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The Syndemic Condition of Psychosocial Problems and HIV Risk Among Male Sex Workers in Ho Chi Minh City, Vietnam

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Abstract

In Vietnam, the co-occurrence (i.e., “syndemic”) of psychosocial factors (e.g., depression and substance use) may disproportionately burden male sex workers and increase their HIV risk. A comprehensive survey was conducted among 300 male sex workers in Ho Chi Minh City, Vietnam in 2010. We performed logistic regression to examine the association between the syndemic variable – a count score of the number of 5 psychosocial conditions endorsed – and unprotected anal sex (UAS) in the past. One-third of participants reported any UAS, and 42% reported 2 psychosocial health problems. In multivariable models, experiencing 4 psychosocial health problems was significantly associated with UAS. Every unit increase in number of psychosocial health problems was associated with a 25%–30% increase in odds of UAS. Understanding the syndemic condition and its association with HIV risk among male sex workers in Vietnam may lead to the development of more effective, comprehensive interventions.

Keywords

HIV; Vietnam; psychosocial health; male sex workers; transactional sex

INTRODUCTION

In Vietnam, men who have sex with men (MSM) in exchange for money or goods (herein, male sex workers, or MSW) are highly stigmatized and are at high risk of HIV infection. In general, while surveillance data does not exist by risk group, research suggests that MSM in Vietnam are disproportionately affected by HIV compared to the general population (1), and that risk may be increasing rapidly. Specifically, data suggests a more than doubling of HIV prevalence among MSM in both Hanoi and Ho Chi Minh City (HCMC) from 2006 to 2009 (from 9% and 5%, respectively, to 20% and 14%, respectively) (2, 3). Moreover, studies utilizing convenience samples indicate that anywhere between 20% to 40% of MSM report transactional sex (4–6). MSWs likely represent a disproportionate number of incident HIV

infections occurring in Vietnam. In a convenience sample of MSM in Ho Chi Minh City, Nguyen et al. (6) found an overall HIV prevalence of 8%, compared to 33% among MSWs.

While the prevalence of and risk factors for HIV in female sex workers in Vietnam have been well studied (7, 8), male sex workers remain largely ignored and understudied (9). Epidemiological surveys have shown that MSWs have higher rates of risk behaviors, including higher number of anal sex partners and lower rates of condom use, compared to their MSM counterparts(6). Moreover, recent qualitative findings from a sample of 23 MSW in HCMC documented barriers to HIV risk reduction strategies including condom negotiation and HIV testing (10).

There is a growing body of literature showing that multiple psychosocial problems (e.g., depression, substance abuse, childhood sexual abuse) may combine and interact to increase HIV risk among MSM – a phenomena known as *syndemics* (11). Syndemic conditions have been widely documented among samples of adult and young MSM in the US and are thought to be a significant driver of the HIV epidemic in this population (12, 13). As these studies suggest, the number of psychosocial conditions experienced by individuals is directly proportional to their odds of HIV transmission risk. Stall's theory of Syndemic Production posits that experiences of social stigma and marginalization as a sexual minority are at the roots of these psychosocial problems (14). Given the social disapproval of same sex behavior and transactional sex in Vietnam (9, 15–18), MSW may experience multiple forms of social marginalization. It is therefore hypothesized that co-occurring epidemics would disproportionately burden this population and increase their sexual risk behavior, both with transactional and non-transactional sexual partners.

The present study was conducted in order to assess HIV and sexually transmitted infection (STI) prevalence, and to describe the typology of sexual risk behaviors among a diverse group of MSWs (e.g., massage-parlor, street-based, call-boys, etc.) in Vietnam. The analysis aims to examine whether individual psychosocial conditions are associated with HIV risk and whether these conditions interact synergistically to increase HIV-related sexual risk behavior. Understanding the extent to which these psychosocial interact with HIV acquisition risk is a crucial step in the development of culturally-relevant, effective HIV risk-reduction interventions for this high-risk subpopulation of MSM in Vietnam.

