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Correlates of Consistent Condom Use among Female Entertainment Workers in Shanghai, China: A Repeated Measures Analysis

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Abstract

Female entertainment workers (FEWs) in China are at increased risk of HIV and other STIs, but correlates of their risky sexual behavior remain poorly understood. Using data from a series of four surveys, this paper employs repeated measures analysis to identify individual and social correlates of consistent condom use among FEWs in Shanghai. Results reveal that both individual cognitive and social influence factors are statistically significant in their bivariate relationships to consistent condom use with a stable or non-stable partner; only prevention motivation and perceived self-efficacy in condom use remain significant in the multiple regressions. When individual and social correlates are examined together, only peer support for condom use remains a significant and independent correlate of consistent condom use in sex with a non-stable partner. Behavioral intervention is urgently needed and should take a multi-level approach, emphasizing individual prevention motivation and behavioral skills training and promoting peer/social support.

Keywords

High-risk behavior; sex workers; women; HIV; Asia

INTRODUCTION

An estimated 48,000 persons were newly infected with HIV in China in 2011.¹ By the end of 2011, China was home to an estimated 780,000 persons living with HIV/AIDS (PLWHA). These official estimates showed a continuing positive trend of declining annual new infections and an overall low prevalence (0.06%) of HIV in China. The new estimates also confirmed that heterosexual transmission of HIV continued to increase and that women were increasingly affected by the epidemic. New infections attributable to heterosexual transmission increased from 31% in 2006 to 63% in 2011 while the proportion of women among PLWHA in China increased from 10% in the early 1990s to 29% in 2011.^{1–3}

Women's increasing share in new infections underscores their greater vulnerability to heterosexual sexual transmission of HIV. Female entertainment workers (FEWs) are particularly at risk because of their involvement in unprotected commercial sex.^{4–8} Despite increasing evidence of unprotected sex among FEWs in China, theory-driven research to understand their condom use behavior remains limited and guided mainly by cognitive

approaches. We argue that given the marginal status of FEWs in China, use or not use a condom in sex is often beyond their control or cognition; social influences also play important roles. In this paper, we seek to understand FEWs' condom use behavior from both individual and social influence perspectives and to empirically identify individual and social correlates of consistent condom use among FEWs.

BACKGROUND

According to the information, motivation, and behavioral skills (IMB) model,⁹ HIV-related information, prevention motivation, and behavioral skills are the key determinants of risky sexual behavior. The importance of accurate information is obvious. Without knowing how HIV is transmitted, no one could even think of a behavior safe or unsafe. However, better information alone does not necessarily lead to safer behavior.¹⁰⁻¹¹ An informed individual may not be highly motivated; motivation to prevent HIV is also important.¹²⁻¹³ Finally, a well-informed and highly motivated individual also needs behavioral skills to translate information and motivation into actions.⁹⁻¹¹ In essence, behavioral skills mediate between information and motivation and unsafe sex.⁸⁻⁹

However, condom use is often not completely up to individuals; social influences beyond individual's control also play an important role.¹⁴ First, research has suggested the importance of gender norms in understanding FEWs' unsafe sex in China,¹⁵⁻¹⁶ conservative gender attitudes toward sexuality are significant barriers to consistent condom use among Chinese women.¹⁷ Second, peers often have a powerful influence over condom use among female sex workers.¹⁸⁻²⁰ Peer support can promote a normative environment supportive of safe sex and reinforce risk reduction behavior. Third, as condom use in heterosexual sex requires the cooperation of the male partner, relationship power in heterosexual sex plays an important role. Research has suggested that women's general lack of relationship power²¹⁻²² significantly limits their ability to exercise personal control in sex and increases their risk of unprotected sex.^{2,17,23-24} Finally, venue support for HIV prevention can promote and reinforce risk reduction norms and facilitate consistent condom use among FEWs.^{5,20}

DATA AND METHODS

Data used in the paper are from a series of four surveys (baseline and 3-, 6-, and 12-month follow-up) of a venue-based sample of FEWs in two urban districts in Shanghai. All surveys were conducted face-to-face by trained interviewers. Sample selection followed a two-stage procedure. First, all registered entertainment venues in the two districts were listed by size and type of business. As the study was to enroll all eligible (age 18 or older with no definitive plans to leave Shanghai within 12 months) women from a selected venue, sample selection gave priority to small to medium-sized establishments to prevent overrepresentation by large ones in the given sample size. Further, small venues are usually the targets of government crackdowns on commercial sex and subsequently subject to frequent closure. To avoid excess sample attrition, sample selection also gave priority to more stable karaoke TV bars (KTVs). With these considerations, 24 venues were sampled and consented to participate: 13 KTVs, 1 beauty salon, and 10 massage parlors.

