

## HIV-Related Stigma in Health Care Settings: A Survey of Service Providers in China

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### ABSTRACT

We examined how individual and institutional factors in health care settings affected discrimination toward persons with HIV/AIDS. A representative sample of 1101 Chinese service providers was recruited in 2005, including doctors, nurses, and laboratory technicians. Multiple regression models were used to describe associations among identified variables, the relationships with HIV-related personal prejudicial attitudes, and perceived institutional support and discrimination at work. Multivariate analyses revealed that respondents' general view of persons living with HIV/AIDS and their perceived levels of support from their institutions regarding protection procedures were both important predictors for discrimination intent. Perceived institutional support varied according to age, gender, ethnicity, and training background. A better understanding of HIV-related discrimination in health care settings requires consideration of both individual and institutional factors.

### INTRODUCTION

**H**IV-RELATED STIGMA is prevalent worldwide.<sup>1</sup> According to Goffman, stigma is conceptualized by society on the basis of what constitutes "deviance"; a stigmatized individual is someone with "an undesirable difference."<sup>2</sup> Stigmatization associated with HIV is also a process of devaluation, often used to produce social inequality.<sup>3,4</sup> HIV-related stigma in a health care setting discourages persons living with HIV/AIDS (PLWHA) from seeking care if they previously experienced unwelcoming treatment or their confidentiality was not respected.<sup>5,6</sup> As a result, fears of stigma and discrimination have created a silence that threat-

ened public health.<sup>7</sup> Many studies have documented that service providers' discriminatory attitudes and behaviors toward PLWHA have direct negative consequences on the quality of life for PLWHA.<sup>5,8-16</sup>

As members of the general community, health care providers can hold the same stigmatizing view against PLWHA as general society holds. Discriminatory attitudes toward HIV/AIDS patients are associated with the actual infection as well as the behaviors believed to have led to infection. Some socially marginalized groups, such as men who have sex with men (MSM), injection drug users (IDUs), and sex workers (SWs), face additional stigmatization. This "double stigma" influences the atti-

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tudes of service providers and affects all PLWHA, regardless of their route of infection. Previous studies have revealed that HIV-positive patients expressed concerns that health care workers have judgmental attitudes and believe that the disease was self-inflicted.<sup>10,16,17</sup> The label of "AIDS" is itself a variable that elicits harsher physician attitudes.<sup>12</sup> These previous studies have implied that moral judgments, socially conservative beliefs, and level of education may be important foundations for discriminatory attitudes toward PLWHA in health care settings.

People who have minimal education or misperceptions regarding HIV transmission are more likely to hold discriminatory attitudes.<sup>5,18,19</sup> An educational intervention targeting dentists resulted in improvements in scores measuring HIV/AIDS knowledge, and in providers' willingness to treat.<sup>20</sup> Mental health professionals who had prior AIDS education or training were found to be more willing to treat a person with HIV/AIDS.<sup>9</sup> Several studies conducted in China have demonstrated that knowledge about HIV is low even among service providers and medical students.<sup>21-24</sup> Providing HIV/AIDS training resulted not only in increased knowledge about HIV/AIDS, but also in better attitudes toward PLWHA among health professionals.<sup>25</sup>

Previous studies have shown conflicting results on the effect of enhancing HIV/AIDS knowledge on providers' attitudes and behavior toward PLWHA. In one study, researchers found that people with sufficient HIV/AIDS knowledge were not significantly less worried about infection, yet those least worried were more likely to reject PLWHA.<sup>11</sup> Schlebusch and colleagues<sup>15</sup> found that attitudes toward HIV/AIDS varied considerably despite the high levels of HIV knowledge reported among health care professionals in the study. In a review of 22 interventions to reduce HIV/AIDS stigma, it was reported that information alone is not sufficient to change attitudes or behavior toward PLWHA, as it has little effect on deep-seated fears.<sup>26</sup>

