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Healthcare Student Attitudes Toward Vulnerable Patient Populations: Potential Impact For Perpetuating Suboptimal Care

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Master of Public Health Thesis

HEALTHCARE STUDENT ATTITUDES TOWARD VULNERABLE PATIENT
POPULATIONS: POTENTIAL IMPACT FOR PERPETUATING SUBOPTIMAL CARE

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Abstract

Objective: Stigma endorsed by healthcare providers has been found to be a barrier to care for vulnerable populations, including HIV-infected, people who inject drugs (PWID), and men who have sex with men (MSM) in multiple clinical contexts. We therefore sought to better understand the extent to which stigma is levied toward these three populations by medical and dental students.

Design: This cross-sectional study assessed the attitudes of 1,296 medical and dental students towards HIV-infected, PWID, and MSM patients.

Methods: Students were asked to score their attitudes towards these patient groups using a feeling thermometer, indicating their attitudes on a sliding scale from 0, meaning very negative, to 100, meaning very positive.

Results: The mean attitude score towards the general patient population (M = 76.50, SD = 20.35) was significantly higher than the scores for HIV-infected patients (M = 54.04, SD = 20.99), PWID patients (M = 37.50, SD = 24.41), and MSM patients (M = 32.13, SD = 29.33).Further, certain demographic variables, most notably religion, ethnicity, and personally knowing someone of these populations, were associated with significant differences in attitudes.

Conclusion: Healthcare students represent the next generation of clinicians who will be responsible for HIV prevention and treatment efforts in the future. Our findings suggest that negative attitudes towards these patients is extremely high, and it is therefore crucial to design interventions to ameliorate the negative attitudes of medical students towards vulnerable populations.

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Introduction

Stigma, or social devaluation and discrediting associated with a mark, characteristic, or attribute [1] within the healthcare sector is a salient barrier for marginalized populations to accessing and utilizing health services [2-5]. A growing body of literature suggests that individuals who harbor negative attitudes toward their patients provide them suboptimal care [6, 7]. Therefore, the impact of stigma needs to be addressed in order to provide an equitable, holistic standard of care to the entire public [8]. This is particularly true in the case of HIV, where it is crucial within the Seek, Test and Treat Strategy to improve identification of HIV, link to care and antiretroviral therapy and ultimately to reduce transmissions to others from individuals who might otherwise avoid healthcare and prevention systems, irrespective of the route by which they acquired it. Stigma towards marginalized populations is high in many places of the world and undermines efforts aimed at detection and treatment [9, 10]. For example, healthcare workers who hold negative attitudes towards HIV-infected, PWID, and MSM patients have been reported to discriminate against these patients by providing substandard care. Further, HIV-infected, PWID, and MSM patients who are discriminated against or perceive discrimination from the healthcare establishment may choose not to utilize care to avoid future experiences of discrimination [11, 12]. In the current work, we assess the attitudes of medical and dental students, the future healthcare providers in Malaysia, towards patients who are HIV-infected, PWID, or MSM to better understand the extent to which these characteristics are stigmatized by healthcare students.

The extents to which these populations are stigmatized have been investigated in several contexts [3, 6, 7, 13-16], yet little is known about healthcare-related stigma among those living with HIV/AIDS (PLWHA), PWID, and MSM in Malaysia, a country where HIV is primarily transmitted among PWIDs, but where HIV incidence among MSM is climbing rapidly [17].

Properly training healthcare professionals to provide care for PLWHA is imperative for patient health because the chronic nature of HIV demands continuous attention [18]. In addition, properly training healthcare professionals to provide care for those at highest risk, especially PWID and MSM patients, is critical to ensure that efforts at HIV detection and linkage to HIV care are successful. The goal of this work is therefore to assess the attitudes that medical and dental students harbor towards HIV-infected, PWID, and MSM patients to better understand the extent to which stigma may impair healthcare delivery in Malaysian healthcare settings, and to identify how they vary by socio-demographics and other characteristics in order to develop stigma-ameliorating interventions.

