

## INFLUENCES OF STIGMA AND HIV TRANSMISSION KNOWLEDGE ON MEMBER SUPPORT FOR FAITH-PLACED HIV INITIATIVES IN CHINESE IMMIGRANT BUDDHIST AND PROTESTANT RELIGIOUS INSTITUTIONS IN NEW YORK CITY

Ezer Kang, Darcie A. P. Delzell, John J. Chin, Elana Behar, and Ming Ying Li

Ethnic religious institutions in the United States are uniquely positioned to influence HIV programming within Asian immigrant communities at large. This article examines how knowledge of HIV transmission and stigma potentially influenced attendees' support for their institutions' involvement in HIV programs. Quantitative questionnaires were individually administered to 400 Chinese attendees of Protestant churches and 402 attendees of Buddhist temples in New York City. Mediation analyses indicated that HIV stigma significantly mediated the direct effects of HIV transmission knowledge on attendees' support of their institution's involvement in HIV education (bias corrected and accelerated [BC<sub>a</sub>] 95% confidence interval [CI], 0.004 to 0.051), HIV care (BC<sub>a</sub> 95% CI, 0.019 to 0.078), and stigma reduction initiatives (BC<sub>a</sub> 95% CI, 0.013 to 0.070), while controlling for religious affiliation, age, gender, and education. To mobilize Chinese churches and temples to engage in HIV programming, it remains important to support educational programs on HIV transmission that specifically help to mitigate stigma toward persons living with HIV.

Ethnic religious institutions in the United States (U.S.) have historically safeguarded and preserved cultural traditions while helping to facilitate Chinese immigrants' assimilation to their new environments. The geographic and social positioning of Protestant churches and Buddhist temples uniquely position them to facilitate or impede HIV prevention and care initiatives, particularly within immigrant enclaves (Chin,

---

Ezer Kang, is affiliated with the Department of Psychology at Wheaton College in Wheaton, Illinois. Darcie Delzell is with the Department of Mathematics at Wheaton College. John J. Chin, Elana Behar, and Ming Ying Li are with the Department of Urban Affairs and Planning Studies at Hunter College, City University of New York.

Research reported in this article was partially supported by the Eunice Kennedy Shriver National Institute of Child Health and Human Development under Award Number R01HD054303. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

Address correspondence to Ezer Kang, Ph.D., Department of Psychology, Wheaton College, 501 College Ave., Wheaton, IL 60187. E-mail: ezer.kang@wheaton.edu

Neilands, Weiss, & Mantell, 2008; Kang, Chin, & Behar, 2011; Loue, Lane, Lloyd, & Loh, 1999). In the U.S., an estimated 9,054 Asians were diagnosed with AIDS between 2008 and 2011 (Centers for Disease Control and Prevention, 2013, February). In New York City (NYC), 1,936 Asians and Pacific Islanders were reported to be living with HIV/AIDS as of December 2011, constituting 1.7% of persons living with HIV/AIDS in NYC (New York City Department of Health and Mental Hygiene, 2012, October). The proportion of new HIV diagnoses among foreign-born New Yorkers increased from 17% in 2001 to 28% in 2009 (Wiewel, Torian, Nasrallah, Hanna, & Shepard, 2013), reflecting the growing immigrant population in NYC (New York State Comptroller, 2010). Between 2006 and 2010, for example, 73% of Chinese residing in NYC were non-native born (Asian American Federation, 2012), and the Chinese population (not including Taiwanese) increased by 34% between 2000 and 2010, representing the largest numeric population increase (126,113 persons) of any ethnic group in NYC. As of 2010, Chinese remained the largest Asian group in NYC, with more than half a million residents (Asian American Federation, 2012).

Drawn from these reports, recent scholarship has focused on how immigrant religious institutions influence broader social milieus within which HIV risk behavior occurs and illness stigma continues to proliferate (Chin, Li, Kang, Behar, & Chen, 2011; Kang et al., 2011). However, it has been well established that HIV stigma and unfounded fears of contracting HIV significantly challenge the implementation of HIV programming in churches (Bluthenthal et al., 2012; Coleman, Lindley, Annang, Saunders, & Gaddist, 2012). Erroneous knowledge of HIV transmission, prevention, and treatment often perpetuated a perceived need for self-protection among religious groups that further excluded persons living with HIV/AIDS (Chen, Choe, Chen, & Zhang, 2007; Lew-Ting & Hsu, 2002; London & Robles, 2000; Takshashi, 1997). Studies, for example, have suggested a “co-occurrence” of correct and incorrect knowledge of HIV transmission and highlighted the importance of reinforcing knowledge of documented modes of transmission *and* correcting inaccurate transmission knowledge (Boer & Emons, 2004; London & Robles, 2000). London (2000) argued that “as people ‘know’ more, they are able to fear more; inaccurate beliefs of HIV transmission emerge when new information is introduced...and assimilated into existing cultural frameworks for understanding contagion and disease” (p. 1277). As such, misinformation about HIV transmission often entrenches individuals in their theological perspectives—ones that negate or minimize the roles of faith traditions in HIV programming.