Perceptions of occupational risk have been reported as a factor related to HIV stigma in health care.<sup>18,19,27,28</sup> In Green's study,<sup>10</sup> the main reported source of negative reactions to

PLWHA was fear of contagion, exhibited in the form of refusal to provide adequate medical treatment. Other literature shows that fear of contagion and fear of death have clear negative effects on service providers' attitudes toward PLWHA.<sup>14,29</sup> Unfounded fear of casual contagion can be addressed by accurate information and training, and real fear of occupational exposure, such as needle stick injury, can be reduced by adherence to appropriate infection control procedures.<sup>5,26</sup>

There are also structural or institutional factors in health care settings, hospitals, and clinics that may encourage or discourage HIV-related stigma. These factors may include policies and standard operational procedures. There has been a lack of research on institutional or structural factors associated with HIV stigma, which is important to inform effective interventions.<sup>30,31</sup> Based on the UNAIDS Protocol for the Identification of Discrimination against People Living with HIV, several studies from the Asia-Pacific region revealed that most instances of discrimination appeared in practice rather than in legislation or written policy.<sup>32-35</sup> Some studies have examined the linkage between discrimination and work environment in health care settings. In one study, a higher level of nurses' satisfaction with work and work environment was associated with fewer negative verbal mannerisms toward patients with AIDS.<sup>36</sup> Moreover, when health care providers are unfamiliar with appropriate procedures, such as universal precautions, incidences of unintentional discrimination are likely to be higher.<sup>5</sup> Lack of adequate supplies of protective means, such as gloves and goggles, also can cause reluctance to care for HIV-positive patients.<sup>27</sup>

It has been clearly demonstrated that HIV-related stigma and discrimination in health care settings have multiple sources and take on many different forms. This study provides an opportunity to examine variations in personal prejudice, perceptions of institutional support, and their relationship to discriminatory tendencies in health care settings. It is particularly challenging to establish a connection between institutional factors and service providers' attitudes toward PLWHA. Using a sample of Chinese service providers, we explore how vari-

ous individual and institutional factors affect discrimination toward PLWHA.

## MATERIALS AND METHODS

### *Participants*

This study collected data from three different sites in Yunnan Province, which has 40% of all reported HIV cases in China, and the highest number of infections in China.<sup>37,38</sup> The study population consisted of health care providers who were currently working at general public health care facilities in the area. Public health care facilities in China are organized in five different levels: provincial, city/prefecture, county hospitals, township, and village health clinics. Generally, hospitals at higher levels serve a broader region and are more likely to have technologically advanced equipment and a more highly educated staff. Such hospitals are therefore capable of performing more sophisticated operations. In order to obtain a representative sample, we gathered staffing information from hospitals and clinics in the three study sites before sampling. We randomly selected 3 provincial hospitals, 4 city/prefecture hospitals, 10 county hospitals, 18 township health clinics, and 54 village clinics. The ratio of doctors to nurses in each hospital was used as our sampling scheme, and hospital laboratory technicians were oversampled to compensate for adequate representation in the analysis. A total of 1101 randomly selected health care providers participated in a self-administered, questionnaire survey between January and August 2005, with a refusal rate of less than 8%. All survey data were collected anonymously.

### *Measures*

Health Professional Survey, developed specifically for this project, contains a total of 172 questions assessing participants' demographics, medical training, experience, and attitudes and behavior toward patients with AIDS and PLWHA in general. The major dependent variable, discrimination at work, was constructed to assess the level of discrimination behavior intent toward PLWHA among service

providers during their daily work. This variable was measured by a 4-item scale (Table 1). Responses to each statement ranged from 1 (strongly agree) to 5 (strongly disagree). By adding four items, we constructed a 17-point continuous variable in which higher numbers indicate higher levels of discrimination intent at work. Cronbach  $\alpha$  for the variable was 0.83, indicating acceptable interitem reliability.

