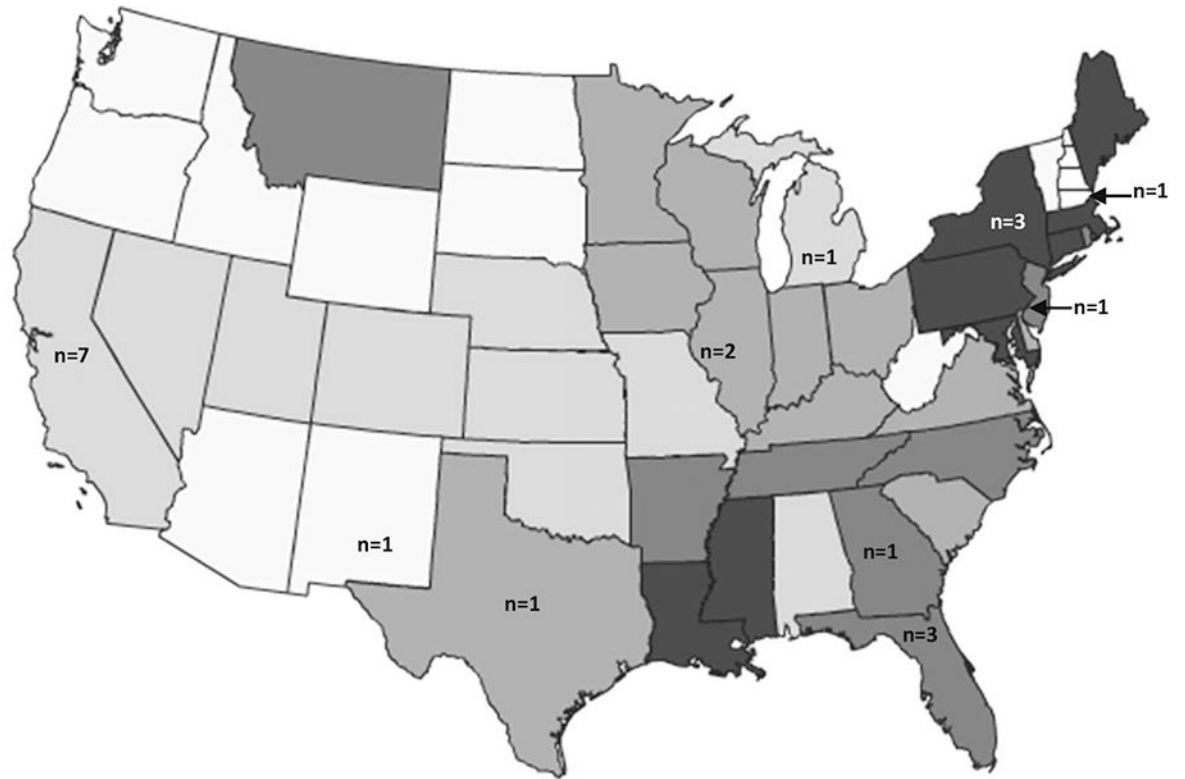


Fig. 2. Number of Latina focused HIV prevention interventions by state and by state level HIV diagnosis

