



Evaluating Physicians' Intention to Discriminate Against Patients Living with HIV in Malaysia

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Abstract

People with HIV (PWH) in Malaysia experience high levels of stigma, which may act as a barrier to accessing healthcare. Stigma against PWH in medical settings is understudied in Malaysia. In the present study, we examine factors associated with physicians' intention to discriminate against PWH in Malaysia. A cross-sectional online survey was emailed to all 1431 physicians at two major university hospitals in Malaysia; 568 (39.6%) participants completed the survey and were included in this analysis. Measures included intention to discriminate against PWH, stigma-related constructs, and socio-demographic characteristics. Multivariate linear regression was used to identify factors associated with intention to discriminate against PWH. Participants were comprised of women (53.5%), Malays (43.1%), and Chinese (35.0%) with nearly 10 years of clinical experience. Most participants were from non-surgical specialties (77.6%). The final multivariate linear regression showed that physicians who expressed greater discriminatory intent against PWH also expressed more negative feelings toward PWH, more HIV-related shame, were more fearful of HIV, and believed that PWH do not deserve good care. Physicians from surgical-based specialties were also significantly more likely to endorse discriminatory intent toward PWH. Stigma and intentions to discriminate against a class of patients, including PWH, can undermine engagement in care, which is central to international HIV prevention and treatment strategies. Interventions that reduce stigma toward PWH among physicians are crucial to ensuring equitable and stigma-free healthcare.

Keywords HIV · Discrimination · Stigma · Malaysia · Physicians · Healthcare

Introduction

HIV remains a major public health challenge globally. As of 2015, there were an estimated 36.7 million people living with HIV (PWH) globally and 1.1 million AIDS-related

deaths [1]. At the same time, coverage of life-saving antiretroviral therapy (ART) remained woefully suboptimal, with only 17 million people worldwide currently receiving ART, or approximately 46% of all PWH [1]. In Malaysia, a multi-cultural Southeast Asian country of 31 million people, there were 90,603 PWH in 2015, or approximately 0.4% of the adult population [2]. HIV is concentrated among key populations in Malaysia, with the highest prevalence in men who have sex with men (MSM; 21.6%) [3], followed by people who inject drugs (PWID; 15.8%) [4], transgender women (12.4%) [5], and female sex workers (11.1%) [5]. Given the impact of ART on reducing morbidity and mortality of PWH, the World Health Organization (WHO) and Malaysia Ministry of Health guidelines recommended ART for all PWH, regardless of CD4 cell count [6]. Despite being available free of charge at most public hospitals and clinics, scale-up of ART in Malaysia remains extremely low, with only 27.6% of all PWH currently receiving ART. Initiating and retaining PWH on ART is a high priority for reducing

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mortality and preventing onward transmission. Although there are many barriers to linking PWH to ART, the WHO has identified HIV stigma and discrimination against PWH as a major challenge to HIV treatment and prevention [7].

Stigma refers to the social devaluation of a characteristic or attribute of an individual [8]. Among PWH, internalization of HIV-related stigma is associated with reduced disclosure of HIV status [9, 10], concealment of ART use [11], lower ART adherence [12], and depression [13]. Although there has been substantial research on the impact HIV stigma has on PWH, less attention has been given to the impact HIV stigma may have on healthcare providers' care-related decisions for PWH. In particular, understanding providers' intentions to discriminate, or act in unfair ways against PWH may be particularly important. In the context of healthcare, discrimination against PWH may take the form of lower quality medical care, withholding of important health information, deferral of ART, or denial of care altogether. Supporting the Theories of Reasoned Action and Planned Behavior [14, 15], empirical evidence demonstrates that behavioral intentions predict subsequent engagement in actual behaviors [16–18]. The current study therefore focuses on discrimination intent as a precursor to discrimination, which is often challenging to measure.

Physicians' intention to discriminate against PWH can be influenced by a number of factors, including their socio-demographic characteristics. For example, a study of 1165 medical and dental students in Malaysia found that females were more likely to endorse statements of discrimination intent against PWH than their male counterparts [19]. Similar research in China, however, found that healthcare providers who were male and older in age were more likely to discriminate against PWH [20].

Likewise, clinical characteristics of the healthcare provider may also influence discrimination intent against PWH. For example, healthcare workers in China who received specialized training in HIV, had more knowledge about HIV, and more contact with PWH, held less discrimination intent against PWH [20]. Similarly, more frequent contact with PWH may lead to more favorable attitudes toward PWH. For example, medical students in Malaysia who had more frequent contact with PWH during their education were found to hold less stigmatizing attitudes toward PWH [21] than their peers who had less or no contact. Alternatively, students less advanced in their training and dental students were more likely to endorse statements of discrimination intent against PWH [19].