METHODS

Participants and Procedures

Data for this analysis came from the second phase of a two-phase study of men who have sex with men in exchange for money or other goods in HCMC, Vietnam. The first phase of this study has been described elsewhere (10). Briefly, in 2010, semi-structured interviews were conducted with 23 male sex workers in HCMC in collaboration with the Life Centre, a Vietnamese NGO working with MSM. The interviews focused on sexual identity, sexual history with men during sex work, sexual risk, and HIV/STI knowledge, as well as what would be most helpful in terms of a future HIV prevention intervention with this group. The overarching goal of this first phase was to obtain information to inform the larger

quantitative assessment battery in phase 2 and eventually to inform a culturally-relevant HIV prevention intervention for MSWs in this setting.

For the current investigation, peer health educators from the Life Centre recruited 300 participants for a one-time assessment. Venue-based sampling was stratified by five groups on how they primarily met clients, including sauna/massage, brothels, bicycle massage, street/parks, and callboys. Callboys do not have specific physical locations to meet clients and therefore were recruited using referrals from *mama-sans* or *mối* (intermediaries who introduce young men to their clients). The sample was recruited at 32 physical locations in the city and by telephone through ten *mama-sans*.

Participants were eligible if they were 15 years of age or older, born biologically male (regardless of gender expression), were a Vietnamese citizen and exchanged sex for money or goods at least once within the previous one month.

Participants underwent a detailed informed consent process before data collection commenced, whereby the interviewer explained all aspects of the study and answered questions. Participants indicated their willingness to participate and confirmed their understanding of the information by providing their signature on the consent form. Participants then completed a demographic, psychosocial and sexual risk battery delivered by a trained study interviewer. To reduce response bias, interviewers were not affiliated with peer health education (PHE) efforts at the Life Centre. Additionally, each participant underwent a medical examination to evaluate for physical manifestations of STIs. HIV and STI (syphilis, gonorrhea, chlamydia, herpes simplex virus) risk reduction counseling and testing were also completed. For those with positive test results, supported referrals were made to public programs where free STI treatment was available. To preserve confidentiality, participants were assigned a unique study ID number and research records were separated from identifiable information. Study files were securely stored in a locked cabinet of the HAIVN office. Additionally, study visits were conducted in a private room by a native-Vietnamese interviewer. All study procedures were approved by the Institutional Review Boards at the Beth Israel Deaconess Medical Center and the HCMC Provincial AIDS Committee.

Study Instrument

Participants completed a behavioral assessment battery to characterize HIV/STI risk, including sexual practices, substance use, relevant psychological concerns, factors associated with the use of condoms and water-based lubricants, motivations/reasons for doing sex work, barriers to HIV testing and receiving HIV care, HIV/STI transmission knowledge, perceptions of risk, sexual identity, and general health issues. The measures used for this analysis are described below.

Demographics and contextual variables—Participants were asked about their age (coded as 15–19, 20–25, 26–30, >30), education (primary or less, secondary, high school, university/vocational or more), monthly income per 100,000 VND (20 or less, 20–100, 100 or greater), hometown (HCMC or other), religion (Buddhist, Catholic, Protestant, other, no religion), sexual attraction (e.g., men only, women only, both equally), and participant

recruitment group. Also included was MSM subpopulation self-identity using Vietnamese terminology: *bong kin* (“hidden” or masculine-appearing MSM), *bong lo* (“open” or feminine appearing), and *trai thang* (“straight boy” or heterosexual) (19).

Sexual risk variables—Unprotected anal sex (UAS) with a male partner (non-transactional) was assessed by asking participants, “In the last month, have you ever had anal sex with a non-commercial male partner and not used a condom?” Similarly, UAS with a male client was assessed by asking participants whether they had either insertive or receptive anal sex with a male client in the past month and not used a condom. Finally, any UAS was assessed by determining whether participants had any UAS with a male partner (non-commercial), client or other sex worker.

