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A Synthesis of 20 Years of Research on Sexual Risk Taking Among Asian/Pacific Islander Men Who Have Sex With Men in Western Countries

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Abstract

Over the past two decades, there has emerged a body of literature documenting a number of risk factors associated with Asian/Pacific Islander men who have sex with men's unsafe sexual behaviors. This study aims to systematically review existing empirical studies and synthesize research results into a social–ecological framework using a mixed research synthesis. Empirical research articles published in peer-reviewed journals between January 1990 and June 2013 were identified in six databases, including PubMed, Ovid MEDLINE, PsycINFO, Social Work Abstract, CINAL, and Web of Knowledge. Both quantitative and qualitative studies were included. Two analysts independently reviewed the articles, and findings were organized on a social–ecological framework. Twenty-two articles were included in the analysis; among these 13 were quantitative, 8 were qualitative, and 1 was mixed-methods research. Results indicated that demographic characteristics, psychological resources, behavioral patterns, relationships with family and friends, dynamics with romantic or sexual partners, community involvement, culture, discrimination, and institutional factors were related to unprotected anal intercourse. This article presents a critique of this literature and discusses implications for future research with this population. It concludes with prevention/intervention initiatives based on review findings.

Keywords

API; MSM; risk factors; unprotected anal sex; social ecology

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Introduction

In Western countries, Asian/Pacific Islander (API) men who have sex with men (MSM) have a lower incidence of human immunodeficiency virus (HIV) infection relative to their other MSM counterparts (...i.e., Blacks Latinos, and Whites) (Zaidi et al., 2005). However, the lower incidence of HIV rates among this population is still concerning given that it is only 2 percentage points lower than White MSM (Sy, Chng, Choi, & Wong, 1998). Additionally, API is one of the fastest growing ethnic groups in Western countries (U.S. Census Bureau, 2000). Combined with the expanding population of APIs, evidence suggests that in the United States, the number of APIMSM living with acquired immune deficiency syndrome (AIDS) is on the rise (Wortley, Metler, Hu, & Fleming, 2000). Consequently, ignoring the HIV prevention needs of this growing population with regard to prevention science could, over time, add to the overall HIV burden within the United States and in other Western countries.

Partly due to the high burden of HIV risk among some MSM subgroups, researchers are increasingly calling for a more careful consideration of how social and cultural factors might influence disease acquisition (Wei et al., 2011). Culture and social context are important factors that shape sexual risk behaviors. It cannot be assumed that significant sexual risk correlates identified among White MSM would be routinely salient for APIMSM (Ruan & Matsumura, 1991). Racism, marginalization, and immigration experiences may influence risky sex (i.e., unprotected anal intercourse [UAI]) in ways that are not salient for White MSM populations (Chng, Wong, Park, Edberg, & Lai, 2003).

Prior studies have conducted reviews of the literatures and applied an ecological approach (Bronfenbrenner, 1992) to better understanding individual and contextual drivers of sexually transmitted infections (STIs) among adolescents (DiClemente, Salazar, & Crosby, 2007), those with detention histories (Voisin, Sung, & King, 2012), and female sex workers (Kerrigan et al., 2003; Larios et al., 2009). Complementary to ecological theory, researchers have also applied a network–individual resource model for HIV prevention (Johnson et. al, 2010). However, despite the increasing number of studies on correlates of UAI among APIMSM, to date, no reviews of this literature have been conducted. Therefore, this article applies an ecological framework to a mixed research synthesis of empirical work on contextual and social factors associated with HIV-related risk behaviors among APIMSM. In brief, a mixed approach synthesis is appropriate for such a review, given that both qualitative and quantitative studies can be mutually corroborative (Dixon-Woods, Agarwal, Jones, Young, & Sutton, 2005), and there were relatively few studies conducted among this population.

Conceptual Framework

The ecological systems model has four different domains organized hierarchically according to individual proximity (Bronfenbrenner, 1992). The *micro-system* reflects direct interaction with the person. The *meso-system* includes two or more micro-systems. The *exo-system* includes domains outside the person that indirectly influence the individual (e.g., through policies or laws). Finally, the *macro-system* refers to society's larger cultural blueprints and

norms (Bronfenbrenner, 1992; Spencer & Harpalani, 2004). The ecological approach employed in this study has been broadly applied to sexual risk behaviors among adolescents (Kotchick, Shaffer, Miller, & Forehand, 2001; Luster & Small, 1994) and used to inform general health promotion behaviors (Glass & McAtee, 2006; Hovell, Wahlgren, & Gehrman, 2009). Notably, given the complexity with disentangling the influences of exo-system factors, this system is rarely captured in systemic reviews (DiClemente et al., 2007; Voisin et al., 2012). In this review, a socioecological approach is employed that organizes factors associated with risky sex according to individual, relational, and societal level domains (DiClemente et al., 2007).

