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Original Article

HIV/AIDs-related stigma among medical students in Beijing, China

Wenhao Tang[1*], Xinjie Zhuang[2*], Haiping Zhao[3], Cheng Pang[4], Yan He[3], Fen Liu[3], Hui Jiang[1], Dian He[3]

[1]Department of Urology, Peking University Third Hospital, Beijing, China; [2]Reproductive Medicine Center, Peking University Third Hospital, Beijing, China; [3]School of Public Health, Capital Medical University, Beijing, China; [4]Department of Medical Record, Perking Union Medical College Hospital, Beijing, China. [*]Equal contributors.

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Abstract: An HIV/AIDS-related stigma is already deeply entrenched within Chinese people; however, little is known about an HIV/AIDS stigma among medical students. This study assessed an HIV/AIDS-related stigma and its factors among medical students in China. A cross-sectional study was conducted at six medical sites in Beijing. Four hundred and twenty-two medical students completed a self-administered questionnaire, which consisted of sociodemographic characteristics, items assessing an HIV/AIDS stigma towards people living with HIV/AIDS (PLWHA), and questions related to HIV/AIDS knowledge. Multivariate analysis was used to identify possible factors associated with an HIV/AIDS-related stigma among medical students. Despite a high level of HIV transmission knowledge (median = 11; possible range, 1-13), medical students in this study exhibited a moderate level of HIV/AIDS stigma (median = 28.6; possible range, 12-60). The HIV transmission knowledge score was not significantly correlated with the HIV/AIDS-related stigma score ($P = 0.40$). Male participants who were in pre-internship (under the fourth grade) or less were more likely to discriminate against PLWHA ($P < 0.05$). Medical students who majored in clinical medicine had higher stigma scores than medical students who majored in preventive medicine ($P = 0.03$). A high level of HIV transmission knowledge is not clearly associated with a low level of HIV/AIDS-related stigma among Chinese medical students; a ceiling effect likely exists. Nevertheless, learning from experience as a medical intern can improve medical students' attitudes towards PLWHA.

Keywords: Medical students, HIV/AIDS, stigma, factors

Introduction

Currently, HIV/AIDS constitutes one of the major health burdens worldwide. Globally, it was estimated that 35.3 million people were living with HIV/AIDS (PLWHA) in 2012, which had increased by approximately 20% from 2001. Indeed, approximately 0.7% of people live with HIV [1, 2]. Although the incidence and mortality of HIV/AIDS have been declining worldwide in recent years, the number of new infections (2.3 million/per year) and the number of PLWHA are still high [2, 3]. These new cases mainly occurred in developing countries, especially in Eastern Europe and central Asia [2, 3]. In China, the prevalence of HIV/AIDS among the general population is approximately 0.1% (780,000), and the number of men who have sex with men has been increasing gradually [2, 3].

With the increase in PLWHA, effective health care systems and new technologies are necessary for the prevention and treatment of AIDS/PLWHA. Attitudes, especially the attitudes of health care providers, are very important for the care of PLWHA and the prevention of HIV/AIDS.

Stigma is an attribute of social relationships that exists with the following characteristics: labeling; stereotyping; separation; status loss; and discrimination [4]. An HIV/AIDS-related stigma has multiple negative impacts on the physical and psychological well-being of PLWHA, including affecting the quality of life [5-7]. In a previous study it was shown that the perceived stigma from health care providers and general population is a major barrier for PLWHA to access prevention and treatment services within the health care system [8-10]. In China, an

HIV/AIDS-related stigma is already deeply entrenched within Chinese communities [11]. This HIV/AIDS stigma may impact the ability of PLWHA to access healthcare and the quality of care they receive. For example, in November 2012, after being refused by two hospitals, based on the excuse of improper technology in Tianjin city and Beijing city, an HIV-infected patient changed and concealed his individual medical records regarding HIV to undergo surgery for lung cancer [12]. This report aroused the concern of the Prime Minister and the general public in China.

Medical students are the future physicians who are at the forefront of fighting to prevent and cure HIV/AIDS. Thus, their professional behaviour and attitudes against HIV/AIDS patients have a profound impact on the course of the disease, treatment compliance, and prognosis [13]. Significant correlations have been reported between HIV transmission knowledge, age, socioeconomic group, urban-rural setting, and HIV/AIDS-related stigma in the general population [14]. There are no studies involving the stigmatizing attitude toward PLWHA among medical students in China. Hence, this study was designed to explore the stigmatizing attitude of medical students and possible factors of the stigmatizing attitude in providing care to PLWHA. In addition, because AIDS and hepatitis B have the same mode of transmission, and an HIV vaccine has not been developed, it will be of interest to explore the association between the status of the Hepatitis B Virus (HBV) vaccine and HIV/AIDS-related stigma.

