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The effect of sympathy on discriminatory attitudes toward persons living with HIV/AIDS in Puerto Rico: a hierarchical analysis of women living in public housing

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Abstract

As the number of persons living with HIV/AIDS (PLWHA) continues to increase in Puerto Rico, it becomes increasingly important to address the issues of stigma and other discriminatory attitudes. Therefore, the objective of the present study is to examine the attitudes toward PLWHA of a large sample of women living in public housing in Puerto Rico, including sympathy and support for PLWHA in the workplace and in school. A total of 1138 women completed a self-administered 218-item survey made up of questions that measured HIV-related knowledge, attitudes and behaviors. Levels of sympathy varied depending upon the target group, with HIV-infected drug users receiving the least sympathy. Most women reported that HIV-positive teachers should be allowed to teach and that HIV-positive children should be allowed to attend school. However, a significantly lower percentage reported that HIV-infected nurses should be allowed to continue working. Women who were more sympathetic toward PLWHA were more tolerant of PLWHA in the workplace and school, while those with inaccurate knowledge concerning HIV transmission were less tolerant. Also, those who knew a PLWHA were more tolerant. Levels of discriminatory attitudes in Puerto Rico are high and warrant both individual- and societal-level interventions.

Keywords

HIV/AIDS stigma and discrimination; low-income women; Puerto Rico; sympathy

Introduction

Entering its third decade, the HIV/AIDS epidemic continues to pose a major public health problem. In Puerto Rico, 31,798 cases of AIDS have been reported as of April, 2007 (Puerto Rico Department of Health, 2007); however, due to the lack of standardized testing, the

actual number of cases may be significantly higher (World Bank, 2000). Among all US states and territories, Puerto Rico ranks fourth in reported AIDS cases (per 100,000 population) among adults and adolescents and tenth among persons living with AIDS (Centers for Disease Control [CDC], 2007). Historically, the primary mode of transmission for HIV in Puerto Rico has been injecting-drug use (IDU), which accounts for 50% of all cases among adults since 1981 (Puerto Rico Department of Health, 2007). Among women, heterosexual transmission accounts for 61% of the cases, followed by IDU at 37%. Cumulative reported cases diagnosed among women constitute 24% of the total cases.

As the number of persons who are infected with HIV continues to increase in Puerto Rico, the subjects of stigma and discrimination become important social issues that need to be addressed. Stigma may be defined as a social process or related personal experience characterized by exclusion, rejection, blame or devaluation that result from either the experience or the reasonable anticipation of an adverse social judgment about a person or group (Goffman, 1963). This judgment is based on an enduring feature of identity conferred by a health problem or health-related condition and the judgment is, in some essential way, medically unwarranted. In addition to its application to either individuals or a group, the discriminatory social judgment may also be applied to the disease or designated health problem itself with repercussions on social and health policy. Those forms of stigma resulting from non-health related factors (e.g. skin color, religious beliefs) can also adversely affect both physical and mental well-being; these matters are, however, a larger issue than that being addressed in this study (Weiss & Ramakrishna, 2001).

Furthermore, one should also recognize that the nature of stigma may vary in different cultures; these cultural differences affect both what is stigmatized and how said stigma manifests itself. For PLWHA, these cultural displays of stigma have a serious impact on the illness experience, on help seeking and on treatment adherence. However, studies examining the correlates of stigma and discriminatory attitudes in Puerto Rico are severely lacking. One such study was identified that examined AIDS-related stigma and social interactions among Puerto Ricans living with HIV/AIDS. Participants reported instances in which AIDS stigma negatively influenced social interactions with family, friends, sexual partners, co-workers and health professionals. Some of the consequences described were loss of social support, persecution, isolation, job loss and problems accessing healthcare (Varas-Diaz, Serrano-Garcia, & Toro-Alfonso, 2005). The findings from this research accentuate the need for interventions that can address AIDS stigma and its consequences. However, in order to adequately address the issue, one must examine the factors associated with attitudes toward PLWHA. One possible strategy for improving overall attitudes toward PLWHA, especially those from marginalized groups, is to increase the level of sympathy felt for these individuals. Sympathy can be defined as a feeling of sorrow or anguish associated specifically with the suffering or need(s) of another; it can also be thought of as the act or capacity of entering into or sharing the feelings or interests of another (Eisenberg et al., 2002). Sympathy for others may lead to altruistic acts aimed at reducing their distress, which tends to induce prosocial – including helping – behaviors that are intended to achieve the reduction (Batson, Chang Orr, & Rowland, 2002; Batson et al. 1997; Batson, Fultz, Fortencbach, McCarthy, & Varney, 1986; Eisenberg et al., 1994; Sober & Wilson, 1998). Increasing sympathy and sympathy-induced altruism can lead to improved attitudes toward