Syndemic psychosocial variables—Depressive symptoms were assessed using the ten item Center for Epidemiologic Studies Depression Scale, a validated survey of clinically significant distress as a marker for clinical depression (Cronbach’s $\alpha=0.70$) (20). The 10-items were scored on a 4-point Likert scale from 0 to 3, with a score of 10 or greater suggestive of clinical depression. Alcohol dependence was determined using the Alcohol Use Disorders Identification Test (AUDIT) – a 10-item validated scale that assesses hazardous and harmful alcohol use (Cronbach’s $\alpha=0.69$) (21). A score of 8 or greater is suggestive of alcohol dependence. Participants were asked whether they had ever used heroin/opium or ecstasy/crystal methamphetamine, and, if so, how often in the past month. Recent illicit drug use was assessed as having answered any use in the past month. Sexual violence was assessed by asking participants “have you ever been forced against your will to have sex after age 18?” Childhood sexual abuse (CSA) was determined by asking participants “were you ever forced against your will to have sex before the age of 18?” Because of an error in skip patterns that was not caught until many men had already completed the survey, there was a substantial amount of missing data for the CSA measure ($n=110$; see procedures below for handling missing data).

Statistical Analysis

Frequencies and percentages were calculated for each measure and reported in Table I. In order to assess whether a set of psychosocial health conditions was associated with increased sexual risk among a sample of male sex workers in Vietnam, we first used logistic regression to examine factors associated with each psychosocial health condition separately. For each condition, we used the same set of demographic, sex risk, and psychosocial variables. Both bivariate and multivariable models were created; however, only multivariable models are presented.

We calculated count scores based on the number of psychosocial health problems each respondent had endorsed, resulting in scores ranging from 0 to 5. Because of large number of missing values for the CSA measure, the syndemic score was calculated as the sum of the 5 items weighted by number of items answered. The weighted scores were then rounded to the nearest integer to simplify interpretation of the measure. If more than 2 items were missing, the scale was not scored.

In order to examine whether the interconnection of these psychosocial health problems magnifies the odds of engaging in UAS, we calculated frequencies and percentages of UAS sex for each count score by partner type, and performed logistic regression to examine the associations between the count score (treated as both nominal and ordinal) and the UAS outcomes.

RESULTS

Participant characteristics are described in Table I. The MSWs in this sample were young, 82% less than 25 years old (mean=22.3; SD=5.0). A small majority had completed high school or more, and 30% had an average monthly income of 20,000,000 VND or less (~960 USD). Sixty percent considered HCMC their home town and 58% were Buddhist. Most participants (59%) described themselves as *bong kin*, and 45% reported being attracted to men only and 14% to men more than women. Over 20% of MSWs reported any UAS with a noncommercial partner in the past month. Slightly more (25%) reported UAS with a client in the past month. Nearly one-third reported UAS with any partner.

Overall, psychosocial health problems were common (Table I). Nearly half (47%) had clinically significant depressive symptoms. Over one third met screening criteria for alcohol dependence and 16% reported any recent illicit drug use. Finally, nearly 20% reported a lifetime history of sexual violence and 18% reported a history of CSA.

Independent Associations of Psychosocial Health Problems

In multivariable regression, the demographic and contextual variables (e.g., education, religion, sexual identity) were not independently associated with any of the psychosocial health problems (Table II). Additionally, when examined individually, only alcohol dependence (Odds Ratio [OR]=2.40; 95% CI 1.06, 5.41) and CSA (OR=5.35; 95% CI 1.71, 16.72) were significantly associated with UAS.

Of the ten possible distinct associations between the five psychosocial health conditions, four were statistically significant in multivariable models ($p<0.05$) (Table II).

Syndemics – the Interconnection of Psychosocial Health Problems

Overall, 29% of participants did not report any of the five psychosocial health problems. Nearly 30% had one, 16% had two, 19% had three, 6% had four and only 1% had five (Table III).

