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Relationship of stigma and depression among newly HIV-diagnosed Chinese men who have sex with men

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Abstract

Little is known about the relationship between HIV stigma and depression among newly diagnosed HIV-infected men who have sex with men (MSM). We measured HIV-related stigma and current depression using standard scales among 367 Chinese MSM who had been diagnosed very recently with HIV infection, analyzing key associations with multivariable ordinal logistic regression. Current depression prevalence was 36%. Median scores for felt, vicarious, and internalized stigma were 17, 2, and 5, respectively, each on a 0–30 scale. A one-point increase in the total stigma score was associated with a 4% increase in the odds of current depression (adjusted odds ratio [aOR] = 1.04, 95% confidence interval [CI] = 1.03–1.05). Internalized stigma had the strongest association with depression (aOR = 1.09, 95% CI = 1.07–1.12). Effective interventions to address coping with HIV-related stigma immediately following HIV-diagnosis might help reduce depression, improve long-term mental health, and improve engagement in their care.

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Spanish abstract

Poco se sabe sobre la relación entre sentir estigma de tener VIH y la depresión en hombres chinos, recién diagnosticados con el virus, que tienen sexo con otros hombres (HSH). Se midió esto utilizando escalas estándar en un grupo de 367 HSH chinos recién diagnosticados. Se evaluaron las asociaciones pertinentes utilizando modelos multivariables de regresión logística ordinal. La prevalencia de depresión fue de 36%. La mediana de los resultados sobre estigma percibido en sí, o vicariamente, o internalizada fué 17, 2, y 5, respectivamente, cada uno en una escala de 0–30. El aumento de un punto en la puntuación total del estigma se asoció con un aumento de 4% en las probabilidades de depresión actual (odds ratio ajustada [aOR] = 1,04, 95% intervalo de confianza [CI] = 1,03–1,05). El estigma internalizado tuvo la asociación más fuerte con depresión (aOR = 1,09; 95% CI = 1,07–1,12). Intervenciones eficaces en enfrentar el estigma associado con tener VIH, hechas inmediatamente después de diagnóstico, pueden ayudar a reducir la depresión, mejorar la salud mental a largo plazo, y mejorar la participación en su proprio cuidado.

Keywords

HIV; stigma; depression; men who have sex with men; China

Palabras clave

VIH; estigma; depresión; hombres que tienen relaciones sexuales con hombres; China

Introduction

The number of people living with HIV (PLHIV) worldwide has risen to 35 million according to the GAP Report by UNAIDS in 2014 (1). Mental health interventions have been incorporated into HIV/AIDS care for many years (2,3), but are often ignored for patients in low and middle income countries (LMIC) (4). Co-morbid mental health issues are important concerns among PLHIV, and depression is common among PLHIV. Depression has negative effects on seeking and being retained in HIV care, disease progression, and mortality (5). The 12-month prevalence of depression measured by self-report ranged from 22% to 36% in two large U.S. cohorts of PLHIV (6,7). A 2012 study among predominantly heterosexual, HIV-infected men in China found that the 12-month prevalence of depression was 49% (8).

Men who have sex with men (MSM) are a high risk population for HIV acquisition; around 64% of new HIV cases in the U.S. in 2012 were from MSM (9). In China, MSM accounted for 33% of new HIV infections in 2009 (10). MSM are also vulnerable for depression, as they experience both homosexuality- and HIV-related social isolation and stigma. Chinese MSM feel internalized homosexuality-related stigma due to their perceived obligations to carry on their family line. A Chinese study in 2013 reported that the lifetime prevalence of depression was 11.7% in Chinese MSM with unknown HIV serostatus (11).

Diagnosis of HIV infection can be a direct trigger for reactive depression. Substance use is also a risk factor for depression (12,13). Other factors could also contribute to the

development of depression after HIV diagnosis, such as HIV-related stigma and social isolation (14–17).