Beyond socio-demographic and clinical characteristics, there are a number of stigma-related factors which may influence healthcare providers' intention to discriminate against PWH [19]. Fear of HIV, including the fear of becoming HIV-infected through occupational exposure (e.g., surgical specialities), has been linked to greater discriminatory intent

toward PWH in clinical settings [22]. Likewise, physicians who feel shame about PWH may be more likely to endorse discriminatory actions toward PWH [19]. Physicians may also believe that PWH do not deserve good quality care because of their HIV status or belonging to a key population at risk for HIV. Prejudice includes negative attitudes or feelings toward PWH, and stereotypes include often negative group-based beliefs about PWH that may be applied to individual PWH [19]. These factors may lead to discriminatory and poorer care to this group of patients. Previous studies done among healthcare providers in China and among medical and dental students in Malaysia showed fear of HIV, feelings of shame about HIV, and a belief that PWH do not deserve good medical care were associated with greater intention to discriminate toward PWH [19, 20]. Research with another stigmatized population, MSM, suggest that prejudice and stereotypes may also contribute to intentions to discriminate against patients among medical and dental students in Malaysia [23].

Study Objective

The objective of this study was to evaluate the impact that socio-demographic and stigma-related constructs have on physicians' intention to discriminate against PWH in Malaysia. Previous research on intention to discriminate against PWH in Malaysia has been restricted to medical and dental students [19, 21] and HIV specialists [24], with no insight on discrimination intent among a broader group of practicing physicians. Understanding intention to discriminate against PWH among practicing physicians provides additional insight on real-world experiences of healthcare providers and their patients. Moreover, unlike students, practicing physicians are responsible for patient care and have vastly greater experience in medicine than students. Such differences between physicians and students may engender important differences in their attitudes toward PWH, as well as their intention to discriminate against them. As such, we present findings from the only study of general physicians' intention to discriminate against PWH in Malaysia. Identifying the factors that contribute to physicians' intentions to discriminate against PWH within a healthcare context where HIV mortality and incidence continue to increase may provide valuable insight into how such attitudes may influence HIV-related outcomes.

Methods

A cross-sectional, online survey of all physicians employed at University Malaya (UM) and University Teknologi MARA (UiTM) medical centers, two major medical universities in Greater Kuala Lumpur, Malaysia, was conducted.

All physicians at the two hospitals were emailed an invitation that contained a link to the survey. Physician email addresses at each university were acquired through each department with the approval of the department head. All departments were included from each university, including surgery, orthopedics, anesthesiology, rehabilitation medicine, sports medicine, psychiatry, ear/nose/throat (ENT), ophthalmology, obstetrics and gynecology, primary care medicine, emergency medicine, pathology, radiology and oncology. Email invitations contained a complete description of the study and a link to the online survey, which directed them to a study information sheet that explained the eligibility criteria, and the risks and benefits of participation, prior to initiating the survey. All participants were informed that their participation was voluntary, anonymous and would have no impact on their employment status. Participants provided informed consent by clicking the phrase “I agree to participate in this research study.” Informed consent was obtained from all individual participants included in the study. The survey was administered through Qualtrics (Provo, Utah, USA), an internet-based survey software. Reminder emails were sent out to those who had not responded to the questionnaire on a weekly basis for 6 weeks. Participants were thanked for their time and given the opportunity to enter a lottery drawing to win a tablet computer or one of five portable mobile power banks.

Ethics

The study was approved by institutional review boards at the University of Malaya, Yale University, and the University Teknologi MARA.

Measures

Socio-Demographic and Clinical Characteristics

Socio-demographic characteristics were measured, including age, sex, ethnicity, religion, and years of practice in medicine. Current clinical status of participants was measured by their professional rank, including: house officer, medical officer, registrar, specialist and consultant. Area of medical specialization was assessed based on their field of practice, including: internal medicine, primary care medicine, emergency medicine, surgery, radiology, psychiatry, obstetrics and gynecology, anesthesiology, orthopedics, rehabilitation medicine, pathology, ophthalmology, sport medicine, ear nose and throat, and oncology. Area of specialization was further classified to surgical-based specialty, defined as those participants based in surgery, obstetrics and gynecology, orthopedics, ophthalmology, and ear, nose and throat and non-surgical based specialty.