Methods

Participants and Procedures. A cross-sectional study of medical and dental students was conducted in eight Malaysian universities from May to October 2012: University of Malaya, National University of Malaysia, National University of Malaysia, International Islamic University Malaysia, and University Malaysia Sarawak, Penang International Dental College, Universiti Teknologi MARA Malaysia, and Universiti Sains Malaysia, where all medical and dental training is taught in English. The study population consisted of all undergraduate level medical and dental students pursuing

either a Bachelor of Medicine Bachelor of Surgery (MBBS) or a Bachelor of Dental Surgery (BDS). Data collection deployed a survey developed for this study that quantifies levels of stigma, including negative attitudes, of medical and dental students towards general medical, HIV-infected, PWID, and MSM patients. This online survey, which required approximately 30 minutes to complete, was uploaded onto Qualtrics Survey Tool and distributed to the students' university emails from their respective university administrative office. Students were informed that participation was completely voluntary, that their answers would be kept anonymous, and that their answers would never jeopardize their student status. No incentives were provided; however, we encouraged the students to participate by indicating that their responses may contribute to improving healthcare and education in Malaysia. The study was approved by institutional review boards (IRB) at Yale University and at each IRB at all of the participating universities.

Measures. Attitudes towards HIV-infected, PWID, MSM, and general medical patients were measured using "feeling thermometers", which asked students to score their attitudes towards each patient population on a scale from 1, meaning very negative, to 100, meaning very positive. Feeling thermometers are used to measure attitudes towards stigmatized groups, and were used to score each of the four patient populations because the endorsement of stigma is characterized in part by decreased affect [19, 20]. Lower scores on feeling thermometers indicate less positive attitudes, or greater stigma, towards the measured group. Additionally, participant demographic information was collected, including sex, age, religion, ethnicity, year of study, pre-university qualifications, and whether students personally knew someone who was HIV-

infected, an PWID, or an MSM. All Malays living in Malaysia are required by law to practice Islam, so it is possible that students who indicated their ethnicity to be Malay and those who are affiliated with Islam are very similar populations, as 99.9% of Malay students indicated that they are Muslim.

Data Analysis. All data were exported from the Qualtrics Survey Tool's database to SAS. All analyses were performed using SAS version 9.2. This study is an analysis of part of the data collected with the survey questionnaire, specifically the demographic information of the students and their responses to the feeling thermometers. Univariate analyses were performed to summarize the study population's demographic information, as well as the primary dependent variables' values. Mean attitude scores were calculated, and one-way analysis of variance/Duncan (ANOVA) tests were used to compare the attitude scores associated with each of the three patient groups and the general medical comparison group. General linear models were created to identify differences in levels of stigma and attitudes when stratified by the independent variables. The number of respondents in each analysis may not equal to 1,296 due to missing data.

Results

Emails inviting participation were sent to a total of 3,191 students (1,149 medical and 2042 dental students), with 1,296 students (40.6%) responding to the survey [486 medical (42.5%), 658 dental (57.5%), and 152 who did not report the degree which they are pursuing]. Table 1 describes the characteristics of the 486 medical and 658 dental students who participated in the survey, of which 793 (68.3%) were female. The

average age of the participants was 22.4 years (SD 1.65), ranging from 19 to 27. 64.1% of the students practiced Islam and 62.1% of the population were Malay ethnicity. A minority of students personally knowing someone with HIV/AIDS (12.5%), personally knowing someone who is a PWID (17.9%), and personally knowing someone who is a MSM (13.7%). Of the two pre-university systems of admission to Malaysian universities, the majority of the students entered university through a one year matriculation program (88.X%), and the rest received their university eligibility by taking the Sijil Tinggi Persekolahan Malaysia, a pre-university examination. The average year of study in university was 3.31 years (SD 1.43), and the majority of students have begun clinical training (65.8%).

Figure 1 compares the mean scores towards each of the types of patients assessed, comparing medical with dental students. Overall the mean attitude scores were significantly higher for the general patient population (M = 76.50, SD = 20.35), and significantly lower for HIV-infected patients (M = 54.04, SD = 20.99), PWID patients (M = 37.50, SD = 24.41), and MSM patients (M = 32.13, SD = 29.33).