Stigma is the perception of an undesirable attribute which causes individuals to be devalued by others (18). More recent, formative work stresses that stigma is not limited to simply possessing the attribute, but reflects a larger context and social processes that include labeling, stereotyping, separation, status loss, and discrimination (19–21). For PLHIV, this results in three primary stigma mechanisms: enacted, felt (or anticipated, perceived), and internalized stigma (21). *Enacted stigma* refers to experiences of prejudice or discrimination by an individual because of his/her HIV; *Felt (or anticipated, perceived) stigma* refers to the expectation of experiencing stigmatization because of HIV, and is often influenced by the perception of attitudes that others have towards PLHIV; and *Internalized stigma* refers to the endorsement of negative beliefs and feelings about oneself because of one's HIV-positive status. Steward et al. (22) further introduced *Vicarious stigma* as a fourth stigma mechanism, defined as hearing or otherwise learning about prejudice or discrimination towards other people with HIV. For PLHIV, the combination of vicarious stigma and one's own experiences leads to *felt stigma*. Health care providers, family, friends, or others in the community can serve as the source of stigma (22–26).

HIV-related stigma has been reported to be associated with depression among PLHIV in China and the United States (17,27–31). However, such evidence is lacking among individuals with newly diagnosed HIV infections in China. Stigma is an immediate challenge that people newly diagnosed with HIV have to face. Stigma may prevent them from disclosing HIV status and seeking help from their close partners, family members or friends; therefore, they may be prone to depression. Depression may, in turn, deter them from timely seeking HIV care. This study aimed to assess the relationship between HIV-related stigma and depression in this key population.

Methods

Study design and population

Our study used data from the Multi-component HIV Intervention Packages for Chinese MSM (China MP3 Project). By design, participants all self-reported having sex with men in the past 12 months, were at least 18 years old, planned on remaining in Beijing for the next 12 months, and were willing to participate in the study and provide signed informed consent.

The MP3 project was a two-phase study. In phase I, we offered HIV testing to 3,588 Chinese MSM with HIV negative or unknown serostatus in Beijing. We used HIV rapid testing for screening, and retested those with a positive screening result with two rounds of enzyme-linked immunosorbent assays (ELISA). Western blot assay was used to confirm HIV infection for individual with ELISA positive results. MSM with newly diagnosed HIV infections were offered free CD4+ cell counts and HIV viral load testing every six months. Laboratories certified by the Chinese Center for Disease Control and Prevention (China CDC) ran all HIV tests. Of 3,588 tested Chinese MSM, 455 were Western-blot confirmed to be HIV-infected. We recruited 367 (81%) of these newly diagnosed MSM into phase II of the study — a randomized behavioral trial. The trial aimed to evaluate the effect of peer

counseling and short message services on the continuum of HIV care. Participants in the phase II trial also completed a baseline questionnaire survey at a median of 11 days (interquartile range [IQR] = 6–22 days) after HIV diagnosis.

Data collection

We gathered sociodemographic information in the questionnaire survey for the phase I study. We collected behavioral information in the baseline survey for the phase II behavioral trial, including drug and alcohol use, HIV testing history, HIV risk perception, knowledge about HIV transmission, history of sexually transmitted infections (STIs), emotional responses to being HIV positive, quality of life, self-efficacy, stigma related to homosexuality and HIV/AIDS, and current anxiety and depression.

Measurement

Depression—Current depression was measured by the Hospital Anxiety and Depression Scale (HADS) that has been validated across many countries (32–35). There were seven items asking about feelings and emotions during the past week; each item was scored from 0 to 3. Responses to all items were summed to create a depression score ranging from 0 to 21, with higher scores indicating more probable depression. As the continuous format of outcome was not clinically meaningful, we categorized scores into three groups based on the thresholds defined by Zigmond et al. (36) and also used in other studies (37,38). A score of 0–7 was defined as normal, a score of 8–10 as borderline depression, and a score 11 as suspected (likely) depression.

