Published in final edited form as:

AIDS Care. 2016 November ; 28(11): 1394–1401. doi:10.1080/09540121.2016.1179713.

Exploring HIV-related stigma among HIV-infected Men who have Sex with Men in Beijing, China: A correlation study

Zhen Li^a, Evelyn Hsieh^b, Jamie P. Morano^c, and Yu Sheng^d

^aSchool of Nursing, Peking Union Medical College, Beijing, China

^bDepartment of Internal Medicine, Yale School of Medicine, New Haven, CT, U.S.A

^cDivision of Infectious Diseases and International Medicine, University of South Florida, Morsani College of Medicine and College of Public Health; Yale University Center for Interdisciplinary Research on AIDS (CIRA), Tampa, FL, U.S.A

^dDepartment of Basic Nursing, School of Nursing, Peking Union Medical College, Beijing, China

Abstract

HIV-related stigma among HIV-infected men who have sex with men (MSM) has been associated with adverse health outcomes, including poor adherence to antiretroviral therapy (ART) and care, and increased participation in behaviours linked to higher rates of HIV transmission. In China, the incidence of HIV is growing more rapidly among MSM than among other subgroups. This study characterizes and quantifies HIV stigma among HIV-infected (MSM) in Beijing, China, which arguably may be driving this epidemic. A cross-sectional survey study was performed among 266 HIV-positive MSM in Beijing, China in 2014. The Berger HIV Stigma Scale was used to measure levels of HIV-related stigma. Participants additionally answered questions regarding socio-demographic characteristics and HIV-associated risk factors; previously validated Mandarin-language scales assessed depression, coping style, and social support networks. Multivariable linear regression models were used to identify variables significantly associated with HIV stigma. The mean overall HIV stigma score among the study population was 112.78 ± 18.11 (score range: 40–160). Higher HIV stigma scores were positively associated with depression ($\beta=7.99$, 95% CI: 3.69, 12.29, $p<0.001$) and negative coping skills ($\beta=0.64$, 95% CI: 0.21, 1.08, $p<0.01$), and was negatively associated with disclosed HIV status ($\beta=-6.45$, 95% CI: -11.80, -1.11, $p<0.05$), and availability of social support networks ($\beta=-0.12$, 95% CI: -0.22, -0.02, $p<0.05$). Other variables such as poor self-rated health status and presence of opportunistic infections were positively associated with individual dimensions of HIV-related stigma. The results of this study can inform the development of culturally sensitive interventions to reduce HIV-related stigma among MSM with HIV in China, with the overarching goal of reducing HIV transmission in this vulnerable population.

Corresponding author: Yu Sheng: shengyumm@126.com.

Conflict of Interest Statement

The authors report no real or perceived vested interests that relate to this article that could be construed as a conflict of interest.

Keywords

Stigma; HIV; AIDS; MSM; China

Introduction

Despite existing prevention and treatment efforts, the HIV epidemic among men who have sex with men (MSM) continues to expand worldwide in both developed and developing countries (Beyrer et al., 2013); China is no exception (Beyrer et al., 2012; Beyrer et al., 2013; UNAIDS, 2015). From 2006 to 2013, the proportion of new HIV infections acquired through MSM contact rose from 2.5 to 21.4% (UNAIDS, 2015). These data underscore the pressing need for more research aimed at understanding the factors contributing to the growing epidemic of HIV among Chinese MSM (Wang et al., 2012).

One formidable challenge encountered by MSM living with HIV is HIV-related stigma (Beyrer et al., 2013). A substantial body of research has documented the physical and mental health consequences of HIV-related stigma, both in China and globally (Hua et al., 2014; Kalichman, 2014; Karamouzian, Akbari, Haghdoost, Setayesh, & Zolala, 2015; Peitzmeier, Grosso, Bowes, Ceesay, & Baral, 2015). Negative consequences include non-adherence to antiretroviral therapy (ART) (Dlamini et al., 2009), irregular patterns of accessing health care (Evangeli, Newell, Richter, & McGrath, 2014), increased HIV symptoms (Earnshaw, Lang, Lippitt, Jin, & Chaudoir, 2015), loneliness (Hubach et al., 2015), and decreased quality of life (Slater et al., 2015; Wu et al., 2014). Stigma can be divided into *perceived stigma*, defined as negative beliefs, views, and feelings toward oneself arising from self-identification with a stigmatized condition (Logie & Gadalla, 2009), and *enacted stigma*, which refers to the experiences of prejudice, discrimination, and exclusion directed towards individuals from an external source because of specific attributes or conditions that characterize them (Brown, Macintyre, & Trujillo, 2003). In the present study, we focus on the conceptualization of perceived stigma put forth by Berger and colleagues (2001), namely “the person with HIV’s awareness of HIV-related actual or potential social disqualification, denial or limitation of opportunity, and negative change in social identity” (p.520).

Studies among MSM living with HIV from many countries demonstrate that HIV-related stigma remains a major challenge for this population (Cloete, Simbayi, Kalichman, Strebel, & Henda, 2008; Dowshen, Binns, & Garofalo, 2009; Semple, Strathdee, Zians, & Patterson, 2012). Given the known link between HIV-related stigma and adoption of health-related behaviors, there is a great need to identify associated factors that influence levels of perceived HIV stigma. Prior studies examining stigma among MSM with HIV have found that variables including ART usage, depression, and social support were significantly associated with HIV stigma (Dowshen et al., 2009; Semple et al., 2012). Only one prior study has examined this issue among Chinese MSM with HIV. The authors found that disclosure of HIV status and marital status were associated with higher levels of HIV-related stigma (Sun Yan-ming, 2012). However, this study did not include an analysis of psychosocial variables, which are important and potentially modifiable risk factors, thus limiting the full applicability of the results.