Table 1

Characteristics and outcomes of Latino focused HIV interventions

References	Participants	Description of intervention	Theory/model	Study design	Primary relevant outcome
Pilot studies					
Lindenberg et al. [49]	Low-income predominantly Mexican-American (79 %) immigrant young women (N = 50) 14–24 years old (average age = 19)	Intervention 1: 5-day workshop conducted 2x/wk for 2.5 weeks. Risk and resilience psycho-educational group interactive learning workshop. Case studies presented: themes related to personal and reproductive health risks inherent in alcohol, tobacco, and other drug use and risky sexual behavior. Classes held in Spanish	Intervention 1: Covey's 7 habits of highly effective people	Two groups; randomized Baseline, 3-month post-test	No statistically significant differences found between the two interventions on: knowledge, attitudes, intentions, and behaviors Neither intervention significantly affected substance use knowledge, sexual risk-taking knowledge, intentions to use alcohol or cigarettes, or substance use behaviors Attitudes towards risk behavior improved significantly ($p < 0.0001$) following both interventions Both interventions resulted in significant increases in ability to discuss HIV/AIDS precautions with sexual partners ($p < 0.05$) Sexual self-efficacy ($p < 0.001$) and resilience scores ($p < 0.001$) significantly increased in both groups
Jones et al. [61]	Latina college students (N = 209), no demographic data provided	Intervention 2: health education individual learning correspondence course delivered via five weekly mailings of Spanish language health education pamphlets specific to substance use, teen and unintended pregnancies, and STDs and HIV/AIDS. Interactive personal diary also used for participant to document personal reflections and responses for promoting self-protection	IMB model	Baseline, immediate post-test, 8-week follow-up	HIV knowledge scores significantly increased ($p = 0.001$) from baseline to post-test Increased knowledge was retained at follow-up ($p = 0.003$) Self-reported condom application and management skills significantly increased from baseline to post-test ($p = 0.001$)
Davila et al. [58]	Primarily Spanish-speaking Latinas (N = 31), 87.1 % Mexican, mean age 36.6 (SD = 10.1), attending an IPV prevention program	SENORITAS: 3-h, single session peer education program delivered by multiethnic nursing students (N = 32). The curriculum used a mini <i>novela</i> to introduce essential content (women's risk for HIV/STIs, ABCs of safer sex, and condom management skills), and presented resources for students available through the university and public health clinics <i>Entre Amigas: Promoviendo Nuestra Salud</i> (adapted from Cuidate): two 1-h sessions, integrated HIV-IPV risk reduction program ("Are you in a healthy and safe relationship?" and "Keeping yourself healthy and safe") held 1 week apart. In Spanish	TPB	One group Baseline, 2-week post-test, 1-month follow-up	No significant differences were noted in participants' attitudes ($p = 0.38$), subjective norms ($p = 0.24$), perceived control ($p = 0.09$), or intentions ($p = 0.08$) to ask their partner to use condoms between baseline and post-test Significant changes were noted in attitude ($p = 0.04$) and intentions toward asking their partner to use a condom ($p = 0.05$) between baseline and follow-up, but not in subjective norms ($p = 0.07$) or perceived control ($p = 0.09$)

Longitudinal-
none controlled

References	Participants	Description of intervention	Theory/model	Study design	Primary relevant outcome
Gómez et al. [66]	Sexually active, low income Latina immigrant women 18 or older (N = 74)	<i>Mujeres Unidas y Activas</i> (MUA): grassroots community education, organizing and advocacy project to empower Latina immigrant women. MUA members can participate in a variety of group activities (general meetings, self-esteem support sessions, friendship circles, HIV workshops, leadership trainings, political participations, volunteering, and special programs), HIV workshops (single or multiple 2–3 h sessions) specifically provide in-depth information about HIV prevention and transmission, condom use negotiation skills, and HIV testing	ET	One group Baseline, 3-month post-test, 6-month follow-up. Monthly phone calls to track participation in MUA activities and MUA maintained participation logs	Comfort with sexual communication: significant increase ($p < 0.001$) from baseline to follow-up Partners' decision-making power: significant decrease among women in steady relationships ($p < 0.001$) from baseline to follow-up Sexual comfort: significant increase ($p < 0.001$) from baseline to follow-up Traditional sexual gender norms: significant decrease ($p < 0.001$) from baseline to follow-up. Fear of coercion: no significant change among women with male sexual partner in previous year ($p = 0.05$) from baseline to follow-up Male condom use: at baseline only 41 % had ever used a condom and 21 % had used a condom at last sex; at follow-up 48 % had ever used a condom and 26 % reported condom use at last sex (significance not reported)
Cervantes et al. [55]	Mothers (93.5 % Hispanic) over the age of 18 with substance abuse disorders (N = 128)	Clarity: 6-month phase structured outpatient program Phase 1: 4 months of education related to parenting skills, effects of drugs on the brain, pharmacological composition of substances, relapse prevention and self-esteem building Phase 2: 2 months of group work related to stress management, anger management, group therapy, women's health, and family violence. Women's health education during phase 2 addresses high risk sexual practices and STDs, among other topics Phase 3: 1 year of after care, including access to a health clinic providing medical screening, family planning, STD testing and treatment and HIV testing	Not reported	Baseline, 6-month post-test, 12-month follow-up	Significant improvements in knowledge related to STD/HIV ($p < 0.001$) More participants decreased their level of unprotected sexual contact with main partner than increased from baseline to post-test, but difference was not significant A slight non-significant increase was found for women's engagement in unprotected sexual contact with a person other than their main partner
Martín et al. [50]	704 Latinos 13–69 years old; mean age = 31.3; 52 % Female; 76 % Mexican; 60 % married	HIV Prevention Program: HIV/AIDS prevention education provided by lay health advisors either in a home for individual or family groups, at a house party for small groups, or at schools and churches for larger groups. Also provided risk-reduction follow-up visits and street outreach services	Community Health worker Model; lay health advisors were trained in the TTM	Baseline, immediate post-test	Significant increase in HIV knowledge ($p < 0.001$) and self-perceived HIV risk ($p = 0.0001$), from baseline to post-test
Ramos et al. [38]	Recent immigrants from Mexico or Latin America who received health services in the US and Mexico (<i>animadoras</i> made 585 direct contacts; 125 women identified as at risk (eligible); 56 agreed to become seeds)	Health Women Project: four <i>animadoras</i> (motivators) were assigned in pairs to conduct extensive community outreach among Latinas, provide information on HIV prevention services, and assess the women's HIV risk factors. They reviewed role model stories with <i>semillas</i> (seeds) to reinforce HIV prevention messages and provided them with a yellow coupon for HIV education and testing, which they were to turn in at the clinic when receiving services. <i>Animadoras</i> also provided each seed with up to five green coupons to recruit additional Latinas for HIV prevention services. Women who agreed to become <i>semillas</i> developed personal plans for behavior change, promoted awareness of HIV as a Latina issue, educated other high-risk women about available services and linked		Baseline assessment with seeds, tracking of service utilization data (via coupons)	Over a 3-month period, seeds made 61 referrals (59 Latinas and 2 Latino men). 95 % of seeds and 100 % of their referrals were tested for HIV

