

Research article

Bias in medicine: a survey of medical student attitudes towards HIV-positive and marginalized patients in Russia, 2010

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Abstract

Background: Russia has a substantial HIV epidemic which is poised to escalate in the coming years. The increases in prevalence of HIV will result in increased healthcare needs by a medical system with limited experience with HIV. A healthcare provider's attitude towards a patient plays a significant role in determining the patient's health-related behaviours and medical outcomes. Previous studies have identified negative attitudes of medical students towards people living with HIV. Studying the prevalence of such attitudes is of particular interest, as medical students represent the future workforce and also as the schooling years present a unique opportunity to nurture bias-free healthcare providers. The study measures prevalence of prejudicial attitudes towards HIV-positive and HIV-negative patients who belong to marginalized subgroups.

Methods: The cross-sectional survey was conducted among medical students of a Russian medical university. Of 500 students surveyed, 436 provided sufficient data to be included in the analysis. Prejudicial attitudes were defined as reluctance to provide medical care to a specified hypothetical patient. Nine hypothetical HIV-positive and HIV-negative patients were proposed: physicians, injecting drug users, commercial sex workers, men who have sex with men and a patient HIV-positive due to blood transfusion. A log-binomial regression solved using generalized estimating equations was utilized to identify factors associated with reluctance to treat.

Results: Prevalence of reluctance to provide medical care to HIV-positive patients in marginalized subgroups was high (ranging from 26.4% up to 71.9%), compared to a maximum of 7.5% if a patient was an HIV-negative physician. Students in their clinical years reported more negative attitudes than preclinical students. In general, female students were less willing to provide care than their male counterparts.

Conclusions: Prejudicial attitudes about HIV-positive patients and those in marginalized subgroups of the population are prevalent among medical students in Russia. Given the increasing prevalence of HIV in the country, reasons for this hesitance to treat must be identified and addressed. Educational programs for healthcare providers are urgently needed to eliminate bias in the delivery of critically needed medical care. These targeted interventions should be coupled with other programs to eliminate structural barriers to care.

Keywords: HIV; stigma; medical students; marginalized groups; Russia.

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Background

A healthcare provider's attitude towards a patient plays a significant role in determining the patient's health-related behaviours and medical outcomes [1,2]. A patient's perception of prejudice or a negative attitude is associated with lower quality of care [2,3], decreased care-seeking by patients [4,5], reduced treatment adherence [6,7] and poor medical outcomes [8,9].

Patients who are HIV positive are often subject to layers of bias or prejudice. The first layer is related to their HIV status, the second due to their association (or presumed association) with marginalized subgroups, such as injecting drug users (IDUs), commercial sex workers (CSWs) and men who have sex with men (MSM) [10,11].

The degree of bias perceived by patients in healthcare settings depends on the provider's knowledge about HIV, experience working with HIV-positive people and lack of HIV-related fears [10,12,13]. Previous studies have detected varying degrees of biased attitudes towards HIV-positive patients among medical students in many countries, including the United States, Canada, the European Union and China [11,14–23].

Among the wide variety of determinants, HIV prevalence figures prominently. By the end of 2009, over 530,000 people living with HIV were registered with the Russian Federation public health service [24]. However, UNAIDS estimates that the actual number of people living with HIV in Russia is closer to one million cases (prevalence about 1%),

and it has one of the fastest growing HIV epidemics in the world [25].

Evidence of HIV-related prejudice in healthcare delivery among Russian patients was documented by Amirkhanian and colleagues, who found that 25% of people living with HIV in St. Petersburg had been refused general healthcare [26].

The current study was designed to identify the extent of prejudicial attitudes among medical students towards HIV-positive and HIV-negative patients who belong to marginalized subgroups and determinants of hesitancy to treat these vulnerable patients.

The educational curriculum at Kazan State Medical University is a six year program with three preclinical years. Beginning in the fourth year students start attending clinics and see patients as a part of their studies. The majority of students at the university are from the city of Kazan or from the Republic of Tatarstan region. International students study in separate classes and were not included in the study.

Methods

A cross-sectional survey was administered in June 2010 to medical students in Kazan State Medical University (Kazan, Russia). Participation in the self-administered, anonymous survey was voluntary; the university's ethics committee approved the study and provided a waiver of signed informed consent to protect anonymity. The sample size was limited to 500, based on the estimated number of participants needed to ensure an acceptable degree of precision.