In order to address this knowledge gap, we carried out a comprehensive assessment of clinical and psychosocial factors, and their association with levels of HIV-related stigma among Chinese MSM with HIV. We hypothesized that perceived levels of HIV-related stigma would be high, and that we would be able to identify unique clinical and psychosocial factors (e.g. depression, coping style, and social support) that contribute to HIV-related stigma. Identifying these factors will help health professionals and policy makers better understand the context of HIV-related stigma, and will inform strategies to curb transmission and mitigate the adverse consequences of HIV among this population.

Methods

Participants

A cross-sectional study was conducted from April to June 2014 at the Red Ribbon Home in Beijing Ditan Hospital, an organization providing clinical care and health education for individuals with HIV. Patients were eligible for inclusion if they met the following inclusion criteria: (1) male gender, (2) age ≥ 18 years, (3) reported sex with a man during most recent sexual encounter and (4) documented HIV positive infection status. Individuals were excluded if they had severe psychiatric disease or poor reading comprehension skills. Potentially eligible clients were referred by clinic staff members to meet with an interviewer who determined study eligibility, provided a detailed description of the study, and obtained written informed consent. Participants then filled out a set of anonymous self-administered questionnaires in a private setting. Of 290 potentially eligible patients, a total of 266 individuals agreed to participate and completed the study questionnaire. As a token of appreciation, participants received a pill box upon completion of the questionnaire. This study was approved by the Institutional Review Board at the Peking Union Medical College School of Nursing in March 2014.

Measures

Berger HIV Stigma Scale—Our primary outcome of interest was the level of perceived HIV-related stigma, which was measured using the standardized Berger HIV Stigma Scale (Berger, Ferrans, & Lashley, 2001). This 40-item tool includes four subscales. Each item is answered using a four-point Likert scale. The items are summed providing a Total HIV Stigma Score ranging from 40 to 160, with higher scores indicating higher levels of perceived stigma. The four subscales are as follows: (1) *Personalized Stigma* (score range: 18–72) identifies the negative consequences of other people knowing that an individual has HIV, such as “Some people who know I have HIV have grown more distant.” (2) *Disclosure Concerns* (score range: 10 – 40) includes items related to revealing or concealing one’s HIV-positive status, such as “I work hard to keep my HIV a secret.” (3) *Negative Self-Image* (score range: 13 – 52) refers to low self-esteem or negative feelings about oneself as a result of being HIV-positive, such as “I feel guilty because I have HIV.” (4) *Concern with Public Attitudes* (score range: 20 – 80) focuses on the respondent’s perceptions of what people think about an HIV-positive individual or what he/she can expect from others when their HIV-positive status is discovered, such as “People with HIV lose their jobs when their employers find out.” The scale was translated into Mandarin Chinese and then translated back into English by two bilingual scholars. The Chinese versions were tested with

acceptable Cronbach α values (0.93, 0.78, 0.84, and 0.92 respectively for the four individual subscales and 0.95 for the overall scale) and content validity estimates (content validity index =0.87).

Demographics and disease characteristics—Socio-demographic and HIV-related clinical characteristics measured as part of the study questionnaire included age (years), urban/rural residence (based upon the classification of the participant's current address by the local government), education level, religious beliefs (None, Buddhism, Taoism, Christianity, or Islam), marital status (unmarried, married to a woman, or divorced), employment status [none, fixed (including part time and full time), and temporary employment)], monthly income (CNY), time elapsed since HIV diagnosis (years), self-reported current opportunistic infection (OI), currently receiving ART treatment, CD4⁺ T-cell count in the past three months (cells/mm³), self-rated health status (very poor, poor, reasonable, good, very good), HIV disclosure status, and to whom HIV status has been disclosed.

Depression—The Mandarin version of the Centers for Epidemiological Studies Depression Scale (CES-D) was used to assess depression symptoms (Radloff, 1977; Zhang, Wu, Fang, Li, & Han, 2010). The CES-D is a 20-item scale designed to measure depressive symptoms experienced by the patient within the past week, such as “I was bothered by things that don't usually bother me”. The responses are then summed to derive a total score, with severity of depressive symptoms increasing as the total score increases. As done in prior published studies, the standard score of 16 was used as the threshold for “depression” in this study. The Mandarin version of the CES-D showed good reliability and validity (Zhang et al., 2010), and the Cronbach α coefficient was 0.91 in the present study.

Coping skills—The Simplified Coping Skill Questionnaire (SCSQ) was used to measure coping skills (Xie, 1998). This is a 20-item scale with two subscales: positive coping and negative coping. Positive coping consists of 12 items, such as focusing on the positive aspects and not taking things too seriously. Negative coping consists of 8 items, such as the use of tobacco and alcohol to deal with situations or relying on others to solve problems. Questions are rated on a four-point scale, ranging from 0 to 3 (from never use to always use). The items are summed providing a final total score ranging from 0 to 36 for positive coping and 0 to 24 for negative coping, with higher scores indicating more frequent use of the coping style. Good reliability has been reported previously (Xie, 1998). In the current study, the Cronbach's alpha was 0.90 for the positive coping subscale and 0.73 for the negative coping subscale.