References	Participants	Description of intervention	Theory/model	Study design	Primary relevant outcome
Rios-Ellis et al. [51]	Latinos 14 years old (N = 461) (65 % female, mean age = 38)	them to services. Seeds received \$5 for each green coupon redeemed. Ability to conduct in Spanish <i>Protege tu Familia: Hazte la Prueba: one 2-h session delivered by trained promotores at various community locations. 27 charlas (group guided discussions) were conducted in conjunction with this evaluation. Developed through a CBPRK approach</i>	Community Health Outreach Model, IMB	Baseline, immediate post-test, and 90-day follow-up	Increase in HIV knowledge ($p < 0.0001$) and intentions to use a condom at every sexual encounter ($p < 0.0001$) Increased willingness to suggest condom use with a future partner ($p < 0.0001$) Increased willingness to talk to a partner about sex in the future ($p < 0.01$) Increased willingness to suggest that a partner get tested for HIV ($p < 0.01$) Intention to get tested for HIV also increased ($p < 0.10$) among all participants and significantly among participants who had never been tested ($p = 0.01$) HIV related stigma also decreased significantly from baseline to post-test ($p < 0.0001$) Only changes in HIV knowledge and HIV related stigma remained significant at follow-up
Non-equivalent control					
Flaskerund and Nyamathi [56]	Low income Black and Latina women (N = 712; 50 % Latina), clients of 6 WIC community sites	AIDS education program consisting of a 12-min English or Spanish slide-tape presentation presented by a nurse educator (same race/ethnicity as participants). Participants also received an educational brochure and a community resource brochure in English or Spanish; control group received a nutrition education program with delayed exposure to the AIDS intervention	Not reported	Two groups Baseline, immediate post-test Experimental group also completed a 2–3 months follow-up	Total AIDS knowledge significantly increased in both racial/ethnic groups ($p < .05$), with improvements more pronounced among Latinas compared to blacks AIDS attitudes significantly improved from baseline to post-test among the intervention group with improvement more pronounced among Latinas ($p < .05$) Both the experimental and control groups experienced significant changes in sexual and drug use practice intentions between baseline and post-test and more Latinas changing intentions to change ($p = 0.004$). Improvements in Barrier were retained at retest among both Blacks and Latinas ($p < .05$), but not for attitudes or practices Blacks exhibited higher HIV knowledge at follow-up but Latinas showed greatest change Attitude was not significant by follow-up, but Latinas regressed back to baseline levels, while Blacks maintained a higher positive attitude than Latinas pre-follow-up
Berrier et al. [54]	All pregnant women attending clinic for their first medical exam between December 1998 and July 1999 Control group was drawn from women that attended orientation without AIDS component. 515 women in experimental group and 98 in control. Mean age 25, 56 % Latina and 81 % born in the US, 66 % not married	Mount Sinai Prenatal Clinic HIV/AIDS Education, Counseling, and Testing Program: HIV education and counseling integrated into routine care	Not reported	Two groups Baseline and immediate post-test	Both groups showed an increase in HIV knowledge, with the increase in the experimental group slightly more No significant difference post-intervention in attitudes to testing for pregnant women; experimental group had a more positive outlook Self-assessed risk twice as high in control than in experimental (no baseline evaluation) In the experimental group there was a significant association between risk assessment and desire for testing ($p = 0.01$), except for the risk category non-injection drug use
Raj et al. [60]; Amaro et al. [62]	Spanish-speaking, Hispanic women 18–35 years old who were sexually active and did not consistently	12-week general women's health promotion program which included HIV and other health topics and used psycho-educational strategies (education and skills building) 12-week HIV-	HIV program: SCT, Empowerment Theory, self-	3-group design (women's health versus HIV risk reduction versus	Participants in both groups were more likely than control group participants to report increased condom use from baseline to post-test (HIV-IP OR 2.51; 95 % CI 0.96, 6.55; WHP OR 2.67; 95 % CI 1.10,