Research staff then made a visit to all selected venues and approached individually all FEWs in the venue, explained the purpose of the study, the institutions conducting the study, and how the information would be used. Participants were informed of their roles in the study and compensation for their time and were assured of confidentiality of study participation. They were informed of the right to refuse to participate, answer any particular questions, or

withdraw from the study later. Of the total of 806 eligible FEWs, 82 declined and 724 consented to participate and completed the baseline survey.

We experienced considerable sample attrition (38%) at 3-month follow-up. A decision was made to make up the lost participants with new FEWs in a participating establishment at a follow-up survey. Table 1 lists the sample size and follow up rate of the surveys.

Data analyses consist of two parts. The first part focuses on bivariate comparisons between consistent and non-consistent condom users during the last three intercourses. The results will provide bivariate tests if each of the individual/social variables is statistically significant in separating consistent from non-consistent condom users. In the second part of the analysis, we use logistic regression to test if the individual cognitive and social influence measures explain individually and/or jointly the odds of having used a condom in all last three sexual intercourses. STATA's xtmelogit (Multilevel mixed-effects logistic regression)²⁵ will be used for all analyses, which adjusts for unobserved correlations among respondents from the same establishment and among repeated measures for the same respondent.

MEASURES

All measures are based on self-reports through one-on-one private questionnaire interviews. The outcome measure is condom use in the last three sexual intercourses by types (stable vs. non-stable) of sexual partner. A stable partner is defined as the respondent's husband, boy friend, lover, or cohabiting partner, while a non-stable partner refers mainly to a commercial sex client. The dichotomous variable of consistent condom use will take the value of 1 if a condom is used in all last three intercourses and 0 if not.

Independent variables include demographic characteristics, IMB, and social influence measures. The demographic characteristics are self-explanatory. All IMB and social influence measures are composite indexes/scales built from summing the numerical answers to a set of question items. Table 2 provides a summary of the index measures used in the analysis.

HIV information and prevention motivation, measured by the prevention intentions and negative condom attitude indexes, are based on answers to dichotomous (0–1) question items; all other index measures are based on answers to 5-point scale (1–5) question items. For all index measures, the higher the index, the more the respondent was as described by the name of the index. For example, for "HIV information and knowledge," the higher the index, the more knowledgeable the respondent; for "Negative condom attitude," the higher the index, the more negative the respondent was toward condom use.

RESULTS

An overwhelming majority (96%) of FEWs enrolled in the study were migrants to Shanghai. Most of them were not married (71%), from small towns or rural townships (77%), and had no more than a junior high school education (61%). On average, they were 25 years old; almost all (99.8%) were sexually experienced with little difference across the surveys. Three percent of respondents reported a history of STIs and 4% a history of substance use. Across the four surveys, 77% of respondents reported sex with a stable partner and 36% with a non-stable partner in the 30 days prior to the interview. Asked about condom use in the last three sexual intercourses, 42% reported consistent condom use with a stable partner and 75% with a non-stable partner. Almost all (99%) had heard about HIV, but almost all (98%) perceived little personal risk and only 12% had ever tested for HIV. Of those who chose the free

voluntary test for syphilis, 3.0% tested positive at the baseline and 2.2% positive at the 12-month follow-up.

Overall, there was little difference by type of sexual partner in the bivariate association between demographic characteristics and measures of IMB and social influences and the odds of consistent condom use (Table 3). Regardless of type of sexual partner, age and education made no difference in the odds of consistent condom use, while being married was significantly negatively associated with the odds. All IMB and social influence measures were significantly associated with the odds of consistent condom use. Better HIV information/knowledge, higher prevention intentions, and greater self-efficacy in condom use were positively associated with consistent condom use, while negative attitude toward condom was negatively associated with it. For social influences, traditional gender norms and perceived lack of relationship power were negatively while peer discussion and support for condom use and venue supports for HIV prevention were positively associated with the odds of consistent condom use.

Table 4 presents the multiple logistic regression analysis of correlates of consistent condom use with a stable partner. When only the demographic characteristics and IMB measures were included (Model 1), age and being married both were negatively associated with the odds of consistent condom use. However, different from its bivariate association, the index measure of HIV information/knowledge lost its significance as a correlate of consistent condom use. HIV prevention intentions, negative attitudes toward condom, and perceived self-efficacy in condom use all retained statistical significance in their association with consistent condom use.