A convenience sampling strategy was used to recruit participants; students were primarily recruited in classes by research personnel (university faculty not involved in teaching the courses). Classes were selected to obtain a sample that included all six years and all medical majors. No coding was allowed by class to protect anonymity; the estimated response proportions based on approximate class size and completed surveys was between 70% and 80%.

Reluctance to treat was assessed by measuring a medical student's willingness to provide medical care to nine hypothetical categories of patients included: four patients who are HIV negative (physician, IDU, female CSW and MSM) and five patients who are HIV positive (physician, blood transfusion recipient, IDU, female CSW and MSM). The original survey question was formulated as follows: "[i]f you have a choice, how likely will it be for you to volunteer to care for the following patients ..." and the list of nine hypothetical patients was provided. Answers were collected via five-point Likert-type scale with extremes being "Very likely to volunteer" and "Would very strongly chose not to volunteer". The study outcome, reluctance to treat, was defined by answer choices "Would not volunteer" and "Would very strongly choose not to volunteer" opposed to neutral or positive attitudes.

As a potential risk factor/confounder, we included a measure of each student's concern to acquire HIV at work ("How much concern do you have about HIV due to caring for patients who may be infected?" with answers ranging from "a lot" to "none").

Stratified analyses were performed using Fisher's exact test for between-group comparison. A two-tailed, independent sample *t*-test was used to compare mean age between subgroups. Results were considered statistically significant if a two-sided *p* value was less than 0.05. A log-binomial regression model solved using generalized estimating equations (GEEs) was utilized to estimate the effect of the patients' subgroup on unwillingness to provide care. Primary risk factors studied include type of patient, student's gender, year of study and concern about acquiring HIV from patients. Additive interaction was assessed in the equation $PR_{11} = PR_{10} + PR_{01} - 1$, where PR_{11} is the combined effect of risk factors, PR_{10} and PR_{01} are the effects of respective individual risk factors [27].

Statistical analyses were performed by using SAS 9.1 software (SAS Institute, Cary, NC, USA).

Results

Initial data cleaning included removing from the original 500 observations 17 entries with answers "Would very strongly avoid to volunteer" for every patient category (i.e. questionable validity), 34 observations with missing data in all strata, 1 observation with no gender and 12 with no year of study. Of the resultant 436 participants, 308 (70.6%) were female and 241 (55.3%) were in the preclinical years. Mean age was 20.4 years (range 17 to 28, standard deviation 2.3), age distribution was approximately equal by gender ($p = 0.22$), as was gender distribution by year of study ($p = 0.67$).

Unwillingness to treat an HIV-negative physician was infrequent (6.0% overall). For HIV-positive non-marginalized groups (HIV-positive physicians, HIV-positive due to transfusion), unwillingness to treat ranged from 7.3% to 31.6%, depending on respondent's gender and year of study. Negative attitudes were higher (but remarkably similar) for HIV-negative marginalized patients (21.8% to 55.2%) and HIV-positive marginalized patients (26.4% to 71.9%).

Reluctance to treat is stronger for marginalized subgroups than due to HIV status. For example, reluctance to provide care is generally higher for HIV-negative CSW (21.9% to 55.2%, across student subcategories), IDU (22.2% to 48.5%) and MSM (30.8% to 52.9%) than for the HIV-positive due to blood transfusion (16.9% to 31.6%). Detailed results are presented in Table 1.

Clinical level students were generally more reluctant to treat HIV-positive and marginalized group patients than preclinical students. Among male students, the increase in prevalence of negative attitudes from the preclinical to the clinical years ranged from -5.1% to 28.2% across scenarios, but reached statistical significance only for HIV-positive IDUs (28.2% increase, $p < 0.001$). For female students, the increase was greater (from 3.3% to 35.2% for preclinical and clinical, respectively) and reached significance ($p < 0.01$) for every marginalized group, except HIV-negative MSM ($p = 0.19$).