Several studies of Black churches also found that lowered knowledge of HIV transmission was associated with stigmatizing attitudes towards persons living with HIV/AIDS (PLWHAs)—often enacted by avoiding contact with PLWHAs, and narrowly framing HIV/AIDS as a deserved condition due to immoral behavior (Coleman et al., 2012; Harris, 2010). In many Black churches, doctrinal beliefs about sexuality often perpetuated exclusionary attitudes towards PLWHAs (Wilson, Witline, Munoz-Laboy, & Parker, 2011). Recent studies, however, highlighted other doctrinal beliefs of compassion and justice that sought to include PLWHAs in faith communities (Kang et al., 2011; Sutton & Parks, 2013). Bluthenthal and colleagues (2012) argued for a range of attitudes towards HIV in urban religious institutions, and claimed that addressing extant HIV stigma and active involvement in HIV prevention and care were concurrent tasks. In other words, one didn’t necessarily follow the other.

Other formidable barriers to sustainable HIV-related programming in Chinese churches and Buddhist temples are worth noting. First, discourse about HIV generally addresses issues of sexual ethics that are not widely embraced in religious and immigrant communities (Chin et al., 2008). Moreover, theological tenets about homosexuality, premarital sexual behavior, and substance abuse often foster negative and exclusionary attitudes towards PLWHAs and those perceived to belong to HIV-risk groups (Kang et al., 2011). Second, involvement in HIV programming potentially compromises a religious institution's perceived moral standing and authority within their community and risks alienating them from their constituents (Chin et al., 2011). Finally, institutional priorities and member needs in immigrant churches often compete with HIV prevention and care priorities, raising questions whether HIV/AIDS bears relevance to the broader ecclesial mission of Protestant churches (Kang et al., 2011).

Formative research to date on factors that impede and support faith-based initiatives in the U.S. have largely focused on African American and Latino communities, with few examining other ethnic groups. In a systematic review of published literature on faith-based health programs between 1990 and 2000, 91% of faith-placed interventions, where health professions established the church as an intervention site, targeted African Americans (DeHaven, Hunter, Wilder, Walton, & Berry, 2004). Moreover, many of the quantitative findings were based on small convenience samples of religious leaders and congregants from a single faith tradition. Recent studies examining factors that influence the immigrant Asian and Latino religious organizations' response to HIV/AIDS or lack thereof suggest that theological orientations (Kang et al., 2011; Ramirez-Johnson, Diaz, Feldman, & Ramirez-Jorge, 2013), church governance, individual agency of church leaders (Cunningham, Kerrigan, McNeely, & Ellen, 2011), and geographic proximity of institution to high HIV prevalence areas should be considered when approaching churches and temples to collaborate on HIV/AIDS programming. Chin and colleagues (2005) framed the conflict between theological directives and responsiveness to community as "conservative innovation"—as church leaders are torn between the responsibilities to preserve and uphold tradition (conservative impulse) and the imperative to respond with timeliness to the felt and actual needs of their community, even at the risk of challenging orthodoxy (innovation impulse; Chin, Mantell, Weiss, Bhagavan, & Luo, 2005).

In addition to garnering resources and strengthening leadership support for HIV programming, recent studies have also addressed the importance of congregational and member support for health-related programming (Trinitapoli, Ellison, & Boardman, 2009). This article extends prior work on the role of immigrant community institutions on HIV-related work by examining the relationship between HIV transmission knowledge and support for institutional HIV programming among 802 Chinese attendees of 20 randomly selected Buddhist temples and Protestant churches serving immigrant communities in NYC. Specifically, we hypothesized that lowered HIV stigma will significantly mediate the positive relationship between HIV transmission knowledge and support for specific forms of institutional HIV programming (i.e., HIV education, prevention, care, and stigma-reduction). Findings from this mediation study will help clarify the causal sequence of HIV-related knowledge, stigma, and community programming. Moreover, it helps to inform potential means of mobilizing immigrant community institutions such as religious organizations to strategically address the challenges of HIV/AIDS prevention and care, and perhaps

other stigmatized public health concerns that affect Chinese and other Asian immigrant communities (e.g., domestic violence, reproductive health, or substance abuse; Chin et al., 2008).