Social support—Social support was assessed using the Medical Outcomes Study Social Support Survey (MOS-SSS). The scale is a 20-item instrument: 1 item assesses the number of support persons, and 19 items measure the availability of the four domains of social support. Questions are rated on a five-point Likert scale, ranging from 1 to 5 (from none of the time to all of the time). The four domains include: a) tangible support (score range: 4 to 20), such as “someone to help you if you were confined to bed”, b) affectionate support (score range: 3 to 15), such as “someone who hugs you”, c) positive social interaction (score

range: 4 to 20), such as “someone with whom to have a good time”, and d) emotional/informational support(score range: 8 to 40), such as “someone who understands your problems” (Sherbourne & Stewart, 1991). The overall score and each individual dimension score is derived as follows: $\text{Score} = [\text{calculated score} - (\text{the possible lowest score})/(\text{the highest possible score} - \text{the lowest possible score})] \times 100$. Higher scores indicate greater social support. The Mandarin version of the MOS-SSS demonstrated a high internal consistency of 0.98 (Yu, Lee, & Woo, 2004) with a Cronbach α coefficient of 0.96 calculated for the present study.

Data Analysis

All data were analyzed using PASW SPSS 18.0 (PASW Statistics Release 18.0, Armonk, NY, USA, 2009). Descriptive statistics were used to report sample characteristics as well as scores for the Berger HIV Stigma Scale and associated subscales. Separate univariate linear regression analyses were conducted to assess relationships between independent variables (including age, residence, religious belief, education level, marital status, employment status, monthly income, time elapsed since HIV diagnosis, OI, current ART treatment, self-rated health status, HIV disclosure, depression, coping style and social support), and each of our dependent variables (the Berger HIV Stigma Score and individual subscales). For each dependent variable, independent variables having a $p \leq 0.20$ in the univariate analyses were included as candidates in the respective multivariable model. To attain a parsimonious model, we employed a backward elimination regression approach (Sauerbrei, Royston, & Binder, 2007) with $p < 0.05$ considered to be significant.

Results

Demographic, HIV-related and Psychosocial Characteristics

Socio-demographic, HIV-related and psychosocial characteristics of the participants are displayed in Table 1. The age of the sample ranged from 18 to 66 years with a mean age of 34.2 ± 9.3 years. The average length of time since HIV diagnosis ranged from 1 month to 20 years, with a median time of 1.7 years. Among the 249 participants who had CD4⁺ cell counts tested in the last three months, the mean CD4⁺ level was 366.76 ± 14.45 cells/mm³.

Based upon the CES-D Scale, 54.9% of participants met the criteria for depression (Table 1). The average item score for positive coping skills (1.85 ± 0.63) was higher than the mean item score for negative coping skills (1.43 ± 0.59). The mean total MOS-SSS score was 55.46 ± 21.67 , and among the four social support domains, the emotional/informational support score was the highest (57.52 ± 22.90) while the tangible support score was the lowest (54.06 ± 25.24).

Overall HIV Stigma and Subscale Scores

Mean stigma scores for the overall Berger HIV Stigma Scale and each of the four stigma subscales are presented in Table 2. The mean overall HIV Stigma Score among study participants was 112.78 ± 18.11 . Average item scores for individual subscales were 2.81 ± 0.52 for *personalized stigma*, 3.06 ± 0.46 for *disclosure concerns*, 2.59 ± 0.50 for *negative self-image*, and 2.90 ± 0.50 for *concern with public attitudes*.

Linear Regression Analysis

The univariate linear regression model found that disclosure status, depression, negative coping skills and social support were significantly associated with the Total HIV Stigma Score (Table 3). In the multivariable model, the total HIV Stigma Score was positively associated with depression ($\beta=7.99$, 95% CI:3.69, 12.29, $p<0.001$) and negative coping skills ($\beta=0.64$, 95% CI:0.21,1.08, $p<0.01$), and was negatively associated with disclosed HIV status ($\beta=-6.45$, 95% CI:-11.80,-1.11, $p<0.05$) and availability of social support networks ($\beta=-0.12$, 95% CI:-0.22,-0.02, $p<0.05$). Univariate and multivariable linear regression analysis of the four HIV stigma subscales, further identified risk factors that were associated with each individual subscale (Table 3 and Table 4).

Discussion

Our study is the first to concurrently examine the impact of sociodemographic and psychosocial factors on HIV-related stigma among MSM with HIV in China. We found that MSM with HIV in China experience a high level of HIV-related stigma, especially individuals with higher depression scores and negative coping skills. By contrast, MSM with disclosed HIV status and more social support networks perceived lower levels of stigma. Additionally, we found that each subscale had unique predictors.