A general prejudicial attitude variable was developed based on the 12-item priority stigma indicator defined in the *HIV/AIDS-related Stigma and Discrimination Indicators Development Workshop Report*.<sup>39</sup> In the present study, we adapted nine items from the original scale, scored from 1 (strongly agree) to 5 (strongly disagree). The directions of some items were reversed so that the higher score indicates a higher degree of general prejudicial attitude. Acceptable consistency reliability was supported by an alpha value of 0.75 for the scale.

Perceived institutional support was measured by the 10 items listed in Table 1. The original responses for each statement were 1 (yes), 2 (no), or 3 (not sure). We revised the original scale to 0 (no), 1 (not sure), or 2 (yes) and developed a 28-point continuous scale in which higher numbers indicate higher levels of perceived institutional support. The interitem reliability of this scale is acceptable with a value of Cronbach  $\alpha$  at 0.70.

Perceived infection risk at work was constructed by the combination of three questions. Survey participants responded to each of the three questions with a response category ranging from 0 (not possible) to 3 (high possibility). In this scale, a higher number was associated with higher perceived risk of HIV infection at work ( $\alpha = 0.70$ ).

Knowledge of HIV/AIDS was measured by 10 questions; these questions have been used, together or separately, in many HIV studies to measure HIV-related knowledge. For each item, response was coded as 1 (correct answer) or 0 (incorrect answer or unknown). The scale for knowledge of HIV/AIDS was constructed as a sum of all 10 items.

We also included variables on respondents' demographic information such as age, gender, ethnicity (Han or minority), medical degree, professional category (doctor, nurse, or labora-

TABLE 1. HEALTH PROFESSIONAL SURVEY QUESTIONS AND SCALES USED IN THIS STUDY

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Discriminatory attitude at work
You would be willing to work with HIV-positive patients.
If you worked with HIV-positive patients, you would provide the same quality of care to them that you provide to other patients.
If the superior in your hospital asked you to do a physical examination of a known HIV-positive patients, you would be willing to do so.
If you worked with HIV-positive patients, you would interact with them just like other patients.
General prejudicial attitude
People who got HIV/AIDS through sex or drug use got what they deserved.
AIDS is a punishment for bad behavior.
People who behave promiscuously should be blamed for AIDS.
PLWHA should have the right to marry.
You feel afraid of PLWHA.
You would feel ashamed if someone you know got HIV/AIDS.
You would feel ashamed if someone in your family got HIV/AIDS.
You would not buy from a food vendor who has HIV/AIDS.
You would not share eating utensils with a PLWHA because you are afraid of HIV infection.
Perceived institutional support
There are always sterile rubber gloves available at your health care facility when you need them for work.
There are always sterile needles available at your health care facility when you need them for work.
There is always rubbing alcohol available at your health care facility when you need them for work.
There are always disposable containers available at your health care facility when you need them for work.
A working autoclave is always available for daily use at your health care facility.
There are always written HIV/AIDS treatment regimens available at your worksite.
There is HIV testing available for patients coming in for HIV testing at your health care facility.
Providers working at your health care facility that have a needle stick incident have access to free HIV testing.
There are AIDS treatments available for HIV patients at your health care facility.
You would have sufficient health insurance coverage if you were infected by HIV on your job.
Perceived infection risk at work
The possibility of having a dirty needle stuck into your skin on your job.
If you had a dirty needle stuck into your skin on the job the likelihood that you would get infected with HIV.
If you provide medical care to HIV positive patients, the likelihood that you would become infected with HIV.
HIV knowledge
Is AIDS curable?
Can HIV be transmitted through pregnancy?
Can HIV be transmitted through childbirth?
Can HIV be transmitted through breast-feeding?
Can mosquitoes transmit HIV??
Can HIV be transmitted through daily contacts, such as sharing public bathrooms?
Can HIV transmission be stopped by more nutrient intake?
Can physical exercise stop HIV transmission?
Is an HIV vaccine already available?
Are patients with sexually transmitted diseases more likely to get HIV?