HIV-related stigma—We used Steward's HIV stigma scale, which contains four subscales: (1) Enacted stigma (e.g.,"have family members forced you to move out of your home because you have HIV?"); (2) Felt stigma (e.g., "in your community, how many people think that if you have HIV you have done wrong behaviors? "); (3) Vicarious stigma (e.g., "how often have you heard stories about families avoiding any relative who has HIV? "); and (4) Internalized stigma (e.g., "how much do you feel that you have brought shame to your family because you have HIV? ") (22). Each subscale contains 10 items; scores were summed for each subscale. The Steward scale was developed among a general HIV-infected population (70% male) receiving antiretroviral therapy in India. Key elements of the scale made it more culturally appropriate for our Chinese population. Because the scale had not been used in Chinese MSM, we conducted an exploratory factor analysis to determine whether or not the original factors remained valid. Complete responses to all 10 enacted stigma items were available for 185 (50%) of participants, while another 135 (37%) did not respond to five or more of the items. Because of this extensive non-response for the enacted stigma scores, we did not include the enacted stigma items in the factor analysis. Responses to the remaining 30 items for felt, vicarious, and internalized stigma were entered into the factor analysis using principal components with oblique (Promax) rotation (39).

Our factor analysis identified five factors: two for vicarious stigma (health care and community/family factors), two for internalized stigma (contact avoidance and shame/guilt), and one for felt stigma. All items loaded on the expected factor with loadings 0.40 and none loaded on multiple factors. Our factors, with the exception of felt stigma, were

consistent with a study of Steward et al. that found a two-factor structure for each of the felt, vicarious, and internalized stigma constructs (22). However, Steward et al. (22) chose to collapse these into three unidimensional factors rather than use the six separate factors. Because we felt the two-factor structures were informative, we chose to report stigma scores and results for the two-factor vicarious and internalized stigma constructs, in addition to the three unidimensional factors originally described by Steward et al (22).

Cronbach's alpha values for the unidimensional felt, vicarious, and internalized stigma factors were 0.97, 0.92, and 0.94, respectively. The Cronbach's alpha values for the two-factor vicarious stigma factors were 0.88 and 0.92 for the health care and community/family factors, respectively. The Cronbach's alpha values for the two-factor internalized stigma construct were 0.92 for both contact avoidance and shame/guilty factors.

Stigma towards Homosexuality—We used Neiland's homosexual stigma scale constructed in a Chinese population (40). This scale has 10 items, and each item has four response options (never, once or twice, a few times, and many times). The total score ranges from 0 to 30. This scale measures perceived stigma (e.g., " how often have you heard that homosexuals are not normal? ") and enacted stigma (e.g., "how often has your family not accepted you because of your homosexuality? ").

Statistical analysis

We used the Chi-square tests and Kruskal-Wallis equality-of-populations rank tests to assess bivariate associations between depression and categorical and continuous variables, respectively. Multivariable ordinal logistic regression was used to evaluate the association between HIV-related stigma and depression while adjusting for confounders. The proportional odds assumption was tested before model building and found to be appropriate. HIV-related stigma scores were analyzed as continuous variables. Linearity of the HIV-related stigma scores and depression association was assessed using likelihood ratio tests comparing models with and without restricted cubic splines. Homosexuality-related stigma was considered *a priori* to be a potential effect modifier for the HIV-related stigma associations, but the homogeneity tests were not significant (all *P* > 0.2). To control for confounding, our initial multivariable models also included age, education, marriage, place of birth, and homosexuality-related stigma. Covariates were subsequently removed from the model, if the exclusion of this variable resulted in less than a 10% change in the odds ratio. All the analysis was conducted in Stata 12.0 (*StataCorp LP, College Station, Texas*).

Results

Demographics and substance use

Of the 367 Chinese MSM with newly diagnosed HIV infections, the median age was 28 (IQR = 25–32); most were of Han ethnicity (93%), single (84%), college educated (77%), and non-registered Beijing residence (82%), i.e., no Beijing *Hukou* (i.e., household registration; Table 1). About half of study participants were born either in small cities or in the countryside, while fewer than half had medical insurance. The prevalence of alcohol and drug use in the past three months was 55% and 33%, respectively. Among drug users, the

majority reported non-injection use, and *Rush* (a type of 'popper', usually alkyl nitrite) was the most common drug. The median of homosexuality-related stigma was 6 (IQR = 3–9) on a scale of 0 to 30.