Materials and methods

In this study, 422 medical students from six medical sites (one medical college and five hospitals) in Beijing were investigated. A class was the smallest unit of sampling and was randomly selected from every site. All students in selected classes were invited to take part in this survey.

Questionnaire and variables

The questionnaire consisted of three sections, as follows: 1) the demographic characteristic (age, gender, ethnicity, medical education level, and majors); 2) a vignette and a stigma scale; and 3) other questions (HIV/AIDS transmission knowledge, self-efficacy of protecting against HIV/AIDS, and exposure to the HBV vaccine). Medical students in China go to affiliated hospitals for practicing as an intern after completing three years of study on campus. The level of medical education in this study was classified into two types (pre-internship [under the fourth grade] and internship [fourth grade and above]). Majors in medical colleges in China were divided into four types according to the different types of work they would engage in after graduation, as follows: clinical medicine; preventive medicine; basic medical science; and others. Generally, only those students who majored in clinical medicine would become a clinician (physician and surgeon).

A vignette, modified from Kelly and Lili, presented a general description of an idealized Chinese named “Xiao Zhang” [15-17]. Xiao Zhang was bright and had many talents. He was considered to be a dutiful son to his parents, and a kind, selfless, and responsible person. However, over the past 6 months, he developed a range of health problems, including fatigue, physical deterioration, and recurrent infections. He learned from his physician that he was seriously ill with AIDS.

A scale comprised of 12 items designed to measure stigma was used to measure the participants’ willingness to interact with the hypothetical person [16, 17]. The scale was translated into Chinese and field-tested for readability with a small sample population. Participants indicated their willingness by marking a 5-point Likert type scale (where 1 = “strongly agree” and 5 = “strongly disagree”). An HIV/AIDS stigma was calculated as the sum of the 12 items (range, 12-60). The internal reliability of the social scale was confirmed using Cronbach’s alpha (α = 0.818). HIV/AIDS transmission knowledge was measured using a 13-item scale of “Yes/No” questions. Self-efficacy of protecting against HIV/AIDS was measured using a nine-item scale with answers ranging from “strongly impossible” to “strongly possible” (e.g., decline drugs, even if my close friends ask me to; I know how to use a condom correctly; I will never be infected with HIV in medical services in the future; I won’t be discouraged if I am infected with HIV). The internal reliability of the self-efficacy was 0.739. We adopted there scales from previous studies [16, 17].

Table 1. Demographic characteristic of medical students

Variables		Frequency	Percent (%)
Gender	Male	138	33.4
	Female	275	66.6
Ethnicity	Han	383	94.1
	Minority	24	5.9
Region of birth	City/town	282	68.4
	Country	130	31.6
Medical education level	Pre-internship	284	68.8
	Internship	129	31.2
Major	Clinical medicine	275	66.6
	Preventive medicine	110	26.6
	Basic medical science and others	28	6.8
Have you ever been vaccinated?	Never	43	10.5
	Yes, not sure of protection effective of antibodies against HBV	283	69.2
	Yes, be sure of protection effective of antibodies against HBV	83	20.3

A higher score regarding HIV/AIDS-related stigma indicated more discrimination against the idealized person.

Survey and procedure

The surveys were administered at the end of each course. Survey questionnaires were distributed to students by teachers on the research team. Participants were not allowed to speak to each other but completed the survey within 15-20 minutes. All of them were informed of the purpose of the study.

Data analysis

Data analysis was performed in three steps. First, the internal reliability of the stigma scale and the demographic characteristic were examined. Second, each stigma item was described in detail. Then, multivariate linear regression analysis was used to determine the positive associations between the HIV/AIDS-related stigma score and related factors. Participant age, gender, level of medical education, ethnicity, whether or not a HBV vaccine was administered, and HIV/AIDS transmission knowledge were treated as possible factors. Possible factors were screened according to HIV/AIDS experts' opinions and these statistically significant variables, which were identified in previous univariate analyses. The HIV stigma score was considered as the dependent variable in these analyses. Analysis was conducted using SPSS 18.0 software (SPSS, Inc., Chicago, IL, USA).

