HHS Public Access

Author manuscript

Cult Health Sex. Author manuscript; available in PMC 2017 November 01.

Published in final edited form as:

Cult Health Sex. 2016 November ; 18(11): 1221–1237. doi:10.1080/13691058.2016.1182217.

Social and psychological correlates of unprotected anal intercourse among Hispanic-American women: implications for STI/HIV prevention

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Abstract

Heterosexual anal intercourse is associated with increased risk for HIV and other sexually transmitted infections. Research on the social and psychological risk factors associated with heterosexual unprotected anal intercourse among Hispanic women in the USA is limited. We examined demographic, mental health, relationship power, sexual self-efficacy, self-esteem, acculturation and HIV knowledge as correlates of unprotected anal intercourse among 514 HIV-negative Hispanic women, 18 to 59 years of age, residing in one urban county in southern Florida. In both unadjusted and adjusted results, the likelihood of engaging in unprotected anal intercourse was associated with food insecurity in the past 30 days (adjusted odds ratio [AOR] = 1.57, 95% confidence interval [CI] 1.03, 2.40) and more interpersonal power attributed to the male partner (AOR = 1.63, 95%CI 1.08, 2.45). Not significant, yet of possible importance, were ever having engaged in exchange sex (AOR = 1.96, 95%CI = 0.97, 3.98) and lower HIV knowledge (AOR = 0.80, 95%CI = 0.63, 1.01). Interventions aimed at reducing heterosexual unprotected anal intercourse risk for HIV infection among Hispanic women may benefit by addressing socioeconomic and interpersonal issues, and assessing HIV knowledge and comprehension.

Keywords

Sexual relationship power; HIV knowledge; Hispanic women; anal sex; USA

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Disclosure statement

No potential conflict of interest was reported by the authors.

Introduction

Although unprotected penile-anal intercourse presents the greatest sexual risk for sexually transmitted infections, including HIV infection, less attention has been given to identifying determinants of this high-risk behaviour among heterosexual women than among men who have sex with men and among transgendered persons. Factors that influence sexual risk behaviour among adult women in the USA, such as relationship power and sexual self-efficacy, are well represented in the literature; however, these and other social and psychological risk factors associated specifically with unprotected anal intercourse remain understudied. Furthermore, to our knowledge, these factors have not been examined as correlates of unprotected anal intercourse among Hispanic women.

In the USA, Hispanic people are disproportionately affected by HIV. Compared to Whites, they continue to have higher rates of new infections and people living with HIV (Henry J. Kaiser Family Foundation 2014). Hispanics make up about 17% of the US population, but in 2013 accounted for approximately 23% of new HIV infections in the USA and six dependent areas (US Centers for Disease Control and Prevention 2013a). Hispanic women represent approximately 15% of new infections and 19% of Hispanics diagnosed and living with HIV in the USA (US Centers for Disease Control and Prevention 2013b). Hispanics are also the nation's largest and fastest growing ethnic minority; it is estimated that by 2060, they will constitute approximately 31% of the US population (US Centers for Disease Control and Prevention 2015). Their growth in the population means that the number of Hispanic persons who become infected by HIV may increase in future years, which highlights the importance of identifying factors that increase risk for contracting HIV and establishing interventions to reduce those risks.

Heterosexual sex is the primary mode of transmission for Hispanic-American women (US Centers for Disease Control and Prevention 2013b) and anal intercourse in particular is associated with a significantly increased risk for HIV and other sexually transmitted infections (Jenness et al. 2011). There is an estimated per-act risk of 10 times as high with receptive anal intercourse as with vaginal intercourse for HIV acquisition among women (Boily et al. 2009; Halperin et al. 2002). The prevalence of unprotected anal intercourse among women in the USA has been found to range from 10 to 35% (Gross et al. 2000; Koblin et al. 2010; Mackesy-Amiti, McKirnan, and Ouellet 2010; Mosher, Chandra, and Jones 2005; Satterwhite et al. 2007), depending on the risk profile of the women in the sample (e.g. population samples, women attending sexually transmitted infection clinics).