stigmatized groups. By “feeling” what a stigmatized person feels, the sympathetic individual may become more supportive of the situation in which stigmatized persons find themselves (Batson et al., 2004).

There are various elements that influence when and how much one feels sympathy. These can be especially relevant for PLWHA, where target factors appear to play a significant role in attitudes toward them. Research has documented that less sympathy is expressed toward persons whose HIV status is attributed to seemingly controllable events, such as sexual intercourse and injecting drug use, compared to persons who contracted the infection through less controllable events, such as blood transfusions and perinatal transmission (Becares & Turner, 2004; Zagumny & Deckbar, 1995). Furthermore, persons who are known to be homosexuals or sex workers receive even less sympathy and compassion than HIV-infected individuals who are not considered to be members of either group (de Bruyn, 1998; International Center for Research on Women [ICRW], 2002).

General ignorance and misconceptions about this disease have been identified as the two primary reasons for widespread discrimination toward PLWHA. Yet, little attention has been paid to the social construction of HIV/AIDS within the Puerto Rican context and by which such constructions are experienced, understood, reacted to and, perhaps, reconstructed through social and interpersonal experiences (Zhou, 2007). It is discovered that, despite their knowledge of HIV/AIDS, PLWHA's perceptions about, and responses to, this disease are greatly influenced by their experiences of interacting with others (e.g. their families, friends, healthcare workers). The conflicts between individuals' mastery of knowledge pertaining to, and the overreaction in practice toward, the dissemination of knowledge per se, but that the interpersonal or interactive dimensions of discrimination and efforts to combat it must be taken into account (Zhou, 2007). One factor that may affect how persons react to PLWHA is spirituality. Spirituality has been found in previous research to be predictive of sympathy toward PLWHA with those who reported being more spiritual expressed more sympathy toward PLWHA, irrespective of target group (Norman, Carr, & Jimenez, 2006).

While the importance and implications of attitudes toward persons living with HIV/AIDS have been highlighted, limited empirical research has been conducted that specifically examines attitudes toward persons living with HIV in Puerto Rico; in fact, only one study was identified that examined attitudes toward PLWHA among children, which found that stigma toward PLWHA was more pronounced than toward other illnesses (e.g. cancer) (Gonzalez-Rivera & Bauermesiter, 2007). No other studies were identified that examined attitudes toward PLWHA living in Puerto Rico. Therefore, in an attempt to address this gap in the research, the present study sought to examine the prevalence and correlates of attitudes toward different categories of PLWHA among a large sample of women living in public housing in Puerto Rico. Relevant research with other populations was used to inform the development of a model that could be utilized to further examine the relationship among demographics, sympathy toward PLWHA and attitudes toward PLWHA in the workplace and school. A hierarchical model was conceptualized, using sub-models that reflect the various factors hypothesized to be related to attitudes toward PLWHA. The following hypotheses were developed:

- Sub-models 1a–1b: Socio-demographic characteristics (age, formal education, employment status, spirituality, religious service attendance, HIV education, HIV awareness, HIV knowledge, HIV testing) are directly related to sympathetic attitudes toward PLWHA. Previous research indicates that attitudes of sympathy toward PLWHA vary by demographics (Herek & Capitanio, 1997; Herek, Capitanio, & Widaman, 2002; Norman et al., 2006; Woubalem, 2005).
- Sub-models 2a–2c: Sympathetic attitudes toward PLWHA are directly related to support for PLWHA being allowed to work (nurses, teachers) or attend school (children) (Norman & Carr, 2005; Peltzer, Nzewi, & Mohan, 2004; Skelton, 2006).