Discrimination Intent

The primary outcome variable, intention to discriminate against PWH, was measured using the intention to discriminate at work subscale of the multidimensional HIV stigma scale [20]. This subscale had previously been adapted to the Malaysian context for use in a sample of medical and dental students [19, 21]. The subscale is comprised of four questions designed to measure discrimination intent toward PWH. Participants responded using a 5-point Likert-type scale ranging from ‘strongly disagree’ (1) to ‘strongly agree’ (5). An example item from this subscale includes, “I am willing to interact with HIV+ patients the same way I interact with other patients.” The scale showed strong internal consistency ($\alpha=0.93$).

Stigma-Related Measures

Participants also completed several additional stigma-related measures from the multidimensional HIV stigma scale. HIV-related prejudiced attitudes were measured using 4 items, including “People who got HIV/AIDS through sex and drug use got what they deserve” ($\alpha=0.10$). HIV-related internalized shame was measured using 3 items, including “I would be ashamed if I knew someone with HIV/AIDS” ($\alpha=0.84$). HIV-related fear was measured using 3 items, including “I would not share utensils with people living with HIV/AIDS” ($\alpha=0.81$). Belief that PWH deserve good care was measured using 3 items, including “People who got HIV/AIDS through drug use deserve good care” ($\alpha=0.83$). These subscales were measured using the same Likert-type scale ranging from ‘strongly disagree’ (1) to ‘strongly agree’ (5).

Attitudes toward HIV were further explored by several items intended to measure participants’ attitude toward PWH and other most at-risk populations, including PWID and MSM. Specifically, feeling thermometers were used to assess participants’ attitudes toward general patients, as well as PWH, PWID, and MSM. The feeling thermometers asked participants to rate how they feel about each group on a 100-point scale, ranging from 1 (very negative) to 100 (very positive). Lower or less-favorable attitudes toward these groups is expected to be inversely correlated with measures of HIV-related stigma, as well as discrimination intent. Feeling thermometers are a reliable tool for measuring prejudice [25] and have been previously used to examine attitudes toward PWH, PWID, and MSM in Malaysia [19, 21].

Last, we examined the extent to which participants endorsed stereotypes about PWH by asking participants to respond to four statements. Each statement asked “Most people who have HIV/AIDS are... prostitutes, promiscuous, homosexuals, and injection drug users” [21]. Participants responded using a Likert-type scale ranging from ‘strongly

disagree' (1) to 'strongly agree' (5). The questions showed good reliability ($\alpha = 0.81$).

Data Analysis

Descriptive analysis of the socio-demographic characteristics was conducted by reporting mean, standard deviation, and frequency values. Mean scores were computed for discrimination intent; the four stigma-related subscales; the three feeling thermometers; and HIV-related stereotypes. For discrimination intent, all items were reverse coded prior to scoring such that lower mean scores indicate lower levels of discrimination intent and higher scores indicate higher levels of discrimination intent.

First, bivariate associations were explored using Pearson correlations between the main outcome variable, discrimination intent, with the four stigma-related subscales; the three feeling thermometers; and HIV-related stereotypes. Second, a series of bivariate linear regressions were conducted between discrimination intent and all stigma-related covariates, followed by a simultaneous multivariate regression. Third, a hierarchical regression model was conducted with discrimination intent as the dependent variable in order to explore the additional variance explained in discrimination intent by stigma-related measure that is over and above that explained by the socio-demographic and clinical characteristics. In step one, all socio-demographic and clinical characteristics were entered into the equation (age, sex, ethnicity, years of practice in medicine, current clinical status, medical department, and being in a surgical-based specialty). In step two, all stigma-related measures were entered (PWH thermometer, PWID thermometer, MSM thermometer, HIV prejudice, HIV internalized shame, HIV fear, belief that PWH deserve good care, and HIV stereotypes). All analyses were conducted using IBM SPSS 23 (Chicago, IL, USA).

Results

Sample Characteristics

Of the 1431 physicians at UM ($n = 1097$) and UiTM ($n = 334$), the response rate was 41.6% ($N = 595$), with 568 (39.7%) providing complete data for analyses. Descriptive statistics for the sample are presented in Table 1. Participants' mean age was 34.7 years ($SD = 6.5$), with over half of participants being female (53.5%), ethnic Malay (43.1%) and Muslim (48.1%). Participants reported having practiced medicine for an average of 9.9 ($SD = 6.3$) years. The most common clinical status was medical officer (43.1%), followed by specialist (23.6%), registrar (16.7%), consultant (13.9%), and house officer (2.6%). Internal medicine (30.3%) was the most common medical specialization, followed by

Table 1 Characteristics of sample ($N = 568$)

