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Reducing HIV Stigma Among Nursing Students: A Brief Intervention

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Abstract

HIV stigma can be devastating and is common among health care providers, particularly nurses. The objectives of this study were to (a) assess the acceptability and feasibility of a brief stigma-reduction curriculum among a convenience sample of Indian nursing students and (b) examine the preliminary effect of this curriculum on their knowledge, attitudes, and intent to discriminate. At baseline, 57% of students had at least one misconception about HIV transmission, 38% blamed people living with HIV for their infection, and 87% and 95% demonstrated intent to discriminate while dispensing medications and drawing blood, respectively. Following the curriculum, HIV-related knowledge increased while blame, endorsement of coercive policies, and intent to discriminate decreased significantly. In addition, more than 95% of participants described the curriculum as practice changing. This brief intervention resulted in decreased stigma levels and was also highly acceptable to the nursing students. Next steps include rigorous evaluation in a randomized controlled trial.

Keywords

HIV; AIDS; stigma; India; nursing; education

HIV stigma has been defined as socially shared perceptions about the devalued status of a person or people living with HIV (PLHIV) (Hossain & Kippax, 2011; Joint United Nations Programme on HIV/AIDS, 2003; Steward et al., 2008). Stigma leads to unjust treatment of individuals with HIV and disproportionately affects people who are socially marginalized,

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Declaration of Conflicting Interests

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including men who have sex with men (MSM), female sex workers (FSW), and injection drug users (Bharat, 2011; Bharat, Aggleton, & Tyrer, 2001; Chan, Stoove, Sringeriyuang, & Reidpath, 2008; Herek, 2002). Globally, HIV stigma has been shown to have detrimental effects on the psychological and physical well-being of PLHIV (Das & Leibowitz, 2011; Hossain & Kippax, 2011; Steward et al., 2011; Subramanian, Gupte, Dorairaj, Periannan, & Mathai, 2009). Stigma perceived by PLHIV interferes with patients' decisions to seek HIV testing and counseling, limits willingness to disclose their HIV positive status, and prevents them from seeking and/or adhering to appropriate medical treatment (Bharat et al., 2001; Steward, Bharat, Ramakrishna, Heylen, & Ekstrand, 2012; Steward et al., 2008). In short, stigma limits accessibility of care for those infected with HIV and limits containment of the HIV epidemic, as many remain undiagnosed and untreated. HIV stigma is considered to be among the greatest impediments to effectively combating the global HIV epidemic (Mahajan et al., 2008).

HIV Stigma in the Health Care Setting

Across multiple studies, stigma toward PLHIV has been found to be high among health care workers, including nurses and ward attendants (Bharat et al., 2001; Ekstrand, Ramakrishna, Bharat, & Heylen, 2013; Hossain & Kippax, 2011; Mahendra et al., 2007; Rosenburg, Taliaferro, & Ercole, 2012; Ruiz-Torres, Cintron-Bou, & Varas-Diaz, 2007). Manifestations of this stigma include disclosure of HIV status to family members without patients' consent, refusal of hospital services, and charging patients for the cost of infection control supplies (Bharat et al., 2001; Mahendra et al., 2007). Existing studies across global settings and populations have identified two primary drivers of stigma toward PLHIV in the health care setting (Ekstrand, Bharat, Ramakrishna, & Heylen, 2012; Herek, 1998, 1999, 2002). The first, instrumental stigma, arises from fears and misconceptions about the possibility of HIV transmission during casual contact (Herek, 2002). The second, symbolic stigma, is related to pre-existing negative attitudes toward marginalized groups vulnerable to HIV infection, which may vary across settings but frequently includes MSM, FSW, and injection drug users (Herek, 2002; Nyblade, Stangl, Weiss, & Ashburn, 2009).

Although numerous descriptive studies of HIV stigma exist and multiple interventions targeting stigma have been developed in the global setting, rigorous evaluations of these interventions are lacking. Using initial stigma studies done in Ethiopia, Tanzania, Vietnam, and Zambia, the International Center for Research on Women (ICRW), in conjunction with multiple other organizations, developed a toolkit for stigma reduction, which included a 3-day educational program specifically for health care workers (Duvvury, Prasad, & Kishore, 2006; ICRW, 2013; Nyblade et al., 2009). The program, which includes education about HIV transmission and direct communication with PLHIV, has been well received in health care settings (ICRW, 2013; Nyblade et al., 2009). However, given that health care workers often have multiple competing demands on their time, there is concern that such a time-consuming program is unlikely to be sustainable (Ekstrand et al., 2013).