Results

Four hundred and twenty-two participants were recruited and 413 were eligible (eligibility rate = 97.9%). The demographic characteristics of the eligible participants are shown in **Table 1**. The mean age of respondents was 21.0 (standard deviation (SD) = 1.18). Greater than 60% of the respondents were female students. Approximately 30% of the respondents were from hospitals and two-thirds of the participants majored in clinical medicine. Approximately 90% of students reported that they had received the HBV vaccine, but 70% of students were not familiar with the protective effect of antibodies. In addition, the mean score of self-efficacy was 22.7 (SD = 4.95; max = 36). The median score of HIV/AIDS transmission knowledge was 11 (max = 13).

The mean HIV/AIDS-related stigma score of the participants was 28.6 (SD = 6.37; max = 60). Detailed results of each item are shown in **Table 2**. Stigma was particularly strong in relation to the below items. The mean score of two items in this scale was > 3 points (the median score). The mean score of "Responsible for his illness" was 3.96 (SD = 1.15). The mean score of "His friends should break up with him" was 3.31 (SD = 1.02). In addition, approximately three-quarters of participants believed that the patient was dangerous to other people, and only approximately 50% of participants strongly agreed that the patients deserved the same medical care as patients with other diseases.

Table 2. Stigma attitudes toward HIV/AIDS among medical students

Variables	Strongly disagree, n (%)	Disagree, n (%)	No opinion, n (%)	Agree, n (%)	Strongly agree, n (%)	Mean score
Responsible for his illness*	162 (39.2)	154 (37.3)	33 (8.0)	45 (10.9)	19 (4.6)	3.96
Worth sympathy and understanding	4 (1.0)	34 (8.2)	70 (16.9)	201 (48.7)	104 (25.2)	2.11
Deserves what has happened to him*	9 (2.2)	32 (7.7)	112 (27.1)	163 (39.5)	97 (23.5)	2.26
Dangerous to other people*	10 (2.4)	96 (23.2)	77 (18.6)	189 (45.8)	40 (9.7)	2.63
Deserves the same medical care as other patients	2 (0.5)	8 (4.1)	17 (4.1)	172 (41.6)	214 (51.8)	1.58
Deserves to lose his job*	3 (0.7)	11 (2.7)	46 (11.1)	194 (47.0)	159 (38.5)	1.80
Willing to strike up a conversation	1 (.02)	16 (3.9)	69 (16.7)	203 (49.2)	124 (30.0)	1.95
Willing to attend a party where preparation of food is involved	11 (2.7)	60 (14.5)	159 (38.5)	114 (27.6)	69 (16.7)	2.59
His friends should break up with him*	55 (13.3)	117 (28.3)	161 (39.0)	63 (15.3)	17 (4.1)	3.31
Willing to work in the same office	4 (1.0)	29 (7.0)	113 (27.4)	197 (47.8)	69 (16.7)	2.28
Willing to continue the friendship at this time	2 (0.5)	6 (1.5)	58 (14.0)	257 (62.2)	90 (21.8)	1.97
His identity should be disclosed to avoid infecting others*	5 (1.2)	45 (10.9)	70 (16.9)	181 (43.8)	112 (27.1)	2.15

The scores for responses were as follows: "Strongly agree" = 1; "Agree" = 2; "No opinion" = 3; "Disagree" = 4; "Strongly disagree" = 5. "Mean score" means the mean score for every item. *Reverse coding was applied to these items when scores were allotted.

Table 3. Factors associated with HIV/AIDS-related stigma attitude among medical students

Variables	U. B	S. E	*P*	95% CI	
Constant	42.47	3.35	0.00	35.89	49.05
Gender	-2.58	0.69	0.00	-3.93	-1.23
Ethnicity	1.65	1.28	0.20	-0.87	4.16
Medical education level	-3.38	0.76	0.00	-4.86	-1.89
Major (reference = clinical medicine)	0.0				
Preventive medicine	-1.83	0.82	0.03	-3.44	-0.23
Basic medical science and others	2.21	1.27	0.08	-0.29	4.70
Region of birth	-0.92	0.68	0.18	-2.25	0.42
Have you ever been vaccinated (reference = never)	0.0				
Yes, not sure of protection effective of antibodies against HBV	1.39	1.00	0.17	-0.58	3.36
Yes, be sure of protection effective of antibodies against HBV	0.93	1.17	0.43	-1.36	3.22
Knowledge score of HIV/AIDS transmission	-0.16	0.18	0.40	-0.52	0.21
Self-efficacy score of protecting against HIV/AIDS	-0.37	0.07	0.00	-0.50	-0.24

*U. B = Unstandardized Coefficients B, S. E = Standard Error, CI = Confidence interval.