In unadjusted models, the number of psychosocial health problems experienced was associated with UAS across partner type (Table IV). Additionally, for male clients (chi-square/d.f.=5.33/1, $p=0.021$) and for all partners combined (chi-square/d.f.=6.11/1, $p=0.013$), there was a linear trend – increasing number of psychosocial conditions was associated with increasing odds of UAS. After adjusting for the demographic variables, experiencing four or five psychosocial health problems (compared to experiencing none of the psychosocial health problems) was significantly associated with UAS with clients (Adjusted Odds Ratio [AOR]=4.71; 95% CI 1.49, 14.86) and with any partner type (AOR=3.98; 95% CI 1.28, 12.34). While the other categories were not statistically different,

the trend remained for male clients (chi-square/d.f.=5.47/1, $p=0.019$) and for all partners combined (chi-square/d.f.=5.98/1, $p=0.015$) (Table IV). Similarly, when treating the syndemic variable as ordinal, every unit increase in number of psychosocial health problems was associated with statistically significant increase in the odds of UAS ($p<0.05$) (Table V). While goodness of fit tests indicated that treating the syndemic measure as ordinal was appropriate, the odds ratios were fairly small (<1.30).

DISCUSSION

This study supports the hypothesis that additive psychosocial health conditions exist among MSW in HCMC, and that the interplay of these conditions magnifies HIV risk in this population. First, the burden of psychosocial conditions was high, with over 70% affected by at least one of the conditions. As expected, there was also a substantial co-occurrence of these conditions – over 40% burdened by more than one. Similarly, HIV risk is high, with approximately one-third of respondents reporting any UAS in the past month. While alcohol dependence and childhood sexual abuse were the only independent variables found to be significantly associated with UAS, there was an additive impact of these psychosocial conditions on UAS. These findings are consistent with existing literature from the U.S. which demonstrates the predicative relationships between these two psychosocial conditions and HIV risk among MSM (22, 23).

Building on research documenting syndemic production in American MSM (12, 14, 24), a small number of studies have illustrated synergistic relationships between HIV risk and psychosocial conditions among MSM in developing world settings. For example, a study of over 500 MSM in Guangzhou, China found that co-occurring psychosocial conditions, including depression and post-traumatic stress disorder correlated with an increase in HIV risk (25).

The overlapping psychosocial conditions among MSW in HCMC have implications for HIV prevention programming. Research with male STI patients in Pune, India found that a history of transactional sex was associated with non-participation in a HIV prevention program (26). While reasons for this connection were unclear, results from the current study point to the potential role of psychosocial problems as a barrier to the uptake of traditional risk reduction strategies such as HIV testing, condom self-efficacy, and reductions in the number of sexual partners. For example, the apathy and negative valuations of self that often accompany depression may reduce personal motivation to engage in safer sex practices. Furthermore, the relatively positive attitude towards HIV prevention programs and peer health education documented in the qualitative phase of the study suggests that that risk reduction may be less of a priority when MSW are coping with the sequelae of psychosocial problems, especially against the backdrop of the economic imperatives motivating sex work (10). Comprehensive HIV prevention interventions are needed that specifically address these co-occurring conditions. Of equal importance is the provision of skills-based counseling to assist MSW in managing the distress resulting from these psychosocial issues within the context of HIV sexual risk and sex work (10, 24).

This is the first study to examine the syndemic condition among MSWs in Vietnam. However, there are limitations that must be acknowledged. First, this is an urban sample from one city and may not represent MSWs more generally, or in other cities or non-urban areas of Vietnam. Additionally, the survey was interviewer-administered and all measures were self-reported. This may increase social desirability bias. However, this would likely result in an underestimation of sexual risk, and potentially reporting of psychosocial factors. This study was cross-sectional and therefore causation cannot be determined – we can only state that there is an association between the psychosocial syndemic and UAS. The scope of this analysis was limited to the correlations between psychosocial problems and HIV risk. Further inquiry is needed to understand the extent to which experiences of adversity and social stigma negatively impact the psychosocial and behavioral profiles of MSW in HCMC.