In the ANOVA subgroup analyses, the participants were stratified by degree, religion, gender, year of study, if they had started clinical training, if they personally know someone who is HIV-infected, a PWID, a MSM (Table 2). The medical students' mean attitude scores towards treating general patients, HIV-infected patients, and PWID patients were statistically more positive than those of dental students. Religion, however, did not affect the students' attitudes towards HIV-infected or general patients; however, it was significantly different for attitudes towards MSM and PWID with Muslim

students reporting significantly more negative attitudes towards MSM patients (24.02), compared to other religions. Similarly, Buddhists self-reported the most negative attitudes towards PWID patients (33.56) compared to the other groups. No significant differences in attitudes towards HIV-infected, PWID, or general patients were identified when the study population was stratified by student ethnicity; however, the mean score for Malay students towards MSM patients (24.01) was significantly more negative than the scores of Chinese students (43.78), Indian students (51.70), and students of other ethnicities (42.30). Students who personally knew someone from within the marginalized community were significantly more likely to report a more positive attitude toward group compared to their counterparts who did not.

In order to determine if direct clinical experiences influenced attitudes towards various types of patients, we found no differences in attitudes across the five years of schooling towards any of the patient populations except for towards MSM patients where X was more negative than Y.

Moreover, students who have already begun clinical training reported more positive attitudes towards MSM patients (34.11) compared to pre-clinical students (28.17). No statistically significant differences in attitudes were found when stratified by sex towards any of the patient populations except for HIV-infected patients, towards which male students had more positive attitudes (57.08) than female students (52.67).

Discussion

The current study evaluated attitudes of Malaysian medical and dental students towards HIV-infected, PWID, and MSM patients. Results demonstrate that medical and

dental students endorse poorer attitudes towards HIV-infected, PWID, and MSM patients in comparison to general patients. Attitudes toward MSM and PWID patients, the groups at highest risk for HIV in Malaysia, were particularly low among medical and dental students. Results further demonstrate that attitudes vary by demographic characteristics of students, including religion and ethnicity. Importantly, personally knowing someone from these populations significantly improved the attitude toward them.

Improving the attitudes of medical and dental students towards HIV-infected, PWID, and MSM patients is integral for the public health of Malaysia, because they represent the next generation of healthcare workers that will be responsible for providing care to these populations. Results suggest that stigma towards these patients is high, and therefore designing interventions to ameliorate the negative attitudes of students towards HIV-infected, PWID, and MSM patients is critical. Fortunately, results also suggest two opportunities for intervention.

Research suggests that stigma can interfere with patients engaging in care, and has been well documented among people who access mental health services. There is a large body of research on the mechanisms in which the stigmatization of mentally ill patients negatively impacts their care, primarily, being given a stigmatized label has been found to diminish self-esteem of patients, which impedes treatment participation [21]. Knowledge gained through researching strategies to reduce the stigmatization of mental illness and to ameliorate the consequences of mental illness stigma may aid in the development of interventions to reduce stigma among other patient populations.

First, the results of this study reinforce the contact hypothesis, which posits that increasing exposure of one population to another improve relations between the two [19, 20]. Students who personally know patients who are HIV-infected, PWID or MSM have significantly more positive attitudes towards them compared to students who do not. The differences in attitudes toward HIV-infected, PWID and MSM patients may be compelling enough to warrant curriculum changes, specifically increasing clinical exposure to these vulnerable populations.

Second, the results of this study indicate that religion and ethnicity are strongly associated with differences in attitudes toward MSM patients. Students who are Malay self-reported significantly more negative attitudes towards MSM patients. Structuring interventions tailored for Muslim students may have great potential in improving the student populations' overall attitudes towards MSM patients, since the majority of the Malaysian population is Muslim. Fostering favorable attitudes toward traditionally stigmatized groups, however, is not an easy task, especially when certain stigmatized behaviors conflict with religious beliefs. The influence of religious leaders may be the key to improving attitudes toward stigmatized populations and to increasing access to healthcare [22]. An example of the impact religious leaders can have on access to healthcare is the way Muslim religious leaders responded to the alarming rates of opioid use and injection of drugs in Malaysia. In 2012, a mosque located in Kuala Lumpur began offering methadone treatment for people who abuse opioids [23]. This partnership between the health sector and religious leadership emphasizes the impact that a collaborative effort can make in public health.

A possible approach to improving attitudes of medical and dental students towards treating vulnerable populations is by modeling a 'popular opinion leader' intervention [24]. This type of intervention is based on the social diffusion theory, which explains that behavioral changes in a population can diffuse to others if influential members of the community endorse this behavior change. If popular opinion leaders in a medical or dental school are willing to adopt and support more positive attitudes toward treating stigmatized population, there is a potential that other students' attitudes may also improve.