Sexual relationship power – having power over the other person in a sexual relationship and having control over the sexual behaviours women engage in – has been well established in the literature as significantly influencing HIV risk behaviour (Gómez and Marin 1996; Pulerwitz et al. 2002). A woman's ability to protect herself from sexually transmitted infections, including HIV, is influenced by her ability to negotiate safer sex behaviours with her male sexual partner(s), which may in turn be influenced by real or perceived imbalances in relationship power dynamics (Amaro 1995; Gómez and Marin 1996; Pulerwitz et al. 2002; Wingood and DiClemente 2000). For Hispanic women, relationship power is also influenced by traditional cultural values and beliefs, such as *machismo*, where the man is the

more dominant sexual partner and *marianismo*, in which the woman is submissive (Rios-Ellis et al. 2008; Villar-Loubet et al. 2011). Such beliefs perpetuate the notion that men are the sexual decision makers in relationships, deciding whether or not the couple uses condoms and having the freedom to engage in sexual intercourse with other partners outside of the primary relationship (Amaro, Vega, and Valencia 2001, Marin 2003; Villar-Loubet et al. 2011). The traditional submissive role of the woman may contribute to feelings of powerlessness, possibly due to financial or emotional dependence on male partners, fear of violence and concern with immigration status. Lack of sexual relationship power is a key factor in decreasing a woman's sexual self-efficacy (Bowleg, Belgrave, and Reisen 2000), thereby increasing her sexual risk vulnerability.

Self-efficacy, or an individual's belief in his or her capacity to have control over self-motivation, behaviour and external environment (Bandura 1977, 1997; Forsyth and Carey 1998), has been identified as one of the strongest predictors of adherence to safer-sex practices (Brien et al. 1994; Goldman and Harlow 1993; Golin et al. 2009; O'leary et al. 1992; Sikkema et al. 1995; Widman et al. 2013; Wulfert and Wan 1993). Researchers have identified significant predictors of sexual self-efficacy, including but not limited to education, gender roles and power (Bowleg, Belgrave, and Reisen 2000). However, a woman's self-efficacious behaviour may be affected by other factors, such as her ability to access condoms (Denner et al. 2005; Morisky, Ang, and Sneed 2002). The length of time the couple has been in the relationship also impacts on how a woman perceives her sexual risk (Thorburn, Harvey, and Ryan 2005).

While relationship power and self-efficacy play an important role in sexual risk behaviour among women (Knipper et al. 2007; O'Leary, Jemmott, and Jemmott 2008; Peipert et al. 2007), for Hispanic-American women, acculturation may also be a key factor (Kasirye et al. 2005; Sastre et al. 2015; Shedlin, Decena, and Oliver-Velez 2005). Acculturation is defined as assimilation to a new or different culture (Kinsler et al. 2009; Leybas-Amedia, Nuno, and Garcia 2005). Overall, research among Hispanics has produced conflicting results regarding the association between acculturation, condom use and sexual risk behaviours. Some studies have found that highly assimilated Hispanic women are more likely to engage in some sexually risky behaviours (e.g. injection drug use, heavy drinking, having more sexual partners) (Dixon, Saul, and Peters 2010; Hines and Caetano 1998; Kinsler et al. 2009), whereas other studies have found greater sexual risk among less acculturated women (e.g. less likely to get tested for HIV, less likely to use condoms) (Dixon, Saul, and Peters 2010; Kinsler et al. 2009; Marin, Gomez, and Tschann 1993; Moore et al. 1995; Sabogal, Faigeles, and Catania 1993). A better understanding of how sexual power, self-efficacy and acculturation influence sexual risk, including unprotected anal intercourse, among Hispanic women in the USA is clearly needed.

Sexual risk behaviour may be associated with other psychosocial and behavioural factors, such as psychological distress (e.g. history of depression [Radloff 1977]), self-esteem (i.e. how a person views his/her self-worth and importance [Rosenberg 1965]) and HIV knowledge (i.e. having HIV-specific information, such as transmission and prevention [Bandura 1997]). Psychological distress can be defined as negative feelings about oneself or one's situation, such as feelings of depression, hopelessness and worthlessness (Kessler et

al. 2002; Radloff 1977). Psychological distress, particularly depression, is highly associated with increased HIV risk behaviours such as inconsistent condom use (Devieux et al. 2015; Kennedy et al. 1993; Yuen et al. 2016). Researchers (Villegas et al. 2013; Villegas-Rodriguez et al. 2011) conducted a sexual risk reduction randomised controlled trial with 548 Hispanic women and found self-esteem and HIV knowledge to be significant predictors of self-efficacy for HIV prevention. These findings are consistent with the wider sexual risk reduction literature, providing further evidence that decreased self-esteem and low levels of HIV/STI knowledge contribute to behaviours that increase a woman's sexual risk, such as inconsistent condom use (Carey, Morrison-Beedy, and Jonshon 1997; Gullette and Lyons 2006; McLellan-Lemal et al. 2012).

To assess the potential association of these factors among Hispanic women, we examined data from a 2008–2009 study of 1527 heterosexual sexually active, HIV-negative women, which included 514 Hispanic women residing in South Florida. Hispanic ethnicity was one of the factors found to be significantly associated with increased odds of engaging in unprotected anal intercourse. Our data showed that 31% of Hispanic women reported that they had engaged in unprotected anal intercourse in the 12 months preceding enrolment (McLellan-Lemal et al. 2012). Using data from our 2008–2009 study, we examined correlates of unprotected anal intercourse among the Hispanic women in the study, including psychological variables (sexual self-efficacy, self-esteem and psychological distress), sexual relationship power, knowledge about HIV and level of acculturation.