Characteristics	% (n)
Mean age, years (<i>SD</i>)	34.7 (6.5)
Gender	
Male	46.5 (264)
Female	53.5 (304)
Ethnicity	
Malay	43.1 (245)
Chinese	35.0 (199)
Other	21.8 (124)
Religion	
Muslim	48.1 (273)
Buddhist	20.2 (115)
Other	31.7 (180)
Mean years of clinical practice (<i>SD</i>)	9.9 (6.3)
Clinical status	
House officer	2.6 (15)
Medical officer	43.1 (245)
Registrar	16.7 (95)
Specialist	23.6 (134)
Consultant	13.9 (79)
Area of specialization	
Internal medicine	30.3 (172)
Primary care medicine	10.4 (59)
Emergency medicine	8.5 (48)
Surgery	7.6 (43)
Radiology	7.4 (42)
Psychiatry	6.7 (38)
Obstetrics and gynecology	6.3 (36)
Anesthesiology	5.6 (32)
Orthopedics	4.4 (25)
Rehabilitation medicine	3.7 (21)
Pathology	2.6 (15)
Ophthalmology	2.5 (14)
Sports medicine	1.8 (10)
Ear nose and throat	1.6 (9)
Oncology	0.7 (4)
Surgical-based clinical care	
No	77.6 (441)
Yes	22.4 (127)

SD standard deviation

primary care (10.4%) and emergency medicine (8.5%) (see Table 1 for a complete list). Less than a quarter of participants (22.4%) were from surgical-based specialties.

Table 2 shows the descriptive statistics for intention to discriminate and all stigma-related constructs, as well as the bivariate Pearson correlations between those measures. As anticipated, the stigma-related constructs were both correlated with each other and with discrimination intent in the expected direction, with the exception of HIV prejudice.

Table 2 Correlations between stigma-related constructs

	Mean (SD)	1.	2.	3.	4.	5.	6.	7.	8.
1. PWH thermometer	66.4 (22.0)								
2. PWID thermometer	43.1 (27.0)	0.45*							
3. MSM thermometer	48.5 (30.9)	0.43*	0.51*						
4. HIV prejudice	2.9 (0.5)	-0.04	0.14*	-0.06					
5. HIV internalized shame	1.8 (0.8)	-0.37*	-0.23*	-0.30*	0.16*				
6. HIV fear	2.2 (0.9)	-0.36*	-0.21*	-0.29*	0.17*	0.68*			
7. HIV deserve good care	4.0 (0.8)	0.36*	0.22*	0.19*	0.03	-0.31*	-0.24*		
8. HIV stereotypes	2.4 (0.8)	-0.11*	-0.09†	-0.20*	0.17*	0.22*	0.27*	-0.91†	
9. HIV discrimination intent	1.6 (0.6)	-0.48*	-0.27*	-0.28*	0.04	0.45*	0.48*	-0.40*	0.14*

SD standard deviation, *PWH* people with HIV, *PWID* people who inject drugs, *MSM* men who have sex with men

† $p < 0.05$, * $p < 0.01$

HIV prejudice was positively correlated with the PWID feeling thermometer, HIV internalized shame, HIV fear, and HIV stereotype. Unexpectedly, there were no associations between HIV prejudice and the MSM feeling thermometer, belief that PWH deserve good care, and HIV discrimination intent.

The mean score for intention to discriminate was 1.6 ($SD = 0.6$), indicating that physicians generally disagreed that they would discriminate against PWH. Nonetheless, 304 participants (53.5%) had a score greater than 1.0, indicating the majority of physicians expressed some intention to discriminate. Furthermore, 23 participants (4.0%) had a score of 3.0 or higher, indicating a minority of participants expressed moderate to high discrimination intent. Mean scores on intention to discriminate did not differ significantly between either university hospital: UM ($M = 1.5$, $SD = 0.63$) and UiTM ($M = 1.6$, $SD = 0.68$), $t(566) = 1.24$, $p > 0.05$, *ns*.

Regarding the feeling thermometers, participants reported having the most favorable feelings toward general patients ($M = 78.7$; $SD = 19.5$), followed by PWH ($M = 66.4$, $SD = 22.0$), MSM ($M = 48.5$; $SD = 30.9$), and PWID ($M = 43.1$; $SD = 27.0$).