## METHOD

### PARTICIPANTS AND PROCEDURES

This article is based on data from an interviewer-administered quantitative survey with 802 church and temple members who participated in a five-year study on Chinese immigrant religious institutions and HIV involvement in NYC. Institutions were selected for this study by conducting a census of Chinese immigrant religious institutions in NYC from September 2007 through November 2008, concentrating our efforts on three boroughs—Manhattan, Queens, and Brooklyn—which have the largest Chinese populations in NYC. Institutions were first identified through published listings, key informants (including two Protestant pastors and two Buddhist monks on our study advisory committee), and by first-hand visual inspection of all the streets in the census tracts with more than 1,000 Chinese in 2000 and within a one-block radius of other known Chinese immigrant religious institutions. We then conducted a short organizational survey with a random sample of 83 of the 200 religious institutions that we identified, and then randomly selected 10 Protestant organizations and 10 Buddhist organizations from the sample of 83 for in-depth study. Based on the distribution of the 200 churches and temples, we found that the distribution of Buddhist temples in the sample was representative of the distribution in the organizational population in the five boroughs of NYC, but for the Protestant churches, the Manhattan churches were underrepresented in the sample.

Within each of the 20 institutions selected for the in-depth study, we surveyed 40 members using an interviewer-administered quantitative survey. Participant selection for the interviewer-administered survey was based on a sampling frame of active members in each institution and was developed using a self-administered short social network survey through which respondents provided names and contact information of their contacts at their church or temple. We continued to collect the social network surveys at regular church and temple events until we had completed surveys from at least 40% of the reported membership (this target was achieved through attendance at one to four events). Members who attended these regular events and completed the short social network survey or who were identified on the social network survey by others as being members of the church or temple were eligible for the longer quantitative interview, which is the focus of the analysis for this article. Church/temple leaders supported the study, but were not involved in the direct recruitment of participants, thereby minimizing any unintended influence over participants' responses.

In each institution, the first 30 interviewees for the face-to-face interviewer-administered survey were randomly selected, and the final 10 were purposively selected to include individuals who filled structural holes (Burt, 2004) in their organizations' social network, such as individuals who bridge two otherwise unconnected social network components (social network data analysis is not discussed in this article). Individuals selected for interviews were contacted by telephone and e-mail by trained multilingual research assistants, and an interview appointment was scheduled at a mutually agreed upon time and place, usually at the church or temple. The interviews were conducted by research assistants from January 2009 through January

2012. Study procedures and instruments were approved by the institutional review board (IRB) at the principal investigator's institution, and participants received a \$60 cash incentive for completing the interview.

The interviewer-administered quantitative instrument was developed first in English and then translated into traditional Chinese. We conducted 36 pilot interviews, half in Chinese and half in English, with members of Buddhist temples and Protestant churches and then revised the instruments to clarify ambiguous questions. Two bilingual Chinese-English-speaking research staff reviewed both instruments to ensure that the meanings of both versions were consistent with each other.

## MEASURES

*Dependent Variable: Support for Institutional HIV Programming (SIHP).* Four items assessing the level of respondents' support for their respective institutions' involvement in HIV education, prevention, care, and stigma-reduction programming were developed from an earlier qualitative study that examined the role of community institutions in HIV prevention initiatives in Chinese and South Asian immigrant communities ( $\alpha = .83$  for current study sample; Chin et al. 2005). Each SIHP item was originally scaled from 1 to 5, ranging from completely non-supportive (1) of institutional involvement to very supportive (5). However, there were few subjects who chose categories 1 or 2 ( $n = 10$ ) relative to the other three categories, making it difficult to detect differences between categories. Therefore, two new categories were created to represent "supportive" and "non-supportive" subjects. For all four SIHP items, subjects who chose categories 1–3 (opposed – neutral) were categorized as "non-supportive" and those who chose categories 4 or 5 (supportive – very supportive) were categorized as "supportive." There were no reversed questions used in this measure.