In the health sciences, risks were long-defined in terms of probability (Fraser, Richman, & Galinsky, 1999). This article utilizes the concept of *risk behavior* to indicate having UAI, given that this is the primary behavioral mechanism that results in the greatest probability of HIV transmission and acquisition for MSM (Centers for Disease Control, 2006). This is distinguished from the concept of *risk factors*, which are defined as contextual or social factors that increase the probability of HIV transmission or acquisition in the presence of UAI (e.g., low HIV prevention knowledge or having sex under the influence of drugs). Ecological factors that were not related to UAI among APIMSM were labeled as *insignificant findings*. Many of these insignificant findings are equally interesting and significant because they differed from those of prior studies based on White and Black samples of MSM.

Data Acquisition

A systematic article search was conducted in six academic databases, including PubMed, Ovid MEDLINE, PsycINFO, Social Work Abstract, CINAL, and Web of Knowledge. Several keywords were used to locate articles, such as Asian American or Asian Pacific Islanders, gay or bisexual, men who have sex with men or MSM, and HIV or sexual risk. A manual search in several key journals (e.g., *AIDS Education and Prevention*) and cross-referencing were also used to assure comprehensiveness of the literature search and obtain additional articles if needed. Articles published in peer-reviewed journals between 1990 and 2013 were included. Articles were included in the analysis if they: (a) represented peer review studies, (b) presented qualitative or quantitative empirical data that focused on investigating the relationship between contextual factors and anal sex without condoms, (c) had a substantial proportion (40%) of study population who were APIMSM, (d) presented separate analysis for APIMSM if their samples contained more than one racial group, and (e) were conducted in Western countries and published in English. Twenty-two articles were finally selected for analysis. The search process is summarized in Figure 1.

Data Extraction and Analysis

The empirical research is synthesized from both quantitative and qualitative studies using a mixed-research synthesis instead of statistical meta-analysis. This mixed research synthesis was based on an *integrated study design*, grounded on the assumption that findings are viewed as answering the same research questions, or addressing similar aspects of a specific phenomenon, and thereby do not need to be synthesized by methods (i.e., qualitative and

quantitative; Sandelowski, Voils, & Barroso, 2006). This approach was also necessary given the limited availability of literature on APIMSM that qualified for this study. A mixed-research synthesis was applied based on the following assumptions: (a) that differences in methods do not necessarily produce differences in findings; (b) that extraction and grouping of findings do not depend on research methods but on whether the study answers the same set of queries; and (c) that findings from quantitative and qualitative studies can be used to corroborate each other, enabling researchers to validate the research findings from studies using different methods and to identify any consistency or discrepancy in findings (Dixon-Woods et al., 2005; Sandelowski et al., 2006; Voils, Sandelowski, Barroso, & Hasselblad, 2008).

Analysis

A codebook was developed based on the selection criteria noted above. To improve the rigor of the analytical process, all potential articles were evaluated by the first and third authors to ensure that they met the eligibility criteria noted above. These researchers had expertise with API culture and independently reviewed the articles and manually coded them, identifying the factors associated with having anal sex without condoms among APIMSM, using the ecological framework. Disagreements on eligibility were resolved by the second author. Overall, the interrater reliability (kappa coefficient) was satisfactory ($\kappa = 0.9$).

Results

Among the 22 articles identified, 13 were quantitative, 8 were qualitative, and 1 utilized a mixed-methods approach. Of these 22 studies, 16 were conducted in the United States, 2 in Australia, and 4 in Canada. Overall, there were 2,059 APIMSM involved in quantitative studies and 279 in qualitative studies. Based on the collective quantitative studies, the mean age was 26.11 years ($SD = 3.5$), with approximately 65% ($SD = 18.6$) of the overall sample being immigrants. Among all qualitative studies, the mean age was 24.73 years ($SD = 3.7$), and with approximately 61% ($SD = 14.2$) being immigrants. Table 1 provides summaries of the articles.