There are several limitations of this study that must be acknowledged. This study is cross-sectional, and does not explain the causality of the associations that were identified. Although there were multiple statistically significant findings, additional studies are required to determine the relationship between demographic variables and attitudes towards HIV-infected, PWID, and MMS patients. Another limitation of this study is that the results cannot be extrapolated to people who are not Malaysian medical or dental students. The aim of this study was to assess the attitudes of a very specific population whose attitudes may not be representative of the attitudes of the general population. The sample of students who participated in this study may not be fully representative of the study population, as only 40.6% of those contacted responded. However, 40.6% is a respectable response rate, given the survey was voluntary and non-incentivized. Despite these limitations, this study represents the first known investigation into attitudes of Malaysian medical and dental students from multiple universities towards HIV-infected, PWID, and MSM patients. By documenting these attitudes, this study provides critical insight into the extent to which stigma

towards HIV-infected, PWID, and MSM patients is endorsed by Malaysian students and highlights the need for stigma reduction interventions within Malaysian medical and dental school settings.

Conclusions

Ameliorating stigma within the healthcare sector is a necessary goal for fighting the HIV/AIDS epidemic and improving public health in Malaysia. This study identified that Malaysian medical and dental students endorse stigma towards HIV-infected, PWID, and MSM patients. Supplemental education and community investment may be crucial for reducing negative attitudes among this population, and continuing research is required to better understand the factors that perpetuate and sustain HIV/AIDS stigma in Malaysia.

References

1.   Goffman E. *Stigma; notes on the management of spoiled identity*. Englewood Cliffs, N.J.,: Prentice-Hall; 1963.
2.   Sadoh AE, Sadoh WE, Fawole AO, Oladimeji A, Sotiloye O. Attitude of health care workers to patients and colleagues infected with human immunodeficiency virus. *SAHARA J* 2009,6:17-23.
3.   Rispel LC, Metcalf CA, Cloete A, Moorman J, Reddy V. You become afraid to tell them that you are gay: health service utilization by men who have sex with men in South African cities. *J Public Health Policy* 2011,32 Suppl 1:S137-151.
4.   Kuthy RA, McQuistan MR, Riniker KJ, Heller KE, Qian F. Students' comfort level in treating vulnerable populations and future willingness to treat: results prior to extramural participation. *J Dent Educ* 2005,69:1307-1314.
5.   Kinsler JJ, Wong MD, Sayles JN, Davis C, Cunningham WE. The effect of perceived stigma from a health care provider on access to care among a low-income HIV-positive population. *AIDS Patient Care STDS* 2007,21:584-592.
6.   Araujo MA, Montagner MA, da Silva RM, Lopes FL, de Freitas MM. Symbolic violence experienced by men who have sex with men in the primary health service in Fortaleza, Ceara, Brazil: negotiating identity under stigma. *AIDS Patient Care STDS* 2009,23:663-668.
7.   Genberg BL, Hlavka Z, Konda KA, Maman S, Chariyalertsak S, Chingono A*, et al.* A comparison of HIV/AIDS-related stigma in four countries: negative attitudes and perceived acts of discrimination towards people living with HIV/AIDS. *Soc Sci Med* 2009,68:2279-2287.
8.   Altice FL, Kamarulzaman A, Soriano VV, Schechter M, Friedland GH. Treatment of medical, psychiatric, and substance-use comorbidities in people infected with HIV who use drugs. *Lancet* 2010,376:367-387.
9.   Martinez J, Harper G, Carleton RA, Hosek S, Bojan K, Glum G*, et al.* The impact of stigma on medication adherence among HIV-positive adolescent and young adult females and the moderating effects of coping and satisfaction with health care. *AIDS Patient Care STDS* 2012,26:108-115.
10.   Li X, Huang L, Wang H, Fennie KP, He G, Williams AB. Stigma mediates the relationship between self-efficacy, medication adherence, and quality of life among people living with HIV/AIDS in China. *AIDS Patient Care STDS* 2011,25:665-671.
11.   Earnshaw VA, Quinn DM. The impact of stigma in healthcare on people living with chronic illnesses. *J Health Psychol* 2012,17:157-168.
12.   Rohn EJ, Sankar A, Hoelscher DC, Luborsky M, Parise MH. How do social-psychological concerns impede the delivery of care to people with HIV? Issues for dental education. *J Dent Educ* 2006,70:1038-1042.
13.   Ahern J, Stuber J, Galea S. Stigma, discrimination and the health of illicit drug users. *Drug Alcohol Depend* 2007,88:188-196.
14.   Li L, Wu Z, Liang LJ, Lin C, Guan J, Jia M*, et al.* Reducing HIV-Related Stigma in Health Care Settings: A Randomized Controlled Trial in China. *Am J Public Health* 2012.
15.   Miller NS, Sheppard LM, Colenda CC, Magen J. Why physicians are unprepared to treat patients who have alcohol- and drug-related disorders. *Acad Med* 2001,76:410-418.
16.   Sayles JN, Ryan GW, Silver JS, Sarkisian CA, Cunningham WE. Experiences of social stigma and implications for healthcare among a diverse population of HIV positive adults. *J Urban Health* 2007,84:814-828.
17.   Suleiman AY, F. Capuano, C. et al. Malaysia 2012. In: *Global AIDS Response Country Progress Report*. Edited by Ngadiman Sa; 2012.