*Independent Variable: HIV Knowledge.* Knowledge of HIV transmission (HKnow) and prevention was measured using the Brief HIV Knowledge Questionnaire, HIV-KQ-18 (Carey & Schroder, 2002). The HIV-KQ-18 is internally consistent across samples of low-income adults—reported alphas by Carey & Schroder (2002) ranged from .75 to .89, test-retest correlations between baseline and Time 2 scores suggested reliability ( $r_s = .76-.94$ ) and was associated with a longer previously validated measure,  $r_s = .93-.97$  (Carey & Schroder, 2002). Based on piloting the HIV-KQ-18, the research team excluded two items—"A natural skin condom works better against HIV than does a latex condom" and "Having sex with more than one partner can increase a person's chance of being infected with HIV"—due to confusing wording (e.g., misunderstood multiple partners as having sex with multiple partners at one time). Participants indicated whether statements about HIV were true or false, or responded that they "don't know." A summary score was calculated by summing the number of items answered correctly ("don't know" responses were scored as incorrect). Summary scores ranged from 0 to 16, with higher scores indicating greater knowledge ( $\alpha = .76$  for current study sample).

*Mediating Variable: HIV Stigma.* Five questions on this scale reflected dimensions of expressed HIV stigma—avoidance and discomfort, and attribution of blame and responsibility to PLWAs (Froman & Owen, 2001; Herek, Capitano, & Widaman, 2002). Participants were asked to rate the extent to which they agreed with statements about interacting with PLWHAs by selecting responses scored 1 (strongly

disagree) to 4 (strongly agree). Total scores ranged from 5 to 25, with higher scores reflecting higher expressed HIV stigma ( $\alpha = .75$  for current study sample).

*Mediation Analyses.* Differences in demographic characteristics between Buddhists and Protestants were determined by a chi-squared test of independence for categorical variables and independent sample t-tests for continuous variables. The hypothesis that HIV stigma (HStig) mediates the association between knowledge of HIV transmission (HKnow) and members' support of their institutions' engagement in HIV programming (herein referred to as support for institutional HIV programming, SIHP) was tested using linear and logistic regressions because the outcome variables were dichotomous and traditional linear regression methods were not appropriate (MacKinnon, Lockwood, Brown, Wang, & Hoffman, 2007). Linear regression was used when HStig was the dependent variable, and logistic regression was used when SIHP was the dependent variable. All regressions contained variables controlling for the subject's age, gender, religious affiliation, and education level.

For each dichotomous SIHP item, logistic regressions were performed to determine the mediation effect estimates and the proportion mediated (mediation effect/total effect). MacKinnon and colleagues' (MacKinnon, Fairchild, & Fritz, 2007) recommended estimators for dichotomous outcome variables were used for the computations (MacKinnon, Lockwood, et al., 2007). Given that the mediation effect estimator might not always be normally distributed, as is assumed by the Sobel test, a bootstrapping method was used for each analysis to assess the significance of the estimated mediation effect. For all analyses, 5,000 bootstrapped samples were generated and bias-corrected, and accelerated (BC<sub>a</sub>) confidence intervals were computed (Efron & Tibshirani, 1993). All computations were performed using the R computing language (Venables, Smith, & Team, 2013).

## RESULTS

### DESCRIPTIVE

Demographic characteristics of the sample (400 Protestant church attendees, 402 Buddhist temple attendees) are presented in Table 1. Seventy-six percent of the participants were born the People's Republic of China, Taiwan, or Hong Kong, and have lived in the U.S. for a mean of 19 years. Buddhist respondents were older than Protestant respondents,  $t(794) = -8.3, p < .001$ , and were more likely to be female,  $\chi^2(1, n = 802) = 29.03, p < .001$ . Compared to Protestants, more Buddhists were unemployed,  $\chi^2(1, n = 802) = 8.83, p < .05$ , completed less education,  $\chi^2(1, n = 802) = 9.5, p < .01$ , and reported household monthly incomes below \$34,999,  $\chi^2(2, n = 802) = 23.9, p < .001$ . The majority of respondents from both temples and churches self-identified as Mainland Chinese. There were no significant differences in marital status between the two groups.

Protestant church attendees scored higher on the HIV knowledge scale (62% of items correctly answered,  $SD = 3.14$ ) compared to Buddhist temples attendees (56%,  $SD = 3.65$ ),  $t(800) = 5.53, p < .001$ . Buddhist attendees endorsed higher HIV stigma than Protestant church attendees,  $t(790) = -2.20, p < .05$ . Ninety percent and 85% of Protestants and Buddhists respectively supported their institutions' involvement in general HIV education workshops for community members. Eighty-four percent and 83% of Protestants and Buddhists believed that religious organizations should play a specific role in HIV prevention, care for PLWHAs (91% and 88%), and HIV

TABLE 1. Demographic Characteristics of Respondents Attending Buddhist Temples and Protestant Churches ( $n = 802$ )