References	Participants	Description of intervention	Theory/model	Study design	Primary relevant outcome
Flaskerud et al. [65]; Flaskerud and Nyamathi [95]	use condoms with a steady male partner in the past 3 months, did not inject drugs or participate in sex trade in past 6 months, and had not plan to relocate from Boston (N = 162), Mean age 28.6 (SD); mean relationship length 5.4 years; 90 % had children; 89 % born outside of the continental US, mostly Dominican; 66 % not fluent in English	intensive prevention program that included only HIV related health topics and used psycho-educational strategies as well as a Frerian participatory and empowerment approach to adult education (group problem solving and critical thinking). Both programs conducted in Spanish and co-facilitated by community health educators. Primary facilitators were community leaders trained in HIV community education and the program curriculum. Both programs included twelve 90–120 min. sessions	inrelation theory, DOI, and TGP Women's health: no specific theoretical framework but concepts from SCT, TRA, and HBM	wait list control) Baseline, 12-week post-test, and 3 month follow-up assessments	6.52) and from baseline to follow-up (HIV-IP OR 4.26; 95 % CI 1.45, 12.56; WHP OR 4.88; 95 % CI 1.80, 13.19) For baseline/post-test analyses, both HIV-IP participants (OR 3.92; 95 % CI 1.21, 12.69) and WHP participants (OR 6.56; 95 % CI 2.19, 19.69) were significantly more likely than wait-list control participants to report increased intent to use condoms in the future Only participants in the HIV-IP program were significantly more likely than the wait-list control group to report increased safer sex communication at post-test (OR 3.88; 95 % CI 1.53, 9.80) and follow-up (OR 3.26; 95 % CI 1.34, 7.92) Only the WHP group was significantly more likely than the wait-list control group to report increased HIV testing at post-test (OR 2.50; 95 % CI 1.02, 6.12), but this significant effect was lost at follow-up
Flaskerud et al. [65]; Flaskerud and Nyamathi [95]	Low-income Latina women, clients of WIC and women accompanying them (experimental group: N = 508; comparison group: N = 51)	2 education/counseling sessions with monthly clinic visits over 1 year. Following pretest, participants were provided with HIV counseling and testing, followed by a psycho-educational intervention provided by an ethnicity, gender, and language matched community health worker. HIV test results provided 2 weeks later along with post-test and reinforcement of educational intervention. A subsample (n = 200) was randomly selected for 1 year retest and HIV testing. Comparison group completed pretest and 2 week post-test. After post-test they were offered HIV testing and educational intervention. Intervention consisted of counseling in risk reduction, lifestyle practices and health promotion; skill development in condom use and negotiating safer sex with a partner; skill development in cleaning needles; pregnancy counseling; free condoms as often as desired; and referral and advocacy for additional social services and for partner testing. The intervention made use of one-on-one peer counseling, group discussion, videotapes and comics in Spanish, role playing, demonstration and return demonstration, information and resource counseling, and printed materials. Child care, toys, and snacks also provided	Collaborative inquiry, cultural competence, women as traditional caregivers and health educators in their families	Two groups Baseline, 2-week post-test and 1-year follow-up	Significant increases noted in knowledge of HIV symptoms ($p = 0.0001$), transmission ($p = 0.0001$), and sexual prevention methods ($p = 0.0001$) from baseline to post-test; increases were retained or increased (although not significantly) at follow-up Perceived risk of having HIV ($p = 0.02$) and perceived risk of getting AIDS ($p = 0.03$) decreased significantly from baseline to post-test Frequency of sexual activity and variety of sexual activities did not significantly change from baseline to post-test or follow-up No condom use (past 6 months) decreased from 77.1 % baseline to 64.5 % at follow-up (no significance given) Frequency of sex without a condom in the past 2 weeks, in addition to number of reasons for not using condoms, significantly decreased in the intervention group between baseline and post-test and between baseline and follow-up ($p = 0.04$) All participants demonstrated skill achievement in cleaning injection equipment and knowledge of bleach use to prevent HIV transmission increased significantly over all three assessments ($p = 0.0001$) No significant changes were noted in comparison group One case of HIV diagnosed at baseline & no new cases in the intervention group at follow-up
Randomized controlled trials	Hispanic and Black women enrolled in a methadone maintenance program for at least 3 months (N = 84, 64.3 % Hispanic)	Skills-building intervention: five 2-h small group sessions of AIDS education and skills building led by experienced women drug counselors. Sessions focused on info about AIDS transmission and prevention techniques, condom use, assertiveness training, problem solving and communication skills. Sessions included video, visual presentations and	Not reported	Two groups Baseline and 2-weeks post-test	At post-test, participants in the skillsbuilding intervention group reported Significantly higher frequency of condom use ($p = 0.001$). Higher frequency of taking condoms from the clinic ($p = 0.005$) Higher comfort levels in talking about sex with sexual partners ($p = 0.030$) than participants in the control group More worried about their child getting AIDS ($p < 0.001$) More interested in learning about