Individual-Level Factors

Demographic Characteristics—Overall findings documented that younger age (Chae & Yoshikawa, 2008; Choi et al., 1995, 2002, 2004, 2005; Mao et al., 2004; Yoshikawa et al., 2004), having immigrant status (Choi et al., 1995, 2002, 2004, 2003, 2005; Lloyd et al., 1999), ethnic affiliation (Choi et al., 2002, 2004, 2003; Matteson, 1997), and HIV serostatus (Choi et al., 2004, 2003; Lloyd et al., 1999) were not linked with UAI. Additionally, the relationship between socioeconomic status and risky sex generated mixed findings. Three studies documented that lower education and income levels were linked with UAI incidences (Choi et al., 2004, 2005; Shapiro & Vives, 1999; Yoshikawa et al., 2004), whereas a similar number of studies documented no evidence for such a relationship (Chae & Yoshikawa, 2008; Choi et al., 1995, 2002).

Psychological Factors—Ethnic and gay identities, self-image, assertive skills, self-efficacy, and HIV prevention knowledge are all psychological dimensions. Several studies

document that a strong gay (Choi et al., 1995, 2002; Lloyd et al., 1999) or ethnic identity (Chae & Yoshikawa, 2008) was related to risky anal sex, although two studies reported no such relationships (Boldero et al., 1999; Choi et al., 2005). As expected, poor assertiveness skills (Mao et al., 2004; Yoshikawa et al., 2004), a sense of powerlessness (Preston, D'Augelli, Kassab, & Starks, 2007), poorer condom-expectations (Choi et al., 1999), lower sexual self-efficacy with casual partners (Wilson & Yoshikawa, 2004), and an intense need for closeness and positive reinforcement from others (Brown et al., 2008) were consistently related to UAI. This review identified no evidence to support a linkage between HIV knowledge and anal sex without condoms (Boldero et al., 1999; Choi et al., 1995; Shapiro & Vives, 1999). In addition, trust in HIV prevention messages was not documented to be related to anal sex without condoms (Shapiro & Vives, 1999).

Behavioral Patterns—The majority of studies provided evidence that drug use, especially during sexual relationships, has been linked to UAI (Brown et al., 2008; Chae & Yoshikawa, 2008; Choi et al., 2004; Mimiaga et al., 2010; Reis, Collins, & Berscheid, 2000), with one exception (Ross et al., 2008). Being more sexually active (Chae & Yoshikawa, 2008), high sexual sensation seeking (Ratti et al., 2000), and being excessively aroused sexually (Choi et al., 1999; Kanuha, 2000) were also linked to reporting unprotected anal sex.

Notably, the relationship between participation in sex parties and UAI was mixed. One study reported that men who participated in sex parties or bathhouses were more inclined to have sex without condoms (Choi et al., 2004), while two studies documented an insignificant (Choi et al., 2005) or the opposite relationship (Poon et al., 2001). Finally, never having been tested for HIV was associated with risky anal sex (Chae & Yoshikawa, 2008; Choi et al., 2004); however, one study documented an inverse finding (Choi et al., 2002). Clearly more research is warranted on how attendance at bathhouses and HIV testing might influence UAI and vice versa.

Relational-Level Factors

Relationships With Family and Friends—A lack of family social support (i.e., not having a relative with whom to discuss one's same sex experiences) has been positively correlated with having UAI (Matteson, 1997; Poon & Ho, 2002), although one study reported no such relationship (Lloyd et al., 1999). Additionally, a lack of sexual education at home (Poon & Ho, 2002; Shapiro & Vives, 1999) has been identified as a correlate of UAI. Moreover, a lack of positive peer norms promoting safer sex practices has also been linked to reporting UAI (Choi et al., 1995, 2005).

Characteristics of Sexual Partnerships—Consistent with other populations of White MSM (Ostrow et al., 2007; Sullivan, Salazar, Buchbinder, & Sanchez, 2009), for APIMSM having a primary sexual partner (Chae & Yoshikawa, 2008; Choi et al., 2002, 2003; Matteson, 1997; Yoshikawa et al., 2004) and having trust in that partnership (Choi et al., 1999; Kanuha, 2000; Matteson, 1997; Poon et al., 2005) were related to reporting UAI.