Results of the multivariate linear regression analysis

Multivariate linear regression analysis on the positive association of HIV/AIDS-related stigma and potential factors are presented in **Table 3**. We found that four patient factors were related to the HIV/AIDS-related stigma store (gender, level of medical education, majors, and the self-efficacy score of protecting against HIV/AIDS; all $P < 0.05$). Participants, who were male or from pre-internship, were more likely to discriminate against PLWHA. Students who majored in clinical medicine had higher stigma scores than students in preventive medicine, but a significant difference was not observed compared with students majoring in basic medical sciences. The higher self-efficacy score of protecting against HIV/AIDS indicated a lower stigma score against PLWHA.

Discussion

In this study medical students had high knowledge scores involving HIV/AIDS transmission, but they had moderate degrees of HIV/AIDS-related stigma scores. We found that gender, level of medical education, majors, and the self-efficacy score of protecting against HIV/AIDS were associated with the stigma of HIV/AIDS.

People who were from internships or had ever practiced in a clinical setting had lower HIV/

AIDS stigma scores than those who did not. The lack of encounter with PLWHA or other patients in clinical settings and the fear of contagion probably increased the stigma of HIV/AIDS. This finding was consistent with a previous study. Specifically, discriminatory acts have been reported to decline when people interact with HIV-infected patients, PLWHA, and homosexuals [18].

Participants who majored in preventive medicine were less likely to discriminate against PLWHA than students who majored in clinical medicine. Students who majored in preventive medicine in China engage in preventing and controlling of diseases at Center for Disease Control and Prevention (CDC) after graduation. The main subjects of preventive medicine cover communicable diseases, including HIV/AIDS, hepatitis B, and tuberculosis. Hence, students who major in preventive medicine have a greater probability of being involved in events related to HIV/AIDS, which reduces the stigma.

In this study we did not find that knowledge about HIV/AIDS transmission was associated with a stigmatizing attitude, which was consistent with another study. However, in previous studies stigmatizing attitudes were related to a misunderstanding about HIV/AIDS-related transmission and an overestimation of the risk of contagion [19, 20]. It was also reported that higher HIV/AIDS-related knowledge indicated a lower stigmatizing attitude among health science students and pharmacists in South America and Hong Kong [21, 22]. There were some possible reasons that could explain the inconsistency. Different measured scales of HIV/AIDS-related stigma were used in these studies [23]. In contrast, it was probably a matter of a ceiling effect that higher knowledge was unrelated to lower stigma. Although knowledge of HIV/AIDS transmission was very high for Chinese medical students, it was not adequate to reduce the stigma attitude against HIV/AIDS further, without clinical experience and clinical situational analogue training [24].

In addition, in this study we did not find an association between HBV vaccine status and HIV/AIDS-related stigma. This result was in contrast with our previous hypothesis; specifically, people who had received the HBV vaccine might be more aware of protecting against communicable diseases than those who did not receive the HBV vaccine; however, one reason could explain this finding. The hepatitis B vaccine coverage is very high in China and 93.2% of children born in 2002-2005 were vaccinated [25]. Therefore, there was no significant difference in HIV/AIDS-related stigma among people whether or not the HBV vaccine was received.

Some limitations of this study should be considered. First, all participants came from six medical sites, so it was unclear whether or not these results reflect the HIV stigma among all medical students in China. Second, it is worth mentioning that these results were based on a patient who was described as being kind and responsible. These findings might be different when a patient has less favorable characteristics. Third, the transmission route of HIV/AIDS was not considered in this study. Different transmission routes of HIV/AIDS may correspond to different degrees of HIV stigma. Hence, these weaknesses should be considered in future studies.

In summary, while encountering PLWHA or other patients in medical settings, the HIV/AIDS-related stigma of medical students may be reduced and the self-efficacy to protect themselves from HIV may be increased. Hence, teaching in class and learning from clinical experience should be combined to improve medical students' attitudes towards PLWHA. In addition, clinical situational analogue training should be developed in Chinese medical universities, and we should consider which type of clinical situational analogue training is used in future studies.

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Disclosure of conflict of interest

None.

Address correspondence to: Dian He, School of Public Health, Capital Medical University, 10 Xitoutiao Youanmen, Beijing, China. Tel: 86-010-83911504; Fax: 86-010-83911504; E-mail: hedian@ccmu.edu.cn; Jiang Hui, Department of Urology, Peking University Third Hospital, Beijing, China. E-mail: jianghui55@163.com

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