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PLWHA, persons living with HIV/AIDS.

tory technician), personal contact with PLWHA (yes or no), and HIV-related training status (yes or no). The level of care or type of medical facilities the respondent had experience with was coded as provincial hospital, city hospital, county hospital, township hospital, or village clinic.

#### *Data analysis*

All analyses were performed using SAS statistical software (SAS Inc., Cary, NC). Descriptive statistics were used to describe the service

providers' demographic characteristics, medical education, level of care, profession, personal contact with PLWHA, and HIV-related training experiences. Pearson correlation coefficients were calculated to assess the relationship between discrimination at work, general prejudicial attitude, perceived institutional support, perceived infection risk, HIV knowledge and training, as well as demographic variables such as age and gender. Furthermore, a series of multiple regression analyses were conducted to examine associations between the level of discrimination at work, general pre-



dicial attitude, and perceived structural support, controlling for the simultaneous effects of participants' age, gender, ethnicity, medical education, personal contact with PLWHA, the level of care, and perceived risk of HIV infection. Regression coefficient estimation and their significant levels are described.

## RESULTS

Characteristics of the study participants are presented in Table 2. The sample was primarily female (74.4%) and of Han ethnicity (72.2%). Approximately 26% of the respondents were younger than 30 years old and 29% were 41 or older. More than 40% of the sample came from provincial hospitals or city hospitals, and slightly more than one half of all participants

were doctors. Among all participants, 45% reported having personal contact with HIV-positive individuals, and 68% reported receiving HIV-related training. At the time of the survey, only about 28% of the participants had received equal to or more than four years of medical education. The demographics of our participants were comparable to the 2003 data reported by the National Bureau of Statistics.<sup>40</sup>

Correlation coefficients of the identified variables are reported in Table 3. The level of discrimination at work reported by service providers was significantly correlated with their general prejudicial attitudes ( $r = 0.42, p < 0.001$ ) and perceived institutional support ( $r = -0.16, p < 0.001$ ). The correlation between discrimination at work and HIV-related training received by participants was significantly negative ( $r = -0.12, p < 0.001$ ). A service provider's general prejudicial attitude was significantly associated with the level of perceived infection risk at work ( $r = 0.14, p < 0.001$ ), HIV knowledge ( $r = -0.08, p < 0.001$ ), level of care at which the participant worked ( $r = 0.12, p < 0.001$ ), and HIV-related training ( $r = -0.09, p < 0.01$ ). Pearson correlation coefficients of a provider's prejudicial attitude toward respondents' age and gender were also significant. Perceived institutional support was significantly associated with the participants' age, gender, ethnicity, medical education, perceived infection risk at work, and level of care. The correlations between respondents' perceived institutional support and personal contact with PLWHA were also statistically significant. Respondents who came from provincial or city hospitals and those who reported personal contact with PLWHA reported a higher level of perceived infection risk at work. It was also noted that having a medical degree was positively correlated with more knowledge about HIV ( $r = 0.14, p < 0.001$ ), and those who had received HIV training tended to score higher on the scale measuring HIV knowledge ( $r = 0.09, p < 0.01$ ).

The results of multiple regression analyses are presented in Table 4. With these three regression models, we tried to answer the following questions: How do service providers' general prejudicial attitudes and their perceived institutional support influence their dis-

TABLE 2. SAMPLE DESCRIPTION (N = 1101)<sup>a</sup>

	% (n)
Age	
29 or younger	25.7 (280)
30–35	28.7 (312)
36–40	16.8 (183)
41 or older	28.8 (314)
Gender	
Female	74.4 (818)
Male	25.6 (282)
Ethnicity	
Han	72.7 (795)
Minority	27.3 (299)
Medical education	
Lower than associate medical degree	41.0 (450)
Associate medical degree	31.4 (345)
Medical degree or higher	27.6 (303)
Level of care	
Provincial hospital	22.8 (251)
City hospital	18.1 (199)
County hospital	36.4 (401)
Township hospital	13.4 (148)
Village clinic	9.3 (102)
Profession	
Doctor	50.6 (557)
Nurse	39.9 (439)
Laboratory technician	9.5 (105)
Personal contact with PLWHA	
Yes	45.1 (497)
No	54.9 (604)
HIV-related training	
Yes	68.1 (738)
No	31.9 (345)

<sup>a</sup>Total number may be less than 1101 because of missing cases.