The high Total HIV Stigma Scores reported in our study are consistent with prior data from China (Sun, Li, Zhao, & Lu, 2012) and India utilizing the Berger Stigma Scale (Charles et al., 2012). However, the Total HIV Stigma Scores in our population are higher compared to studies from other regions of the world, including the United States and Sweden (Dowshen et al., 2009; Lindberg, Wettergren, Wiklander, Svedhem-Johansson, & Eriksson, 2014; Relf & Rollins, 2015). Among the four subscales, participants' scores were highest for the *disclosure concerns* subscale. A potential explanation for our finding may be that in China, MSM are commonly viewed as abnormal because their behaviors contradict traditional Chinese concepts of reproduction and family structure (Chow et al., 2013). MSM with HIV therefore face dual pressures related to their HIV diagnosis as well as their sexual orientation, which could lead to a comparatively high level of disclosure concern.

The finding that higher depression scores were positively associated with HIV stigma scores is consistent with previous studies among MSM and other populations (Galvan, Davis, Banks, & Bing, 2008; Levi-Minzi & Surratt, 2014; Peltzer & Ramlagan, 2011; Wohl et al., 2013). Maladaptive coping has previously been associated with higher levels of stigma among older adults living with HIV (Emlet et al., 2013), and in our population of younger Chinese individuals with HIV, stigma scores were also inversely correlated with coping scores. Finally, higher levels of social support were associated with reduced HIV-related stigma, which has also been described in previous studies from different countries (Colbert, Kim, Sereika, & Erlen, 2010; Emlet et al., 2013). Our findings suggest that for Chinese MSM with HIV, social support from friends and parents may help mitigate HIV-related stigma. Collectively, these results demonstrate the importance of addressing psychosocial factors as a vehicle for addressing stigma in this vulnerable population.

Demographic factors, such as living in an urban area, were specifically associated with higher perceived *personalized stigma* and *concern with public attitudes* in our population. This is contrary to results from studies conducted among individuals with HIV in Canada and Africa (Alemu, Biadgilign, Deribe, & Escudero, 2013; Loutfy et al., 2012), but is consistent with a study conducted in India (Nebhinani, Mattoo, & Wanchu, 2012). It is possible that MSM with HIV living in these densely populated urban areas come into contact with an extremely high number of people in daily life, increasing the probability of encountering discrimination and the psychological pressure to keep HIV status a secret.

Certain HIV-related characteristics such as MSM with HIV who reported having OIs or low self-rated health status (“poor” or “very poor”) also reported a higher level of *disclosure concern*. This may reflect more severe HIV disease, and physical symptoms can draw attention to HIV status, which in turn can enhance the probability of discrimination from the public. Participants who concealed their HIV status had higher Total HIV Stigma Scores and higher scores for *personalized stigma* and *concern with public attitudes*, which support findings from previous studies (Chaudoir, Fisher, & Simoni, 2011; Li, Liu, He, Wang, & Huang, 2013; Overstreet, Earnshaw, Kalichman, & Quinn, 2013). It is likely that individuals who have disclosed their HIV status to sexual partners or close friends benefit from the help and care of their support networks, which in turn reduce the amount of perceived stigma related to HIV. The greater the perceived level of stigma, the more difficult it may be for an individual to disclose their HIV status to others. These findings underscore the key role of psychosocial support components within HIV prevention and treatment strategies.

Limitations

First, our study used a convenience sample of MSM with HIV recruited from a single healthcare institution, which excludes those who are not accessing care or not on ART, thereby limiting the generalizability of our results. However, we would expect this to underestimate the actual level of HIV-related stigma perceived by Chinese MSM with HIV. Second, the cross-sectional design of this study limits our ability to infer causality between the levels of HIV-related stigma and the correlated factors. Nevertheless, these strong associations suggest that interventions targeting HIV-related stigma may be helpful in promoting more positive health outcomes for the population. Future longitudinal studies are needed to confirm the predictors of HIV-related stigma identified in the present study and to determine how these factors can best be incorporated into effective interventions.

Conclusions

Our study found a relatively high level of HIV-related stigma among Chinese HIV positive MSM and identified several risk factors that are associated with HIV stigma in this population, which can help guide development of HIV prevention and care strategies. Stigma reduction efforts should be focused on populations that may bear a high burden of HIV stigma (e.g. urban residents, individuals with depression). These findings can inform the development of culturally appropriate interventions to decrease HIV-related stigma among this vulnerable population, with the ultimate goal of improving the care of HIV-infected MSM and decreasing HIV transmission rates.

Acknowledgments

We would like to thank the staff of the Red Ribbon Home of the Beijing Ditan Hospital and all the study participants who have given their time and effort to assist us to better understand the needs of MSM with HIV. We would also like to acknowledge Dr. Kaveh Khoshnood for his editorial assistance in preparing this manuscript.

This study was funded by the Youth Foundation of Peking Union Medical College (No.3332013013). Dr. Hsieh and Dr. Morano were supported by NIH/FIC U2RTW006918.