18.   Gerbert B, Maguire BT, Bleecker T, Coates TJ, McPhee SJ. Primary care physicians and AIDS. Attitudinal and structural barriers to care. *JAMA* 1991,266:2837-2842.

19.   Allport GW. *The nature of prejudice*. Cambridge, Mass.,: Addison-Wesley Pub. Co.; 1954.

20.   Brewer MB. The Social Psychology of Intergroup Relations: Social Categorization, Ingroup Bias, and Outgroup Prejudice. In: *Social Psychology: Handbook of Basic Principles*. Edited by Kruglanski AW, Higgins ET. New York, NY: The Guilford Press; 2007. pp. 695-715.

21.   Corrigan P. How stigma interferes with mental health care. *Am Psychol* 2004,59:614-625.

22.   Galanter M. Spirituality and addiction: a research and clinical perspective. *Am J Addict* 2006,15:286-292.

23.   Gooch L. Malaysian Mosque Is Also a Methadone Clinic. In: *New York Times*. Edited by In A. W. Kruglanski ETH. New York, NY; 2012.

24.   Kelly JA. Popular opinion leaders and HIV prevention peer education: resolving discrepant findings, and implications for the development of effective community programmes. *AIDS Care* 2004,16:139-150.

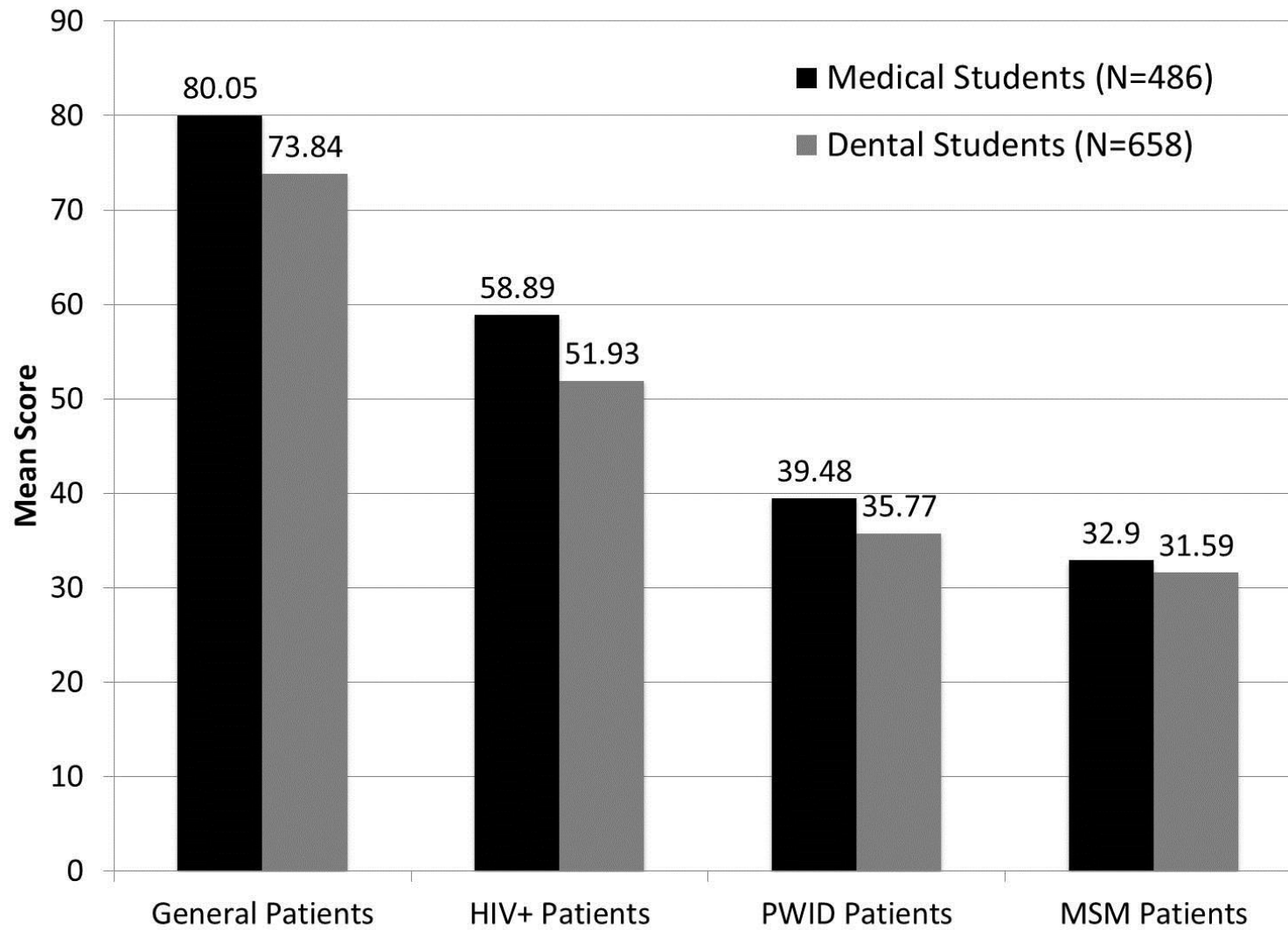Figure 1. Attitudes toward traditionally stigmatized patients

Table 1. Comparison of the Characteristics of Medical and Dental Students

Characteristic	Total Sample* 1,296 (100%)	Medical Students* 486 (42.5%)	Dental Students* 658 (57.5%)	p†