Purpose

The purpose of this project was to (a) assess the acceptability and feasibility of the delivering a brief stigma-reduction curriculum to Indian nursing students and (b) examine the preliminary effect of this curriculum on their knowledge, stigma attitudes, and intent to discriminate in a convenience sample of students.

Method

Participants

This study took place at the St. John's College of Nursing, St John's National Academy of Health Sciences, in Bengaluru, India. Bengaluru is in the state of Karnataka, which has been designated one of the six "high HIV prevalence states" with approximately 250,000 individuals living with HIV, or approximately 10% of PLHIV in India residing within this state (The World Bank, 2012). All second-year undergraduate nursing students at St. John's College of Nursing were invited to participate. Second-year students were selected for participation because they had received a course on universal precautions and had recently started clinical rotations, which St. John's College of Nursing felt would be a good basis for the intervention. In addition, all of the students were English-speaking and received their education in the English. This class initially consisted of 100 students, however 9 students were away on clinical placements thereby reducing the sample size to 91 students. A female U.S. medical student of Indian descent who had no affiliation with St. Johns College of Nursing recruited participants through an in-class announcement explaining the purpose and requirements of the project. All participants were given the opportunity to seek clarification related to the project. During recruitment, it was emphasized that although the College of Nursing did endorse the program, the school did not monitor participation and would not have access to individual data. In addition, it was expressed that there were no negative consequences for not participating. Participants were offered a 250-rupee gift card (approximately US\$5) to a local movie theater as incentive for their participation. Students interested in enrolling were given written information about the project and, if interested, signed informed consent. Due to pre-scheduled clinical placements following enrollment and because the timing of the intervention was pre-determined due to the availability of session facilitators, only 45 students were on-campus when the intervention was delivered. For this reason, the group available to receive the curriculum was designated the intervention group ($n = 45$), whereas the other served as the control group ($n = 46$). Although this was not random assignment, the two groups were similar in terms of their demographics and prior education. In addition, we still felt that this quasi-experimental design would yield useful data on acceptability and feasibility as well as preliminary outcome data.

Intervention

The intervention was adapted from the ICRW curriculum and delivered in English by the same medical student who recruited participants. The curriculum focused only on the components of the ICRW curriculum that specifically addressed the two main drivers of health care-associated stigma, instrumental and symbolic stigma. These components were

developed into two 1-hr sessions. These sessions were administered 1 week apart, beginning approximately 3 weeks following enrollment, and took place in classrooms at the St. John's College of Nursing; no staff or administrators from the college were present. To help facilitate open discussion through smaller groups, students were allowed to choose between two scheduled times for each session based on their convenience; there were 27 students in one intervention subgroup and 18 in the other.

The first session targeted instrumental stigma and was dedicated to knowledge building to decrease undue fears about the possibility of HIV transmission during casual contact. The focus of the session was a 45-min PowerPoint presentation, which included information on the epidemiology of HIV in India, routes of transmission, transmission misconceptions, and ways to prevent the transmission of HIV, including the proper use of personal protective equipment in the hospital. Students were given a handout containing the slides used in the presentation, and as a group, they were asked to summarize key learning points at the end of the session. In addition, they were allowed 15 min to ask questions, either privately or in the group setting, at the end of the session.

The second session targeted symbolic stigma and was co-facilitated by a PLHIV from the Karnataka Network for Positive People (KNP+) and the fourth-year U.S. medical student. At the beginning of the discussion, the students were asked to respect the confidentiality of the presenter and other students. The guest speaker shared his story regarding his life prior to HIV infection, experiences of stigma in the health care setting, and reflections on how stigma affected him and his family. Students then had the opportunity to ask questions, either openly or anonymously by submitting written questions. At the end of the session, the guest speaker shared examples of positive experiences in the health care setting and brainstormed with the students about strategies that could be employed to decrease stigmatizing behaviors in the hospital.