References

- Alemu T, Biadgilign S, Deribe K, Escudero HR. Experience of stigma and discrimination and the implications for healthcare seeking behavior among people living with HIV/AIDS in resource-limited setting. *SAHARA J.* 2013; 10(1):1–7. DOI: 10.1080/17290376.2013.806645 [PubMed: 23721543]
- Berger BE, Ferrans CE, Lashley FR. Measuring stigma in people with HIV: psychometric assessment of the HIV stigma scale. *Res Nurs Health.* 2001; 24(6):518–529. DOI: 10.1002/Nur.10011 [PubMed: 11746080]
- Beyrer C, Baral SD, van Griensven F, Goodreau SM, Chariyalertsak S, Wirtz AL, Brookmeyer R. Global epidemiology of HIV infection in men who have sex with men. *Lancet.* 2012; 380(9839):367–377. DOI: 10.1016/S0140-6736(12)60821-6 [PubMed: 22819660]
- Beyrer C, Sullivan P, Sanchez J, Baral SD, Collins C, Wirtz AL, Mayer K. The increase in global HIV epidemics in MSM. *AIDS.* 2013; 27(17):2665–2678. DOI: 10.1097/01.aids.0000432449.30239.fe [PubMed: 23842129]
- Brown L, Macintyre K, Trujillo L. Interventions to reduce HIV/AIDS stigma: what have we learned? *AIDS Educ Prev.* 2003; 15(1):49–69. DOI: 10.1007/s10461-010-9847-0 [PubMed: 12627743]
- Charles B, Jeyaseelan L, Pandian AK, Sam AE, Thenmozhi M, Jayaseelan V. Association between stigma, depression and quality of life of people living with HIV/AIDS (PLHA) in South India - a community based cross sectional study. *BMC Public Health.* 2012; 12:463.doi: 10.1186/1471-2458-12-463 [PubMed: 22720691]
- Chaudoir SR, Fisher JD, Simoni JM. Understanding HIV disclosure: a review and application of the Disclosure Processes Model. *Soc Sci Med.* 2011; 72(10):1618–1629. DOI: 10.1016/j.socscimed.2011.03.028 [PubMed: 21514708]
- Chow EP, Chen L, Jing J, Gao L, Zhang J, Wilson DP, Zhang L. HIV disease burden and related risk behaviours among men who have sex with men in Yuxi Prefecture, Yunnan Province, China: 2010–2011. *AIDS Behav.* 2013; 17(7):2387–2394. DOI: 10.1007/s10461-012-0300-4 [PubMed: 22961582]
- Cloete A, Simbayi LC, Kalichman SC, Strebel A, Henda N. Stigma and discrimination experiences of HIV-positive men who have sex with men in Cape Town, South Africa. *AIDS Care.* 2008; 20(9):1105–1110. DOI: 10.1080/09540120701842720 [PubMed: 18608067]
- Colbert AM, Kim KH, Sereika SM, Erlen JA. An Examination of the Relationships Among Gender, Health Status, Social Support, and HIV-Related Stigma. *Janac-Journal Of the Association Of Nurses In Aids Care.* 2010; 21(4):302–313. DOI: 10.1016/j.jana.2009.11.004
- Dlamini PS, Wantland D, Makoe LN, Chirwa M, Kohi TW, Greeff M, Holzemer WL. HIV stigma and missed medications in HIV-positive people in five African countries. *AIDS Patient Care STDS.* 2009; 23(5):377–387. DOI: 10.1089/apc.2008.0164 [PubMed: 19327098]
- Dowshen N, Binns HJ, Garofalo R. Experiences of HIV-related stigma among young men who have sex with men. *AIDS Patient Care STDS.* 2009; 23(5):371–376. DOI: 10.1089/apc.2008.0256 [PubMed: 19320600]
- Earnshaw VA, Lang SM, Lippitt M, Jin H, Chaudoir SR. HIV stigma and physical health symptoms: do social support, adaptive coping, and/or identity centrality act as resilience resources? *AIDS Behav.* 2015; 19(1):41–49. DOI: 10.1007/s10461-014-0758-3 [PubMed: 24715226]
- Emler CA, Brennan DJ, Brennenstuhl S, Rueda S, Hart TA, Rourke SB, Team OCS. Protective and risk factors associated with stigma in a population of older adults living with HIV in Ontario, Canada. *AIDS Care.* 2013; 25(10):1330–1339. DOI: 10.1080/09540121.2013.774317 [PubMed: 23452022]