References	Participants	Description of intervention	Theory/model	Study design	Primary relevant outcome
Suarez-Al-Adam et al. [63] Latina subsample; O’Leary et al. [98]	From Suarez-active Latinas 18 years old who were receiving care in a public STD clinic and did not consistently use condoms (N = 46)(overall sample was N = 472, only 41 % female and 3 % Hispanic)	Seven, 90-min sessions delivered over three and a half weeks to small same-sex groups, led by two trained professional or paraprofessional facilitators. HIV intervention focused on providing information and building skills to promote safer sex, including condom use and negotiation strategies Health promotion intervention focused on general health issues and was equivalent in contact time and activities	SCT	Two groups: HIV risk reduction versus health-promotion control intervention Baseline and 3-month post-test interviews	Latinas in the HIV intervention group showed a non-significant decrease in risky sexual acts ($p > 0.15$) compared to those in the control condition and a non-significant increase in proportion of sexual acts in which a condom was used ($p > 0.20$) There were no group differences in discussion of condom use as a result of the intervention
Shain et al. [53]; Korte et al. [72]	From Korte: Mexican American (N = 424; N = 328 attended all 3 visits and African American (N = 193; N = 149 attended all 3 visits) women 14–45 years old with a current non-viral STD	Project SAFE: three 3–4 h weekly small group sessions designed to help women recognize personal susceptibility, commit to behavior change, and acquire necessary skills. Groups led by a female facilitator of the same race/ethnic group as participants and included open discussions, games, videos, behavior modeling and role play Control group received standard STD counseling (option to receive intervention after completing the study)	IMB	Two groups Baseline, 6-month post-test, and 12-month follow-up	Rates of subsequent GC/CT infection were significantly lower in the intervention group than in the control group based on tests During the first 6 months (11.3 vs. 17.2 %, $p = 0.05$). During the second 6 months (9.1 vs. 17.7 %, $p = 0.008$). Over the entire 12-month study period (16.8 vs. 26.9 %, $p = 0.004$)
Shain et al. [53] (added intervention to initial group in Shain et al. [71])	Mexican–American (N = 585) and African American (N = 190) women 15–45 years old and diagnosed with gonorrhea, chlamydia, syphilis or trichomoniasis in public health clinics	Project SAFE 2: all participants received 15–20 min. of individual counseling based on CDC recommendations, as well as treatment for baseline infections, prior to randomization. Enhanced intervention group consisted of the standard intervention with option of attending 5 additional monthly support group sessions each lasting 90 min. Standard intervention consisted of three weekly, 3-h small group sessions (see Project SAFE description). Sessions were divided by ethnic group with ethnicity matched female facilitators	IMB	3 arm with control (delayed intervention), standard intervention and enhanced intervention arms Baseline, 6-month post-test, 1-year follow-up, 18-month follow-up, and 2-year follow-up assessments (all including STI testing, optional only at 18 months)	Women in the enhanced and standard interventions were 40.5 % ($p = 0.004$) and 34.2 % (0.006) less likely than controls to be infected with GC/CT in year 1 Women in the enhanced and standard interventions were 35.9 % ($p < 0.03$) and 36.4 % ($p = 0.03$) less likely to be infected in year 2 Women in enhanced ($p = 0.003$) and standard ($p < 0.03$) intervention groups were less likely than controls to have multiple infective episodes any time during the study
Harvey et al. [28]	Hispanic females ages 18–25 and their male sex partner (N = 107) (other criteria: had had sex without condom in past 3 months and either knew/thought her partner had had sex with someone else in the past year, thought he might have (concurrent) sex with someone else in the next year, and/or knew or	PARTNERS Project: a couple-based intervention aimed at reducing the risk of unintended pregnancy and STDs (including HIV) among young Hispanic women and their male partners. Small group format, skill-based activities, and skill-building activities in communication and risk reduction including behavior modeling, role playing and games. three 2.5 h intervention sessions (one per week for 3 weeks) covered perceived vulnerability to unintended pregnancy/HIV/STDs, transmission/prevention of HIV/STDs, strategies for safer	Fishbein’s Integrated Behavior Change Model, the IMB	Two groups Baseline, 3-month post-test, 6-month follow-up	Number of unprotected vaginal sex acts with main partner in past 90 days significantly decreased for both groups between baseline and post-test ($p < 0.01$) No significant between group differences in number of unprotected vaginal sex acts Both groups reported significant increases in consistency of condom use between baseline and post-test ($p < 0.001$) No significance between group differences in consistency of condom use at post-test Among females only, consistent use of an effective contraceptive method with main partner in past 90 days significantly increased between baseline and post-test ($p < 0.001$)