Less consistent have been the findings on the significance of the number of sexual partners and the importance of sexual communication. Some studies have reported that greater numbers of sexual partners were linked to having UAI (Chae & Yoshikawa, 2008; Choi et

al., 2002, 2004), whereas others have reported an inverse (Choi et al., 2003) or insignificant relationship (Choi et al., 2005). Findings on sexual communication have also been mixed. One study reported that a lack of sexual communication or feeling discomfort with sexual partners was linked to anal sex without condoms (Poon et al., 2005; Shapiro & Vives, 1999). In contrast, another study documented that greater comfort with discussing sex with sexual partners was related to having unprotected anal sex (Choi et al., 1995).

Characteristics of sexual partners such as racial matching and age have been identified to be related to reporting UAI. For APIMSM, having an Asian versus a White sexual partner was linked to UAI incidences (Mao et al., 2004; Poon & Ho, 2002). In addition, larger age differences between these men and their partners were also associated with UAI incidences (Choi et al., 2003).

Community Involvement—In recent years, there has been growing interest in investigating the extent to which involvement in the mainstream gay community might be correlated with UAI. Four studies reported that general participation in the gay community was not linked with UAI (Choi et al., 1999, 2004; Han, 2008; Mao et al., 2004), whereas one study documented that greater involvement was related to having unprotected anal sex (Mao et al., 2004).

Societal-Level Factors

Culture—Arguably, culture may be subsumed under individual level factors. However, in this article, culture is conceptualized as a societal variable because while individuals often learn societal scripts and internalize blueprints for how they organize themselves and act within the larger society, they typically cannot act directly on those wider cultural assumptions to change them. Arguably, culture within the API communities concerning gender roles, sexuality and mores have played a significant roles in shaping the sexual behaviors of APIMSM. Four qualitative studies reported that men who follow more traditional gender roles and sexual mores in Asian culture (e.g., the meanings of sexuality, intimacy, and safer sex practices) were more inclined to report having UAI relative to their counterparts not supporting such norms (Choi et al., 1999; Kanuha, 2000; Nemoto et al., 2003; Wilson & Yoshikawa, 2004), although this finding was not replicated in a quantitative study (Shapiro & Vives, 1999).

Several cultural perceptions common within the API community include the assumptions that HIV and other STIs are irrelevant to APIs, and that such infections are greater in other communities and populations such as among Whites and those with certain behavioral or demographic attributes. These perceptions, when held by individual APIMSM, were also linked with having anal sex without condoms (Choi et al., 2004). Finally, in a mixed methods study, lower ethnic cultural competence—a set of culturally specific skills that enable individuals to have smooth interactions with others in their cultural community—was linked to reporting unsafe sex (Matteson, 1997). Given that the meaning of acculturation is a complex phenomenon, it is not surprising that the studies in this domain have presented mixed findings. One quantitative study reported lower acculturation was linked with UAI

incidences (Ratti et al., 2000), while another documented no relationship between acculturation and risky anal sex (Chae & Yoshikawa, 2008).

Discrimination—Some evidence suggests that homophobia and racial discrimination experiences were correlated with reporting UAI (Choi et al., 1999; Han, 2007; Nemoto et al., 2003) with two exceptions (Lloyd et al., 1999; Yoshikawa et al., 2004). Homophobia, even in its usually subtle expression in the API community, was linked to participants reporting having unprotected anal sex. In addition, findings have also identified that APIMSM who agree to accept Western standards of beauty, agree to stereotypes of Asian men, and adhere to passive and submissive roles in interracial relationships reported having had anal sex without condoms (Chae & Yoshikawa, 2008; Matteson, 1997; Nemoto et al., 2003, Poon & Ho, 2002, Wilson & Yoshikawa, 2004).

Discrimination can also occur because of immigration status. Anti-immigration discrimination has been consistently identified as a significant correlate of having anal sex without condoms (Wilson & Yoshikawa, 2004; Yoshikawa et al., 2004). Additionally, coping styles have been reported to be related to UAI. APIMSM in Western countries who report heightened sensitivity to avoiding stigma (Nemoto et al., 2003), who utilize less confrontational strategies (Wilson & Yoshikawa, 2004), and who have not disclosed their sexuality to family and friends (Choi et al., 1999) all reported anal sex without use of condoms.