When measures of social influences were examined along with demographic characteristics (Model 2), marital status was the only demographic characteristics that remained significant. Of the five social influence measures, traditional gender norms and venue supports for HIV prevention lost their statistical significance as correlates of consistent condom use. Peer discussion of and support for condom use as well as perceived lack of relationship power all remained significantly associated with the odds of consistent condom use.

When demographic characteristics, IMB, and social influence measures were examined together in Model 3, marital status remained significant. All the three IMB measures that were significant in Model 1 also remained to be significant. There was little change in the coefficient estimates for the three IMB measures between Model 1 and Model 3. In contrast, all social influence measures lost statistical significance when they were examined together with the IMB measures (Model 3).

Similar patterns of results characterize the multiple logistic regression analysis of consistent condom use with a non-stable partner (Table 5). Being married was significantly negatively associated with the odds of consistent condom use across the three models. HIV information lost its statistical significance when it was examined together with other IMB measures (Model 1) and/or measures of social influences (Model 3). All the other three IMB measures remained statistically significant whether they were examined together with or without the measures of social influences.

For measures of social influences, traditional gender norms and venue supports for HIV prevention lost significance in both Models 2 and 3. While peer discussion of condom use and perceived lack of relationship power remained significant in Model 2, they also lost significance in Model 3. Peer support for condom use was the only social influence measure that remained a significant and independent correlate of consistent condom use with a non-stable partner even when it was examined together with the IMB measures. This also appears the only important difference between Tables 4 and 5.

DISCUSSION

Despite evidence of elevated prevalence of STIs among female entertainment workers in China, correlates of their condom use in sex remain not well understood. With repeated measures analysis, we tried in this paper to identify individual and social correlates of consistent condom use among a venue-based sample of FEWs in Shanghai.

Consistent with the literature, FEWs enrolled in the study were at elevated risk of sexually acquiring or transmitting HIV/STIs because of their unprotected commercial sex.⁴⁻⁸ However, an overwhelming majority perceived no personal risk and continued engaging in unprotected sex. Study participants scored considerably higher on prevention intentions and self-efficacy in sex with a non-stable than a stable partner. This contributed to their higher rate of consistent condom use with a non-stable than with a stable partner. Still, a fully one-fourth did not use a condom in all last three sexual intercours with a non-stable partner, putting themselves at the risk of HIV/STIs.

Note that the 30-day measure of sex with a non-stable partner (36%) appeared surprisingly low because most study participants were identified as girls who go out with clients and offer sexual services. It is possible that some women might have considered repeated clients as stable partners¹⁵ or intentionally reported clients as stable partners to conceal commercial sex. Further indirect evidence of potential misreporting is that while less than 30% of respondents were married or cohabiting, 77% self-reported to have had sex with a stable partner in the month prior to the interview. Such a huge discrepancy would unlikely have resulted from a non-cohabiting lover or boy friend. The actual rate of unprotected sex with a non-stable partner could be higher than the data may have suggested. Future research needs to pay more attention to how to better define a non-stable partner and measure sexual behavior with non-stable partners.

HIV-related information did not appear sufficient in understanding FEWs' unsafe sexual behavior. FEWs were fairly knowledgeable about the protection of consistent condom use: 90% knew condom use could reduce the risk of HIV/STIs and 95% correctly answered that a condom needed to be put on before sexual intercourse. Further, the association between HIV information and consistent condom use was statistically significant only at the bivariate level.

However, this should not negate the importance of information in HIV/STI prevention. First, the influence of information might have been mediated through behavioral skills as suggested by the original IMB model⁹ and by the evidence that information lost significance only when examined together with measures of prevention motivation and perceived self-efficacy. Second, incorrect information about how transmission of HIV/STIs can be prevented might have influenced condom use. For example, in in-depth interviews, some participants thought (actually practiced) that regularly taking antibiotics or douching right after sex could prevent HIV/STIs, others believed occasional unprotected sex would be just fine, and still others believed it was not necessary to use a condom with known clients. Therefore, it is important for future preventions to pay equal attention to correcting misinformation about risks and effective prevention measures.

Both HIV prevention motivation and perceived self-efficacy in condom use were more important, consistent, and independent correlates of consistent condom use in sex with a stable or non-stable partner. Their impact on the odds of consistent condom use persisted and little affected when they were examined together with measures of social influences.