References	Participants	Description of intervention	Theory/model	Study design	Primary relevant outcome
Peragallo et al. [46]	thought partner had had an STD in the past year, knew or thought partner had ever been in prison, knew or thought partner had ever used injection drugs, knew or thought male partner had ever had sex with a man, if she had had sex with someone else in the past year, though she might have sex (concurrently) with someone else in the future, had had an STD in past year, or had ever used injection drugs). HIV+ women, pregnant women/ those intending pregnancy in the next year were excluded	sex, condom use skills, mutual monogamy, testing, couple selection of a healthy safer-sex strategy, reproductive intentions, avoiding/controlling triggers of unsafe sex, and communication about sexual issues. Condoms, lubricants and relevant handouts provided at each session Comparison condition: facilitators provided couples with information about contraception and STDs (including HIV) and answered questions. Videos and brochures provided additional information. Condoms, lubricants and referrals for HIV counseling and testing provided at end of single, 2 h session. One male and one female facilitator and a facilitator assistant led all sessions (same team led all sessions for the same cohort)	SCT	Two groups Baseline, 3-month post-test, and 6-month follow-up	and between baseline and follow-up ($p < 0.01$). No significance between group differences in effective contraception use
Peragallo et al. [47]	Mexican and Puerto Rican women 18–44 years old who were sexually active during previous 3 months (N = 454 at baseline; N = 394 at 3-months; N = 422 at 6-months)	Project SEPA: six culturally tailored intervention sessions on understanding their bodies, HIV/AIDS and STDs, condoms (myths and use), negotiating safer sex, violence prevention, and partner communication. Facilitated by bilingual, bicultural Latinas certified by the Red Cross as HIV counselors and instructors. Sessions included hands-on activities, role-playing, skill demonstration, homework to build self-efficacy, and quizzes	SCT, Freire's pedagogy	Two groups	Compared to the control group at follow-up, participants in the intervention group: Were significantly more likely to report always using condoms ($p = 0.006$), Had significantly higher HIV knowledge ($p < 0.001$), Had significantly better partner communication ($p = 0.0001$), Had significantly higher risk reduction behavioral intentions ($p = 0.0005$), Had significantly fewer perceived barriers to condom use ($p < 0.001$)
Peragallo et al. [48, 69, 70]; Koniak et al. [96]	Adult Hispanic women 18–50 who were sexually active within the past 3 months; N = 548 at baseline	Project SEPA: five 2-h small group sessions covering HIV/AIDS in the Hispanic community, STIs, HIV/AIDS prevention, negotiation and communication with the partner, IPV, and substance abuse. Facilitated by five bicultural and bilingual Hispanic females. Sessions used role play, participatory methods, videos, and discussions	Project CHARM; SCT TRA and TGP	Block Randomized; Baseline, 3-month post-test, 3, 6-month and 12-month follow-up	Intervention participants had: An increase in partner communication at post-test ($p = 0.04$). A decrease in perceived barriers to condom use at post-test ($p = 0.001$). An increase in community prevention at post-test ($p = 0.003$) and 6-month follow-up ($p < 0.001$). An increase in HIV knowledge at 6-month follow-up ($p < 0.001$). An increase in reported condom use at 12-month follow-up ($p = 0.01$)
Lesser et al. [48, 69, 70]; Koniak et al. [96]	84 couples in treatment and 86 couples in control; in a relationship for at least 3 months; had a child 3 months; and spoke English or Spanish, females were 14–23, mean age = 18. 86 % of the females identified as Latina	Respecting and Protecting Our Relationships: 12 h- 6 sessions curriculum built on feeling of maternal and paternal protectiveness. Facilitation was based on <i>espejo</i> (mirror) process of teaching using strategies like storytelling, reflection and guidance	Project CHARM; SCT TRA and TGP	Block Randomized; Baseline, 3-month post-test, 3, 6-month and 12-month follow-up	Overall decrease in unprotected sex in intervention group ($f = p < .005$; $m = p < .05$) For women, protectiveness ($p < .05$) of the male partner predicted greater intervention effect; Intervention to 6-month f/u group by time effect The intervention group decreased unprotected sex more than the control ($p < .001$), but reversed at 12 months (increased unprotected sex from 6 to 12 months, $p < .05$) Intention to use condoms increased over time for intervention group at 6-month f/u ($p < .02$) At 12 months the control group significantly ($p = .003$) decreased in knowledge and the intervention group did not
Roye et al. [52]	Sexually active, non-pregnant Black and Latina	Arm 1: 15–20 min of one-on-one counseling by health care assistants (goal: negotiation a	SCT, TRA, HBM	Solomon four-group design used	Overall intervention group women were 2.5x ($p = .06$) more likely to have used a condom than controls at