Institution—Health care systems are important institutions that help promote STI/HIV risk reduction. When such systems are unresponsive to their needs of their clients, poor outcomes often occur. A qualitative research has identified that unresponsive and insensitive health care provision has been linked to APIMSM reporting anal sex without condoms (Poon et al., 2005). However, studies examining institutional factors related to risky sex among APIMSM are few and represent an important area for future inquiry.

Discussion

Although HIV incidence rates among APIMSM may be lower relative to other MSM populations (Zaidi et al., 2005), such differences are minimal (Wortley et al., 2000) and belie the fact that HIV incidences among APIMSM is alarming. This current study reviewed 22 empirical articles and organized findings around a socioecological approach. In general, findings are consistent with the broader MSM literature, which indicates that males with fewer psychological resources (Brown et al., 2008; Casey, Timmerman, Allen, Krahn, & Turkiewicz, 2009; Fisher, Fisher, & Shuper, 2009), behaviorally unsafe sex patterns (Mansergh et al., 2008; Mimiaga et al., 2010; Shuper et al., 2010), less support from family and friends (Carlos et al., 2010; Deptula, Henry, & Schoeny, 2010; Strathdee et al., 1998), and a lack of sexual education at home report higher UAI incidences (Lehr, DiIorio, Dudley, & Lipana, 2000; Markham et al., 2010). Theoretically, social support and social learning theories may partially explain why family influences matter with regards to UAI, and its effects have been well substantiated in prior findings among other populations (for reviews, see DiClemente et al., 2007).

Also consistent with prior research (Ostrow et al., 2007; Sullivan et al., 2009), APIMSM who have a primary partner reported UAI incidences. This suggests that, as with women, relational dynamics play an important role in determining APIMSM's sexual behavior (Montgomery et al., 2008; Pulerwitz, Amaro, De Jong, Gortmaker, & Rudd, 2002; Soler et al., 2000). For instance, men with primary sexual partners may be more inclined to engage in UAI given their intimate bond and familiarity with their partners. In addition, they may know or make assumptions about the HIV status of their primary sexual partners.

This review also indicated that linkages between sexual communication and UAI were mixed. Sexual communication is a complex phenomenon, and individuals can often negotiate certain sexual practices based on such communication. More research is needed to better understand when and under what conditions sexual communication may advance or reduce risky sexual behaviors.

This review further indicated that mistrust in HIV prevention messages had no relationship to having UAI (Shapiro & Vives, 1999). This is an interesting finding given that, among Black MSM, lower trust in HIV prevention messages was a significant predictor of UAI (Bogart, Galvan, Wagner, & Klein, 2011). It is plausible that given their model minority status, Asian Americans may have a different level of interaction with the dominant culture compared with their Black counterparts, and consequently, suspicion of prevention messages may be less an issue. In addition, having a racially matched sexual partner was linked to UAI incidences (Choi et al., 2003). Similar findings have been observed with Black MSM (Berry, Raymond, McFarland, 2007; Raymond & McFarland, 2009). Men who have sex with racially concordant partners may wrongly assume a lower rate of HIV infection among members of their own ethnic groups and a higher rate among other ethnic groups.

Other important findings document that aspects of community, culture, and discrimination levels were correlated with rates of risky anal sex. APIMSM who adhere more to traditional Asian cultural notions of sexuality and intimacy, and those who experience discriminations regarding their ethnicity, sexuality, and immigration status have more risky sexual behaviors. It is plausible that men who ascribe to negative sexual stereotypes of what it means to be gay or API may internalize those stereotypes, leading to increased risky behaviors (Sellers, Caldwell, Schmeelk-Cone, & Zimmerman, 2003). Empirical findings document that identity dilemmas (Nemoto, et al, 2003) and negative self-concepts (Choi et al., 1999) are related to increase UAI. Another possibility is that men who do not embrace their sexual identity may be less prone to carry condoms and be educated or prepared for sexual encounters, given that they are trying to suppress or deny this dimension of themselves.

Limitations of the Extant Literature

As this review documents, the majority of research examining risk behaviors among APIMSM focused on individual and relational factors. Few studies examined environmental factors associated with risk factors and more research is warranted in these ecological domains.