The control group received no intervention. They simply completed the stigma assessment survey twice: once at the enrollment, and 5 weeks later, after the intervention group had received the curriculum.

Measures

The measures used in this study were adapted from previously developed interview-based instruments to measure dimensions of HIV stigma in U.S. and Indian health care settings. Such instruments have included assessments of pre-existing prejudices toward vulnerable populations, fear of casual transmission, endorsement of coercive policies, and intent to discriminate against PLHIV in the workplace, all of which have previously been used to develop a theoretical model of HIV stigma in India (Ekstrand et al., 2013; Herek, 1999, 2002; Steward et al., 2008, 2012). To facilitate administration, these measures were restructured to create a 29-item self-administered paper-and-pencil survey.

Demographic characteristics—All participants were asked about their gender and age.

Prior experience caring for PLHIV—All participants were asked one “yes or no” question regarding whether they had previously cared for PLHIV.

HIV-related knowledge and transmission misconceptions—The overall percentage of correct responses to 14 “true or false” statements about four general HIV-related facts (e.g., HIV destroys a person’s immune system), four true transmission routes (blood, breast milk, vaginal fluids, semen), and six false transmission routes (sharing cutlery or food, sharing toilets, saliva, urine, sweat) were calculated. If any students incorrectly identified one of the six false transmission routes as transmitting HIV, they were considered to have a “misconception about HIV transmission.”

Endorsement of coercive measures—Participants rated their level of agreement with nine statements related to mandatory testing, the rights of PLHIV to marry or to have children, and the right of health care workers to refuse to treat PLHIV. There were five answer choices, ranging from “strongly disagree” to “strongly agree.” The number of responses indicating strong or moderate agreement with coercive measures or denial of PLHIV’s rights was added, resulting in a possible count of 0 to 9. Higher scores indicated greater levels of stigma.

Worry about HIV infection—Participants rated how worried they were about acquiring HIV within or outside of the workplace on a 4-point scale ranging from *not at all worried* to *very worried*. Each of the two items in the section was coded on a scale of 0 to 3 with higher scores indicating a greater degree of worry. The mean score from each group was determined.

Blame—Participants indicated their level of agreement with the statement “people who got HIV through sex or drug use have gotten what they deserve” by selecting among five answer choices ranging from “strongly disagree” to “strongly agree.” Answers expressing strong or moderate agreement were considered endorsement of blame.

Intent to discriminate against PLHIV—Participants were asked multiple-choice questions regarding how they would behave during two hypothetical interactions with PLHIV (dispensing medication and drawing blood). A dichotomous variable was created for each interaction. Responses that indicated that a participant would take extra precautions or refuse to treat the PLHIV in these situations were scored as “stigmatizing,” whereas treating the patient as they would a non-PLHIV was scored as “non-stigmatizing.”

Process Evaluation of the Intervention

At the end of each intervention session, intervention participants were asked to complete a process evaluation that assessed their level of agreement with 11 statements about how interesting, useful, accessible, and practice changing each session was, and how strongly they would recommend the course to others. Answers of “strongly agree” or “agree” were counted as agreement.

Survey Administration Procedures

All 91 participants completed a self-administered survey at the time of enrollment and 1 week following the second intervention session. At the end of each session, intervention participants were asked to complete the process evaluation. All of the surveys were self-

administered, pencil-and-paper surveys and were all completed in the classroom setting. The Institutional Review Board at the University of California, San Francisco and the Institutional Ethics Review Board at St. John's National Academy of Health Sciences approved the protocol for this project.

Analyses

The data were analyzed via descriptive statistics consisting of frequencies and percentages for categorical variables, and means and standard deviations for continuous variables. Baseline differences between the intervention and control group were assessed via chi-square test for dichotomous variables, and *t* test for continuous variables. Difference scores (post-intervention - pre-intervention) were calculated to assess the effect of the intervention while accounting for baseline levels, and for continuous outcomes the mean difference scores between the intervention and control group were compared via *t* test. For dichotomous variables, chi-square tests were used to compare the proportion of participants in each group who had moved from a stigmatizing to a non-stigmatizing response. All significance levels reported are two-sided, with statistical significance reported with a *p* value less than .05. Analyses were performed in SPSS (PASW version 18.0).