As sex workers and MSM, men who engage in transactional sex with men are vulnerable to psychosocial conditions that render them disproportionately at risk for HIV. Understanding the complex interplay of sexual risk, substance use, mental health problems, and traumatic life experiences help us paint a clearer picture of the risk environment for this population. Currently there are limited prevention programs available for MSW specifically or MSM in Vietnam. The results of the present study suggest that more in-depth programming is needed, and represent a crucial step in the development of more effective, comprehensive interventions that address the health needs of MSWs in Vietnam.

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Table I

Participant characteristics (n=300)

	n/N (%)
Sociodemographic Factors	
Age	
15–19	81/300 (27.0)
20–25	164/300 (54.7)
26–30	38/300 (12.7)
>30	17/300 (5.7)
Education completed	
Primary or less	23/299 (7.7)
Secondary	103/299 (34.3)
High School	120/299 (40.0)
University/vocational or more	53/299 (17.7)
Average monthly income per 100,000 VND	
20 or less	88/300 (29.3)
20–100	196/300 (65.3)
100 or greater	16/300 (5.3)
Hometown	
Ho Chi Minh	179/300 (59.7)
Other	121/300 (40.3)
Religion	
Buddhist	175/300 (58.3)
Catholic/Protestant/Other	54/300 (18.0)
No Religion	71/300 (23.7)
Sexual Identity	
Bong kin	176/297 (59.3)
Trai Thang	90/297 (30.3)
Bong lo	31/297 (10.4)
Sexual attraction	
Men only/ Men more than women	177/300 (59.0)
Men and women equally	59/300 (19.7)
Women only/Women more than men	64/300 (21.3)
Participant Group	
Massage parlor	50/300 (16.7)
Bicycle massage	27/300 (9.0)
Park/Street	73/300 (24.3)
Brothel	46/300 (15.3)

	n/N (%)
Call boy/café/disco	104/300 (34.7)
Sexual Risk Outcomes	
UA Sex – noncommercial	65/299 (21.7)
UA Sex - commercial	74/299 (24.7)
UA Sex – any partner	98/299 (32.8)
Psychosocial Conditions	
Depression	142/300 (47.3)
Alcohol Dependence	101/293 (34.5)
Any recent drug use	45/288 (15.6)
Sexual Violence	58/293 (19.8)
Childhood Sexual Abuse	34/190 (17.9)