Overall, reluctance to treat was higher among female medical students, and gender differences tended to be strongest among marginalized subgroups of the same gender. For instance, female students in clinical years were

Table 1. Prevalence of prejudicial attitudes among medical students (Kazan, Russia, 2010) and corresponding prevalence ratio's

Student	Patient	Prevalence, %	PR		CI ₉₅	p-value
Preclinical, female (n = 168)	HIV – MD	7.5	1			
	HIV+ MD	13.5	1.77	1.12	2.80	0.015
	HIV+ BT	16.9	2.22	1.36	3.62	0.001
	HIV – CSW	29.0	3.77	2.26	6.28	<0.001
	HIV+ CSW	36.7	4.79	2.82	8.14	<0.001
	HIV – IDU	27.5	3.54	2.13	5.89	<0.001
	HIV+ IDU	35.4	4.59	2.71	7.79	<0.001
	HIV – MSM	23.1	3.04	1.91	4.86	<0.001
	HIV+ MSM	30.8	4.02	2.47	6.56	<0.001
Preclinical, male (n = 73)	HIV – MD	6.9	1			
	HIV+ MD	8.2	1.20	0.84	1.70	0.313
	HIV+ BT	13.9	2.04	0.83	5.02	0.122
	HIV – CSW	21.9	3.17	1.46	6.88	0.004
	HIV+ CSW	32.9	4.74	2.12	10.60	0.001
	HIV – IDU	26.4	3.79	1.64	8.77	0.002
	HIV+ IDU	22.2	3.19	1.38	7.35	0.007
	HIV – MSM	39.7	5.72	2.54	12.90	<0.001
	HIV+ MSM	43.8	6.31	2.78	14.32	<0.001
Clinical, female (n = 140)	HIV – MD	6.5	1			
	HIV+ MD	16.8	2.58	1.39	4.80	0.003
	HIV+ BT	31.6	4.90	2.54	9.46	<0.001
	HIV – CSW	55.2	8.62	4.62	16.07	<0.001
	HIV+ CSW	71.9	11.05	5.87	20.80	<0.001
	HIV – IDU	48.5	7.54	4.06	13.97	<0.001
	HIV+ IDU	67.7	10.47	5.57	19.67	<0.001
	HIV – MSM	30.2	4.67	2.59	8.40	<0.001
	HIV+ MSM	52.9	8.14	4.37	15.16	<0.001
Clinical, male (n = 55)	HIV – MD	3.6	1			
	HIV+ MD	7.3	2.00	0.50	8.00	0.327
	HIV+ BT	20.0	5.50	1.57	19.27	0.008
	HIV – CSW	21.8	6.00	1.69	21.26	0.006
	HIV+ CSW	45.5	12.50	3.31	47.23	0.001
	HIV – IDU	32.7	9.00	2.25	35.99	0.002
	HIV+ IDU	54.6	15.00	3.93	57.22	<0.001
	HIV – MSM	34.6	9.50	2.56	35.24	0.001
	HIV+ MSM	43.6	12.00	3.18	45.23	<0.001

4% or less of data was missing in a single cell. HIV+, HIV positive; HIV –, HIV negative; MD, medical doctor; CSW, commercial sex worker; IDU, injecting drug user; MSM, men who have sex with men; BT, blood transfusion recipient.

substantially more likely to be unwilling to treat CSWs than male students (55.2% vs. 21.8% $p < 0.001$) whereas more preclinical male students were unwilling to treat MSM compared to female students (39.7% vs. 23.1% $p = 0.01$).

Multivariate analyses results, where negative attitudes towards each patient's subgroup were compared to unwillingness to treat a medical doctor, confirm the aforementioned findings. GEE-estimated prevalence ratios for such comparisons are presented in Table 1.

HIV positivity and belonging to a marginalized group appear to have independent additive discriminatory effects. For example, among female students in clinical years, the PR

for negative attitudes towards HIV-positive vs. HIV-negative physicians was 2.6, and 8.6 for HIV-negative CSWs compared to HIV-negative physicians. For the HIV-positive CSW, ratio of unwillingness to volunteer to treat is 11.0, approximately equal to the expected value of 10.2 ($2.6 + 8.6 - 1$), if an additive model was assumed.

Discussion

Negative attitudes towards treating HIV-positive and marginalized patients were found to be common among the medical students studied. The substantial hesitance to treat marginalized patients resembles the early period of the HIV/AIDS

epidemic in the United States when 50% of primary care clinicians reported they would not treat HIV-positive patients if given a choice, and 55% would “feel very uncomfortable” having an IDU patient [28]. Even more pronounced prejudice was noted among US medical students during the same period: 78.4% would try to avoid contact with an IDU and 58.3% reported negative attitudes regarding those with AIDS [16]. Bias decreased in the United States and other developed countries over time, potentially due to the implementation of education interventions and enhanced infection control that limited the occupational risk of infection [20,29,30].

