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# Attitudes Toward HIV Among Health Professions Students in the Southeastern United States: Implications for Interprofessional Education

**Kathryn R. Macapagal PhD** *Feinberg School of Medicine, Northwestern University*

**Abbey K. Valvano PhD** *Medical College of Georgia at Georgia Regents University*

**Lauren Penwell-Waines PhD** *Medical College of Georgia at Georgia Regents University*

**Christina K. Wilson PhD** *Atlanta VA Medical Center*

**Lindsey M. West PhD** *Georgia Regents University*

**Lara M. Stepleman PhD** *Medical College of Georgia at Georgia Regents University*

## Abstract

**INTRODUCTION** The Southeastern United States is disproportionately affected by HIV, and unfavorable attitudes toward HIV among healthcare providers in these communities can negatively impact persons living with HIV (PLWH). Moreover, attitudinal differences between providers impede collaboration in interdisciplinary HIV treatment teams and can have detrimental effects on patient care. Identifying attitudinal differences during health professions training and student characteristics associated with those differences may help narrow these gaps by revealing potential areas for improving education.

**METHODS** Health professions students in nursing, allied health, medical, mental health, and dental training programs in Georgia (n = 475) completed measures of attitudes toward HIV and patient care for PLWH, and measures of personal and educational characteristics including religiosity, attitudes toward lesbian, gay, bisexual, and transgender (LGBT) patients, and clinical and classroom experiences relevant to sexual health.

**RESULTS** Beliefs about disclosing patients' HIV status without consent, concerns about the effects of working with PLWH on students' health, and perceptions of adequacy of HIV education differed across disciplines. Several personal and educational factors were correlated with students' attitudes (e.g., having positive attitudes toward LGBT patients, more patient contact hours relevant to sexual health).

**CONCLUSION** Addressing HIV-related concepts in health professions training (e.g., exposure to patients with sexual health concerns or who are LGBT) could improve attitudes about HIV and patient care. Interprofessional clinical and classroom opportunities, where students with varied personal and educational backgrounds can learn from and with each other about HIV, also could improve student attitudes and interdisciplinary collaboration in HIV clinical care.

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## Implications for Interprofessional Practice

- Negative attitudes toward HIV and persons living with HIV (PLWH) remain significant barriers to interprofessional collaboration among healthcare providers, and ultimately are barriers to providing quality care (for providers) and accessing or seeking care (for patients). Interprofessional training at the pre-licensure level that is related to HIV could help mitigate these issues.
- Health professions students may benefit from reflecting on their own positive or negative biases about PLWH, and what factors may contribute to these beliefs (e.g., religion, sexual orientation, clinical/didactic experiences). Trainees could share and discuss their views, and engage in perspective-taking activities when students from other disciplines share divergent views. Such activities could equip students with the ability to self-reflect, communicate, and empathize with providers who may not share their perspectives about PLWH.
- Health professions training programs could implement broader interprofessional sexual health curricula, which could increase students' comfort and competence with a range of interrelated issues including HIV, healthy sexuality, sexual dysfunction, and sexual orientation and gender identity. Such training could help familiarize trainees with the roles of different providers in integrated HIV care and facilitate the use of multidisciplinary treatment plans in the future.

## Introduction

The southeastern region of the United States is disproportionately affected by HIV, accounting for nearly half of new HIV diagnoses among adults and adolescents annually (CDC, 2013). Nationally, most of these diagnoses are due to sexual transmission among men who have sex with men (MSM), and in the southeastern U.S., black women and black MSM are particularly vulnerable to HIV (CDC, 2013). Moreover, persons living with HIV (PLWH) experience much higher rates of physical and mental health conditions compared to persons without HIV (e.g., Goulet et al., 2007; Pence, Miller, Whetten, Eron, & Gaynes, 2006). In order to provide appropriate care for PLWH, it is essential that healthcare providers in the Southeastern U.S. are sensitive to and knowledgeable about the unique needs of this population.

## Literature Review

The Southeastern U.S. represents a diverse population, with rapid growth in racial and ethnic minority groups in the last decade (Humes, Jones, & Ramirez, 2011). Despite this diversity, this region is characterized by a generally conservative social, cultural, and political

climate that may manifest itself in healthcare settings as well. This environment could both facilitate healthcare providers' expression of unfavorable attitudes toward marginalized populations (e.g., PLWH, lesbian, gay, bisexual, and transgender [LGBT] patients) and prevent providers from expressing more favorable attitudes toward these groups. Indeed, there is evidence of more negative attitudes toward HIV among providers who practice in the Southeastern U.S. (Talley, Ritzdorf, & Muma, 2010) whereas national data shows more positive attitudes among providers (Myers et al., 2007). Unfortunately, negative attitudes about HIV prevent providers from delivering optimal healthcare and decrease PLWH's willingness to access healthcare (e.g., Ding et al., 2005; Wong et al., 2004), which together can perpetuate health inequities among PLWH in the southeastern U.S.