Table II

Multivariable risk factors of each psychosocial condition

		Odds Ratio (95% CI)				
		Depression	Alcohol Dependence	Any recent drug use	Sexual Violence	Childhood Sexual Abuse
Sociodemographic Factors						
Age						
15–19	1.00	1.00	1.00	1.00	1.00	1.00
20–25	3.02 (1.23, 7.39)	0.88 (0.36, 2.17)	1.18 (0.31, 4.56)	0.86 (0.28, 2.65)	2.50 (0.58, 10.77)	
26–30	2.25 (0.60, 8.42)	1.24 (0.34, 4.48)	0.63 (0.10, 3.75)	2.12 (0.46, 9.66)	0.43 (0.05, 4.02)	
>30	5.48 (0.86, 34.82)	0.25 (0.04, 1.74)	0.36 (0.02, 5.39)	0.65 (0.06, 6.48)	0.17 (0.01, 3.99)	
Education completed						
Primary or less	1.00	1.00	1.00	1.00	1.00	1.00
Secondary	0.75 (0.15, 3.68)	0.91 (0.19, 4.30)	1.13 (0.16, 8.16)	0.50 (0.09, 2.84)	0.54 (0.06, 5.25)	
High School	0.85 (0.16, 4.44)	1.46 (0.29, 7.27)	0.48 (0.06, 3.82)	0.90 (0.16, 5.11)	1.70 (0.20, 14.81)	
University/vocational or more	0.87 (0.14, 5.47)	0.69 (0.11, 4.29)	0.08 (0.01, 1.45)	0.78 (0.11, 5.78)	1.78 (0.16, 19.34)	
Average monthly income per 100,000 VND						
20 or less	3.30 (0.48, 22.47)	1.98 (0.23, 16.92)	0.33 (0.02, 4.36)	1.20 (0.09, 16.05)	0.12 (0.01, 1.66)	
20–100	1.32 (0.21, 8.41)	1.87 (0.23, 15.35)	0.70 (0.06, 8.02)	2.55 (0.20, 31.87)	0.12 (0.01, 1.47)	
100 or greater	1.00	1.00	1.00	1.00	1.00	
Hometown						
Ho Chi Minh	1.00	1.00	1.00	1.00	1.00	1.00
Other	1.50 (0.73, 3.11)	1.38 (0.65, 2.95)	0.28 (0.09, 0.90)	1.67 (0.68, 4.14)	0.95 (0.33, 2.76)	
Religion						
Buddhist	0.97 (0.42, 2.29)	1.49 (0.60, 3.68)	0.68 (0.20, 2.36)	1.19 (0.25, 3.75)	1.61 (0.44, 5.84)	
Catholic/Protestant/Other	0.97 (0.34, 2.78)	2.16 (0.74, 6.31)	0.54 (0.11, 2.65)	0.97 (0.39, 3.64)	1.77 (0.36, 8.64)	
No Religion	1.00	1.00	1.00	1.00	1.00	1.00
Sexual Identity						
Bong kin	1.00	1.00	1.00	1.00	1.00	1.00

Odds Ratio (95% CI)						
	Depression	Alcohol Dependence	Any recent drug use	Sexual Violence	Childhood Sexual Abuse	
Trai Thang	2.22 (0.53, 9.34)	3.34 (0.84, 13.30)	0.48 (0.07, 3.28)	2.31 (0.42, 12.61)	0.30 (0.03, 2.96)	
Bong lo	1.18 (0.32, 4.27)	4.93 (1.34, 18.19)	0.73 (0.12, 4.25)	2.89 (0.63, 13.27)	0.80 (0.16, 4.15)	
Sexual attraction						
Men only/ Men more than women	1.00	1.00	1.00	1.00	1.00	
Men and women equally	0.50 (0.17, 1.48)	1.18 (0.41, 3.37)	2.04 (0.46, 9.17)	0.75 (0.22, 2.61)	3.06 (0.70, 13.42)	
Women only/Women more than men	0.78 (0.17, 3.59)	0.50 (0.11, 2.24)	0.89 (0.10, 7.78)	0.26 (0.04, 1.69)	2.29 (0.18, 29.50)	
Participant Group						
Massage parlor	1.00	1.00	1.00	1.00	1.00	
Bicycle massage	0.68 (0.16, 2.90)	0.72 (0.14, 3.70)	0.64 (0.05, 8.98)	5.94 (0.99, 35.46)	0.38 (0.02, 6.28)	
Park/Street	1.13 (0.38, 3.38)	0.67 (0.21, 2.14)	1.43 (0.26, 7.84)	1.26 (0.30, 5.27)	2.21 (0.43, 11.47)	
Brothel	0.51 (0.15, 1.73)	0.67 (0.19, 2.40)	3.32 (0.55, 19.96)	2.27 (0.46, 11.22)	0.10 (0.01, 1.56)	
Call boy/café/disco	0.61 (0.22, 1.74)	1.78 (0.59, 5.42)	1.58 (0.31, 8.09)	1.13 (0.28, 4.62)	2.39 (0.49, 11.58)	
Sexual Risk Outcome						
UA Sex – any partner	1.00 (0.45, 2.23)	2.40 (1.06, 5.41)	1.47 (0.48, 4.45)	0.45 (0.16, 1.28)	5.35 (1.71, 16.72)	
Psychosocial Conditions						
Depression	(excluded)	1.20 (0.58, 2.46)	3.59 (1.24, 10.35)	2.45 (1.02, 5.90)	1.54 (0.55, 4.32)	
Alcohol Dependence	1.20 (0.58, 2.48)	(excluded)	1.81 (0.68, 4.80)	0.77 (0.31, 1.89)	3.09 (1.11, 8.58)	
Any recent drug use	3.37 (1.23, 9.26)	1.77 (0.69, 4.55)	(excluded)	1.22 (0.38, 3.88)	0.56 (0.13, 2.37)	
Sexual Violence	2.38 (1.00, 5.63)	0.79 (0.32, 1.91)	1.14 (0.35, 3.73)	(excluded)	6.05 (1.88, 19.43)	
Childhood Sexual Abuse	1.44 (0.54, 3.80)	2.48 (0.96, 6.40)	0.64 (0.16, 2.56)	4.33 (1.46, 12.82)	(excluded)	