Table 3 shows the results of the bivariate and multivariate correlates of intention to discriminate against PWH. In the bivariate analysis, participants based in internal medicine reported lower levels of discrimination intent, while those in surgical-based specialties reported greater levels. Age, sex, ethnicity, years of practicing medicine, and clinical status were not significantly associated with discrimination intent. Among the stigma-related constructs, higher scores on the PWH thermometer, PWID thermometer, MSM thermometer, and PWH deserve good care were significantly associated with lower levels of intention to discriminate, while higher scores on HIV internalized shame, HIV fear, and HIV stereotypes were all significantly associated with higher levels of intention to discriminate. HIV prejudice, however, was not significantly associated with discrimination intent.

Several changes were observed in the multivariate regression analysis. No socio-demographic characteristics were independently correlated, but being in a surgical-based specialty remained significant. Among the stigma-related constructs, however, the PWID thermometer, MSM thermometer, and HIV stereotypes all became non-significant, while the PWH thermometer, HIV internalized shame, HIV fear, and HIV deserve good care remained significantly associated with intention to discriminate against PWH.

Last, we examined the variance in discrimination intent that was explained by the socio-demographic, clinical and stigma-related constructs in the multivariate regression. In step 1, the socio-demographic constructs did not explain a significant portion of the variance in discrimination intent, $R^2 = 0.013$, $F(9,552) = 0.78$, $p > 0.05$, *ns*. In step 2, the stigma-related constructs were found to explain a significant portion of the variance in discrimination intent over and above the socio-demographic constructs, $R^2 = 0.397$, $R^2\Delta = 0.384$, $F(17,544) = 43.3$, $p < 0.001$, indicating that the stigma-related constructs explained approximately 39.7% of the variance in discrimination intent.

Discussion

To our knowledge, this is the first study to examine the role stigma-related factors play in physicians' intention to discriminate against PWH within the Malaysian healthcare context. Our study examined the attitudes of 568 physicians at two major universities in Kuala Lumpur, Malaysia's most densely populated city and the epicenter of the national HIV epidemic. Our findings suggest that socio-demographic factors of physicians play no role in explaining intention to discriminate against PWH. Physicians in surgical-based specialties, however, express greater discrimination intent. Stigma-related constructs played a larger role in physician's intention to discriminate. Specifically, doctors who reported

Table 3 Bivariate and multivariate correlates of HIV discrimination intent

	Bivariate regression				Multivariate regression			
	<i>B</i>	SE	<i>t</i>	<i>p</i>	<i>B</i>	SE	<i>t</i>	<i>p</i>
Socio-demographic and clinical characteristics								
Age	0.00	0.00	−0.00	0.944	−0.01	0.01	−0.39	0.697
Male	−0.01	0.05	−0.16	0.875	0.03	0.05	0.75	0.456
Malay	−0.01	0.05	−0.09	0.927	0.04	0.10	0.43	0.669
Chinese	0.07	0.06	1.27	0.204	0.06	0.07	0.79	0.432
Muslim	−0.01	0.05	−0.22	0.827	0.08	0.11	0.75	0.455
Buddhist	0.08	0.07	1.25	0.210	0.03	0.07	0.40	0.688
Years of practice	−0.00	0.00	−0.02	0.985	0.01	0.02	0.32	0.748
Clinical status	−0.01	0.02	−0.61	0.545	0.04	0.03	1.28	0.202
Internal medicine	−0.12	0.06	−2.16	0.031	0.06	0.05	0.05	0.240
Surgical-based specialties	0.16	0.06	2.54	0.011	0.11	0.06	2.01	0.045
Stigma-related constructs								
PWH thermometer	−0.01	0.00	−12.89	<0.001	−0.01	0.00	−6.04	<0.001
PWID thermometer	−0.01	0.00	−6.62	<0.001	−0.00	0.00	−0.72	0.471
MSM thermometer	−0.01	0.00	−6.96	<0.001	−0.00	0.00	−0.01	0.992
HIV prejudice	0.06	0.05	1.06	0.291	−0.04	0.05	−0.90	0.367
HIV internalized shame	0.37	0.03	11.88	<0.001	0.09	0.04	2.24	0.026
HIV fear	0.34	0.03	13.11	<0.001	0.20	0.03	5.85	<0.001
HIV deserve good care	−0.33	0.03	−10.52	<0.001	−0.18	0.03	−5.87	<0.001
HIV stereotypes	0.11	0.03	3.38	0.001	0.00	0.30	0.00	0.997

PWH people with HIV, *PWID* people who inject drugs, *MSM* men who have sex with men

more negative attitudes toward PWH, greater feelings of HIV-related shame, greater fear of HIV, and less agreement that PWH deserve quality medical care expressed greater intention to discriminate against PWH.