Results

All 91 participants were female and had a median age of 19 years, with a range of 18 to 29 years. Approximately 85% ($n = 77$) of all participants reported prior experience caring for PLHIV.

Baseline Findings

As shown in columns 2 to 5 of Tables 1 and 2, participants answered an average of 79% of HIV-related knowledge questions correctly while 57% of participants held at least one misconception regarding the transmission of HIV, without any significant differences between groups for either of these variables ($p = .55$, $p = .47$). Thirty-eight percent of all students demonstrated strong or moderate agreement with the blame statement "people who got HIV through sex or drugs have gotten what they deserve." Although the proportion was somewhat higher in the intervention group (45%) than in the control group (30%), the difference was not statistically significant ($p = .14$).

Participants exhibited high baseline intent to discriminate with 87% of all students responding that they would either take extra, unnecessary, precautions or refuse to dispense medications to PLHIV and 96% responding that they would either take extra precautions or refuse to draw blood from PLHIV, with no significant differences between the two groups ($p = .51$, $p = .98$).

The control and intervention groups also had similar scores on the endorsement of coercive measures index at baseline, endorsing on average 5.6 out of 9 items. On the individual items, 85% ($n = 77$) supported mandatory testing for all FSW and 81% ($n = 74$) mandatory testing for MSM; 48% ($n = 44$) of students felt PLHIV should not be allowed to get married and 59% ($n = 54$) believed HIV positive women should not be permitted to have children. While only three participants believed that health care workers should have the right to refuse to

care for PLHIV, 51% ($n = 46$) believed that PLHIV should be treated in separate facilities from people not infected with HIV.

Post-Intervention Findings

Post-intervention changes from baseline are presented in columns 6 to 8 of Tables 1 and columns 7 to 9 of Table 2. Following the stigma-reduction curriculum, there was an increase in mean overall HIV-related knowledge in the intervention group only from 78% to 87% ($p = .001$). In addition, the proportion of participants who changed from having one or more transmission misconceptions to zero misconceptions was about twice as high in the intervention group (33%) than in the control group (15%, $p = .04$). Twenty-five percent of participants in the intervention group who initially agreed with the blame statement “people who got HIV through sex or drugs have gotten what they deserve” no longer agreed with this statement following the curriculum, compared with 9% of control group participants ($p = .04$).

Controlling for pre-intervention responses, 36% of intervention group participants no longer had discriminatory intent when dispensing medications following the intervention, compared with only 13% of control group participants ($p = .01$). Intent to discriminate when drawing blood, however, did not vary between the pre- and post-intervention survey in either group.

Following the curriculum, intervention group participants showed a small but non-significant decrease in the number of coercive policies endorsed when compared with the control group (-0.6 vs. 0.0 , $p = .08$). There was a slightly greater decrease in the amount of worry expressed by the intervention group about becoming HIV infected, both at work and outside of work compared with the control group (work: -0.6 vs. -0.3 , non-work: -0.7 vs. -0.3 , respectively), but the differences between the groups were, again, not statistically significant ($p = .15$, $p = .09$).

Process Evaluation

As shown in Table 3, both sessions were rated very highly by the intervention group participants; 89% to 100% of the students stated that the sessions were useful, interesting, and easy to understand and more than 95% of the participants felt that the sessions would change the way they will take care of PLHIV in the future and would recommend the sessions to other students. Only 4% strongly agreed with the statement that some of the materials that made them uncomfortable. Thirty-eight percent and 40% of students did report feeling embarrassed to share their thoughts or opinions; however, despite this, 87% and 93% of participants felt that they could be honest about their beliefs and behaviors during the first and second sessions, respectively.

Discussion

This study confirmed that the nursing students in this sample had high levels of baseline HIV stigma; in addition, it demonstrated that the HIV stigma-reduction curriculum was very favorably rated among nursing students and showed promise in reducing HIV-transmission misconceptions and stigmatizing attitudes toward PLHIV.