Age (years), mean ± SD	22.4 ± 1.65	22.5 ± 1.61	22.4 ± 1.68	0.3976
Sex				<0.0001
Male	369 (31.7%)	204 (42.1%)	161 (24.5%)	
Female	794 (68.3%)	280 (57.9%)	497 (74.5%)	
Race/ethnicity				0.0003
Malay	720 (62.1%)	330 (68.0%)	376 (57.5%)	
Chinese	353 (29.6%)	119 (24.5%)	220 (33.6%)	
Indian	56 (4.8%)	16 (3.3%)	40 (6.1%)	
Other	40 (3.5%)	21 (4.1%)	18 (2.8%)	
Religion				0.0001
Muslim	744 (64.0%)	344 (70.9%)	386 (58.7%)	
Buddhist	257 (22.1%)	86 (17.7%)	170 (25.8%)	
Christian	97 (8.3%)	40 (8.2%)	55 (8.4%)	
Hindu	42 (3.6%)	8 (1.6%)	33 (5.0%)	
Other	23 (2.0%)	8 (1.6%)	14 (2.1%)	
Year of study				0.0521
1	182 (15.7%)	59 (12.2%)	123 (18.7%)	
2	180 (15.5%)	83 (17.1%)	96 (14.6%)	
3	210 (18.1%)	87 (17.9%)	121 (18.4%)	
4	273 (23.5%)	111 (22.9%)	152 (23.0%)	
≥5	316 (27.2%)	143 (29.9%)	163 (25.3%)	
Clinical training				0.0126
Pre-clinical	396 (34.2%)	147 (30.3%)	245 (37.3%)	
Clinical	761 (65.8%)	338 (69.7%)	411 (62.7%)	
Personally know anyone living with HIV/AIDS				0.0182
Yes	144 (12.5%)	72 (14.8%)	67 (10.2%)	
No	1,006 (87.5%)	414 (85.2%)	584 (89.8%)	
Personally know anyone who is a				<0.0001

person who injects drugs				
Yes	208 (17.9%)	113 (23.3%)	91 (13.9%)	
No	952 (82.1%)	373 (76.8%)	565 (86.2%)	
Personally know anyone who is a man who has sex with men				0.0263
Yes	160 (13.8%)	80 (16.5%)	78 (11.9%)	
No	1,000 (86.2%)	405 (83.5%)	579 (88.1%)	