Reviews of the literature often result in mixed findings, and although the overall review findings were congruent in most cases, there are several instances where qualitative findings

contracted quantitative results (Choi et al., 1995; Poon et al., 2005; Ratti et al., 2000; Shapiro & Vives, 1999). This may be partly attributed to the fact that the relationships under study are not only complicated by social-cultural phenomena, but also by sample bias and the use of clinical versus nonclinical samples. Future research with more sophisticated study designs are needed to clarify such discrepancies.

APIMSM are among the most hard to reach populations (Chng et al., 2003; Matteson, 1997). In the 22 articles reviewed, only 4 utilized representative sampling techniques, whereas all the others used convenience or purposive samples recruited from traditional venues in the gay community. Such findings have limited generalizability and may be subject to sample bias. All of the studies reviewed used cross-sectional designs. Given that this population has been largely ignored in the extant literature, these few studies represent an important start; however, longitudinal designs are needed to clarify temporal ordering among observed variables. Consequently, the socioecological factors linked to UAI in this review in no way infer temporal or causal inferences. In addition, most studies did not specify their underlying behavioral theories. Theory-based statistical modeling in larger samples utilizing longitudinal study designs could allow for greater understanding of the interrelationships across various domains (Beadnell et al., 2003). With a few exceptions, most of the studies reviewed focused only on risk factors. As a result, there is a dearth of information on protective factors related to HIV risk behaviors among APIMSM.

To overcome these limitations, future research efforts should attempt well-designed sampling techniques if true probability sampling is simply infeasible; include prospective study designs; utilize measurements which have been validated within the API community; explicitly specify the causal pathways to be tested; and give closer attention to interactions between behavioral-contextual factors. Finally, given the few number of published studies focused on this population, a meta-analysis was not able to be conducted for this review. Therefore, the authors were unable to precisely summarize and integrate results across the number of studies, or more precisely analyze differences in the results across studies.

Implications for Prevention Interventions

More research needs to go beyond the individual level of analysis and simultaneously consider environmental and structural level factors. Frameworks, such as the one presented here, help advance our understanding of how to best combat the HIV epidemic among APIMSM through coordinated multilevel interventions (Salazar et al., 2010). Given that one size does not fit all, health promotion interventions designed for MSM of other racial groups may not work effectively for APIMSM. To optimize effects of prevention interventions, it is highly recommended that researchers and practitioners consider social factors and incorporate culturally relevant components (e.g., racial and immigration discrimination) into intervention designs (Crepaz et al., 2007; Herbst et al., 2007). For instance, given that psychological, relational, and family factors were the most consistent correlates of UAI for APIMSM, prevention/intervention approaches might consider how empowerment approaches that support sexual self-efficacy and sexual negotiation skills might support safer sex for this population. In this regard, an application of the network-individual resource model for illuminating how HIV might be transmitted through dyadic network exchanges

might be most useful (Johnson et al., 2010). In addition, given the importance of family dynamics and support, prevention/intervention approaches might consider how to best incorporate supportive members of one's natural network as support confidants in brief interventions designed to reduce UAI. Moreover, prevention approaches often focus on men with casual sexual partners as a high-risk group. Though useful, prevention initiatives should not ignore APIMSM and their primary partners, where rates of UAI may be high and HIV risk acquisition still present if these relationships are not monogamous.

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Figure 1.

Selection process for analysis.

Note. APIMSM = Asian and Pacific Islander men who have sex with men.

Table 1
Socioecological Factors and Unprotected Anal Sex Among Asian and Pacific Islander (API) Men Who Have Sex With Men.