This study extends our previous research which examined the same socio-demographic and stigma-related constructs impact on intention to discriminate against PWH among medical and dental school students in Malaysia [19, 21] – the next generation of physicians. Understanding the impact physicians' attitudes may have on healthcare-related decisions for PWH is an important area of research, especially given their role in providing access to lifesaving ART medications. Unlike students, physicians in this study had markedly longer contact with patients and consequently reported markedly lower levels of intention to discriminate ($M = 1.6$, $SD = 0.64$) against PWH compared with the medical and dental students ($M = 2.14$, $SD = 0.71$). This difference may be due to physicians having more clinical experience and more frequent contact with PWH. This is consistent with previous literature which shows contact with outgroup members to be associated with more favorable attitudes toward those individuals [26, 27]. This increased contact and experience may help to dismantle stereotypes and negative attitudes which may be held about PWH. Furthermore, compared with medical and dental students, physicians' knowledge about HIV, including how it is transmitted and how to provide HIV-specific medical-care, may also

explain the more favorable attitudes toward PWH and, in turn, lower intention to discriminate. Similar findings have been observed among pharmacists and health science students in South America [28] and the general population in Hong Kong [29], which found higher HIV-related knowledge was associated with lower stigmatizing attitudes toward PWH. Despite having found generally low levels of intention to discriminate in the present study, 3.1% of participants reported a mean score of 4 or greater on the intention to discriminate subscale, indicating a small subset of participants were highly intent on discriminating against PWH. Additionally, whereas socio-demographic constructs played a moderate role in the medical and dental students intention to discriminate against PWH in previous work [19], socio-demographic attributes played a comparatively minor role among physicians in the present study. Specifically, medical and dental students who were female and earlier in their training held greater intentions to discriminate against PWH, however, the present study found no differences by gender or years of practice in both the bivariate or multivariate linear regressions, suggesting that over time the influence of socio-demographic factors on discrimination intent may become reduced or eliminated altogether. This may be due to the fact that practicing physicians are adhering to the ethical code and professionalism. The results from this study, which explored on different subscales of HIV stigma-related constructs will help to better understand which is associated

with the discrimination intent toward PWH. It also will help us to pinpoint and focus on the specific areas when developing intervention strategies to reduce stigma and ameliorate discrimination intent among physicians.

Interestingly, doctors from surgical-based specialties held greater discrimination intent compared to non-surgical based practitioners. Doctors from these specializations may perceive themselves at greater risk of occupational exposure to HIV and other blood borne pathogens during more invasive surgical procedures. This difference may also be due to a lack of experience in caring for PWH as these doctors are less likely to have ongoing, routine contact with PWH compared with their counterparts in primary care and internal medicine. Alternatively, doctors in surgical-based specialties may be less exposed to ongoing training in HIV medicine as their primary focus is narrow to their area of specialization. Improvement of HIV knowledge for doctors in surgical-based specialties, as well as others, through continuing medical education is one strategy that may lead to less HIV stigmatizing attitudes and ultimately lower discrimination intent. Likewise, fear of occupational transmission of HIV may also be addressed through strong institutional support, such as hospitals providing thorough training in good practices for infection control and access to resources to practice universal precautions, such as latex gloves, eye protection, and other clinical tools.

One unexpected finding from the present study was the lack of a significant correlation between HIV prejudice and discrimination intent, a correlation which was significant in the study of medical and dental students [19]. Practicing physicians are following the professional code of conduct, therefore, despite them exhibiting a prejudicial attitude they did not exhibit discrimination intent toward PWH. This subscale also showed an unexpected association with PWID thermometer: a positive relationship which suggests a more positive feeling to PWID held more prejudice toward them.

Limitations

There are several important limitations to the present results. First, only physicians from university-based hospitals were included in the study. Doctors based in major medical centers, such as university hospitals, may be more likely to gain experience and knowledge about PWH and HIV-related clinical care compared with doctors from less advanced medical centers. Given the increased exposure to HIV patients in university-based hospitals, it is likely that these physicians would be less discriminatory based on evidence from the contact hypothesis [30] and intergroup contact theory [31], which proposes that individuals with increased and potentially positive experiences with members of outgroups would result in lower prejudice and less discriminatory intent. For example, findings from Malaysia suggest that medical

students hold the most negative feelings toward MSM [21] when compared to their feelings about other key populations (i.e., PWID, PWH), yet HIV experts who have more contact with MSM express relatively few negative feelings toward MSM, including their willingness to treat them for HIV [24]. Thus, findings from academic hospitals in Malaysia likely represent the best case scenario. Nonetheless, future studies should examine how physicians' intention to discriminate may differ across varying types of medical centers.