In contrast, with the exception of peer support for condom use with a non-stable partner, all other measures of social influences lost their significance when they were examined together

with measures of prevention motivation and perceived self-efficacy. Given their consistently significant association with consistent condom use at the bivariate level, this suggests that social influence over condom use may be largely indirect and mediated through prevention motivation and/or self-efficacy in condom use, a finding consistent with an earlier analysis with only the baseline data.²⁶ The only exception was peer support for condom use, which remained highly significant as an independent correlate of consistent condom use with a non-stable partner even when it was examined together with measures of prevention motivation and self-efficacy. This underscores the importance of promoting peer support for condom use as a potentially effective prevention strategy.

There are some study limitations. First, the selection of establishments was not random, nor did it include all types of female sex workers. Second, the distinction between a stable and a non-stable partner appeared not always clear to study participants. It is difficult to assess the extent to which this may have caused outcome measurement biases or how exactly the potential measurement biases may have affected the partner-specific analyses. It is likely that this may lead to potential overestimates of the rate of consistent condom use with non-stable partners.

With those limitations in mind, the results confirm that female entertainment workers are at high risk of sexually acquiring and/or transmitting HIV/STIs and that correlates of consistent condom use among FEWs in Shanghai include both individual and social factors. The repeated measure analyses suggest that prevention motivation and perceived self-efficacy in condom use are the most important and consistent individual factors while peer support for condom use is the key social influence that are significantly and independently associated with the likelihood of consistent condom use. However, individual knowledge and other measures of social influence are important indirect correlates, of which the influence over condom use may be largely mediated through prevention motivation, self-efficacy, and/or peer support.

Behavioral intervention is urgently needed for female entertainment workers in China. Findings from the study suggest that to be effective intervention programs need to take a multi-level approach that, in addition to informational education, emphasizes prevention motivation building and behavioral skills training and promotes a supportive social, normative, and working environment. It also appears critical for interventions to correct misinformation about HIV and its effective prevention while promoting peer support for effective preventive strategies. Without simultaneously addressing the various components of social influences, it is unlikely that individual-based motivation enhancing and skills training alone will be as effective in reducing unprotected sex among female entertainment workers in China.

Acknowledgments

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Table 1

Sample Size Distribution and Follow-Up Rate of the Four Surveys

Surveys	Sample Size			Follow-up Rate (%)
	Followed	New Recruit	Total	
Baseline	/	724	724	/
3 month follow-up	445	269	714	61.5
6 month follow-up	633	23	656	88.7
12 month follow-up	559	144	703	85.2

Table 2

Sample Items and Summary Statistics of the IMB and Social Influence Index Measures.

	Number of item	Item range	Sample items in the index measure	Mean (s.d.)	Cronbach alpha
<i>Information, motivation, behavioral skills</i>					
HIV information and knowledge	16	0–1	Condom use can reduce HIV transmission	11.3 (0.05)	0.63
HIV prevention intentions (stable partner)	7	0–1	Plan to refuse sex if partner refuses to use a condom	4.5 (0.04)	0.85
HIV prevention intentions (non-stable partner)	7	0–1	Plan to use a condom every time having sex	6.2 (0.03)	0.77
Negative condom attitude	6	1–5	Condom use destroys Natural feeling of sex	13.2 (0.10)	0.88
Condom use efficacy (stable partner)	7	1–5	Able to persuade partner to use a condom in sex	23.4 (0.14)	0.89
Condom use efficacy (non-stable partner)	7	1–5	Able to refuse sex if partner refuses to use a condom	28.0 (0.11)	0.84
<i>Social influences</i>					
Traditional gender norms	12	1–5	Women should submit to men in sex	26.5 (0.14)	0.74
Peer discussion of condom use	7	1–5	Talk to each other the need to always use a condom	17.7 (0.12)	0.89
Peer support of condom use (stable partner)	4	1–5	My friends think I should always use a condom	13.3 (0.08)	0.87
Peer support of condom use (non-stable partner)	4	1–5	My friends think I should always carry condoms	14.7 (0.08)	0.87
Lack of relationship power	7	1–5	Use or not use a condom is up to my partner	12.2 (0.07)	0.72
Venue support for HIV prevention	11	1–5	Mamas regularly remind us of HIV/STD risk	38.3 (0.17)	0.87

Table 3

Bivariate Association between Individual Characteristics, IMB and Social Influence measures and the Odds of Consistent Condom Use in the Last Three Sexual Intercourses¹