Of all participants, 16% (59/367) had borderline depression, and 20% (74/367) had suspected depression (Table 1). Depressed MSM were more likely to be older, single, less educated, and born in the countryside. Depressed men were also more likely to use drugs and report homosexual-related stigma, but less likely to consume alcohol.

Association between HIV-related stigma and depression

Overall, felt stigma had the highest scores (median = 17, IQR = 0–25) while vicarious (median = 2, IQR = 0–8) and internalized (median = 5, IQR = 0–13) stigma scores were low (Table 2). A trend of increasing stigma scores across depression categories was observed. Likelihood ratio tests suggested that the linearity assumption held. Hence, HIV-related stigma scores were modeled in a linear format. HIV-related stigma had a statistically significant association with depression, and a one-point increase in total stigma score was associated with a 4% increase in the odds of being classified as borderline or suspected depression versus normal, or to be classified as suspected depression versus normal and borderline depression (adjusted odds ratio [aOR] = 1.04, 95% confidence interval [CI] = 1.03–1.05) (Table 3). Internalized stigma had the strongest association with being depressed among the three factors (aOR = 1.09, 95% CI = 1.07–1.12).

When vicarious and internalized stigmas were further broken down into the source or reason for stigma, shame/guilt had the strongest association with depression among all stigma scores. A one-point increase in shame/guilt score was associated with a 17% increase in the odds of being classified as borderline or suspected depression versus normal, or to be classified as suspected depression versus normal and borderline depression (aOR =1.17, 95% CI = 1.12–1.24). Internalized stigma from avoiding contact (aOR = 1.15, 95% CI = 1.10–1.21) and vicarious stigma from the community (aOR = 1.14, 95% CI = 1.07–1.23) also had relatively high associations with depression (Table 3).

Discussion

In our study, 36% of newly diagnosed HIV-infected MSM had a score at or above the threshold for current depression. This was consistent with other reports in PLHIV (22–49%) (6,8,41), but was higher than that in the Chinese MSM population with unknown HIV serostatus (11.7%) (11). HIV diagnosis can be highly stressful or traumatic, immediately leading to a depressed state. It is not surprising to observe a higher level of depression in our study population than that among Chinese MSM with unknown HIV serostatus. Furthermore, we found that HIV-related stigma had a significant association with having depression in our MSM study population. Internalized stigma had the strongest independent association with being depressed among the three subscales.

Previous research has reported that internalized stigma has the strongest association on the development of depression (42). The items that measured internalized stigma in our study actually had two underlying contexts, shame/guilt and contact avoidance, which were both

strongly associated with being depressed. Stigma from the community also presented as a more influential factor for depression. Steward et al. only reported the correlation between each subscale stigma and depression measured by Beck depression inventory; all of them had a significant correlation with depression except vicarious stigma (22). Most studies on HIV-related stigma and depression only reported correlation coefficient (r) or coefficient determination (r^2) (27,43). However, a strong correlation does not necessarily represent a strong association. The magnitude of the association is necessary to estimate the expected change and cost-effectiveness of an effective intervention program on the reduction of HIV-related stigma following HIV-infection diagnosis.

Appropriate and accurate measurement of HIV-related stigma may be difficult due to differences in culture and context (44). Although the Berger HIV-related stigma scale has been validated in the U.S and European countries (23,45–47), we decided to use Steward's stigma scale developed in an Asian culture (22). Current HIV-related stigma scales mainly focus on enacted/personalized stigma and internalized stigma; they also include the measurement of contexts related to HIV disclosure, health care, and public attitude/community (22–24,47,48). Steward's scale had four subscales. In our analysis, we separated it into five factors, including felt stigma, vicarious stigma from health care and from community/family, and internalized stigma from shame/guilt and from contact avoidance. The reliability was good for the five-factor subscale in our study population.