Demographic Characteristics	Buddhist Temple ( $n = 400$ )	Protestant Church ( $n = 402$ )
	Mean (SD) or $n$ (%) <sup>1</sup>	Mean (SD) or $n$ (%)
Age (years)	52 (13.74)	43 (16.27)
Gender		
Female	304 (57)	232 (43)
Male	96 (36)	168 (64)
Self-Identify as Mainland Chinese <sup>2</sup>	387 (50)	392 (50)
Primary Language/Dialect		
Mandarin	156 (49)	165 (51)
Cantonese	143 (62)	87 (38)
Taiwanese	10 (36)	18 (64)
English	34 (28)	86 (72)
Other	55 (64)	31 (36)
Marital Status		
Married/Living With Spouse	227 (48)	246 (52)
Single/Never Married	83 (44)	106 (56)
Highest Education Completed		
Graduate School	38 (37)	64 (63)
4-Year College	74 (38)	121 (62)
High School/ GED	90 (52)	82 (48)
Current Employment		
Full-Time	153 (44)	192 (56)
Unemployed	173 (56)	136 (44)
Household Monthly Income		
≤ \$4,999–\$34,999	247 (56)	188 (43)
\$35,000–\$84,999	70 (41)	99 (59)
\$85,000–≥ \$105,000	41 (35)	77 (65)

<sup>1</sup>Percentage within demographic variable (e.g., 57% of women in the sample were attendees of Buddhist temples).

<sup>2</sup>Chinese born in the People's Republic of China (PRC).

stigma reduction programming (89% and 87%)—there were no significant group differences in supporting these initiatives.

#### ANALYSIS OF THE MEDIATION MODEL

Table 2 shows initial logistic regression results for all four Supports for Institutional HIV Programming (SIHP) items. Knowledge of HIV Transmission (HKnow) was a significant predictor for all of the items, with the exception of HIV Prevention ( $p$ -value = 0.14). As such, HIV Prevention was not included in subsequent mediation analysis.

Based on the BC<sub>a</sub> confidence intervals, HStig has a statistically significant effect on the association between HKnow and three SIHP items (Table 3). For example, for the association between HKnow and HIV Education, the estimated mediation effect of HStig was 0.0272, which constituted approximately 31% of the total effect of 0.0871. The bootstrapped confidence intervals did not contain a zero, indicating evidence for significant mediation effects. HStig mediated approximately 25% to

TABLE 2. HIV Stigma Mediation Effects on the Relationship Between HIV Knowledge and Support for Institutional Involvement in HIV Programming: Logistic Regression Results

Support for Institutional Involvement in HIV Programming		No Mediator	Mediator (Stigma)
		Predictor ( <i>p</i> -value)	Predictor ( <i>p</i> -value)
HIV Education	HKnow <sup>1</sup>	0.09 (0.01)	0.06 (0.11)
	HStig <sup>2</sup>	—	-0.06 (0.03)
HIV Prevention	HKnow	0.05 (0.14)	0.02 (0.49)
	HStig	—	-0.06 (0.04)
HIV Care	HKnow	0.12 (0.002)	0.08 (0.06)
	HStig	—	-0.11 (0.001)
HIV Stigma Reduction	HKnow	0.15 (0)	0.12 (0.002)
	HStig	—	-0.09 (0.003)

<sup>1</sup>Independent variable.

<sup>2</sup>Mediator.

38% of the total effect of HKnow on whether a participant was supportive of their institution's involvement in HIV programs (as measured by the three items). It is noteworthy that the estimation of the proportion mediated can be highly variable, even given a moderately large sample.

We further explain these results in the context of logistic regression by providing various interpretations of the coefficients. One interpretation of the effect of HKnow on SIHP (using HIV Stigma Reduction as an example) *without* inclusion of the mediation effect (Table 2) is to state that the estimated effect of a five-unit increase (for example) in HKnow increases the odds of a participant being supportive of their institution's involvement in HIV Stigma Reduction by a multiplicative factor of  $e^{0.15(5)} = 2.12$  (increasing the odds by 112%). However, when HStig is included in the model as a mediator, the estimated effect of a five-unit increase in HKnow increases the odds of a subject being supportive by a multiplicative factor of  $e^{0.12(5)} = 1.82$  (increasing the odds by 82%). In addition, if HKnow is held constant, the effect of a five-unit increase in HStig decreases the odds of a subject being supportive by a multiplicative factor of  $e^{-0.09(5)} = 0.64$  (decreasing the odds by 36%).