Author(s)	Methods	N	Age/nativity	Location	Major findings
Boldero, Sanitioso, and Brain (1999)	Self-administered questionnaire; cross-sectional (quantitative)	90	Mean age = 29.6 years; 91.1% immigrants	Melbourne area; advertisements in gay communities.	Risk factors: lack of behavioral skills in safer sex and persuasion. Insignificant findings: knowledge, attitudes, subjective norms, and gay identity are not associated with risks.
Chae and Yoshikawa (2008)	Self-administered questionnaire; cross-sectional (quantitative)	192	Mean age = 30.3 years; 87% immigrants	Northeastern cities in the United States; Two sets of samples: 134 from gay community setting, 58 from a group intervention program (baseline data); time/location sampling.	Risk factors: feeling racial identity important to oneself, being attracted to White, having a primary partner, being South Asian, greater number of sexual partners, and greater perceived devaluation of Asian community among those attracted to White partners. Insignificant findings: younger age, income, language preference, and proportion of White male partners are not associated with risks.
Choi, Coates, Catania, Lew, and Chow (1995)	Mailed, self-administered questionnaire; cross-sectional (quantitative)	241	Mean age = 30 years; 63% immigrants	San Francisco; convenience sample.	Risk factors: substance use, comfort with sexual communication and gay identity, never tested for HIV, lower perceived risk, and fewer positive peer norms for safer sex. Insignificant findings: younger age, knowledge, income, immigration status, and number of gay friends are not associated with sexual risks.
Choi et al. (1999)	Face-to-face semistructured in-depth interviews (qualitative)	40	Mean age = 20.7 years; 68% immigrants	San Diego and Seattle; coffee shops and other gay community settings.	Risk factors: negative feelings about oneself, being "closeted," trust in the primary partner, wishing to please the partner, passion that overwhelms judgment, alcohol and drug use, positive attitudes in the gay community and negative attitudes in Asian community toward sexuality, and lack of support and sexual education at home.
Choi, Han, Hudes, and Kegeles (2002)	Face-to-face questionnaire (qualitative)	253	Mean age = 21 years; 55% immigrants	San Diego and Seattle; coffee shops and other community settings; time/location sampling.	Risk factors: having gay and bisexual identity, greater number of sexual partners, having a primary partner, ever tested for HIV, and negative peer norms toward safer sex. Insignificant findings: ethnicity, age, education, and immigration status are not associated with risks.
Choi, Operario, Gregorich, and Han (2003)	Face-to-face questionnaire (qualitative)	303	Mean age = 24 years; 35% immigrants	Los Angeles and Orange County; convenience sample in gay communities.	Risk factors: having an API partner, having a younger partner, being older, having fewer partners, having a primary partner, partner's HIV status and drug history, and larger age-differences with partners. Insignificant findings: ethnicity, HIV status, and immigration status are not associated with risks.
Choi et al. (2004)	Face-to-face questionnaire; cross-sectional (qualitative)	496	Pooled mean age = 24.06 years; 70% immigrants	San Francisco; random sample in gay communities and other related avenues; time/location sampling.	Risk factors: being Thai and multiethnic, being older, being American-born, having 50+ lifetime sexual partners, attending a "circuit party," and lower education. Insignificant findings: age, ethnicity, HIV status, and drug use are not associated with risks.
Choi et al. (2005)	Face-to-face questionnaire; cross-sectional (quantitative)	496	Pooled mean age = 24.06 years; 70% immigrants	San Francisco; random sample in gay communities and other related avenues; time/location sampling.	Risk factors: using Gamma Hydroxybutyrate or Crystal during sex, having lower education, and having a primary partner.