Methods

Recruitment, screening and enrolment procedures were conducted from October 2008 to September 2009 in South Florida. Prior to the onset of study activities, ethical review and approval was received from the Miller School of Medicine Institutional Review Board at the University of Miami and the US Centers for Disease Control and Prevention. The US Office of Management and Budget approved information collection and procedures. Participants provided written informed consent upon enrolment and completed a 45-minute audio computer- assisted self-interview (ACASI) followed by HIV counselling and rapid oral HIV testing. All data (i.e. screening, enrolment, ACASI, HIV test results) were coded with a unique study identification number for each participant to ensure confidentiality. Participants received a US$50 gift certificate for completing the ACASI. Recruitment, data collection and HIV counselling staff were matched with participants on race/ethnicity and gender, and were bilingual (English and Spanish).

Eligibility

Eligibility screening was conducted using hand-held digital devices at recruitment venues or over the telephone. Women were eligible for the study if they met the following criteria: (1) self-identified as Hispanic, (2) between 18–59 years of age, (3) reported vaginal and/or anal intercourse with a man in the past 12 months, (4) no history of an HIV diagnosis, (5) willing to be tested for HIV using rapid oral testing, (6) willing and able to give informed consent and (7) were able to understand English or Spanish.

Recruitment

A convenience sample was recruited from one urban county in South Florida using multiple approaches: venue-based recruitment (Muhib et al. 2001), advertisements in locally posted flyers, a participant-referral incentive system similar to respondent-driven sampling (Heckathorn 2002) and word-of-mouth referral without incentives. For venue-based recruitment, the study team identified zip code areas in one urban county in South Florida with the greatest number of reported sexually transmitted infection (including HIV) cases. Once the zip code areas were selected, the study team identified a list of potential venues for recruiting women from each zip code area. Venues included beauty salons, laundromats, shopping centres, churches, local community organisations, educational/training facilities, bars/clubs, transportation centres and health clinics. Also identified were local cultural events and festivals with a high concentration of Hispanic attendees. Each week, venues were selected randomly as recruitment sites. Women were purposively approached at these recruitment locations. Recruitment flyers informing women of the study and providing a telephone number to call for more information were also posted at the venues. Details regarding recruitment and enrolment procedures can be found elsewhere (McLellan-Lemal et al. 2012).

Data collection

The study sessions were conducted in either a private room in a study office at the Miller School of Medicine or in a study mobile unit. The mobile unit was a customized recreational vehicle that included private spaces for the collection of ACASI data, as well as HIV counselling and testing. Both the study office and the mobile unit were used for scheduled study appointments, while the mobile unit also accommodated on-the-spot recruitment. Details regarding data collection procedures can be found elsewhere (McLellan-Lemal et al. 2012).

The ACASI collected self-report data on demographic, mental health, interpersonal, psychological and behavioural variables. Analysis variables are described further below.

Assessment measures

Unprotected anal intercourse—Unprotected anal sex in the past 12 months (1 = yes, 0 = no) was our outcome.

Demographics—Demographic data collected included information on age, education, marital status and employment status.

Exchange sex—Women were asked if they had ever exchanged sex for things they needed or wanted (e.g. money, food, shelter, drugs/alcohol, gifts/other).

Food insecurity—Women were asked if they were concerned about having enough to eat for themselves or their family in the past 30 days. Scores were dichotomous (1 = yes, 0 = no).

Psychological distress—The 10-item short version of the Center for Epidemiologic Studies Depression Scale (Kohout et al. 1993) was administered. A cut-point for possible depression (caseness) in the past week was defined as a sum score of ≥ 10 (0 = rarely or none of the time – less than 1 day in past week; 1 = some or a little of the time – 1–2 days in the past week; 2 = occasionally or a moderate amount of time – 3–4 days in the past week; 3 = all of the time – 5–7 days in the past week). The 4-point response scale for the two positively worded items (i.e. During the past week, you felt hopeful about the future; During the past week, you were happy) was reversed before summing. Following methods used in prior studies (Andresen et al. 1994), for four women who had missing data on only 1 item, we imputed an individual-level score on that item based on the mean of the other 9 non-missing items. For two women with data missing on more than 1 item, a score was not imputed. Internal consistency of response was .87 (Cronbach's Alpha). Sample items included: During the past week, you were bothered by things that usually don't bother you; During the past week, you felt hopeful about the future.