- Evangelini M, Newell ML, Richter L, McGrath N. The Association between Self-Reported Stigma and Loss-to-Follow Up in Treatment Eligible HIV Positive Adults in Rural Kwazulu-Natal, South Africa. *PLoS One*. 2014; 9(2):doi: 10.1371/journal.pone.0088235
- Galvan FH, Davis EM, Banks D, Bing EG. HIV stigma and social support among African Americans. *AIDS Patient Care STDS*. 2008; 22(5):423–436. DOI: 10.1089/apc.2007.0169 [PubMed: 18373417]
- Hua J, Emrick CB, Golin CE, Liu K, Pan J, Wang M, Jiang N. HIV and stigma in Liuzhou, China. *AIDS Behav*. 2014; 18(Suppl 2):S203–211. DOI: 10.1007/s10461-013-0637-3 [PubMed: 24154921]
- Hubach RD, Dodge B, Li MJ, Schick V, Herbenick D, Ramos WD, Reece M. Loneliness, HIV-related stigma, and condom use among a predominantly rural sample of HIV-positive men who have sex with men (MSM). *AIDS Educ Prev*. 2015; 27(1):72–83. DOI: 10.1521/aeap.2015.27.1.72 [PubMed: 25646731]
- Kalichman SC. The causes and consequences of HIV-related enacted and internalized stigma: a comment on Takada et al. *Ann Behav Med*. 2014; 48(1):5–6. DOI: 10.1007/s12160-014-9620-0 [PubMed: 24706075]
- Karamouzian M, Akbari M, Haghdoust AA, Setayesh H, Zolala F. “I am dead to them”: HIV-related stigma experienced by people living with HIV in Kerman, Iran. *J Assoc Nurses AIDS Care*. 2015; 26(1):46–56. DOI: 10.1016/j.jana.2014.04.005 [PubMed: 24856436]
- Levi-Minzi MA, Surratt HL. HIV Stigma Among Substance Abusing People Living with HIV/AIDS: Implications for HIV Treatment. *AIDS Patient Care STDS*. 2014; 28(8):442–451. DOI: 10.1089/apc.2014.0076 [PubMed: 24983302]
- Li X, Liu L, He G, Wang H, Huang S. HIV/AIDS related-stigma and discrimination among HIV positive men who have sex with men. *Chin J Nurs*. 2013; 48(2):142–146.
- Lindberg MH, Wettergren L, Wiklander M, Svedhem-Johansson V, Eriksson LE. Psychometric evaluation of the HIV stigma scale in a Swedish context. *PLoS One*. 2014; 9(12):e114867.doi: 10.1371/journal.pone.0114867 [PubMed: 25522127]
- Logie C, Gadalla TM. Meta-analysis of health and demographic correlates of stigma towards people living with HIV. *AIDS Care*. 2009; 21(6):742–753. DOI: 10.1080/09540120802511877 [PubMed: 19806490]
- Loutfy MR, Logie CH, Zhang Y, Blitz SL, Margolese SL, Tharao WE, Raboud JM. Gender and ethnicity differences in HIV-related stigma experienced by people living with HIV in Ontario, Canada. *PLoS One*. 2012; 7(12):e48168.doi: 10.1371/journal.pone.0048168 [PubMed: 23300514]
- Nebhinani N, Mattoo SK, Wanchu A. HIV Stigma and Specified Correlates in North India. *Indian J Psychol Med*. 2012; 34(4):324–331. DOI: 10.4103/0253-7176.108203 [PubMed: 23723539]
- Overstreet NM, Earnshaw VA, Kalichman SC, Quinn DM. Internalized stigma and HIV status disclosure among HIV-positive black men who have sex with men. *AIDS Care*. 2013; 25(4):466–471. DOI: 10.1080/09540121.2012.720362 [PubMed: 23006008]
- Peitzmeier SM, Grosso A, Bowes A, Ceesay N, Baral SD. Associations of stigma with negative health outcomes for people living with HIV in the Gambia: implications for key populations. *J Acquir Immune Defic Syndr*. 2015; 68(Suppl 2):S146–153. DOI: 10.1097/QAI.0000000000000453 [PubMed: 25723979]
- Peltzer K, Ramlagan S. Perceived stigma among patients receiving antiretroviral therapy: a prospective study in KwaZulu-Natal, South Africa. *AIDS Care*. 2011; 23(1):60–68. DOI: 10.1080/09540121.2010.498864 [PubMed: 21218277]
- Radloff LS. The CES-D scale a self-report depression scale for research in the general population. *Applied psychological measurement*. 1977; 1(3):385–401.
- Relf MV, Rollins KV. HIV-related stigma among an urban sample of persons living with HIV at risk for dropping out of HIV-oriented primary medical care. *J Assoc Nurses AIDS Care*. 2015; 26(1):36–45. DOI: 10.1016/j.jana.2014.03.003 [PubMed: 24881591]
- Sauerbrei W, Royston P, Binder H. Selection of important variables and determination of functional form for continuous predictors in multivariable model building. *Stat Med*. 2007; 26(30):5512–5528. DOI: 10.1002/sim.3148 [PubMed: 18058845]

- Semple SJ, Strathdee SA, Zians J, Patterson TL. Factors associated with experiences of stigma in a sample of HIV-positive, methamphetamine-using men who have sex with men. *Drug Alcohol Depend.* 2012; 125(1–2):154–159. DOI: 10.1016/j.drugalcdep.2012.04.007 [PubMed: 22572209]
- Sherbourne CD, Stewart AL. The MOS social support survey. *Soc Sci Med.* 1991; 32(6):705–714. [PubMed: 2035047]
- Slater LZ, Moneyham L, Vance DE, Raper JL, Mugavero MJ, Childs G. The multiple stigma experience and quality of life in older gay men with HIV. *J Assoc Nurses AIDS Care.* 2015; 26(1): 24–35. DOI: 10.1016/j.jana.2014.06.007 [PubMed: 25249266]
- Sun Yan-ming, LUH-yLIY. Stigma among MSM living with HIV/AIDS and its related factors. *Chin J AIDS STD.* 2012; 18(8):518–520.
- Sun YM, Li Y, Zhao YJ, Lu HY. Quality of life and its influencing factors of people living with HIV or AIDS in Beijing. *Chinese Journal of Preventive Medicine.* 2012; 46(6):514–518. [PubMed: 22943897]
- UNAIDS. 2014 China AIDS Response Progress Report. 2015. Retrieved 2015-3-20, 2015, from <http://unaids.org.cn/pics/20130116094000.pdf>
- Wang L, Norris JL, Li DM, Guo W, Ding ZW, Wang N. HIV prevalence and influencing factors analysis of sentinel surveillance among men who have sex with men in China, 2003–2011. *Chinese medical journal.* 2012; 125(11):1857–1861. DOI: 10.3760/cma.j.issn.0366-6999.2012.11.003. [PubMed: 22884042]
- Wohl AR, Galvan FH, Carlos JA, Myers HF, Garland W, Witt MD, George S. A comparison of MSM stigma, HIV stigma and depression in HIV-positive Latino and African American men who have sex with men (MSM). *AIDS Behav.* 2013; 17(4):1454–1464. DOI: 10.1007/s10461-012-0385-9 [PubMed: 23247362]
- Wu X, Chen J, Huang H, Liu Z, Li X, Wang H. Perceived stigma, medical social support and quality of life among people living with HIV/AIDS in Hunan, China. *Appl Nurs Res.* 2014; doi: 10.1016/j.apnr.2014.09.011
- Xie Y. Reliability and validity of the simplified coping style questionnaire. *Chinese Journal of Clinical Psychology.* 1998; 6(2):114–115.
- Yu DS, Lee DT, Woo J. Psychometric testing of the Chinese version of the medical outcomes study social support survey (MOS-SSS-C). *Res Nurs Health.* 2004; 27(2):135–143. DOI: 10.1002/nur.20008 [PubMed: 15042639]
- Zhang J, Wu ZY, Fang G, Li J, Han BX. Development of the Chinese age norms of CES-D in urban area. *Chinese Mental Health Journal.* 2010; 24(2):139–143.