PLWHA, persons living with HIV/AIDS.

TABLE 3. CORRELATION COEFFICIENTS AMONG SELECTED VARIABLES

	1	2	3	4	5	6	7	8	9	10	11	12
1. Discrimination at work	1.00											
2. General prejudicial attitude	0.42 <sup>a</sup>	1.00										
3. Perceived institutional support	-0.16 <sup>a</sup>	-0.05	1.00									
4. Perceived infection risk at work	0.06	0.14 <sup>a</sup>	0.11 <sup>a</sup>	1.00								
5. HIV knowledge	-0.01	-0.08 <sup>b</sup>	0.04	0.07 <sup>c</sup>	1.00							
6. Age	-0.05	0.15 <sup>a</sup>	0.12 <sup>a</sup>	-0.11 <sup>a</sup>	-0.04	1.00						
7. Male	-0.02	-0.10 <sup>a</sup>	-0.14 <sup>a</sup>	-0.16 <sup>a</sup>	-0.01	0.12 <sup>a</sup>	1.00					
8. Han	0.05	0.04	-0.09 <sup>b</sup>	-0.04	-0.02	0.09 <sup>c</sup>	-0.07 <sup>c</sup>	1.00				
9. Medical degree	0.04	0.02	0.15 <sup>a</sup>	0.11 <sup>b</sup>	0.14 <sup>a</sup>	-0.02	0.14 <sup>a</sup>	-0.06	1.00			
10. Provincial/city hospital	0.09 <sup>b</sup>	0.12 <sup>a</sup>	0.28 <sup>a</sup>	0.16 <sup>a</sup>	0.07 <sup>c</sup>	0.05	-0.04	0.05	0.30 <sup>a</sup>	1.00		
11. Contact with PLWHA	-0.03	0.06	0.23 <sup>a</sup>	0.13 <sup>a</sup>	0.09 <sup>b</sup>	0.03	-0.05	-0.10 <sup>a</sup>	0.18 <sup>a</sup>	0.36 <sup>a</sup>	1.00	
12. HIV training	-0.12 <sup>a</sup>	-0.09 <sup>b</sup>	0.30 <sup>a</sup>	-0.00	0.09 <sup>b</sup>	0.08 <sup>c</sup>	0.00	-0.03	-0.02	-0.01	0.01	1.00

<sup>a</sup> $p < 0.001$ .<sup>b</sup> $p < 0.01$ .<sup>c</sup> $p < 0.05$ .

crimination intent at work toward PLWHA? How are providers' demographics, work and training experience, HIV training and knowledge, and perceived infection risk at work associated with their general prejudicial attitude and their perceived institutional support?

Multiple regression of general prejudicial attitude shows that providers' HIV training and their perceived infection risk at work were important predictors for prejudicial attitude, as those who had received HIV-related training tended to report a significantly lower level of prejudicial attitudes ( $\beta = -0.10$ ), and those who perceived higher infection risk at work

were more likely to display a higher level of prejudicial attitude ( $\beta = 0.13$ ). Providers with more knowledge about HIV also tended to report a lower level of general prejudicial attitudes against PLWHA ( $\beta = -0.08$ ). Older respondents ( $\beta = 0.18$ ) and those who worked at provincial or city hospitals ( $\beta = 0.08$ ) reported higher general prejudicial attitudes than their younger counterparts and those who worked at county, township, or village medical facilities. Furthermore, male respondents reported a lower level of prejudicial attitudes against PLWHA than female respondents ( $\beta = -0.11$ ). Considering the connection many people make