Sexual relationship power—Nine items were drawn from the 23-item Sexual Relationship Power Scale (Pulerwitz, Gortmaker, and DeJong 2000); the number of items was reduced to comply with the Paperwork Reduction Act and ensure that survey administration time did not create undue burden for study participants. Seven of the nine items were from the relationship control factor subscale, in which questions asked centred on the woman's perception of her partner's condom use behaviour, as well as how much the partner controls what the woman does; the two remaining items (from the decision-making dominance factor subscale), were used to assess power in sexual relationships. Items were rated using a 4-point Likert scale (0 = strongly disagree, 1 = disagree, 2 = agree and 3 = strongly agree) and a mean score was generated. Higher scores indicated that more interpersonal power was attributed to the man. Internal consistency of response was .79. Sample items included: When you ask a man to use a condom, he will get angry; If you ask a man to use a condom, he will think you are having sex with other people.

Sexual self-efficacy—The Sexual Self-Efficacy Questionnaire developed by Smith and colleagues (1996), was used to collect information regarding a woman's belief in her capacity to have control over her sexual behaviour and the external environment, including refusing unprotected sex, negotiating condom use and comfort in using male and female condoms. Participants rated their comfort level with specific sexual risk reduction behaviours using a 3-point Likert scale (0 = not at all sure, 1 = somewhat sure, and 2 = very sure). A mean score was produced. Higher scores represented more sexual self-efficacy. Internal consistency was .85. Sample items included: How sure are you that you could buy condoms in a store? How sure are you that you could talk with a man about safer sex?

Self-esteem—Self-esteem data was collected using the Rosenberg 10-item scale (Rosenberg 1965). In addition, participants were asked to rate their agreement with a statement regarding 'not being worth anything without a man in your life'. All items were scored using a 4-point Likert scale (0 = strongly disagree, 1 = disagree, 2 = agree, 3 = strongly agree) and a mean score was generated. Higher scores reflected higher self-esteem.

Internal consistency was .80. Sample items included: You feel that you have a number of good qualities; You feel you do not have much to be proud of.

Acculturation—The Bicultural Involvement Questionnaire (Szapocznik, Kurtines, and Fernandez 1980) includes 24 items assessing comfort with speaking Spanish and English in different contexts and enjoyment of cultural customs and behaviours associated with Hispanic and US cultures. Participants responded using a 5-point Likert scale (0 = not at all comfortable to 4 = very comfortable). For analysis, the mean of the 12 Spanish/Hispanic items was subtracted from the mean of the 12 English/American items. The resulting difference score was used to categorise the women into one of four groups: (1) mostly Hispanic orientation (scores from −4.00 to −1.50), (2) somewhat Hispanic (>−1.50 to −.50), (3) approximately equal (>−.50 to .49) and (4) mostly American (> .49 to 4.00). Sample items included: How comfortable do you feel speaking English when at home? How much do you enjoy Hispanic music?

HIV knowledge—A sum score was calculated for six true/false HIV knowledge items reflecting the total number of correct answers; three correct answers were ‘true’ and three were ‘false’. A higher score was indicative of more knowledge. Sample items included: Do you think that only people who look sick can give HIV to someone else? Do you think that birth control pills prevent a woman from getting HIV?

Statistical analyses

Mean scores were calculated independently for four scales: relationship power, sexual self-efficacy, self-esteem and acculturation, and sum scores were calculated independently for psychological distress and HIV knowledge (see Table 1). A single multivariable logistic regression model was used to examine the associations between mental health, sexual relationship power, sexual self-efficacy, self-esteem, acculturation, HIV knowledge and demographic factors associated with unprotected anal intercourse in the past 12 months. Variables that had a p-level < 0.20 in the unadjusted results were included in the adjusted model (n = 487) (see Table 2). The AORs and 95%CIs were calculated. All analyses were conducted by using SAS 9.3 (SAS Institute, Gary, NC).

Results

Participant characteristics

Approximately 88% (683 out of 775) of women screened for eligibility met the inclusion criteria, and 75% (514 of 683) of these eligible women enrolled in the study. Fourteen women (2%) were ineligible because they reported a prior HIV diagnosis. As shown in Table 1, the median age of the participants was 40 years (range 18–59), 49% reported education beyond high school (e.g. technical school or college), 49% were married or living as married and 42% were employed full- or part-time. Being concerned about having enough food for herself and/or her family in the past 30 days (i.e. food insecurity) was reported by 53%. Of participants, 47% reported annual income less than US$12,000. Mostly English/US acculturation was reported by 17%, in comparison to 36% with mostly a Hispanic orientation. As stated previously, 31% had engaged in unprotected anal intercourse in the

past 12 months. Additional results on demographic and sexual behaviour characteristics can be found in Table 1.