Table 1

Demographics, HIV severity, and psychological characteristics of MSM living with HIV in Beijing, China, 2014 (N=266)

Variable	n	%	Mean ± SD
Age (years)			34.24±9.27
30	107	40.2	
30~40	93	35.0	
40	66	24.8	
Current place of residence			
Rural area	41	15.4	
Urban area	225	84.6	
Religious belief			
Yes	67	25.2	
No	199	74.8	
Education level			
Senior high school or below	91	34.2	
College or above	175	65.8	
Marital status			
Unmarried	174	65.4	
Married to woman	58	21.8	
Divorced	34	12.8	
Employment status			
Fixed employment	142	53.4	
Temporary employment	71	26.7	
Unemployment	53	19.9	
Monthly income (¥ CNY)			
2000	44	16.5	
2001~4000	106	39.9	
> 4000	116	43.6	
Time elapsed since HIV diagnosis			
1 year	91	34.2	
> 1 year	175	65.8	
Presence of opportunistic infection			
Yes	63	23.7	
No	203	76.3	
Current ART treatment			
Yes	213	80.1	
No	53	19.9	
CD4 counts(cells/mm ³)(n=249)			
< 350	118	47.2	
350	132	52.8	
Self-rated health status			

Variable	n	%	Mean ± SD
Good or very good	96	36.1	
Reasonable	149	56.0	
Poor or very poor	21	7.9	
Disclosure of HIV status (any person)			
Yes	216	81.2	
No	50	18.8	
HIV status disclosed to:			
Parents (One or both)	76	28.6	
Female Spouse	50	18.8	
Siblings	61	22.9	
Children	8	3.0	
Health providers	58	21.8	
Close friends	78	29.3	
Colleagues	5	1.9	
CES-D Scale ^a			
Depressed (score ≥ 16)	146	54.9	
Not depressed (score <16)	120	45.1	
SCSQ ^b			
Positive coping score			1.85±0.63
Negative coping score			1.43±0.59
MOS-SSS ^c			
Tangible support			54.06±25.24
Affectionate support			54.66±22.24
Positive social interaction			56.88±23.11
Emotional/informational support			57.52±22.90
Total social support			55.46±21.67

HIV: Human Immunodeficiency Virus

MSM: Men who have sex with men

ART: Antiretroviral Therapy

^aCES-D: The Centers for Epidemiological Studies Depression Scale

^bSCSQ: The Simplified Coping Skill Questionnaire

^cMOS-SSS: The Medical Outcomes Study Social Support Survey

Table 2

Scores of Berger HIV Stigma Scale and subscales among HIV positive MSM in Beijing, China, 2014 (n=266)

Subscales	Number of Items	Maximum Possible Scores	Average Total Scores	Average Item Scores
Personalized Stigma	18	72	50.51±9.40	2.81±0.52
Disclosure Concerns	10	40	30.59±4.64	3.06±0.46
Negative Self-Image	13	52	33.72±6.47	2.59±0.50
Concern with Public Attitude	20	80	57.91±10.01	2.90±0.50
Total	40	160	112.78±18.11	2.80±0.45

Table 3

Univariate linear regression models for HIV-related stigma and relevant covariates among MSM living with HIV in Beijing, China, 2014 (n=266)