Therefore, the present study seeks to identify the predictors of sympathy toward PLWHA and the effect of sympathy on discriminatory attitudes toward PLWHA with regard to working and/or attending school. These factors are critical because they connect directly to the principles of the International Labor Organization's (ILO) Code of Practice on HIV/AIDS and the World of Work, which code deals on the right of PLWHA to work (ILO, 2001). These principles become a marker of human rights protection and an enabling environment that is stated as the foundation of an effective national response.

Methods

Data collection

Data for these analyses were taken from *Proyecto MUCHAS*, an HIV-risk-reduction project targeting women living in public housing in Ponce, Puerto Rico. For the project, we developed a 219-item questionnaire that explored knowledge to HIV/AIDS education and prevention. Instruments from other Caribbean studies and from the Centers for Disease Control and Prevention (CDC) were used to facilitate the development and inclusion of standard questions that have been found to deliver reliable and valid measures of HIV-related attitudes and behaviors across various samples (CDC, 1992; Ministry of Health, 2004). Our survey instrument was reviewed and approved by the Institutional Review Board, Ponce School of Medicine and included: items addressing knowledge of transmission; knowledge of risks associated with specific sexual behaviors; attitudes toward persons living with HIV/AIDS; HIV-testing behaviors; sexual history; attitudes toward condoms and safer sex; sexual behaviors by steady and non-steady sex partners; and drug and alcohol use.

A non-probability sample was employed for the study; all eligible women were invited to participate. Eligibility criteria were that the potential participant be female and that she lived in the public housing development. Data were gathered from 1138 women between April and August 2006 in 23 various public housing developments across the city of Ponce. There was no age criterion for participation in this formative phase of the research.

Variables

A number of variables were used in these analyses. Some variables were recoded to facilitate the logistic regression analyses. The following operationalizations were used:

Discriminatory attitudes toward PLWHA—Women were asked to report whether they thought specific groups of PLWHA should be allowed to continue to work at their jobs (nurses, teachers) or allowed to go to school (children). Three separate variables were examined and responses were dichotomized into “yes” (0) and “no” (1). For the purposes of statistical analyses, the “don’t know” responses were coded as system missing.

Sympathy—Women were asked to report what level of sympathy they felt toward six target groups of PLWHA, those being: homosexual males; heterosexual males; females who are prostitutes; females who are not prostitutes; male drug users; and female drug users. Responses were measured using a five-point Likert scale, ranging from strongly sympathetic (1) to strongly unsympathetic (5). For each target group, responses were dichotomized into “expressed sympathy” (strongly sympathetic and sympathetic) (1) and “no expressed sympathy” (strongly unsympathetic, unsympathetic, neutral) (0). In order to determine an overall sympathy scale, values for the new variables were summed, yielding a sympathy score (theoretical range 0–6) for each respondent. A higher score reflects more sympathy toward PLWHA. Reliability analysis revealed Cronbach’s alphas of 0.96. Scale scores were trichotomized, with a score of 6 being coded as “complete sympathy” (2) and scores 1–5 being coded as “less than complete sympathy” (1), while a score of 0 was coded as “no expressed sympathy” (0). Scores were calculated only for respondents who provided data for both measures comprising the scale.

Knowledge of HIV transmission—Women were asked to report whether certain behaviors were viable modes of HIV transmission. The following items comprise the non-viable modes: through drinking fountains; through toilet seats; through tears; through sweat; through urine; through spitting; and through sharing food. Women who reported that one or more of the seven modes as being viable were coded as having “inaccurate knowledge of nonviable modes of HIV transmission” (1), while the women who reported that all seven modes were not viable were coded as having “accurate knowledge of non-viable modes of HIV transmission” (0).