References	Participants	Description of intervention	Theory/model	Study design	Primary relevant outcome
Wingood et al. [64]	Females 15–21 years old (N = 400); 55 % Latina, mean age = 18)	realistic plan for reducing STI risk); Arm 2: 21-min culturally sensitive, theory-based video (viewed alone in a room by each participant) featuring a young Black and a young Latina HIV? woman and a young Black and a young Latino HIV– male and addressing barriers to condom use, etc.; Arm 3: video plus counseling; Arm 4: usual care	SCT, TGP and the core adapted from SISTAS	for data collection—70 % of participants randomized to receive baseline assessment Baseline, 3-month post-test, and 12-month follow-up	3-months Among older teens (18–21 years old), at post-test 39 % in the combined intervention group reported condom use at last sex compared to 25 % in the usual care group (not significant) Among Latinas only, at post-test, 53 % in the combined intervention group reported condom use at last sex compared to 33 % in usual care group (not significant). Loss to follow up rates, reduced power to detect differences in STD rates No different in outcomes at 12 months Consistent condom usage in the past 90 days and past 30 days higher after post-test ($p < 0.001$, $p = 0.003$) and follow-up ($p < 0.001$, $p < 0.001$) No condom usage in the past 90 days lower after post-test ($p = 0.005$); not statistically significant for activity in the past 30 days No condom usage in the past 90 days and past 30 days lower after follow-up ($p = 0.06$, $p = 0.03$) Condom use at last sexual encounter higher in the past 90 days and past 30 days after post-test ($p < 0.001$, $p = 0.009$) and after follow-up ($p < 0.001$, $p < 0.001$) Unprotected vaginal intercourse lower in the past 90 days after post-test ($p = 0.008$) and after follow-up ($p = 0.06$); not statistically significant for activity in the past 30 days Lower mean traditional gender roles after post-test ($p = 0.01$) and follow-up ($p = 0.05$) assessments Increase in HIV knowledge after post-test ($p = 0.02$) and follow-up ($p = 0.05$) assessments Perceived barriers to condom usage lower after post-test ($p = 0.003$) and follow-up ($p < 0.001$) assessments Greater self-efficacy in negotiating condom usage after post-test ($p < 0.001$) and follow-up ($p < 0.001$) assessments Power in relationship greater after post-test assessment ($p = 0.05$) and follow-up ($p = 0.06$) assessments Greater self-efficacy in condom use after post-test ($p < 0.001$) and follow-up ($p < 0.001$) assessments

IMB information-motivation-behavioral skills model for risk reduction, *TPB* theory of planned behavior/theory of reasoned action, *ET* empowerment theory, *TGP* theory of gender and power, *TTM* trans-theoretical model, *SCT* social cognitive theory, *HBM* health belief model, *DOI* diffusion of innovation

Table 2
Settings, community engagement and formative preparation of Latino focused HIV interventions