* Numbers may not sum to total due to missing data, and percentages may not sum to 100% due to rounding.

† P-value χ^2 test for categorical variables or t-test for age.

Table 2. Mean attitude scores comparing general medical patients with each of the vulnerable populations

Characteristics	General Patients Mean (SD)	Column P-Value	HIV+ Patients Mean (SD)	Column P-Value	PWID Patients Mean (SD)	Column P-Value	MSM Patients Mean (SD)	Column P-Value
Overall mean score	76.50 (20.35)		54.04 (20.99)		37.50 (24.41)		32.13 (29.33)	
Type of student		**<0.0001**		**<0.0001**		**0.0124**		0.4649
Medical	80.05 (17.95)		58.89 (20.94)		39.48 (24.00)		32.90 (29.91)	
Dental	73.84 (21.69)		51.93 (20.63)		35.77 (24.56)		31.59 (28.92)	
Sex		0.0952		**0.0010**		0.0623		0.1115
Male	77.95 (19.40)		57.08 (21.69)		39.52 (24.95)		34.22 (30.92)	
Female	75.78 (20.74)		52.67 (20.47)		36.54 (24.14)		31.09 (28.52)	
Race/ethnicity		0.0683		0.5088		0.4124		**<0.0001**
Malay	76.14 (21.42)		54.04 (21.08)		38.22 (25.33)		24.01 (27.58)	
Chinese	75.77 (18.70)		53.53 (20.52)		35.92 (22.45)		43.78 (26.67)	
Indian	82.36 (15.65)		56.58 (21.14)		36.70 (24.21)		51.70 (28.88)	
Other	81.00 (17.85)		58.13 (21.10)		41.13 (24.52)		42.33 (32.30)	
Religion		0.0943		0.2399		**0.0031**		**<0.0001**
Muslim	76.23 (21.36)		53.94 (21.03)		37.95 (25.23)		24.02 (27.60)	
Buddhist	76.52 (18.21)		52.58 (20.49)		33.56 (22.52)		44.84 (26.15)	
Christian	75.31 (19.35)		57.90 (18.47)		45.13 (20.03)		40.15 (26.64)	
Hindu	85.13 (15.15)		57.08 (23.29)		36.79 (23.87)		56.05 (29.08)	
Other	74.68 (20.26)		56.82 (25.83)		36.05 (29.11)		59.09 (28.43)	
Training status		0.8936		0.3436		0.3284		**0.0021**
Clinical	76.47 (20.15)		53.75 (21.23)		37.05 (23.83)		34.11 (29.79)	
Pre-clinical	76.64 (20.78)		54.97 (20.11)		38.56 (25.51)		28.17 (28.06)	
Personally knows someone with HIV/AIDS		0.3686		**0.0201**		**0.0400**		0.6739
Yes	77.95 (21.45)		57.91 (21.08)		41.53 (25.69)		31.09 (30.46)	
No	76.43 (20.07)		53.65 (20.84)		36.95 (24.20)		32.34 (29.22)	
Personally knows a PWID		0.1391		0.5253		**0.0017**		0.3219
Yes	78.41 (20.22)		54.87 (22.19)		42.41 (27.84)		30.21 (30.63)	
No	76.11 (20.33)		53.97 (20.65)		36.43 (23.50)		32.60 (29.06)	
Personally knows a MSM		0.6949		**0.0176**		0.1162		**<0.0001**
Yes	75.90 (21.24)		57.78 (22.11)		40.43 (26.30)		51.76 (31.35)	
No	76.64 (20.19)		53.59 (20.64)		37.10 (23.09)		28.99 (27.75)	

*All row p-values are <0.0001

Legend: PWID=people who inject drugs; MSM=men who have sex with men