HIV awareness—Women were asked whether they knew someone who was infected with HIV or who had died from AIDS. Four response categories were used: (1) yes, a family member or friend; (2) yes, but not a family member or friend; (3) no; and (4) don’t know. A new variable was created by dichotomizing the responses: “yes” (1); and, “no/don’t know” (0).

HIV education—Women were asked whether they had attended a lecture, course or community forum about HIV/AIDS at any time in the 12 months before the survey. Those who reported attending such an activity were coded as “having received HIV/AIDS education” (1), while the remaining women were coded as “not having received HIV/AIDS education” (0).

Spirituality—Women were asked to report how spiritual they were, using a 5-point Likert scale, ranging from not at all spiritual to very spiritual. Responses were dichotomized into “very spiritual” (1) and “less than very spiritual” (0).

Religious service attendance—Women were asked how often they had attended religious services in the previous month. Responses ranged from never, once, 2–3 times a month, once a week, and more than once a week. Responses were trichotomized into “never” (1), “less than weekly” (2) and “once a week or more” (3).

HIV testing—Women were asked to report whether they had received an HIV test in the past. Responses were dichotomized into “yes” (1) and “no” (0).

Employment status—Women were asked to report whether they were working, either full-time or part-time, or were unemployed. Those reporting working part-time or full-time were coded as “employed” (1), while the remaining women were coded as “unemployed” (0).

Age—Students were asked to report their age, in years, on their last birthday. Those reporting being under the age of 25 were coded as “youths” (1), while those who were 25 years of age or older were coded as “adults” (0). This categorization is based on the World Health Organization’s (WHO) definition of “youth” (WHO, 2000).

Formal education—Women were asked what level of school they had completed. Those who reported having completed high school or greater were coded as “having at least a high-school education” (1) while remaining women were coded as “having less than high-school education” (0).

Data analysis

Hierarchical logistic regression analyses were employed in order to understand the relationship among all the model variables with respect to the dependent variables of interest. This type of regression analysis takes an iterative form: an initial simple model is followed by more complex models in which the dependent variable from the immediately preceding model becomes a predictor along with the previous predictors (Cohen & Cohen, 1983). All model variables have been dichotomized or trichotomized to facilitate the logistic regression analyses. Figure 1 illustrates the conceptual model.

Results

Sample characteristics

Table 1 presents the socio-demographic characteristics of the sample. The majority of the sample was over the age of 25 years (80.2%), with a mean sample age of 36.77 (SD = 12.31). A slight majority had at least a high school education (57.5%), while most were unemployed (88.6%). A slight minority reported having attended an HIV lecture/forum/discussion in the previous year (44.0%). Most persons did not perceive themselves as very spiritual (69.9%) and slightly less than one-quarter (23.4%) attended religious services at least weekly. Overall, the vast majority (82%) reported knowing a PLWHA and most (74.4%) had accurate knowledge concerning non-viable modes of transmission, specifically casual contact modes.

Table 2 presents the univariate frequency and valid percentage distributions for the dependent variables used in the hierarchical logistic regression models. There was significantly less sympathy expressed for drug users, whether male or female, than any other group of PLWHA ($p < 0.05$). The highest level of sympathy was expressed for children (89.7%), followed by heterosexual women (who were not prostitutes or drug users) (76.8%). There were no differences in the levels of sympathy expressed toward male homosexuals and female sex workers or heterosexual men who were not drug users.

Slightly more than one-third (36.3%) disagreed that a HIV-infected nurse should be allowed to continue working; smaller percentages disagreed that HIV-infected teachers should be allowed to continue teaching (22.0%) and that HIV-infected children should be allowed to attend school (13.0%).