In all, 27% provided responses suggestive of psychological distress (i.e. possible depression) during the past week. Results on participants' standing on the psychological and knowledge variables can be found in Table 3. The women's mean responses, when placed on the absolute response scales, showed that they had a low level of psychological distress, moderately high levels of self-esteem and sexual self-efficacy, and a high level of HIV knowledge. The women attributed considerably more sexual/relationship power to the man than to themselves.

Factors associated with unprotected anal intercourse

In both unadjusted and adjusted analyses, we found that two variables were significantly associated with unprotected anal intercourse. Women who reported being concerned about having enough food in the household in the past 30 days had 1.57 (AOR) times the odds (95%CI = 1.03, 2.40) of engaging in unprotected anal intercourse compared with those who did not report food insecurity. Regarding sexual relationship power, the odds of unprotected anal intercourse increased (AOR = 1.63, 95%CI = 1.08, 2.45) with increasing attributions of sexual relationship power to the male partner. Although not significant, there may be a potentially meaningful association between unprotected anal intercourse and two other variables: exchange sex and HIV knowledge. The odds of unprotected anal intercourse were about two times as high among women who ever engaged in exchange sex than among women who had not engaged in exchange sex (AOR = 1.96, 95%CI = 0.97, 3.98). Women with more HIV knowledge had lower odds (AOR = 0.80, 95%CI = .63, 1.01) of engaging in unprotected anal intercourse than those with less HIV knowledge. Psychological distress, sexual self-efficacy, self-esteem and acculturation were not associated with the risk of engaging in unprotected anal intercourse.

Discussion

We sought to identify the relative contributions of social and psychological factors, including mental health and acculturation, as determinants of unprotected anal intercourse among adult heterosexual Hispanic women from an urban county in southern Florida. Among those who reported unprotected anal intercourse, two factors were significantly associated with one or more instances of anal intercourse without using a condom: (1) more sexual relationship power being attributed to the man and (2) concerns about not having enough food for themselves or their families. Two other factors, having less HIV knowledge and engaging in exchange sex, were not significantly associated with unprotected anal intercourse, but were close enough to be worthy of consideration.

Not surprisingly, male partners appear to exert a strong influence on condom use during anal intercourse. Previous research on the relationship between gendered cultural beliefs and condom use has provided mixed findings. Researchers have found that sexual negotiation for Hispanic women is influenced by real imbalances in relationship power dynamics, as well as perceived imbalances (Amaro 1995; Gómez and Marin 1996; Pulerwitz, Gortmaker, and DeJong 2000; Wingood and DiClemente 2000). These findings are also consistent with

those reported by studies that suggest that a woman's proposal to use a condom might be perceived by her male partner as a sign of distrust or infidelity (Kelly and Kalichman 1995). Other studies have found an association between unprotected vaginal and/or anal sex and intimate partner violence, where fear of abuse can limit a woman's ability to negotiate condom use (Marin, Gomez, and Tschann 1993; McGrane-Minton et al. 2016; Mittal, Stockman, and Seplaki 2013). Having a history of sexual and/or physical abuse also increases a woman's vulnerability to HIV and other sexually transmitted infections (Wingood and DiClemente 1998). Protecting oneself from sexually transmitted infections, including HIV, may be highly influenced by a woman's actual and/or perceived sexual relationship power, which impacts the extent to which she negotiates safer sex behaviours with her male sexual partner(s).

For Hispanic women, sexual relationship power may also be impacted on by traditional and often complex cultural values as well as gendered beliefs, including role expectations. In a study conducted by Knipper and colleagues (2007) among heterosexual Hispanic men living in North Carolina, increased condom use was correlated with having more traditional male roles. It would be important to determine if the female partners also adhere to more traditional gender roles (i.e. are less likely to discuss their own sexual preferences and condom use). Such findings would suggest that although the couple is engaging in protected sexual intercourse, the decision to use condoms is made by the man.

Several contextual factors for unprotected anal intercourse have been identified in the literature. Exner and colleagues (2008) found that most women had not planned to engage in anal intercourse, and consequently were not prepared with condoms or lubricants. Also, it was noted that most women reported having anal and vaginal sex during the same sexual encounter. Women who endorsed having sexual encounters where only anal intercourse was practised stated they did so primarily to preserve virginity, during their menstrual period, during late-pregnancy or to prevent pregnancy. Reasons for non-use of condoms during anal intercourse included not having a condom available and previous experience of pain when condoms were used.