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Table III

Number of Psychosocial Health Problems (weighted)

No. of Psychosocial Health Problems (weighted) N, %						
	0	1	2	3	4	5
No.	86	88	48	56	17	4
%	28.8	29.4	16.1	18.7	5.7	1.3

Table IV

Association of interconnection of these psychosocial conditions and report of unprotected anal sex in past month

Number of Psychosocial Problems at Baseline	UA Sex N (%)	No UA Sex N (%)	Unadjusted Odds Ratio (95% CI)	Adjusted Odds Ratio (95% CI)
UA Sex – noncommercial (65/299)				
0 psychosocial problems	10 (15.4)	76 (32.5)	1.00	1.00
1	21 (32.3)	67 (28.6)	2.38 (1.05, 5.42)	1.96 (0.71, 5.38)
2	14 (21.5)	34 (14.5)	3.13 (1.26, 7.75)	2.02 (0.68, 6.04)
3	14 (21.5)	42 (17.9)	2.53 (1.04, 6.20)	2.41 (0.83, 7.01)
4/5 psychosocial problems	6 (9.2)	15 (6.4)	3.04 (0.96, 9.64)	3.23 (0.79, 13.16)
UA Sex – commercial (74/299)				
0 psychosocial problems	15 (20.3)	71 (31.6)	1.00	1.00
1	21 (28.4)	67 (29.8)	1.48 (0.71, 3.12)	1.47 (0.63, 3.40)
2	17 (23.0)	31 (13.8)	2.60 (1.15, 5.85)	2.18 (0.88, 5.40)
3	11 (14.7)	45 (20.0)	1.16 (0.49, 2.74)	1.36 (0.53, 3.50)
4/5 psychosocial problems	10 (13.5)	11 (4.9)	4.30 (1.55, 11.95)	4.71 (1.49, 14.86)
UA Sex – any partner (98/299)				
0 psychosocial problems	19 (19.4)	67 (33.3)	1.00	1.00
1	29 (29.6)	59 (29.4)	1.73 (0.88, 3.41)	1.58 (0.72, 3.50)
2	20 (20.4)	28 (13.9)	2.52 (1.17, 5.42)	1.82 (0.76, 4.36)
3	19 (19.4)	37 (18.4)	1.81 (0.85, 3.84)	1.86 (0.79, 4.38)
4/5 psychosocial problems	11 (11.2)	10 (5.0)	3.88 (1.43, 10.51)	3.98 (1.28, 12.34)

Table V

Association of interconnection of these psychosocial conditions (ordinal) and report of unprotected anal sex in past month

Number of Psychosocial Problems at Baseline	Unadjusted Odds Ratio (95% CI)	Adjusted Odds Ratio (95% CI)
UA Sex - noncommercial No. of psychosocial problems	1.27 (1.03, 1.57)	1.28 (0.98, 1.69)
UA Sex - commercial No. of psychosocial problems	1.24 (1.02, 1.53)	1.28 (1.02, 1.62)
UA Sex – any partner No. of psychosocial problems	1.29 (1.06, 1.56)	1.29 (1.03, 1.61)