Multivariate analyses

Table 3 presents the results of the hierarchical logistic regression analyses and consists of five sub-models. The model chi-squared test, which assesses the extent that the model independent variables are – as a whole – related to the log odds of the dependent variables for a given regression analyses, indicated that four of the five sub-models was statistically significant (Sub-models 1b, 2a–2c). For Sub-model 1a, in which complete sympathy toward PLWHA across groups is compared to some level of sympathy, no independent variables emerged as significant ($p > 0.05$). For Sub-model 1b, in which complete sympathy toward PLWHA across groups is compared to no sympathy across risk groups, two of the nine independent variables emerged as statistically significant. Women who reported being very spiritual were more likely to report complete sympathy than women who reported being less spiritual (Odds Ratio (OR) = 2.18, 95% Confidence Interval (95%CI) = 1.37–3.48). Also, those women who reported knowing a PLWHA compared to those who reported not knowing a PLWHA were much more likely to report complete sympathy when compared to those who reported not knowing such person (OR = 2.65, 95%CI = 1.67–4.23).

In Sub-model 2a, where the attitude toward allowing an HIV-infected nurse to continue to work was the dependent variable, three of the ten independent variables emerged as being statistically significant. Women who reported knowing a PLWHA, compared to those who reported not knowing a PLWHA, were much less likely to disagree with the statement that HIV-infected nurses should be allowed to continue to work (OR = 0.37, 95%CI = 0.21–0.64). Those women who had inaccurate knowledge concerning non-viable modes of transmission were much more likely to disagree with the statement than were women who had accurate knowledge (OR = 3.91, 95%CI = 2.43–6.28). Lastly, women who expressed no sympathy or less than complete sympathy were more likely to disagree with the statement (OR = 3.97, 95%CI = 2.18–7.23 and OR = 2.74, 95%CI = 1.63–4.61, respectively).

In Sub-model 2b, in which the attitude toward an HIV-infected teacher being allowed to continue to teach was the dependent variable, four of the ten independent variables emerged as being statistically significant. Women who were employed compared to those who were not employed were less likely to disagree with the statement that HIV-infected teachers should be allowed to continue to teach (OR = 0.45, 95%CI = 0.23–0.92). Women who reported knowing a PLWHA, compared to those who reported not knowing a PLWHA, were

also much less likely to disagree with the statement that HIV-infected teachers should be allowed to continue to teach (OR = 0.40, 95%CI = 0.25–0.64). Those women who had inaccurate knowledge concerning non-viable modes of transmission were more likely to disagree with the statement than were women who had accurate knowledge (OR = 2.98, 95%CI = 1.98–4.48). Lastly, women who expressed no sympathy or less than complete sympathy were more likely to disagree with the statement (OR = 3.27, 95%CI = 1.98–5.37 and OR = 2.74, 95%CI = 1.79–4.20, respectively).

In Sub-model 2c, in which the attitude toward HIV-infected children being allowed to attend school was the dependent variable, three of the ten independent variables emerged as statistically significant. Women who reported knowing a PLWHA compared to those who reported not knowing a PLWHA were much less likely to disagree with the statement that HIV-infected children should be allowed to attend school (OR = 0.52, 95%CI = 0.32–0.85). Those women who had inaccurate knowledge concerning nonviable modes of transmission were much more likely to disagree with the statement than were women who had accurate knowledge (OR = 2.41, 95%CI = 2.17–3.51). Lastly, women who expressed no sympathy or less than complete sympathy were more likely to disagree with the statement (OR = 3.70, 95% CI = 2.29–5.96 and OR = 2.61, 95%CI = 1.79–3.81, respectively).

Discussion

The results indicate that significant proportions of women living in public housing hold less than sympathetic attitudes toward various groups of PLWHA in Puerto Rico. Less sympathy was expressed toward drug users, whether male or female, than any other group. This may be explained by the stigma attached to HIV/AIDS and drug use in Puerto Rico. When illness is believed to be the result of immoral behavior, HIV/AIDS may reinforce preexisting stigmas (Parker & Aggleton, 2000). Intravenous drug use is the primary mode of transmission, followed by heterosexual contact (Puerto Rico Department of Health, 2007), which makes it uniquely different from other Caribbean countries. One interesting finding that emerged was that the level of sympathy expressed for homosexual men and female sex workers was no different than that expressed for heterosexual men. This is in contradiction to previous research findings that these groups are stigmatized at a higher rate than other groups of PLWHA (de Bruyn, 1998, ICRW, 2002; Norman et al., 2006). This may be unique to the Puerto Rican culture and warrants further research.