## DISCUSSION

Mobilizing religious institutions to address HIV prevention and care initiatives in Asian immigrant communities necessitates understanding what influences member support for such programming in faith-based contexts (Kang et al., 2011). The current findings suggested that being more knowledgeable about HIV transmission decreased HIV stigma, which in turn increased support for institutional involvement in HIV programming among attendees of Chinese churches and temples in NYC. As such, HIV education that specifically challenges unfounded fears of interacting with PLWHAs and other forms of stigmatizing attitudes remains strategic in fostering programming support within churches and temples.

Since the late 1990s, the decline of stigmatizing attitudes towards PLWHAs and increasing public awareness of HIV transmission and prevention in the U.S. gradually shifted prevention priorities from knowledge-based to behavioral change-focused interventions. However, among foreign-born and U.S.-born ethnic minority groups, the co-occurrence of correct and incorrect knowledge about HIV transmission per-

TABLE 3. HIV Stigma Mediation of HIV Knowledge on Support for Institutional Involvement in HIV Programming (5,000 Bootstrap Samples)

SIHP Item	Estimates		Total Effect	Proportion Mediated
	Mediation Effect $BC_a$	95% CI for Mediation Effect		
HIV Education	0.0272	[0.004, 0.051]	0.0871	31%
HIV Care	0.0466	[0.019, 0.078]	0.1240	38%
HIV Stigma Reduction	0.0395	[0.013, 0.070]	0.1569	25%

sisted (London & Driscoll, 1999; London & Robles, 2000). Consistent with previous findings showing low levels of HIV knowledge in immigrant communities (De Santis, Provencio-Vasquez, McCabe, & Rodriguez, 2012; Kang, Rapkin, Springer, & Kim, 2003; Loue, Cooper, & Fiedler, 2003), the mean percentages of correctly answered responses on the HIV knowledge scale in this study were 62% and 56% respectively among attendees of churches and temples. This finding is a striking reminder that the long course of HIV in the U.S. is not *sine qua non* for competent HIV knowledge in all communities.

Our findings indicated that knowledge of HIV transmission was not significantly associated with support for general HIV prevention education programs in religious institutions. The extent of support for HIV prevention programming was likely influenced by doctrinal pronouncements against the use of condoms in premarital sex or congregants' discomfort with discussing comprehensive sex education. Similar reticence in addressing sexual topics among African American churches has raised the question of how much to "compromise" over of what public health professionals argue as essential preventive messages and what faith institutions are willing to discuss (Francis & Liverpool, 2009). It is important to add that theological positions against substance abuse and homosexual behavior, upheld in more conservative immigrant churches and temples, may not necessarily result in their dismissal of *all* forms of HIV programming (Kang et al., 2011). Although many churches and temples, particularly during the first decade of the epidemic, unjustly espoused vitriolic and hateful views about PLWHAs, (Green & Rademan, 1997), it was noteworthy that 83% to 91% of participants in this study supported some form of faith-based HIV programming. This support was potentially informed by doctrinal teachings in the Christian and Buddhist traditions to compassionately treat, without judgment, those who are socially marginalized due to illness (Kang et al., 2011; Loue et al., 1999). Also, with greater public awareness of HIV, it is likely that faith-based HIV programming in Chinese communities is better received now compared to the early years of the epidemic in the U.S.

The well-established importance of reducing HIV-related stigma in religious communities necessitates identifying specific dimensions of stigma for programmatic focus. Our findings suggested that an informed understanding of HIV transmission routes could challenge fears of interacting with PWHAs. Although many religious leaders in churches and temples may not overtly marginalize PLWHAs, it is noteworthy to consider how the general lack of interaction with individuals openly living with HIV in these settings may undermine efforts to correct misinformation about HIV transmission (Cunningham et al., 2011).

The findings from our study also highlight the need for additional studies on several issues. First, ethnographic studies are important in exploring the "range and

types of norms and attitudes (from stigmatizing to affirming)” towards PLWHAs among immigrant churches, temples, and mosques located in ethnic minority communities (Bluthenthal et al., 2012, p. 1521). Responses to quantitative scaled questions may not adequately capture the nuances of misinformed HIV knowledge and stigmatizing attitudes towards PLWHAs. Second, despite strong support for HIV-related programming within churches and temples, it is uncertain whether member support results in actual implementation of programming. In the traditional hierarchical structure of Chinese churches, for example, support within a congregation for an issue may not necessarily propel leadership to respond—largely due to competing institutional needs and limited resources. Moreover, if programming is actualized, how much and in what ways are immigrant communities being helped (Trinitapoli et al., 2009)?