Although many students had some prior experience caring for PLHIV and all had received a prior course on universal precautions, the majority of students had high levels of stigmatizing attitudes, suggesting that a focused intervention targeting HIV stigma was needed to address this problem. Despite having high overall HIV-related knowledge, the majority of participants held transmission misconceptions, which have been associated with instrumental stigma in previous research (Ekstrand et al., 2012, 2013; Herek, 2002). Surprisingly, participants reported similar levels of worry about acquiring HIV in the health care setting and outside of work. This indicates that factors other than worry are driving the stigmatizing attitudes in the workplace; the similarity between worry at and outside of work might be explained by misconceptions that HIV can be transmitted through casual contact, which may occur just as often outside of work (Ekstrand et al., 2013). The majority of students showed intent to discriminate while performing routine nursing duties. This might be due to the students' limited experience in caring for PLHIV, as prior studies have indicated that less frequent contact with PLHIV is an independent driver of stigma (Ekstrand et al., 2013). Approximately one third of students blamed PLHIV for their infection if acquired through sex or drugs, which has been associated with symbolic stigma in prior work (Herek, 2002; Nyblade et al., 2009). The vast majority felt coercive policies were appropriate, including mandatory testing for FSW and MSM, the prohibition of marriage and childbearing, and care for PLHIV in separate facilities. The baseline data from this study are consistent with prior research on stigma among health care workers in India revealing knowledge gaps regarding routes of transmission of HIV, intent to discriminate in the professional setting, endorsement of coercive measures by the majority of nursing students, and the ascription of blame to PLHIV (Bharat et al., 2001; Hossain & Kippax, 2011; Mahendra et al., 2007; Rosenburg et al., 2012; Ruiz-Torres et al., 2007). These data confirm high levels of instrumental and symbolic stigma, both of which have been found to predict discrimination against PLHIV (Ekstrand et al., 2012, 2013; Herek, 1998, 1999, 2002).

This HIV stigma-reduction curriculum shows promise at specifically targeting HIV stigma. After receiving the curriculum, students had greater HIV-related knowledge and reduced HIV stigma across multiple measures. Participants who received the curriculum held fewer misconceptions regarding transmission, were less likely to blame PLHIV, and showed decreased intent to discriminate in the workplace. Although not all of the differences were statistically significant, this may have been due to the relatively small size of this convenience sample. Notably, the intervention appeared to have a greater effect on intentions to perform low-risk activities than those that involve a higher risk of exposure to infected fluids. This might be related to the students' inexperience and at least partly related to the reduction in transmission misconceptions; however, future interventions may warrant a dedicated module on universal precautions with a general skill-building session in addition to the existing two modules to ensure that health care providers know how to protect themselves from exposures.

The nursing students who participated in this curriculum found it to be useful and practice changing, with nearly all of the students reporting that the curriculum would change the way they cared for PLHIV and that they would recommend the course to their peers. These high

ratings indicate that the curriculum was highly acceptable to the students and may be ready for a more rigorous outcome evaluation.

It is uncertain how the stigma attitudes may change over time, as we do not know if the changes seen in this study were sustained over time. However, the promising results of this study suggest that this curriculum has the potential to substantially reduce HIV stigma and that it is ready for scale-up and a more rigorous evaluation following minor adaptations. Given the impact of HIV stigma among health care personnel on global HIV prevention and treatment efforts, developing and rigorously evaluating interventions targeting HIV stigma in multiple settings should continue to remain a priority.