Second, PWH routinely encounter other types of health-care professionals during the course of their care, including medical assistants, nurses, nurse practitioners, and physician assistants. The present study does not provide data on how intention to discriminate against PWH may manifest among differing types of healthcare providers. Third, the response rate from doctors in internal medicine was higher compared to the other specialties. As a result, doctors based in internal medicine may be overrepresented in the present study. Though the response rate is in the acceptable range, non-responders may have held markedly different views toward PWH than those who responded. Additionally, the current study focused on discrimination intent, which avoided recall bias inherent in asking about past behaviors related to discrimination. Given social desirability bias when proposing discrimination intent, the findings are conservative. Future work, however, may focus on actual engagement in discrimination.

Understanding the impact HIV stigma in healthcare settings has on patient care is a critically important question. This is especially true in Malaysia where it has already been established that HIV experts differentially discriminate against key populations of PWH, including PWID, prisoners, alcohol users and those without social support, for whom they would withhold lifesaving ART [24]. There is a large gap of knowledge on HIV stigma and discrimination intent among physicians in Malaysia and physicians are the gatekeepers to HIV treatment and prevention. Future research should also explore PWH's experiences of discrimination from healthcare providers. There was evidence from other studies which showed that PWH experience discrimination in healthcare settings in Thailand [32] and Italy [33], but no such study has been conducted in Malaysia. The experience of discrimination may adversely impact the quality of care provided to PWH including a loss of trust in their physician and reduce adherence to treatment [33].

Conclusions

Stigma and discrimination against PWH occurring in the context of patient care can result in adverse health outcomes for PWH. The present study demonstrated that HIV stigma-related factors were the primary factors responsible

for variations in physicians' intention to discriminate against PWH, a finding which is consistent with previous research on discrimination intent among medical and dental students [19]. As such, interventions to reduce intention to discriminate against PWH should focus on efforts to reduce HIV stigma-related attitudes among healthcare providers. Such interventions could be deployed in primary medical education curriculums for students in medicine and other healthcare professional training programs and in continuing medical education programs for practicing physicians and medical professionals.

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Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interest.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent Informed consent was obtained from all individual participants included in the study.