TABLE 4. ESTIMATION RESULTS FROM LINEAR REGRESSIONS

Parameter	General prejudicial attitude	Perceived institutional support	Discrimination at work
Age	0.18 <sup>a</sup>	0.11 <sup>a</sup>	-0.10 <sup>a</sup>
Male	-0.11 <sup>a</sup>	-0.16 <sup>a</sup>	0.02
Han	0.01	-0.10 <sup>a</sup>	0.02
Medical degree	0.01	0.10 <sup>a</sup>	0.03
Provincial/city hospital	0.08 <sup>b</sup>	0.20 <sup>a</sup>	0.08 <sup>c</sup>
Personal contact with PLWHA	0.02	0.14 <sup>a</sup>	-0.05
HIV training	-0.10 <sup>c</sup>	0.29 <sup>a</sup>	-0.04
HIV knowledge	-0.08 <sup>c</sup>	-0.04	0.03
Perceived infection risk at work	0.13 <sup>a</sup>	0.03	-0.02
General prejudicial attitude			0.42 <sup>a</sup>
Perceived institutional support			-0.13 <sup>a</sup>
R <sup>2</sup>	0.08	0.24	0.21

<sup>a</sup> $p < 0.001$ .<sup>b</sup> $p < 0.05$ .<sup>c</sup> $p < 0.01$ .

PLWHA, persons living with HIV/AIDS.

between being HIV positive and being homosexual, this finding is consistent with previous reports that women are found to be more homophobic than men.<sup>41,42</sup>

The second column of Table 4 summarizes findings from regression of perceived institutional support, controlling for all selected independent variables. Service providers' HIV training was the most important predictor for perceived institutional support ( $\beta = 0.29$ ). Female participants ( $\beta = -0.16$ ) and those from provincial or city hospitals ( $\beta = 0.20$ ) tended to report a higher level of institutional support than others. In addition, respondents with personal contact with PLWHA ( $\beta = 0.14$ ), of older age ( $\beta = 0.11$ ), with minority background ( $\beta = -0.10$ ), and those with a medical degree ( $\beta = 0.10$ ) were shown to report higher institutional support regarding HIV. Significant zero-order correlation between perceived infection risk at work and perceived institutional support became insignificant while other variables were held constant.

The final and complete regression model of discrimination at work includes all predictors, general prejudicial attitude, and perceived institutional support. About 21% of the variance was explained by these predictors. Controlling for other variables, we found general prejudicial attitude against PLWHA was the most important factor in predicting discrimination at work, as the higher the general prejudicial attitude, the more likely the discrimination intent at work ( $\beta = 0.42$ ). Perceived institutional support remained significantly related to discrimination at work ( $\beta = -0.13$ ) in the multivariate analysis. It was unexpected to find that younger service providers were more likely to be discriminatory at work than older ones ( $\beta = -0.10$ ). Also, providers at provincial or city hospitals were significantly more likely to report higher levels of discrimination at work than those employed at other health care facility levels ( $\beta = 0.08$ ).

## DISCUSSION

HIV-related stigma in health care needs to be addressed at both individual and institutional levels. Although this study does not allow us to definitively identify the exact process of how

service providers' personal values and institutional factors influence discrimination toward PLWHA, three important findings in this study merit further consideration. First, multivariate analyses revealed that respondents' general view toward PLWHA and their perceived level of support from their institutions regarding protection procedures were both important predictors for discrimination at work. Second, the level of care in terms of medical facilities where providers work was related significantly to not only providers' perceived institutional support, but also their general and work-related discriminatory attitudes toward PLWHA. Third, perceptions of institutional support varied according to several individual characteristics such as age, gender, ethnicity, and training background.