Confirming that bias exists among Russian medical students is not altogether surprising given the intolerance among the general population and medical establishment towards marginalized populations [26,31,32], but the increased prevalence with advanced schooling is particularly concerning. While recent studies in the United Kingdom and Poland indicated that more positive attitudes developed throughout medical school [33,34], a study from the United States (early 1990s) found that medical school professors can be a source of negativity regarding HIV-positive and marginalized groups [16]. McGrory and colleagues [16] found that 31.1% of teachers had publicly expressed negative attitudes towards AIDS patients. Similar disturbing patterns were found more recently in Brazil [35]. Clearly, interventions to reduce bias among medical students should include educational programs for faculty.

Reasons for reluctance to provide care to marginalized patients in Russia are multifactorial, some of which are valid. While institutions vary substantially, well-documented shortages of infection control supplies (e.g. gloves and single-use syringes) do exist [32]. Informal out-of-pocket payments for services create a dual system whereby those with means may receive better care, or more ready access to care [36–38]. Because marginalized patients are often severely economically disadvantaged, their ability to pay informal surcharges is very limited. Thus doctors may avoid poor patients or those with complex medical conditions.

Somewhat surprising was that female students generally were more reluctant to treat HIV-positive patients than male students. While some of this difference appears directly related to gender (e.g. CSW for female students contrasted by MSM for male students), the overall higher levels of reluctance among women likely relates to factors other than social bias. Qualitative research is needed to further understand the gender differences seen. We did not conduct further statistical tests on our data because we did not have an *a priori* hypothesis related to this finding.

The larger number of female students in our sample is representative of the usual gender distribution among the Russian medical student and physician workforce; additionally the gender distribution is consistent with the university's statistics on students.

We found no interaction on an additive scale between biases among medical students, suggesting that the effect of each stigma determinant is independent of the other. In another study conducted in China [11], interaction between stigmas was found to be sub-additive: bias against those with

HIV and patient's category overlapped with each other, such that the total bias was less than the arithmetical sum of individual biases.

As with all studies, some caveats exist. Convenience sampling strategy may undermine accuracy of the prevalence estimates because self-selection bias may be present. However, this would likely direct prevalence estimates towards the null because students with negative attitudes would be less likely to participate the survey.

The study outcome should be interpreted as reluctance to provide care, as stigma is broadly defined and not as a direct intent to discriminate. This interpretation stems from the assumption that even latent stigma can hamper trustful patient-provider relationships and have negative consequences, even if the services are provided.

Limitation to one participating medical school could threaten external validity of the results; however, the responses appear consistent with society's attitudes generally. While 95% confidence intervals do not have probabilistic meaning in regard to generalizability, they are still useful measures of precision of the estimates.

Conclusions

The majority of medical students studied in Russia report negative attitudes towards HIV-positive patients and those who belong to marginalized subgroups. Reluctance to treat appears to be more prevalent among students in the more advanced clinical years of study and among female students.

These findings are alarming given that the proportion of the Russian population affected by HIV is sizable, and growing. Several factors may contribute to this reluctance to treat, such as limitations in the availability of infection control resources, limited education on marginalized subgroups, socially acceptable bias against marginalized subgroups and a system of informal payments for medical care.

More specific attention to the issue is needed, including further exploration of the reasons behind reluctance to provide care followed by developing interventions to reduce bias in healthcare delivery among these vulnerable groups. This should include changing existing interventions and proposition of new educational curricula for medical students and professionals.

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Competing interests

The authors declare that they have no competing interests.

Authors' contributions

DAB participated in originating the idea of the study, developing survey tools, collecting data, statistical analysis and drafting the manuscript. VAA participated in developing the study idea, supervising and facilitating data collection and editing the manuscript. ANV participated in preparing literature review, designing survey tools and editing the manuscript. WRT participated in developing survey tools and editing the manuscript. LAM conceived the study, participated in developing survey tools, statistical analysis, editing the manuscript and supervising the project. All authors have read and approved the final version.

Abbreviations

CSW, commercial sex workers; IDU, injecting drug user; GEE, generalized estimating equations; MSM, men who have sex with men.

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