References

- UNAIDS. UNAIDS Global AIDS Update 2016. 2016. http://www.unaids.org/sites/default/files/media_asset/global-AIDS-updat-e-2016_en.pdf Accessed 11 Nov 2016.
- Ministry of Health Malaysia. The Global AIDS Response Progress Report 2016: Malaysia. 2016. http://www.moh.gov.my/images/gallery/Report/Malaysia%20GARPR%202016_Final.pdf Accessed 1 Sept 2018.
- Ministry of Health Malaysia. Results from the integrated biobehavioral survey: 2018 [unpublished data]. Kuala Lumpur: Ministry of Health; 2018.
- Bazazi AR, Crawford F, Zelenev A, Heimer R, Kamarulzaman A, Altice FL. HIV prevalence among people who inject drugs in greater Kuala Lumpur recruited using respondent-driven sampling. *AIDS Behav.* 2015;19(12):2347–57.
- Wickersham JA, Gibson BA, Bazazi AR, et al. Prevalence of Human immunodeficiency virus and sexually transmitted infections among cisgender and transgender women sex workers in greater Kuala Lumpur, Malaysia: results from a respondent-driven sampling study. *Sex Transm Dis.* 2017;44(11):663–70.
- World Health Organization. *Guideline on when to start antiretroviral therapy and on pre-exposure prophylaxis for HIV.* World Health Organization, Geneva, Switzerland. Retrieved December 20, 2016, from: <http://www.who.int/hiv/pub/guidelines/earlyrelease-arv/en/2015>.
- World Health Organization. *Global HIV/AIDS Response: Epidemic update and health sector progress towards Universal Access: Progress report 2011.* World Health Organization, Geneva, Switzerland. Retrieved February 20, 2016, http://www.who.int/hiv/pub/progress_report2011/en/2011.
- Goffman E. *Notes on the Management of Spoiled Identity.* 1st Touchstone Edition ed. New York: Simon & Schuster; 1963.
- 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):466–71.
- Wolitski RJ, Pals SL, Kidder DP, Courtenay-Quirk C, Holtgrave DR. The effects of HIV stigma on health, disclosure of HIV status, and risk behavior of homeless and unstably housed persons living with HIV. *AIDS Behav.* 2009;13(6):1222–32.
- Mills EA. Briefing—from the physical self to the social body: expressions and effects of HIV-related stigma in South Africa. *J Commun Appl Social Psychol.* 2006;16:498–503.
- Bogart LM, Wagner GJ, Green HD Jr, Mutchler MG, Klein DJ, McDavitt B. Social network characteristics moderate the association between stigmatizing attributions about hiv and non-adherence among black americans living with HIV: a longitudinal assessment. *Ann Behav Med.* 2015;49(6):865–72.
- Mitzel LD, Venable PA, Brown JL, Bostwick RA, Sweeney SM, Carey MP. Depressive symptoms mediate the effect of hiv-related stigmatization on medication adherence among hiv-infected men who have sex with men. *AIDS Behav.* 2015;19(8):1454–9.
- Ajzen I. The theory of planned behavior. *Organ Behav Human Decis Proces.* 1991;50(2):179–211.
- Fishben M, Ajzen I. *Belief, attitude, intention and behavior: An introduction to theory and research.* Reading: Addison-Wesley; 1975.
- Ajzen I, Fishbein M. Attitudinal and normative variables as predictors of specific behaviors. *J Pers Soc Psychol.* 1973;27:41–57.
- Hagger MS, Chatzisarantis NL. Integrating the theory of planned behaviour and self-determination theory in health behaviour: a meta-analysis. *Br J Health Psychol.* 2009;14(Pt 2):275–302.
- Schifter DE, Ajzen I. Intention, perceived control, and weight loss: an application of the theory of planned behavior. *J Pers Soc Psychol.* 1985;49(3):843–51.
- Earnshaw VA, Jin H, Wickersham J, Kamarulzaman A, John J, Altice FL. Exploring intentions to discriminate against patients living with HIV/AIDS among future healthcare providers in Malaysia. *Trop Med Int Health.* 2014;19(6):672–9.
- Stein JA, Li L. Measuring HIV-related stigma among Chinese service providers: confirmatory factor analysis of a multidimensional scale. *AIDS Behav.* 2008;12(5):789–95.
- Jin H, Earnshaw VA, Wickersham JA, et al. An assessment of health-care students' attitudes toward patients with or at high risk for HIV: implications for education and cultural competency. *AIDS Care.* 2014;26(10):1223–8.
- Reis C, Heisler M, Amowitz LL, et al. Discriminatory attitudes and practices by health workers toward patients with HIV/AIDS in Nigeria. *PLoS Med.* 2005;2(8):e246.
- Earnshaw VA, Jin H, Wickersham JA, et al. Stigma toward men who have sex with men among future healthcare providers in malaysia: would more interpersonal contact reduce prejudice? *AIDS Behav.* 2016;20(1):98–106.
- Ferro EG, Culbert GJ, Wickersham JA, et al. Physician Decisions to Defer Antiretroviral Therapy in Key Populations: Implications for Reducing Human Immunodeficiency Virus Incidence and Mortality in Malaysia. *Open forum infectious diseases.* Winter 2017;4(1):ofw219.
- Alwin DF. Feeling thermometers versus 7-point scales: which are better? *Sociol Methods Res.* 1997;25:318–40.

26. Pettigrew TF, Tropp LR. A meta-analytic test of intergroup contact theory. *J Pers Soc Psychol.* 2006;90(5):751–83.
27. Pettigrew TF, Tropp LR. How does intergroup contact reduce prejudice? Meta-analytic tests of three mediators. *Eur J Social Psychol.* 2008;38:22–34.
28. Balfour L, Corace K, Tasca GA, Best-Plummer W, Macpherson PA, Cameron DW. High HIV knowledge relates to low stigma in pharmacists and university health science students in Guyana, South America. *Int J Infect Dis.* 2010;14(10):e881–7.
29. Lau JT, Tsui HY. Discriminatory attitudes towards people living with HIV/AIDS and associated factors: a population based study in the Chinese general population. *Sex Trans Inf.* 2005;81(2):113–9.
30. Allport GW. *The nature of prejudice.* Cambridge: Perseus Books; 1954.
31. Pettigrew TF. Intergroup contact theory. *Annu Rev Psychol.* 1998;49(1):65–85.
32. Giuliani M, Lajolo C, Rezza G, et al. Dental care and HIV-infected individuals: are they equally treated? *Commun Dent Oral Epidemiol.* 2005;33(6):447–53.
33. Rungsyanont S, Vacharotayangul P, Lam-Ubol A, Ananworanich J, Phanuphak P, Phanuphak N. Perceived dental needs and attitudes toward dental treatments in HIV-infected Thais. *AIDS care.* 2012;24(12):1584–90.

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