Author(s)	Methods	N	Age/nativity	Location	Major findings
Fazio et al. (2010)	Face-to-face semistructured in-depth interviews (qualitative)	40	Mean age = 26.5 years; 47.5% immigrants	San Francisco Bay Area; dance clubs.	Insufficient findings: age, immigration status, gay identity, attending "partner exchange" parties, clubbing, and number of partners are not associated with risks. Risk factors: use of methamphetamine during sex.
Han (2007)	Unstructured, face-to-face, in-depth interviews (qualitative)	15	Mean age = 27 years; 53% immigrants	Seattle; snowball sampling and referrals at community-based agencies.	Risk factors: stereotypes of gay Asian men, racism and marginalization in gay community, acceptance of Western standards of beauty, and competition with other Asians to "get" a White partner.
Kanuha (2000)	Face-to-face semistructured in-depth interviews (qualitative)	18	age range 18–59 years; 83% from Hawaii	Hawaii; snowball sampling at HIV service and health agencies; advertisement.	Risk factors: trust in the primary partner, considering pleasing others as cultural norms, alcohol or drug use, partner "looks clean," discomfort with condom, "heat of the moment," invincibility of HIV issues in local gay Asian community, and fatalism.
Lloyd, Faust, Roque, and Loue (1999)	Self-administered questionnaire; cross-sectional (quantitative)	31	55% immigrants; 84% gay; 36% HIV positive; 71% Christian	San Diego County, California; gay bars, HIV agencies, health clubs, referral; convenience sample.	Risk factors: higher self-acceptance. Insufficient findings: immigration status, HIV status, and social support are not associated with risks.
Mao, Van de Ven, and McCormick (2004)	Self-administered questionnaire; cross-sectional (quantitative)	199	Mean age = 30 years; 94.5% immigrants	Sydney, Australia; gay social venues, such as bars and nightclubs.	Risk factors: having higher proportion of gay friends in social networks and lower self-efficacy in condom use with casual sexual partners. Insufficient findings: age is not associated with risks.
Matteson (1997)	Qualitative: structured interviews; quantitative: face-to-face questionnaire cross-sectional (mixed methods)	70 (58 in Quant report)	Almost 50% of the sample was born in the United States	A large Midwestern city; advertisements in both gay and nongay media and settings.	Risk factors: misinformation, trust in the primary partner, poor assertive skills, a sense of guilt toward parents, acceptance of submissive roles in interracial relationships, and lower ethnic cultural competence. Insufficient findings: ethnicity, having an older White partner, and acculturation to gay community are not associated with risks.
Nemoto et al. (2003)	Five focus groups (qualitative)	38	Mean age = 21.9 years; 59% immigrants	San Francisco Bay Area; convenience sample (use gay venues, gay e-mail list, and referrals).	Risk factors: homophobia in API community and family, racism in gay community, lack of personal cohesive identity, polarized responses to stigmas, stereotypes of gay Asian men, club drug use to access to gay community, cultural norms against sex-explicit HIV prevention programs, and intense needs for closeness and positive reinforcement from others.
Poon, Ho, and Wong (2001)	Self-administered questionnaire; cross-sectional (quantitative)	90	58% 18–29 years; 31% 30–39 years; 13% 40–49 years; 1% over 50 years	Toronto; gay bathhouse and bars; time/location sampling.	Risk factors: not attending bathhouses.
Poon and Ho (2002)	Ethnography; 2 interviews and 3 focus groups (qualitative)	15	Mean age = 20.7 years; 93% immigrants. (8 males, 7 females)	Toronto; gay community settings.	Risk factors: lack of sex education at home, lack of social support, homophobia in API family, unresponsive health and social service providers, stereotypes of gay Asian men, and Western standards of beauty.

Author(s)	Methods	N	Age/nativity	Location	Major findings
Poon, Ho, Wong, Wong, and Lee (2005)	Online in-depth interviews (qualitative)	21	Mean age = 26.1 years; 76% immigrants	Toronto-based online chat-room for Asian gay men.	Risk factors: incorrect assumption about partners' serostatus and discomfort with discussing safer-sex practice with sexual partners.
Ratti, Bakeman, and Peterson (2000)	Self-administered questionnaire; cross-sectional (quantitative)	46	Mean age = 32 years	Toronto and Vancouver; advertisement, community organizations and word of mouth; convenience sample.	Risk factors: enjoyment in high-risk sex, lower condom expectations, internalized homophobia, and lower acculturation to the majority culture. Insignificant findings: race, sexual communication, condom efficacy, and acculturation to gay community are not associated with risks.
Shapiro and Vives (1999)	Self-administered questionnaire; cross-sectional (quantitative)	60	Mean age = 23.7 years; about 50% immigrants	San Francisco; Two AIDS resources centers; purpose sampling.	Risk factors: being younger, less education, and more sexually active, drug use and never tested for HIV. Insignificant findings: discomfort in communication about safer sex, trust in HIV information, knowledge and cultural stereotypical attitudes about HIV and gender roles that are not associated with risks.
Wilson and Yoshikawa (2004)	Face-to-face semistructured in-depth interviews (qualitative)	23	Mean age = 32 years; 91% immigrants;	New York City; purposive samples in gay venues.	Risk factors: racial and anti-immigration discrimination in gay community, self-stigmatization about ethnicity and immigration status, cultural notions of intimacy, efforts to please (non-API) partners, a sense of powerlessness, and use of avoidance and confrontational strategies less frequently.
Yoshikawa, Wilson, Chae, and Cheng (2004)	Self-administered questionnaire; cross-sectional (quantitative)	192	Mean age = 30.3 years; 87% immigrants	Northeastern cities in the United States; Two sets of samples: 134 from gay community setting; 58 from a group intervention program (baseline data); time/location sampling.	Risk factors: being American-born, being South Asian and multiethnic, having a primary partner, and experiencing anti-immigration discrimination. Insignificant findings: age, experiencing homophobia, racism, and mental illness are not associated with risks.