While only a minority of the women surveyed had inaccurate knowledge concerning non-viable modes of HIV transmission, they were much more likely to object to an HIV-infected nurse or teacher continuing to work or an HIV-infected child to being allowed to attend school. These study findings illustrate the necessity of continued HIV education that focuses on knowledge regarding non-viable modes of HIV transmission.

Sympathy toward PLWHA was associated with tolerant attitudes toward them, in that people who were more sympathetic also tended to be more tolerant. There were marginal differences in the magnitude of the effect; women who expressed complete sympathy across all six risk groups were much less likely to express negative attitudes toward the idea of HIV-infected individuals working or attending school, compared to those who expressed

some level of sympathy or no sympathy at all. While the differences between those who expressed some sympathy and no sympathy were small, they suggest that the influence of sympathy on discriminatory attitudes varies.

It is possible that lower-class persons express less sympathy toward PLWHA than persons from other social classes, due to lack of understanding and education. Plus, living in an enclosed environment, such as public housing developments, may exacerbate these negative attitudes.

However, the important implication of these results is the association between sympathy and discriminatory attitudes across various groups of PLWHA. This finding suggests that campaigns and interventions aimed at reducing HIV/AIDS-related stigma and discrimination should focus on increasing sympathetic attitudes toward PLWHA. Since the level of sympathy varies significantly by risk group, future research endeavors will need to identify (under various conditions) the factors that influence this construct. This is crucial to understanding the dynamics of sympathy and to better inform the development and implementation of anti-stigma campaigns and interventions.

While the present study has provided insight into a number of factors associated with intolerant and discriminatory attitudes toward PLWHA in Puerto Rico, it is important to note its limitations may impact the validity of the findings. The sample was non-random, consisting of persons who volunteered to participate; therefore, the generalizability of the population of women living in public housing in Puerto Rico may be limited. Also, sympathy was not defined for the women, which may have affected the interpretation of the term for a number of women.

Conclusion

These study findings indicate there is much work to do in Puerto Rico with respect to improving attitudes toward PLWHA, especially those attitudes related to infected persons being allowed to continue to work or attend school. This is especially important considering that the rights of PLWHAs need to be acknowledged. In addition, improving the attitudes toward PLWHAs could encourage at-risk individuals to get tested, especially those who are afraid of the stigma attached to a positive test result. For awareness campaigns to be effective, it is imperative that the programs be informed by relevant theoretical and empirical research. As the number of HIV/AIDS cases continue to increase in Puerto Rico, methodologically rigorous studies are urgently needed to identify the demographic, attitudinal and social determinants of stigmatizing and discriminatory attitudes. The identification of such factors can facilitate their understanding and aid in the development of interventions to end stigma at both the individual and societal level. In previous studies that investigated specific stigmatized groups, it was found that including members of the given group in the intervention resulted in increased empathy and positive attitudes toward the group (Batson et al., 1997; Ezedinachi et al., 2002; Rutledge & Abell, 2005). In developing and implementing future programs aimed at the improvement of attitudes toward PLWHAs, care should be taken to target messages to specific subgroups and then to include members of the targeted subgroup in the subsequent efforts. The implementation of such interventions

may result in a decrease in intolerant attitudes toward PLWHAs and create a positive social climate, both for those who are infected and for those who are affected by HIV/AIDS.

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Figure 1.
Conceptual model.

Table 1Sample characteristics ($n = 1138$).

Variable	Frequency	Valid Percentage
Age		
<25 years of age	221	19.8
25+ years of age	898	80.2
Formal education		
Less than high school	463	42.5
High school or more	627	57.5
Employment status		
Unemployed	978	88.6
Employed full/part-time	126	11.4
HIV education in previous year		
Yes	496	44.0
No/don't know	630	56.0
Religious service attendance in previous month		
Once a week or more	259	23.4
Less than weekly	455	41.0
Never	395	35.6
Perceived spirituality		
Very	331	30.4
Moderately or less	759	69.6
Know person living with HIV (PLWH)		
Yes	920	82.0
No/don't know	202	18.0
HIV Knowledge of non-viable modes of transmission		
Accurate knowledge	847	74.4
Inaccurate knowledge	291	25.6

Table 2Univariate frequency and percent distributions for model dependent variables ($n = 1138$).