Another contextual factor significantly associated with occurrence of sexually transmitted infections was concern about not having enough food for themselves or their families. Winham and Armstrong-Florian (2015) conducted a study with 352 Hispanic women in Arizona and found that almost half of the sample reported being food insecure and that acculturation status significantly impacted the degree of food insecurity (i.e. of the women who reported 'very low food insecurity', 8% were Hispanic dominant and 19% were American dominant). It is important to note that the association between food insecurity concerns and sexually transmitted infections is not well established in the literature. Limited US-based studies have examined this association. Results from HPTN 064, a multi-site, HIV sero-incidence cohort study among African-American and Hispanic women 18–44 years of age similarly illustrated that recent food insecurity was one predictor for sexually transmitted infections (Justman et al. 2015). Financial and/or emotional dependence on male partners, as well as social and self-imposed pressures, may contribute to conformity to expected gender roles.

When we look at food insecurity, HIV knowledge and sexually transmitted infections in our sample, a contextual pattern of behaviour emerges. Food insecurity is a proxy for poverty, which is related to pleasing or keeping the source of income, which may in part be associated with male sexual satisfaction. If unprotected anal intercourse is practised in Hispanic populations as an 'accepted' means of birth control or to preserve virginity, as we found with our sample, then it may occur more frequently compared to other cultures who do not share the same views. Also, it stands to reason that assuming that more HIV-knowledgeable women will be aware of the high STI/HIV risk, the impact of knowledge may, however, be tempered by the sexual dominance of the male partner and his decision on whether condoms will be used.

Reasons for women engaging willingly in sexually transmitted infections may include a desire to please her partner, to increase intimacy with her partner and for personal sexual satisfaction (Reynolds, Fisher, and Rogala 2015b; Stahlman et al. 2015). Women who report engaging unwillingly in anal intercourse report not knowing they had a right to refuse and because they were coerced and/or attacked (Reynolds, Fisher, and Rogala 2015b). Some women may be less inclined to view condoms as necessary for anal intercourse given the possibility that the behaviour, despite any regularity in occurrence, is viewed culturally as a sexual exception or taboo. Yet again, if condom use does not occur in general, the possibility that it will be considered in this context is minimal.

Researchers have identified other factors associated with unprotected anal intercourse, including limited or no knowledge of STI risk from anal intercourse (Stahlman et al. 2015) and concurrent drug use (Reynolds et al. 2015a, 2005b). Drug use was not reported here because we examined it elsewhere (McLellan-Lemal et al. 2012) among the Hispanic women in our sample (8% engaged in recreational drug use, which included smoking, inhaling or ingesting marijuana, in the past 12 months). We did examine participation in exchange sex and found that it was a risk factor for unprotected anal intercourse among the Hispanic women. To our knowledge, three other studies have demonstrated a significant association between exchange sex and unprotected anal intercourse. In two of these studies, this finding was specific to female injection drug and crack-cocaine users (Mackesy-Amiti, McKirnan, and Ouellet 2010; Reynolds, Latimore, and Fisher 2008). In the third study, the sample was comprised mainly of non-Hispanic African-American women (Jenness et al. 2011).

Although other studies have found a relationship between self-efficacy and risk behaviours, this association was not present in our findings. For instance, Deren and colleagues (2008) found a positive change in perceived self-efficacy and a reduction of high-risk behaviours among 49% of Puerto Rican drug users; those who had a negative change in self-efficacy were twice as likely to have multiple sex partners and participate in unprotected vaginal or anal sex as compared to those with increased self-efficacy or who did not show negative change in self-efficacy. Bowleg, Belgrave and Reisen (2000) found Hispanic women's education, gender roles and direct power strategies were significant predictors of self-efficacy; however, these predictors of sexual self-efficacy had no effect in women who were in a long-term relationship where perceived HIV and STI risk was low to non-existent. Other studies have also found that women in stable long-term relationships are at greater risk of

acquiring STIs, including HIV (Dixon, Saul, and Peters 2010; Kelly and Kalichman 1995; Soler et al. 2000), possibly due to the perception of condom use as mistrust or an implication of infidelity by either partner (Epperson et al. 2009; Kelly and Kalichman 1995). Among women in our sample, other factors (e.g. exchange sex, poverty, sexual relationship power) may interplay with sexual self-efficacy, thereby reducing its influence on minimising risk-taking behaviours.

Research evidence among Hispanics is conflicting regarding the association between acculturation, condom use and sexual risk behaviour. Our study found no association between acculturation and unprotected anal intercourse. Some studies, however, have shown that less acculturated Hispanic women have been found to adhere to traditional female sex roles, use condoms less frequently, undergo fewer HIV tests, are less likely to use non-injection drugs, have fewer sexual partners and exhibit higher acceptance of their partner's sexual behaviour outside of their primary relationship (Dixon, Saul, and Peters 2010; Kinsler et al. 2009; Marin, Gomez, and Tschann 1993; Moore et al. 1995; Sabogal, Faigeles, and Catania 1993). In contrast, highly acculturated Hispanic women have been found to have greater HIV prevention self-efficacy, to be more likely to get tested for HIV, engage in injection drug use and heavy drinking more often, have more sexual partners and use condoms more often (Dixon, Saul, and Peters 2010; Hines and Caetano 1998; Kinsler et al. 2009).