### LIMITATIONS

Several study limitations are noteworthy. First, HIV knowledge assessment was limited to domains of HIV prevention and sexual transmission that excluded the treatment of HIV and clinical illness course. Moreover, since the HIV-KQ was validated with primarily low-income and low-literacy samples, potential ceiling effects with this study’s higher educated sample should be considered (Carey & Schroder, 2002). Second, our sampling of Chinese participants from a single geographic location limits generalizability to attendees of different ethnic religious institutions in other U.S. regions. Moreover, the implications of our findings may be less relevant to Chinese immigrants who recently immigrated to the U.S., as the mean length of U.S. residence for our sample was 19 years. Third, this is a cross-sectional study that cannot definitely draw causal relationships between HIV knowledge, HIV stigma, and support for institutional involvement in HIV programs. Notwithstanding these limitations, findings from this study underscored the importance of *continually* reinforcing knowledge of HIV transmission—especially as it relates to dispelling fears of interacting with PLWAs. In efforts to garner member support for faith-based HIV programming in Chinese immigrant communities, a dual approach of correcting misinformed knowledge of interacting with PLWHAs and challenging other forms of stigmatizing attitudes remains a critical strategy.

### REFERENCES

- Asian American Federation. (2012). *Asian Americans in New York City: A decade of dynamic change 2000-2010*. New York: Asian American Federation.
- Bluthenthal, R. N., Palar, K., Mendel, P., Kanouse, D. E., Corbin, D. E., & Derose, K. P. (2012). Attitudes and beliefs related to HIV/AIDS in urban religious congregations: Barriers and opportunities for HIV-related interventions. *Social Science and Medicine*, 74(10), 1520-1527.
- Boer, H., & Emons, A. A. (2004). Accurate and inaccurate HIV transmission beliefs, stigmatizing and HIV protection motivation in Northern Thailand. *AIDS Care*, 16(2), 167-176.
- Burt, R. S. (2004). Structural holes and good ideas. *American Journal of Sociology*, 110(2), 349-399.
- Carey, C. L., & Schroder, K. E. E. (2002). Development and psychometric evaluation of the brief HIV knowledge questionnaire. *AIDS Education and Prevention*, 14(2), 172-182.
- Centers for Disease Control and Prevention. (2013, February). *HIV Surveillance Report, 2011* (Vol. 23).
- Chen, J., Choe, M. K., Chen, S., & Zhang, S. (2007). The effects of individual- and community-level knowledge, beliefs, and fear on stigmatization of people living with HIV/AIDS in China. *AIDS Care*, 19(5), 666-673.