The findings showed that the more institutional support providers were perceived to have, the less discrimination intent they would exhibit at work toward PLWHA. With access to more sufficient resources of preventive measures, such as sterile rubber gloves, working autoclaves, and access to free HIV testing for providers, the providers may feel less anxious about HIV infection, and therefore tend to have less discriminatory attitude toward PLWHA at work. These resources have made providers feel more comfortable with PLWHA patients and more likely to provide PLWHA with impartial medical treatment. Unlike the inverse relationship with perceived institution support, discrimination at work and providers' general prejudicial attitude were positively correlated. This finding is consistent with other studies in which providers' general prejudicial attitudes toward PLWHA were indicative of discriminatory tendencies at work, such as an unwillingness to work with PLWHA patients.<sup>10,12,16,17</sup>

An important observation is that HIV training and HIV knowledge may influence discrimination at work indirectly via general prejudicial attitudes and perceived institutional support. This finding may shed light on the mixed picture that emerges while examining the relationship between HIV-related stigma and HIV training or knowledge.<sup>9,15,25,26,43</sup> This study implies that HIV training and knowledge might not have direct impact on providers' discriminatory behavior at work, but they can in-

versely influence providers' general prejudicial attitudes toward PLWHA; also, HIV training is likely to help providers identify institutional policy and procedure support. These positive changes can in turn contribute to a willingness to work with PLWHA.

In China, the level of care at which services are provided presents quite different challenges for providers. The Chinese health care system is organized in a very hierarchical way: provincial, city, county, township, and village. Health care professionals in a village, township clinic, or county hospital typically have the most intimate relationships with patients at the local level, yet they have the least amount of medical training. Service providers in cities or provincial hospitals are likely to have professional medical training and receive referrals of PLWHA who are experiencing opportunistic infections or other illnesses that are difficult to treat. These providers at the provincial and city level hospitals are likely to be the ones responsible for implementing new government policies on HIV testing and counseling, universal precautions, and (when implemented) antiretroviral therapies. Furthermore, provincial and city hospitals are often the training bases for service providers from lower levels of medical facilities. Compared to lower levels of care (village, township, or county), provincial and city hospitals are much better staffed and equipped. Therefore, it is not surprising to see that service providers at these facilities reported better institutional support regarding protection procedures. Unexpectedly, the reported institutional support fails to translate to decreased discrimination intent at work for this population. The finding that service providers in provincial or city hospitals are more likely to report a discrimination tendency at work remains puzzling. While the finding may simply be an artifact of the regression analysis, an alternative explanation might be that service providers at higher levels of care were likely to be more forthcoming with their opinions. They may also be more experienced in academic surveys and have a greater understanding of study research ethics and therefore placed a greater amount of trust in the research staff. As a result, their answers may better reflect the real thinking of health care providers.

Another interesting finding relates to service providers' age. We speculated that, because discrimination at work was positively correlated with general prejudicial attitudes, older service providers would be more likely to report general prejudicial attitudes toward PLWHA. This, in fact, proved not to be the case. On the contrary, even though older providers tended to exhibit more general prejudicial attitudes, they reported less discrimination intent at work than their younger counterparts. One possible explanation could be that older service providers are often more experienced professionals and tend to follow the professional code of conduct more strictly. They may also be better informed of standard medical protection procedures and have easier access to institutional supports in health settings.

Some limitations of our data should be noted. To begin, the data were collected from a region with the highest reported HIV cases in China. Service providers in this area are likely to be better informed of issues related to HIV care and treatment than service providers from other parts of China. There should be caution in generalizing these findings to a different population or other geographic locations. In addition, this study relied entirely on self-report data, for which issues of accuracy of recall and veracity can always be raised. Moreover, this study assessed institutional support based on self-report; the lack of data on institutional indicators (e.g., related policies, procedures or protection equipment) limits the study's implications for future policy design and implementation. Nevertheless, our findings seem clear enough to encourage speculation about the need for onsite intervention against HIV-related stigma in health settings.

In conclusion, on the front line of the war against HIV/AIDS, health service providers are positioned to respond with needed services. Yet, HIV-related stigma and discrimination continue to impede an effective response for treatment and care for PLWHA worldwide. The impacts of the AIDS epidemic on the health care system and on health professionals are enormous. Understanding the various dimensions of HIV-related discrimination in health settings is the first step in successfully meeting this challenge.



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