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References

- Bharat S. A systematic review of HIV/AIDS-related stigma and discrimination in India: Current understanding and future needs. *Journal of Social Aspects of HIV/AIDS Research Alliance*. 2011; 8:138–149. [PubMed: 23237728]
- Bharat, S.; Aggleton, P.; Tyrer, P. India: HIV and AIDS-related discrimination, stigmatization and denial. Geneva, Switzerland: The Joint United Nations Programme on HIV/AIDS; 2001.
- Chan KY, Stoope MA, Sringeriyuang L, Reidpath DD. Stigmatization of AIDS patients: Disentangling Thai nursing students' attitudes towards HIV/AIDS, drug use, and commercial sex. *AIDS and Behavior*. 2008; 12:146–157.10.1007/s10461-007-9222-y [PubMed: 17364148]
- Das S, Leibowitz GS. Mental health needs of people living with HIV/AIDS in India: A literature review. *AIDS Care*. 2011; 23:417–425.10.1080/09540121.2010.507752 [PubMed: 21153958]
- Duvvury, N.; Prasad, N.; Kishore, N. HIV and AIDS stigma and violence intervention manual. Washington, DC: International Center for Research on Women; 2006.
- Ekstrand ML, Bharat S, Ramakrishna J, Heylen E. Blame, symbolic stigma and HIV misconceptions are associated with support for coercive measures in urban India. *AIDS and Behavior*. 2012; 16:700–710.10.1007/s10461-011-9888-z [PubMed: 21290175]
- Ekstrand ML, Ramakrishna J, Bharat S, Heylen E. Prevalence and drivers of HIV stigma among health providers in urban India: Implications for interventions. *Journal of the International AIDS Society*. 2013; 16(Suppl 2):1–12. [PubMed: 24008177]
- Herek GM. Symbolic prejudice or fear of infection? A functional analysis of AIDS-related stigma among heterosexual adults. *Basic and Applied Social Psychology*. 1998; 20:230–241.
- Herek GM. AIDS stigma and sexual prejudice. *American Behavioral Scientist*. 1999; 42:1130–1147.10.1177/0002764299042007006
- Herek GM. Thinking about AIDS and stigma: A psychologist's perspective. *Journal of Law, Medicine & Ethics*. 2002; 30:594–607.10.1111/j.1748-720X.2002.tb00428.x
- Hossain MB, Kippax S. Stigmatized attitudes toward people living with HIV in Bangladesh: Health care workers' perspectives. *Asia-Pacific Journal of Public Health*. 2011; 23:171–182.10.1177/1010539509346980 [PubMed: 19825839]
- International Center for Research on Women. A global HIV stigma reduction framework adapted and implemented in five settings in India. Washington, DC: Author; 2013.

- Joint United Nations Programme on HIV/AIDS. Stigma and discrimination. 2003. Retrieved from http://data.unaids.org/Publications/fact-sheets03/fs_stigma_discrimination_en.pdf
- Mahajan AP, Sayles JN, Patel VA, Remien RH, Sawires SR, Ortiz DJ, Coates TJ. Stigma in the HIV/AIDS epidemic: A review of the literature and recommendations for the way forward. *AIDS*. 2008; 22(Suppl 2):S67–S79.10.1097/01.aids.0000327438.13291.62 [PubMed: 18641472]
- Mahendra VS, Gilborn L, Bharat S, Mudoir R, Gupta I, George B, Pulerwitz J. Understanding and measuring AIDS-related stigma in health care settings: A developing country perspective. *Journal of Social Aspects of HIV/AIDS Research Alliance*. 2007; 4:616–625. [PubMed: 18071613]
- Nyblade L, Stangl A, Weiss E, Ashburn K. Combating HIV stigma in health care settings: What works? *Journal of the International AIDS Society*. 2009; 12:15.10.1186/1758-2652-12-15 [PubMed: 19660113]
- Rosenburg N, Taliaferro D, Ercole P. HIV-related stigma among nursing students in Cameroon. *Journal of the Association of Nurses in AIDS Care*. 2012; 23:170–176.10.1016/j.jana.2011.09.003 [PubMed: 22063703]
- Ruiz-Torres Y, Cintron-Bou FN, Varas-Diaz N. AIDS-related stigma and health professionals in Puerto Rico. *Interamerican Journal of Psychology*. 2007; 41:49–56. [PubMed: 21423837]
- Steward WT, Bharat S, Ramakrishna J, Heylen E, Ekstrand ML. Stigma is associated with delays in seeking care among HIV-Infected people in India. *Journal of the International Association of Physicians in AIDS Care*. 2012; 12:103–109.10.1177/1545109711432315
- Steward WT, Chandy S, Singh G, Panicker ST, Osmand TA, Heylen E, Ekstrand ML. Depression is not an inevitable outcome of disclosure avoidance: HIV stigma and mental health in a cohort of HIV-infected individuals from Southern India. *Psychology, Health & Medicine*. 2011; 16:74–85.10.1080/13548506.2010.521568
- Steward WT, Herek GM, Ramakrishna J, Bharat S, Chandy S, Wrubel J, Ekstrand ML. HIV-related stigma: Adapting a theoretical framework for use in India. *Social Science & Medicine*. 2008; 67:1225–1235.10.1016/j.socs-cimed.2008.05.032 [PubMed: 18599171]
- Subramanian T, Gupte MD, Dorairaj VS, Periannan V, Mathai AK. Psychosocial impact and quality of life of people living with HIV/AIDS in South India. *AIDS Care*. 2009; 21:473–481.10.1080/09540120802283469 [PubMed: 19283642]
- The World Bank. HIV/AIDS in India. Author; 2012. Retrieved from <http://www.worldbank.org/en/news/feature/2012/07/10/hiv-aids-india>