The magnitude of HIV-related stigma scores was fairly similar between our study and Steward et al. for felt (14.8 vs. 11.9) and internalized (8.1 vs. 6.0) stigma, but lower for vicarious stigma in our study (4.9 vs. 8.2) (means are reported here for comparison with data from Steward et al., and median scores were reported in Table 1 due to skewed distributions). In both studies, felt stigma was higher than internalized and vicarious stigma scores (we did not report on enacted stigma due to extensive non-response by participants.) Enacted stigma, or discrimination because of HIV, requires knowledge of an individual's HIV status – whether through physical signs or symptoms suggesting AIDS (less common in the era of highly active antiretroviral therapy) or through voluntary or involuntary disclosure of HIV status. Only 50% of our participants responded to all 10 enacted stigma items. Of those who skipped one or more items, most did not respond to five or more (37%) and 16% did not respond to any of the 10 items. Qualitative studies suggest that for many individuals, disclosure of their new HIV status to others has not occurred, meaning measurement of enacted stigma may not be appropriate, especially around the time of diagnosis (49). Even among participants who do respond to enacted stigma items, a response of 'disagree' may be a statement about others not knowing of their HIV status, rather than a denial of discrimination in spite of others knowing their HIV status (50). For newly diagnosed individuals, vicarious stigma, particularly from stories of how other PLHIV were treated in their communities, may be a more important measure. While levels of vicarious stigma were low among Chinese MSM in our study, it was found to have one of the strongest associations with depression, particularly for vicarious stigma from the community.

Our study helps fill in the knowledge gap of the association between HIV-related stigma and depression among Chinese MSM with newly diagnosed HIV infections. There are several strengths in our study. The majority of participants was recruited and interviewed for the

baseline survey within one month since their HIV-infection diagnosis. Use of the HIV-related stigma scale from Steward et al. (22) was reliable in this study population, and offered information for future research on HIV-related stigma in Chinese context. Our relative large sample size had more power to detect small associations. There were also limitations. This is a single city study, and our findings might not represent all MSM population across China. We could not include the enacted stigma result due to low response rates for that element. Studies with a more representative sampling of MSM in China are needed to further explore the association between HIV-related stigma and depression. The cross-sectional study design limited our ability to infer the causal relationship between HIV-related stigma and depression.

Interventions on HIV-related stigma following diagnosis of HIV infection may reduce depression and improve long-term mental health for HIV-infected individuals. Internalized stigma is, perhaps, the most important contributor towards depression. Depression is a condition that contributes to difficulties in its own management, as well as adherence to newly prescribed antiretroviral therapy. Community- and society-level efforts to reduce stigma and discrimination toward persons of minority sexual orientation would also help in confronting this stigma-related challenge of depression-HIV co-morbidity in China.

Acknowledgments

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Table 1

Sociodemographic characteristics by depression status among 367 newly diagnosed HIV-infected men who have sex with men in Beijing, China

Covariate		Normal (N=234) N (%)	Borderline (N=59) N (%)	Suspicious (N=74) N (%)	P[†]
Depression[*]					
Age (year, median, IQR)		28 (24–32)	28 (24–31)	30 (26–33)	.13
Ethnicity					.88
	Han	219 (93.6)	55 (93.2)	68 (91.9)	
	Other	15 (6.4)	4 (6.8)	6 (8.1)	
Marriage					.16
	Never Married	199 (85.0)	52 (88.1)	57 (77.0)	
	Ever Married	35 (15.0)	7 (11.9)	17 (23.0)	
Education					.47
	High school or below	182 (77.8)	47 (79.7)	53 (71.6)	
	College or over	52 (22.2)	12 (20.3)	21 (28.4)	
Enrolled in health care plan					.69
	No	101 (43.2)	29 (49.2)	34 (46.0)	
	Yes	133 (56.8)	30 (50.8)	40 (54.0)	
Place of birth					.16
	Large City	65 (27.8)	10 (17.0)	17 (23.0)	
	Middle size city	55 (23.5)	16 (27.1)	18 (24.3)	
	Small city	51 (21.8)	17 (28.8)	10 (13.5)	
	Township/countryside	63 (26.9)	16 (27.1)	29 (39.2)	
Registered Beijing residence					.59
	No	191 (81.6)	51 (86.4)	59 (79.7)	
	Yes	43 (18.4)	8 (13.6)	15 (20.3)	
Current alcohol use					.69
	No	103 (44.0)	26 (44.1)	36 (48.7)	
	Yes	131 (56.0)	33 (55.9)	38 (51.3)	