Our study was limited by several factors. Our findings were based on a convenience sample of Hispanic women in southern Florida, limiting generalisability to other geographical regions. In addition, causal inferences among our findings cannot be drawn due to the cross-sectional design of our study. Also, it is important to note that the varied recall periods for some of the variables (e.g. 30 days for food insecurity, 12 months for unprotected anal intercourse) are a limitation in that we could not examine concurrency of events and behaviours with the data. Reasons for engaging in anal intercourse and attitudes on unprotected anal intercourse were not collected, thus limiting our ability to contextualise this behaviour. Variables not examined in our analysis and data not collected for our study (e.g. frequency of unprotected anal intercourse, co-occurrence of unprotected anal intercourse and other sexual acts, information on who initiated anal intercourse, history of physical, emotional and sexual abuse) may provide additional understanding, beyond our contextual variables, of broader sexual practises that may be predictive of engaging in anal intercourse. Thus, future research specifically focusing on anal intercourse among heterosexual Hispanic women is recommended. Finally, women in our study may have underreported unprotected anal intercourse, psychological distress and other psychosocial factors due to the sensitive nature of the questions asked or the potentially stigmatising nature of anal intercourse.

Conclusion

HIV interventions to address the needs of Hispanic women could benefit from addressing economic circumstances, such as food insecurity, and sexual relationship power – factors that may increase the likelihood of engaging in unprotected anal intercourse, which is an extremely high-risk sexual behaviour that increases vulnerability to HIV and other sexually transmitted infections. Greater attention needs to be paid to the influence of sexual

relationship power, including fear of abuse and partner dependence, on a woman's ability to negotiate condom use. Other factors that may impact risk behaviour, such as low HIV knowledge and exchange sex, should also be explored. There is a need to better assess the prevalence of unprotected anal intercourse among heterosexual Hispanic men and women and to collect contextual information, such as frequency, situation of first and most recent occurrence and reasons for engaging in the behaviour.

Acknowledgments

The findings and conclusions in this report are those of the authors and do not necessarily represent the views of the US Centers for Disease Control and Prevention. The authors thank the field staff and participants without whom this study could not have been done.

Funding

Funding for this research was provided by US Centers for Disease Control and Prevention [grant number PS05-107-197].

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Table 1

Demographic and sexual behaviour characteristics of study participants in southern Florida, 2008–2009.

	N (%)
Screening and enrolment	
Women screened/approached[a]	774/775 (100)
Eligible[b]	683/775 (88)
Not eligible[c]	92/775 (12)
Enrolled (ACASI and HIV test)[d]	514/683 (75)
Demographics	
Median age (years) at study enrolment (range)	40 (18–59)
Age categories (years)	
18–30	141/514 (27)
31–45	201/514 (39)
46 and older	172/514 (33)
Education	
Less than high school graduate	111/510 (22)
High school graduate/GED	151/510 (30)
Tech/trade school graduate; some college	153/510 (30)
College graduate	95/510 (19)
Marital status	
Single, never married	124/512 (24)
Married or living as married	249/512 (49)
Separated, divorced or widowed	139/512 (27)
Employed full- or part-time	215/507 (42)
Annual income (US$)	
Less than 6,000	89/485 (18)
6,001–12,000	141/485(29)
12,001–24,000	153/485 (32)
More than 24,000	102/485 (21)
Food insecurity past 30 days[e]	274/514 (53)
Acculturation	
Mostly Hispanic	186/512 (36)
Somewhat Hispanic	136/512 (27)
Equally Hispanic and US American	102/512 (20)
Mostly US American	88/512 (17)
Sexual behavior	
Ever exchanged sex[f]	42/466 (8)
Unprotected anal sex past 12 months	156/506 (31)

Note: GED stands for General Equivalency Diploma and is the equivalent of a high school diploma. Sample sizes fluctuate slightly for some variables due to missing data. Some percentages do not sum to 100 due to rounding.

[a]84.6% of women were screened by phone; 15.4% were screened in person. One woman declined screening.

[b] Two women who screened eligible were deemed ineligible based on their ACASI survey responses (not sexually active in past 12 months). They were excluded from the analysis.

[c] Women might be ineligible for more than one reason: less than age 18 years or greater than age 59 years; not Hispanic or Latina; no vaginal or anal sex in past 12 months; prior HIV diagnosis; unwilling to test for HIV.

[d] 169 eligible women were eligible but were not enrolled (e.g. lacked transportation to the study visit; staff unsuccessful in re-contacting women who indicated intent to enrol, etc.).