Furthermore, healthcare providers' attitudes toward HIV and PLWH warrant renewed research attention given the emergence of integrated care for PLWH (e.g., Bottonari & Stepleman, 2010; Chetty & Maharaj, 2013; Zaller, Gillani, & Rich, 2007). While multidisciplinary treatment teams are designed to improve healthcare for PLWH, differences in professional cultures, attitudes, and beliefs between

providers can hinder collaboration and impede patient care (Hall, 2005). One way to mitigate this problem is to assess attitudes and beliefs about HIV and PLWH at the health professions training level. Training aimed at increasing health professions students' knowledge about HIV and providing culturally-sensitive care to PLWH can remediate inaccurate and potentially stigmatizing beliefs before students enter the workforce (Oandasan & Reeves, 2005). Moreover, identifying attitudinal similarities and differences *across* students in different health professions fields would shed light on HIV-related topics that would benefit from interprofessional education, where students learn from each other and with each other (e.g., D'Eon, Proctor, Cassidy, McKee, & Trinder, 2010). This training model has the potential to improve patient-centered care by building communication skills that foster collaboration with other providers, and by improving HIV-related knowledge and attitudes, which would transfer into clinical practice (e.g., Blue & Zoller, 2012; D'Eon et al., 2010).

However, the vast majority of studies on health professions students' attitudes toward HIV have focused only on one field, such as nursing, dentistry, or medicine (e.g., Kopacz, Grossman, & Klamen, 1999; Talley et al., 2010). Furthermore, despite the expanding role of mental health providers in multidisciplinary HIV care, research has largely overlooked psychology trainees' attitudes toward HIV (for exceptions see: Carney, Werth, & Emanuelson, 1994; Fliszar & Clopton, 1995), and no studies have investigated how they compare to attitudes of students in other disciplines. Moreover, differences in trainees' personal attributes and educational characteristics have been found to explain varying attitudes toward HIV, such as knowledge, education, or clinical experience relevant to HIV (Carney et al., 1994), or attitudes toward LGBT individuals (Kopacz et al., 1999), which could be targeted in interprofessional training. While personal attributes related to attitudes toward HIV are not always modifiable (e.g., age, religiosity; Andrewin & Chien, 2008), trainees' awareness of factors that may render them more vulnerable to positive or negative biases about PLWH may be beneficial when working in multidisciplinary teams.

In this study, we examined attitudes and beliefs about HIV and PLWH among health professions students

in the Southeastern United States. Unlike previous research on health professions students' attitudes toward HIV, we included trainees from psychology graduate programs and compared attitudes between different health professions disciplines. We also examined the relationship between several personal and educational characteristics and trainees' attitudes toward HIV and PLWH, including religiosity, sexual orientation, attitudes toward LGBT-identified patients, and clinical and didactic experiences relevant to sexual health. These factors may be particularly important to consider among trainees who live and work in a more socially and culturally conservative region in which there may be more stigma around HIV and related subjects, like sexual health and sexual orientation (Lichtenstein, 2005). Based on previous findings, we expected that negative attitudes toward HIV and PLWH would be associated with stronger religious identification (Andrewin & Chien, 2008), and more negative attitudes towards LGBT-identified patients (Kopacz et al., 1999). We also predicted that heterosexual identification, and less exposure to sexual health topics in the classroom and clinic, would also be linked with more negative attitudes toward HIV.

## Methods

Participants were 475 students recruited from a public health sciences university and clinical or counseling psychology master's degree programs in Georgia, as the health sciences university had no training programs in psychology. As part of a larger Internet-based study of sexual health competencies in health professions students, participants completed a questionnaire on attitudes toward treating PLWH. Participants were required to be over the age of 18 and enrolled in a graduate program in medicine, nursing, dentistry, an allied health science (e.g., medical laboratory, imaging, and radiologic sciences; occupational therapy; physical therapy), or mental health programs that led to licensure.

## Measures

**Author-derived questionnaire.** This questionnaire assessed key demographic data, much of which has been found to be associated with provider attitudes toward HIV and sensitive health topics. These variables included participants' age, gender, religious affiliation, sexual orientation, race/ethnicity, type

of graduate program, semesters completed in their current training program, and estimated numbers of patient contact hours and classroom (non-clinical) hours relevant to sexual health. Religiosity was measured using a 5-point scale ranging from *Not at all* (1) to *Extremely* (5).

**Attitudes toward LGBT Patients Scale (ATLPS)** (Sanchez, Rabatin, Sanchez, Hubbard, & Kalet, 2006). Participants also completed the ATLPS, a 13-item questionnaire measuring providers' comfort with LGBT patient encounters, opinions about same-sex relationships, and views of professional responsibilities, among other areas. Items were rated on a 5-point Likert scale ranging from *Strongly Disagree* (1) to *Strongly Agree* (5), and six items were reverse-scored such that higher scores indicated more positive attitudes toward LGBT patients.

**Attitudes toward HIV Scale (ATHS)** (Kopacz et al., 1999). The primary outcome measures for this study were the total score and individual item scores on the ATHS. The ATHS is a 10-item scale that assesses attitudes about HIV and beliefs about working with patients with HIV. Items (Table 1) are rated on a 4-point Likert scale ranging from *Strongly Disagree* (1) to *Strongly Agree* (4). Two items were reverse-scored to compute the ATHS total score such that higher scores indicated more negative attitudes and beliefs. The original scores were used for individual item analyses such that a higher score indicated greater agreement with the item.