Variable	Frequency	Valid Percentage
Sympathy toward homosexual male living with HIV/AIDS		
Strongly sympathetic	307	28.7
Sympathetic	456	42.6
Neutral	155	14.5
Unsympathetic	85	7.9
Strongly unsympathetic	68	6.3
Sympathy toward female prostitute living with HIV/AIDS		
Strongly sympathetic	298	28.2
Sympathetic	449	42.4
Neutral	148	14.0
Unsympathetic	95	9.0
Strongly unsympathetic	68	6.4
Sympathy toward heterosexual male living with HIV/AIDS		
Strongly sympathetic	289	27.0
Sympathetic	448	41.9
Neutral	157	14.7
Unsympathetic	94	8.8
Strongly unsympathetic	81	7.6
Sympathy toward female non-prostitute living with HIV/AIDS		
Strongly sympathetic	343	32.0
Sympathetic	479	44.7
Neutral	139	13.0
Unsympathetic	67	6.3
Strongly unsympathetic	43	4.0
Sympathy toward male drug user living with HIV/AIDS		
Strongly sympathetic	266	25.0
Sympathetic	395	37.1
Neutral	171	16.1
Unsympathetic	134	12.6
Strongly unsympathetic	99	9.3
Sympathy toward female drug user living with HIV/AIDS		
Strongly sympathetic	273	25.5
Sympathetic	400	37.4
Neutral	182	17.0
Unsympathetic	119	11.1
Strongly unsympathetic	95	8.9
Sympathy toward child living with HIV/AIDS		
Strongly sympathetic	550	50.5
Sympathetic	428	39.3

Variable	Frequency	Valid Percentage
Neutral	54	5.0
Unsympathetic	37	3.4
Strongly unsympathetic	21	1.9
HIV-infected nurse should be allowed to work		
Yes	467	41.5
No	409	36.3
Don't know	250	22.2
HIV-infected teacher should be allowed to teach		
Yes	647	57.6
No	247	22.0
Don't Know	230	20.5
HIV-infected child should be allowed to attend school		
Yes	771	68.4
No	147	13.0
Don't Know	209	18.5

Table 3

Hierarchical logistic regression results.

Model and independent variables@	B	SE	Significance	OR	95%CI
Sub-model 1a: some level of expressed sympathy towards PLWHA (<i>n</i> = 878)					
Employment status	0.148	0.256	0.562	0.88	0.59–1.31
Formal education	0.037	0.166	0.823	1.04	0.75–1.44
Age	0.131	0.203	0.517	0.88	0.59–1.31
Spirituality	0.212	0.179	.0238	1.24	0.87–1.76
Church attendance					
Never	–0.031	0.223	0.889	0.97	0.63–1.50
Less than weekly	0.120	0.211	0.570	1.13	0.75–1.71
HIV awareness	0.269	0.228	0.239	1.31	0.83–2.05
HIV education	0.159	0.167	0.342	1.17	0.85–1.63
HIV transmission knowledge	–0.055	0.182	0.764	0.95	0.66–1.35
HIV testing	0.082	0.219	0.706	1.09	0.71–1.67
Sub-model 1b: no level of expressed sympathy toward PLWHA (<i>n</i> = 878)					
Employment status	0.296	0.314	0.346	1.44	0.73–2.84
Formal education	–0.317	0.201	0.115	0.69	0.44–1.10
Age	–0.158	0.234	0.499	0.85	0.54–1.35
Spirituality	0.780	0.238	0.001	2.18	1.37–3.48
Church attendance					
Never	0.151	0.272	0.579	1.16	0.68–1.98
Less than weekly	0.257	0.260	0.323	1.29	0.78–2.15
HIV awareness	0.978	0.237	0.000	2.66	1.67–4.23
HIV education	–0.042	0.199	0.832	0.96	0.65–1.42
HIV transmission knowledge	0.230	.0229	0.316	1.26	0.80–1.97
HIV testing	0.256	0.248	0.302	1.29	0.79–2.10
HIV testing					
Sub-model 2a: HIV-infected nurse allowed to work (<i>n</i> = 687)					
Employment status	–1.013	0.538	0.060	0.36	0.13–1.04
Formal education	–0.445	0.234	0.057	0.64	0.41–1.01