	With a Stable Partner	With a Non-Stable Partner
<i>Demographic characteristics</i>		
Age	0.99	1.04
Senior high school or more education ²	1.17	1.30
Currently married ²	0.43 **	0.53 **
<i>Information, motivation, behavioral skills</i>		
HIV information/knowledge	1.16 **	1.19 **
HIV prevention intentions ³	1.67 **	1.84 **
Negative condom attitude	0.83 **	0.83 **
Condom use efficacy ³	1.22 **	1.20 **
<i>Social influences</i>		
Traditional gender norms	0.97 **	0.95 **
Peer discussion of condom use	1.06 **	1.07 **
Peer support for condom use ³	1.21 **	1.20 **
Lack of relationship power	0.91 **	0.89 **
Venue supports for HIV prevention	1.04 **	1.03 **
Sample size ⁴	1,860	1,922

Notes:

¹Results are based on xtlogit in STATA and presented as odds ratios adjusted for intra-correlations among the respondents from the same establishment and among repeated measures for the same respondent.

²Dummy variables. The reference categories are less than a senior high school education and never married for the education and marital status dummy variables, respectively.

³The composite index/scale is constructed based on questions specific to type of sexual partner.

⁴Sample size varies slightly (1,860–1,864 for sex with a stable partner and 1,922–1,926 for sex with a non-stable partner) due to missing value on a particular variable.

**
p < 0.01

Table 4

Individual and Social Influence Correlates of Consistent Condom Use in the Last Three Sexual Intercourses with A Stable Partner¹

	Model 1	Model 2	Model 3
<i>Demographic characteristics</i>			
Age	0.97 *	0.99	0.97
Senior high school or more education ²	1.12	1.09	1.13
Currently married ²	0.64 **	0.50 **	0.65 **
<i>Information, motivation, behavioral skills</i>			
HIV information/knowledge	1.02	/	1.01
HIV prevention intentions ³	1.25 **	/	1.24 **
Negative condom attitude	0.90 **	/	0.90 **
Condom use efficacy ³	1.14 **	/	1.14 **
<i>Social influences</i>			
Traditional gender norms	/	1.00	1.01
Peer discussion of condom use	/	1.03 *	1.01
Peer support for condom use ³	/	1.17 **	1.01
Lack of relationship power	/	0.93 **	0.99
Venue supports for HIV prevention	/	1.01	0.99
Sample size	1,863	1,857	1,856
Model Wald χ^2	290.42 **	124.12 **	289.88 **

Notes:

¹ Results are based on xtlogit in STATA and presented as odds ratios adjusted for intra-correlations among the respondents from the same establishment and among repeated measures for the same respondent.

² Entered as dummy variables. The reference categories are less than a senior high school education and never married for the education and marital status dummy variables, respectively.

³ The composite index/scale is constructed based on questions specific to type of sexual partner.

* $p < 0.05$;

** $p < 0.01$

Table 5

Individual and Social Influence Correlates of Consistent Condom Use in the Last Three Sexual Intercourses with A Non-Stable Partner¹

	Model 1	Model 2	Model 3
<i>Demographic characteristics</i>			
Age	1.02	1.04	1.02
Senior high school or more education ²	1.16	1.23	1.20
Currently married ²	0.65 *	0.59 **	0.68 *
<i>Information, motivation, behavioral skills</i>			
HIV information/knowledge	1.01	/	0.99
HIV prevention intentions ³	1.48 **	/	1.46 **
Negative condom attitude	0.87 **	/	0.87 **
Condom use efficacy ³	1.12 **	/	1.11 **
<i>Social influences</i>			
Traditional gender norms	/	0.98	1.00
Peer discussion of condom use	/	1.04 *	1.03
Peer support for condom use ³	/	1.16 **	1.08 **
Lack of relationship power	/	0.92 **	0.98
Venue supports for HIV prevention	/	1.01	0.99
Sample size	1,922	1,920	1,916
Model Wald χ^2	158.75 **	93.31 **	160.49 **

Notes:

¹Results are based on xtlogit in STATA and presented as odds ratios adjusted for intra-correlations among the respondents from the same establishment and among repeated measures for the same respondent.

²Entered as dummy variables. The reference categories are less than a senior high school education and never married for the education and marital status dummy variables, respectively.

³The composite index/scale is constructed based on questions specific to type of sexual partner.

* $p < 0.05$;

** $p < 0.01$