References	Region	Recruitment site	Study setting	Community engagement	Formative research
Pilot studies					
Lindenberget al. [49]	"Large southeastern city" in Georgia	7 Public and private primary care clinics/program activities carried out at local Red Cross	Local Red Cross	Community involved in development of risk and resilience intervention, lay Hispanic panel reviewed measures	Focus groups and ethnographic interviews
Jones et al. [61]	Miami, FL	Florida International University College of Nursing, various campus centers	University classrooms	Reports use of integrated participatory action research, but activities were not reported—at the end of the article the authors explain that this meant that peer educators were allowed to "own" the curriculum by adapting it or adding components	Focus groups—according to the article, focus groups were held with nursing students as Stage 1 of the IMB and results informed core curriculum
Davila et al. [58]	Detroit, Michigan	Detroit Urban Research Center, La Vida (community partner), Southwest Detroit Partnership (University of Michigan)	Not reported	Collaboration with Community Group, no other indication of community approach	Focus groups
Longitudinal-none controlled					
Gómez et al. [66]	San Francisco, CA	San Francisco's Mission District	Mujeres Unidas y Activas center	Program developed independent of academic partner, evaluation model (selection of theoretical constructs, instrument development, etc.) also a collaborative process	MUA originally created by NCCIR in response to survey of undocumented Latina women
Cervantes et al. [55]	Los Angeles, CA:	The Institute for Women's Health	The Institute for Women's Health	Community Partner	Not reported
Martin et al. [50]	Chicago, IL	Centro San Bonifacio, various Hispanic neighborhoods (West Town, Logan Square, Humboldt Park, and Hermosa)	Various Chicago neighborhoods	Community partner designed program and involved in developing pre-test and post-test	Not reported
Ramos et al. [38]	US-Mexico Border Health Association, El Paso, TX and Chaparral, New Mexico	Community-wide in homes	Multiple community settings (parks, bus stops, schools, laundromats)	Hired community organization for recruitment and data collection and to supervise implementation of intervention (by <i>animadoras</i>)	None reported
Rios-Ellis et al. [51]	San Ysidro and Los Angeles, CA	Multiple community settings (churches, schools etc.)	Multiple community settings (parks, health department, community centers, clinic sites)	Community partner involvement in early stages, but not reported in data interpretation. Reported using CBPR methods to develop intervention	Focus groups, the article also mentions surveys
Non-equivalent control					
Flaskerud and Nyamathi [56]	Los Angeles County, CA	Public Health Foundation's Nutrition Program for Women, Infants and Children	Public Health Foundation's Nutrition Program for Women, Infants and Children	Not reported	Not reported

References	Region	Recruitment site	Study setting	Community engagement	Formative research
Berrier et al. [54]	New York City, NY	Prenatal clinics	Prenatal clinics	According to authors, program development and implementation were described in another paper (Mason et al. [97])	Not reported
Raj et al. [60]; Anro et al. [62]	Boston, MA	HIV groups held in a community center for Hispanic women; women's health groups held in a community clinic serving largely Hispanic clients	Community-based organization	Community organizations involved in development and implementation but not dissemination	Not reported
Flaskerud et al. [65]; Flaskerud and Nyamathi [95]	Los Angeles, CA	Women, Infant, and Children program waiting room	Women, Infant, and Children program waiting room	Reported CBPR; included CAB and input from Cab and community workers at all stages of study	Extensive use of focus groups
RCT					
Schilling et al. [57]	New York City, NY-Region not reported in manuscript	Clinics in a large methadone maintenance program	Not reported	Not reported	Not reported
Suarez-Al-Adam et al. [63] reports only on Latina subsample and O'Leary et al. [98]	Maryland, Georgia and New Jersey (Latinas only from New Jersey)	Publically funded STD clinics	Not reported	Not reported	Not reported
Shain et al. [53]; Korte et al. [72]	San Antonio, TX	Public health clinics	Research clinic	Not reported	Focus groups and interviews
Harvey et al. [28]	Los Angeles, CA	Community-based clinic serving the Hispanic community of East LA	Community-based clinic serving the Hispanic community of East LA	Community partners included in design and implementation of the intervention	Reports formative work, but not what was conducted (?)
Peragallo et al. [46]	Chicago, IL	Community agencies, radio stations, newspapers	Not reported	Not reported	Focus groups
Peragallo et al. [47]	Miami-Dade and Broward Counties, FL	Downtown area of Miami-Dade County and a neighborhood in Broward County with a large Hispanic population	"Community sites easily accessible to participants"	Not reported	Not reported
Lesser et al. [48, 69, 70]; Koniak et al. [96]	Los Angeles, CA	Community based clinics	CBO offices, clinics, libraries	Community partner included in intervention development (including pilot/feasibility testing); reported use of Participatory Action Research	Focus groups and interviews
Roye et al. [52]	New York City, NY	Planned Parenthood clinics	Clinic	Not reported	Quantitative and qualitative
Wingood et al. [64]	Miami, FL	Miami HIV/AIDS office	Miami HIV/AIDS office	Reported using CBPR, partners involved in intervention and measurement development and recruitment, but not stated how they were involved in dissemination	Focus groups