| Covariate | Normal (N=234) N (%) | Depression[*] | | P[†] |
		Borderline (N=59) N (%)	Suspicious (N=74) N (%)	
Current drug Use				.33
No	164 (70.1)	39 (66.1)	43 (58.1)	
Yes	71 (29.9)	20 (33.9)	31 (41.9)	
Homosexuality-related stigma (MS=30, median, IQR)	5 (2–8)	7 (3–9)	8 (6-0)	<.001

[*]
Depression scale: Normal=0–7 points; Borderline=8–10 points; Suspicious=11–21 points.

IQR: interquartile range; MS: maximum score.

[†]
Krustal-Wallis equality-of-population rank test for continuous variables; Chis-square test for categorical variables.

Table 2

Median and interquartile ranges for HIV-related stigma scores by depression status among 367 newly diagnosed HIV-infected Chinese Men who have sex with men

HIV-related stigma[*]	Score range	Depression status[†]				
		Normal	Borderline	Suspicious	P	Total§
Total stigma§	0–90	20 (4–34)	31 (14–51)	46 (27–60)	<.001	27 (9–44)
Felt stigma	0–30	12.5 (0–22)	20 (8–27)	22 (11–30)	<.001	17 (0–25)
Vicarious stigma	0–30	0 (0–6)	3 (0–9)	6 (1–14)	<.001	2 (0–8)
Health care	0–15	0 (0–3)	1 (0–5)	2 (0–7)	<.001	0 (0–5)
Community/family	0–15	0 (0–3)	2 (0–4)	3 (0–7)	<.001	1 (0–4)
Internalized stigma	0–30	2.5(0–9)	6 (2–17)	17 (6–25)	<.001	5 (0–13)
Contact avoidance	0–15	0 (0–4)	2 (0–7)	7 (2–12)	<.001	1 (0–6)
Shame/guilty	0–15	1 (0–5)	5 (1–9)	9 (4–14)	<.001	3 (0–8)

[*] Stigma scores are reported as the median (interquartile range)

[†] As determined by the depression scale: Normal=0–7 points; Borderline=8–10 points; Suspicious=11–21 points.

§ Total score combines the three stigma factors: felt, vicarious, and internalized.

Table 3

Association between HIV-related stigma and categorized depression among 367 newly diagnosed Men who have sex with men in Beijing, China

HIV-related stigma	Depression Categories	
	Crude odds ratio[*]	Adjusted odds ratio[*]
Total stigma [†]	1.04 (1.03–1.05)	1.04 (1.03–1.05)[§]
Felt stigma	1.05 (1.03–1.07)	1.03 (1.01–1.06)[#]
Vicarious stigma	1.08 (1.05–1.12)	1.06 (1.03–1.10)[¶]
Health care	1.13 (1.07–1.20)	1.09 (1.03–1.16)[¶]
Community	1.19 (1.12–1.28)	1.14 (1.07–1.23)[¶]
Internalized stigma	1.11 (1.08–1.14)	1.09 (1.07–1.12)[¶]
Contact avoidance	1.18 (1.12–1.23)	1.15 (1.10–1.21)[¶]
Shame/guilt	1.21 (1.15–1.26)	1.17 (1.12–1.24)[¶]

[*] Odds ratios are for each one point increase in the given stigma score

[†] Total score combines three stigma factors: felt, vicarious, and internalized.

[§] Adjusted for homosexually-related stigma score and marriage

[#] Adjusted for education, marriage, and homosexually-related stigma score.

[¶] Adjusted for homosexually-related stigma score