- Chin, J., Li, M. Y., Kang, E., Behar, E., & Chen, P. C. (2011). Civic/sanctuary orientation and HIV involvement among Chinese immigrant churches and Buddhist temples in New York City. *Global Public Health*, 6(S2), S210-S226.
- Chin, J., Mantell, J. E., Weiss, L., Bhagavan, M., & Luo, X. (2005). Chinese and South Asian religious institutions and HIV prevention in New York City. *AIDS Education and Prevention*, 17(5), 484-502.
- Chin, J., Neilands, T. B., Weiss, L., & Mantell, J. E. (2008). Paradigm shifters, professionals, and community sentinels: Immigrant community institutions' roles in shaping places and implications for stigmatized public health initiatives. *Health and Place*, 14(2008), 866-882.
- Coleman, J. D., Lindley, L., Annang, L., Saunders, R. P., & Gaddist, B. W. (2012). Development of a framework for HIV/AIDS prevention programs in African American churches. *AIDS Patient Care and STDs*, 26(2), 116-124.
- Cunningham, S. D., Kerrigan, D. L., McNeely, C. A., & Ellen, J. M. (2011). The role of structure versus individual agency in churches' responses to HIV/AIDS: A case study of Baltimore City churches. *Journal of Religion and Health*, 50, 407-421.
- De Santis, J. P., Provencio-Vasquez, E., McCabe, E., & Rodriguez, R. A. (2012). Predictors of HIV knowledge among Hispanic men. *Hispanic Health Care International* 10(1), 7-17.
- DeHaven, M. J., Hunter, I. B., Wilder, L., Walton, J. W., & Berry, J. (2004). Health programs in faith-based organizations: Are they effective? *American Journal of Public Health*, 94, 1030-1036.
- Efron, B., & Tibshirani, R. (1993). *An introduction to the bootstrap*. Boca Raton, FL: CRC Press.
- Francis, S. A., & Liverpool, J. (2009). A review of faith-based HIV prevention programs. *Journal of Religion and Health*, 48, 6-15.
- Froman, R., & Owen, S. (2001). Measuring attitudes toward persons with AIDS: The AAS-G as an alternative form of the AAS. *Scholarly Inquiry for Nursing Practice*, 15(2), 161-174.
- Green, G., & Rademan, P. (1997). Evangelical leaders and people with HIV. *AIDS Care*, 9(6), 715-726.
- Harris, A. C. (2010). Sex, stigma, and the Holy Ghost: The Black church and the construction of AIDS in New York City. *Journal of African American Studies*, 14, 21-43.
- Herek, G. M., Capitanio, J. P., & Widaman, K. F. (2002). HIV-related stigma and knowledge in the United States: Prevalence and trends, 1991-1999. *American Journal of Public Health*, 92, 371-377.
- Kang, E., Chin, J. J., & Behar, E. (2011). Faith-based HIV care and prevention in Chinese immigrant communities: Rhetoric or reality? *Journal of Psychology and Theology*, 39(3), 268-279.
- Kang, E., Rapkin, B. D., Springer, C., & Kim, H. J. (2003). The "demon plague" and access to care among undocumented Asian immigrants living with HIV disease in New York City. *Journal of Immigrant Health*, 5(2), 49-58.
- Lew-Ting, C.-Y., & Hsu, M.-L. (2002). Pattern of responses to HVI transmission questions: Rethinking HIV knowledge and its relevance to AIDS prejudice. *AIDS Care*, 14(4), 549-557.
- London, A. S., & Driscoll, A. K. (1999). Correlates of HIV/AIDS knowledge among US-born and foreign-born Hispanics in the United States. *Journal of Immigrant and Minority Health*, 1(4), 195-205.
- London, A. S., & Robles, A. (2000). The co-occurrence of correct and incorrect HIV transmission knowledge and perceived risk for HIV among women of childbearing age in El Salvador. *Social Science and Medicine*, 51(2000), 1267-1278.
- Loue, S., Cooper, M., & Fiedler, J. (2003). HIV knowledge among a sample of Puerto Rican and Mexican men and women. *Journal of Immigrant Health*, 5(2), 59-65.
- Loue, S., Lane, S. D., Lloyd, L. S., & Loh, L. (1999). Integrating Buddhism and HIV prevention in US Southeast Asian communities. *Journal of Health Care for the Poor and Underserved*, 10(1), 100-121.
- MacKinnon, D. P., Fairchild, A. J., & Fritz, M. S. (2007). Mediation analysis. *Annual Review of Psychology*, 58, 593-614.
- MacKinnon, D., Lockwood, C., Brown, C., Wang, W., & Hoffman, J. (2007). The intermediate endpoint effect in logistic and probit regression. *Clinical Trials*, 4(5), 499-513.
- New York City Department of Health and Mental Hygiene. (2012 October). *HIV Epidemiology & Field Services Semiannual Report (January 1, 2011 - December 31, 2011)* (Vol. 7).
- New York State Comptroller. (2010). *The role of immigrants in the New York City economy*. New York: Author.
- Ramirez-Johnson, J., Diaz, H. L., Feldman, J. B., & Ramirez-Jorge, J. (2013). Empowering Latino church leaders to deal with the HIV/AIDS crisis: A strengths-oriented service model. *Journal of Religion and Health*, 52(2), 570-588.
- Sutton, M. Y., & Parks, C.P. (2013). HIV/AIDS prevention, faith, and spirituality among

- Black/ African American and Latino communities in the US: Strengthening scientific faith-based effort to shift the course of the epidemic and reduce HIV-related health disparities. *Journal of Religion and Health*, 52(2), 514-530.
- Takshashi, L. M. (1997). Stigmatization, HIV/AIDS, and communities of color: Exploring response to human service facilities. *Health and Place*, 3(3), 187-199.
- Trinitapoli, J., Ellison, C. G., & Boardman, J. D. (2009). US religious congregations and the sponsorship of health-related programs. *Social Science and Medicine*, 68, 2231-2239.
- Venables, W. N., Smith, D. M., & Team, R Core. (2013). *An introduction to R: Notes on R, a programming environment for data analysis and graphics* (version 3.0.0).
- Wiewel, E. W., Torian, L. V., Nasrallah, H. N., Hanna, D. B., & Shepard, C. W. (2013). HIV diagnosis and utilisation of HIV-related medical care among foreign-born persons in the New York City 2001–2009. *Sexually Transmitted Infections*, 89(5), 380–382. doi:10.1136/sextrans-2012-050677
- Wilson, P. A., Wittline, N.M., Munoz-Laboy, M., & Parker, R. (2011). Ideologies of Black churches in New York City and public health crisis of HIV among Black men who have sex with men. *Global Public Health*, 6(S2), S227-S242.