Variable	Total Stigma Score β (95%CI)	Personalized Stigma β (95%CI)	Disclosure Concern β (95%CI)	Negative Self-Image β (95%CI)	Concern With Public Attitudes β (95%CI)
Age	0.14(-0.10, 0.37)	0.11(-0.01, 0.23) [*]	-0.02(-0.08, 0.04)	0.08(-0.01, 0.16) [*]	0.07(-0.06, 0.20)
Urban residence	3.81(-2.24, 9.56)	2.24(-0.89, 5.38) [*]	1.25(-0.30, 2.79) [*]	-0.01(-2.18, 2.16)	3.12(-0.22, 6.45) [*]
Religious belief	4.05(-0.75, 8.86) [*]	1.72(-0.78, 4.21) [*]	0.69(-0.55, 1.92)	1.34(-0.38, 3.06) [*]	2.16(-0.50, 4.82) [*]
Education level	2.41(-1.81, 6.63)	0.37(-1.82, 2.57)	0.93(-0.14, 2.01) [*]	0.16(-1.36, 1.67)	1.49(-0.85, 3.82)
Marital status	-0.25(-5.56, 5.06)	0.21(-2.54, 2.96)	-0.87(-2.22, 0.49)	1.06(-0.83, 2.95)	-0.70(-3.63, 2.24)
Employment status	-0.88(-3.62, 1.86)	-0.48(-1.90, 0.94)	-0.16(-0.86, 0.55)	-0.29(-1.27, 0.69)	-0.52(-2.03, 1.00)
Monthly income	0.77(-2.24, 3.79)	0.13(-1.43, 1.70)	0.64(-0.13, 1.41) [*]	-0.53(-1.60, 0.55)	0.79(-0.88, 2.45)
Time since HIV diagnosis	-0.31(-1.05, 0.44)	-0.10(-0.48, 0.29)	-0.11(-0.30, 0.08)	-0.07(-0.34, 0.19)	-0.20(-0.61, 0.21)
Opportunistic infection	3.35(-1.78, 8.49) [*]	1.58(-1.09, 4.25)	1.75(0.45, 3.05) [‡]	-0.05(-1.89, 1.79)	2.31(-0.53, 5.15) [*]
Current ART treatment	3.03(-2.44, 8.50)	1.84(-1.00, 4.68)	0.32(-1.08, 1.73)	1.10(-0.85, 3.06)	1.44(-1.59, 4.46)
Self-rated health status	0.28(-3.37, 3.93)	0.30(-1.59, 2.20)	-0.87(-1.80, 0.06) [*]	1.09(-0.21, 2.38) [*]	-0.32(-2.34, 1.69)
Disclosed HIV status	-8.27(-13.79, -2.76) [‡]	-4.79(-7.64, -1.94) [‡]	-1.74(-3.16, -0.32) [‡]	-1.97(-3.96, 0.02) [*]	-4.65(-7.70, -1.60) [‡]
Depression	10.22(5.99, 14.44) [‡]	3.96(1.73, 6.19) [‡]	2.24(1.15, 3.34) [‡]	4.61(3.14, 6.08) [‡]	4.26(1.88, 6.64) [‡]
Positive coping scores	-0.26(-0.55, 0.03) [*]	-0.13(-0.28, 0.02) [*]	0.02(-0.06, 0.09)	-0.18(-0.28, -0.08) [‡]	-0.07(-0.24, 0.09)
Negative coping scores	0.63(0.16, 1.09) [‡]	0.26(0.01, 0.50) [§]	0.15(0.03, 0.27) [‡]	0.27(0.11, 0.44) [‡]	0.31(0.05, 0.56) [*]
Social support scores	-0.19(-0.29, -0.10) [‡]	-0.12(-0.17, -0.07) [‡]	-0.01(-0.04, 0.01)	-0.08(-0.11, -0.04) [‡]	-0.10(-0.15, -0.04) [‡]

^{*} p 0.2,[§] p <0.05,[‡] p <0.01,[‡] p <0.001

Multivariable linear regression models for HIV-related stigma and relevant covariates among MSM living with HIV in Beijing, China, 2014 (n=266)

Table 4

Variable	Total Stigma Score β (95%CI)	Personalized Stigma β (95%CI)	Disclosure Concern β (95%CI)	Negative Self-Image β (95%CI)	Concern With Public Attitudes β (95%CI)
Adjusted R ²	0.13	0.14	0.11	0.20	0.12
Age	NA	-	NA	-	NA
Urban residence	NA	3.78(0.79, 6.77) [§]	-	NA	4.48(1.26, 7.70) [‡]
Religious belief	-	-	NA	-	-
Education level	NA	NA	-	NA	NA
Monthly income	NA	NA	-	NA	NA
Opportunistic infection	-	NA	1.51(0.24, 2.77) [§]	NA	-
Self-rated health status	NA	NA	-1.06(-1.98, -0.13) [§]	-	NA
Disclosed HIV status	-6.45(-11.80, -1.11) [§]	-3.41(-6.19, -0.64) [§]	-	-	-3.49(-6.48, -0.50) [§]
Depression	7.99(3.69, 12.29) [¥]	2.56(0.33, 4.79) [§]	2.51(1.41, 3.60) [¥]	3.08(1.50, 4.65) [¥]	3.17(0.77, 5.57) [‡]
Positive coping scores	-	-	NA	-0.14(-0.26, -0.03) [§]	NA
Negative coping scores	0.64(0.21, 1.08) [‡]	0.30(0.07, 0.52) [§]	0.12(0.01, 0.23) [§]	0.36(0.19, 0.53) [¥]	0.33(0.09, 0.58) [‡]
Social support scores	-0.12(-0.22, -0.02) [§]	-0.10(-0.16, -0.05) [¥]	NA	-0.04(-0.08, -0.01) [§]	-0.08(-0.14, -0.02) [‡]

NA = this variable was not included the multivariable model because p-value>0.2 in the univariate model.

[§] p <0.05,
[‡] p <0.01,
[¥] p <0.001