Model and independent variables@	B	SE	Significance	OR	95%CI
Age	-0.226	0.264	0.987	1.00	0.60–1.42
Spirituality	0.004	0.188	0.424	1.16	0.80–1.68
Church attendance					
Never	0.264	0.328	0.421	1.30	0.68–2.48
Less than weekly	0.302	0.316	0.340	1.35	0.73–2.51
HIV awareness	-1.005	0.284	0.000	0.37	0.21–0.64
HIV education	0.130	0.242	0.591	1.14	0.71–1.83
HIV knowledge	1.362	0.242	0.000	3.91	2.43–6.28
HIV testing	0.291	0.324	0.369	1.34	0.71–2.53
Sympathy					
Some level of expressed sympathy	1.008	0.265	0.000	2.74	1.63–4.61
No expressed sympathy	1.379	0.305	0.000	3.97	2.18–7.23
Sub-model 2b: HIV-infected teacher allowed to teach (<i>n</i> = 693)					
Employment status	-0.789	0.356	0.027	0.45	0.23–0.92
Formal education	-0.285	0.193	0.140	0.75	0.52–1.10
Age	0.148	0.241	0.540	1.16	0.73–1.86
Spirituality	-0.008	0.219	0.972	0.99	0.65–1.52
Church attendance					
Never	0.233	0.269	0.388	1.26	0.74–2.14
Less than weekly	0.303	0.256	0.237	1.35	0.82–2.24
HIV awareness	-0.928	0.244	0.000	0.40	0.25–0.64
HIV education	-0.027	0.201	0.894	0.97	0.56–1.44
HIV knowledge	1.092	0.208	0.000	2.98	1.98–4.48
HIV testing	-0.270	0.521	0.281	0.76	0.47–1.25
Sympathy					
Some level of expressed sympathy	1.01	0.218	0.000	2.74	1.79–4.20
No expressed sympathy	1.18	0.254	0.000	3.27	1.98–5.37
Sub-model 2c: HIV-infected child should be allowed to attend school (<i>n</i> = 684)					
Employment status	-0.089	0.257	0.729	0.92	0.55–1.51
Formal education	0.040	0.174	0.820	1.04	0.74–1.46
Age	0.264	0.219	0.228	1.30	0.85–2.00

Model and independent variables@	B	SE	Significance	OR	95%CI
Spirituality	0.122	0.189	0.520	1.13	0.78–1.64
Church attendance					
Never	0.122	0.228	0.593	1.13	0.72–1.77
Less than weekly	0.419	0.219	0.056	1.52	0.99–2.33
HIV awareness	–0.650	0.246	0.008	0.52	0.32–0.85
HIV education	–0.352	0.371	0.395	0.86	0.61–1.21
HIV knowledge	0.880	0.192	0.000	2.41	1.66–3.51
HIV testing	–0.241	0.233	0.301	0.79	0.50–1.24
Sympathy					
Some level of expressed sympathy	0.959	0.193	0.000	2.61	1.79–3.81
No expressed sympathy	1.307	0.243	0.000	3.70	2.29–5.96

Notes:

@ The reference group for each variable is as follows: employment status (unemployed); formal education (less than high school); age (age- > =25 years); spirituality (less than very spiritual); church attendance (at least weekly); HIV awareness (don't know PLWHA); HIV education (no previous formal HIV education); HIV transmission knowledge (accurate); HIV testing (no history of testing) and sympathy toward PLWHA (complete sympathy across groups); PLWHA should be allowed to work/attend school (agree).

* $p < .05$;

** $p < .01$;

*** $p < .001$.