Table 1
 Baseline Characteristics and Change From Baseline Following Intervention for Continuous Variables: *M* ± *SD*.

	Baseline Data			Change Following Intervention ^a			
	Total (n = 91)	Control (n = 46)	Intervention (n = 45)	p Value ^b	Control (n = 46)	Intervention (n = 45)	p Value ^b
HIV-related knowledge: Percent correct	79.0 ± 10.0	79.7 ± 10.9	78.4 ± 9.1	.55	-1.9 ± 8.4	8.7 ± 8.7	<.001
Endorsement of coercive measures (0-9)	5.6 ± 1.6	5.5 ± 1.7	5.7 ± 1.5	.57	0.0 ± 1.4	-0.6 ± 1.8	.08
Worry about acquiring HIV at work (0-3)	1.8 ± 0.9	1.6 ± 0.9	1.9 ± 0.9	.12	-0.3 ± 0.9	-0.6 ± 0.9	.15
Worry about acquiring of HIV outside of work (0-3)	1.5 ± 1.1	1.4 ± 1.1	1.7 ± 1.1	.18	-0.3 ± 1.2	-0.7 ± 1.0	.09

^aChange = post-intervention score – pre-intervention score.

^bBased on *t* test.

Table 2

Baseline Characteristics and Change From Baseline Following Intervention for Categorical Variables: *n* (%).

	Baseline Data			Change Following Intervention			
	Total (<i>n</i> = 91)	Control (<i>n</i> = 46)	Intervention (<i>n</i> = 45)	<i>p</i> Value ^a	Control (<i>n</i> = 46)	Intervention (<i>n</i> = 45)	<i>p</i> Value ^a
Held one misconception about HIV transmission	52 (57.1)	28 (60.9)	24 (53.3)	.47	7 (15.2)	15 (33.3)	.04
Blame: Agreeing that people who got HIV deserve it	34 (37.8)	14 (30.4)	20 (45.5)	.14	4 (8.9)	11 (25.0)	.04
Intent to discriminate when							
					No longer intended to discriminate when		
dispensing medication	79 (86.8)	41 (89.1)	38 (84.4)	.51	6 (13.0)	16 (35.6)	.01
drawing blood	87 (95.6)	44 (95.7)	43 (95.6)	.98	0 (0.0)	3 (6.7)	.12

^aBased on chi-square or Fisher's exact test.

Table 3

n (%) of Students in Intervention Group (*n* = 45) Who Somewhat/Strongly Agree With Each Statement.

	<u>Session 1 (Didactic)</u>	<u>Session 2 (PLHIV Speaker)</u>
	<i>n</i> (%)	<i>n</i> (%)
I felt that this session was useful.	44 (97.8)	45 (100)
I felt that this session was interesting.	40 (88.9)	45 (100)
The information presented was easy to understand.	45 (100)	43 (95.6)
I know more about HIV than I did at the beginning of the class.	30 (66.7)	29 (64.4)
I know more about AIDS stigma than I did at the beginning of class.	27 (60.0)	34 (75.6)
I would recommend this course to other students.	43 (95.6)	45 (100)
What I learned today will change the way I take care of PLHIV.	43 (95.6)	44 (97.8)
There was enough time to ask questions.	37 (82.2)	41 (91.1)
I felt that I could be honest about my beliefs and behaviors during this session.	39 (86.7)	42 (93.3)
Some of the information presented made me uncomfortable.	4 (8.9)	10 (22.2)
I was embarrassed to share my opinions and thoughts.	17 (37.8)	18 (40.0)

Note. PLHIV = person or people living with HIV.