[e] Participant reported concern about having enough food for herself or her family in the past 30 days.

[f] Ever exchanged sex for things needed or wanted (e.g. money, food, shelter, drugs/alcohol, gifts/other).

Table 2

Odds of unprotected anal intercourse in past 12 months stratified by study variables, southern Florida, 2008–2009.

	Unadjusted results		Adjusted results[a]	
	OR	**95%CI**	**AOR**	**95%CI**
Age (years)				
18–30	1.00			
31–45	1.28	0.80, 2.05		
46 and older	1.03	0.63, 1.69		
Education				
Less than high school graduate	1.00			
High school graduate/GED	0.83	0.49, 1.41		
Tech/trade school graduate; some college	0.80	0.47, 1.36		
College graduate	0.83	0.46, 1.50		
Marital status				
Single, never married	1.00			
Married or living as married	0.79	0.49, 1.26		
Separated/divorced/widowed	1.11	0.66, 1.86		
Annual income (US$)				
Less than 6,000	1.00			
6,001–12,000	0.88	0.50, 1.54	0.87	0.48, 1.60
12,001–24,000	0.79	0.45, 1.38	0.97	0.54, 1.76
More than 24,000	0.53	0.28, 1.00	0.70	0.35, 1.40
Missing data[b]	0.41	0.14, 1.19	0.38	0.11, 1.25
Employment				
Not employed full- or part-time	1.00			
Full- or part-time employment	0.97	0.66, 1.43		
Food insecurity (past 30 days)[c]				
No	1.00		1.00	
Yes	1.82	1.23, 2.68**	1.57	1.03, 2.40**
Acculturation				
Mostly Hispanic	1.00		1.00	
Somewhat Hispanic	1.20	0.73, 1.95	1.23	0.73, 2.08
Equally Hispanic and US American	1.13	0.66, 1.92	1.36	0.77, 2.41
Mostly US American	1.43	0.83, 2.47	1.57	0.87, 2.84
Exchange sex (ever[d]				
No	1.00		1.00	
Yes	2.60	1.36, 4.95**	1.96	0.97, 3.98*
Sexual self-efficacy[e]	0.74	0.46, 1.20		
Psychological distress in past week[e]	1.17	0.85, 1.61		

	Unadjusted results		Adjusted results[a]	
	OR	**95%CI**	**AOR**	**95%CI**
Self-esteem[e]	0.76	0.51, 1.15	1.30	0.79, 2.14
Sexual relationship power[e]	1.82	1.29, 2.58**	1.63	1.08, 2.45**
HIV knowledge[e]	0.79	0.64, 0.98**	0.80	0.63, 1.01*

Note: For some variables, the denominators in Table 2 differ slightly from Tables 1 or 3 due to missing data on the anal intercourse variable.

[a] Variables that had a p-level < 0.20 in the unadjusted results were included in the adjusted model (n = 487).

[b] Patients with missing data on annual income were retained to increase the sample size for analysis.

[c] Participant reported concern about having enough food for herself or her family in the past 30 days.

[d] Exchanged sex for things needed or wanted (e.g., money, food, shelter, drugs/alcohol, gifts/other).

[e] Continuous variables.

* $p \leq 0.10$;

** $p \leq 0.05$.

Table 3

Participants' standing on the psychological and knowledge variables, southern Florida, 2008–2009.

	Mean	SD (observed range)
Psychological distress index[a]	0.70	0.60 (0–3)
Self-esteem index[b]	2.33	0.46 (0.45–3)
Sexual self-efficacy index[c]	1.63	0.39 (0–2)
Sexual/relationship power index[d]	0.88	0.56 (0–3)
HIV knowledge sum score[e]	5.27	0.87 (1–6)

[a]Psychological distress index is the mean of 11 items rated on the following scale focusing on the last week: 0 = rarely or none of the time (less than 1 day), 1 = some or a little of the time (1–2 days), 2 = occasionally or moderate amount of time (3–4 days), 3 = all of the time (5–7 days).

[b]Self-esteem index is the mean of 11 items rated on the following scale: 0 = strongly disagree, 1 = disagree, 2 = agree, 3 = strongly agree. Higher score indicates higher self-esteem.

[c]Sexual self-efficacy index is the mean of 11 items rated on the following scale: 0 = not at all sure, 1 = somewhat sure, 2 = very sure. Higher score indicates higher sexual self-efficacy.

[d]Sexual/relationship power is the mean of 9 items rated on the following scale: 0 = strongly disagree, 1 = disagree, 2 = agree, 3 = strongly agree. Higher score indicates more power attributed to the man.

[e]HIV knowledge is a sum score of 6 yes/no items. Higher score indicates more knowledge.