Because the ATLPS and ATHS were created to assess medical student attitudes, several items were modified for this study such that the language would apply to students in different disciplines (e.g., changing the word "residency" to "career"). The ATLPS also was adapted to use the term "LGBT" rather than "lesbian and gay" to be more inclusive of other sexual minority individuals. The adapted versions of the scales demonstrated good reliability (ATHS  $\alpha = .75$ ; ATLPS  $\alpha = .78$ ).

### Procedure

The health sciences university's human subjects committee approved all procedures prior to data collection. Students in medicine, dentistry, nursing, and allied health were recruited via a Web-based

evaluation system used by the health sciences university, and mental health students were recruited through professional organizations and mental health graduate program listservs and email groups in Georgia. Participants at the health sciences university completed the survey study on the Web-based evaluation system, and the remaining participants accessed an identical survey protocol through SurveyMonkey, an Internet-based survey research tool. All participants reviewed an electronic informed consent document, and submitting the questionnaire indicated their consent to participate. Participants who completed the study were given the opportunity to enter a raffle to win one of fifteen \$50 gift certificates.

### Data Analysis

Sexual orientation was measured using a dichotomous variable for the purpose of analysis (1 = heterosexual; 2 = LGBTQ and other sexual minority status [e.g., asexual]). Analyses included participants who did not complete all ATHS items (approximately 1% of cases) as their removal did not meaningfully change the results. One-way analysis of variance (ANOVA), correlations, and nonparametric tests examined differences in personal and educational characteristics across student discipline, and correlations explored relationships between ATHS scores and participants' personal and educational characteristics. Finally, one-way ANOVAS examined differences in individual ATHS items related to student discipline.

### Results

Detailed participant characteristics can be found in Table 1 (following page). Most participants identified as white, heterosexual, and female. On average, participants reported being "quite religious," and over two-thirds of the sample identified as Christian. Medical students comprised over half of the sample, followed in order by allied health, dentistry, nursing, and mental health students. Students were enrolled in their current training programs between 1-11 semesters, with a median of 3 semesters. Students reported a median of 10 classroom hours ( $M = 16.6$ ,  $SD = 23.1$ ) devoted to sexual health topics (e.g., sexually transmitted infections including HIV) and a median of 1 patient contact hour ( $M = 13.4$ ,  $SD = 41.3$ ) related to sexual health in their current and past degree programs.

**Table 1.** *Participants' personal and educational characteristics.*

	<i>N</i>	<i>%</i>
Gender		
Male	183	38.5
Female	287	60.4
Unspecified	5	1.0
Race/ethnicity		
White	344	72.4
Asian	61	12.8
Black	42	8.8
Other	28	6.0
Sexual orientation		
Heterosexual	445	93.7
LGBTQ or other sexual minority	30	6.3
Student field		
Medicine	270	56.8
Allied health	94	19.8
Dentistry	48	10.1
Nursing	32	6.7
Mental health	31	6.5
Religious affiliation		
Christian	325	68.4
Jewish	17	3.6
Hindu	16	3.4
Muslim	12	2.5
Atheist or agnostic	30	6.3
No affiliation	44	9.3
Other	31	6.5
	<i>M</i>	<i>SD</i>
Age	26.9	7.4
Religiosity	3.0	1.2
Semesters completed	3.6	2.4
Estimated classroom hours relevant to sexual health	16.9	23.2
Estimated patient contact hours relevant to sexual health	13.2	40.0
ATLPS score	39.3	5.6
ATHS score	20.9	4.3



### *Relationships between personal and educational factors and student discipline*

ANOVAs examined differences in personal and educational factors by student field; means are available in Table 2. Regarding personal factors, there was a significant difference in religiosity by student discipline ( $F(4,472) = 7.97, p < .001$ ). Follow-up tests showed that medical students were less religious on average than nursing and allied health students ( $ps < .001$ ) and dentistry students ( $p < .03$ ). Mental health students were less religious than nursing students ( $p = .004$ ) and allied health students ( $p < .02$ ). Mental health students' religiosity was not significantly different from either medical or dental students. Mental health students were significantly older than students from all disciplines ( $F(4,455) = 211.9, p < .001$ ). There was a significant difference in the proportion of LGBT-identified students across training programs

$\chi^2(4, N = 473) = 14.52, p < .01$ ) such that there was a greater proportion of LGBT-identified students in mental health compared to allied health ( $p = .001$ ) and medicine ( $p < .05$ ). There were no significant differences in attitudes toward LGBT patients on the ATLPS measure.

Regarding educational factors, medical students reported greater numbers of estimated patient contact hours relevant to sexual health concerns ( $F(4,465) = 2.41, p < .05$ ) compared to students in allied health ( $p < .03$ ) and dental programs ( $p < .02$ ), but not compared to nursing or mental health students. Dental students reported fewer classroom hours on sexual health topics ( $F(4,467) = 2.52, p < .05$ ) compared to medical and allied health ( $p < .02$ ) and nursing students ( $p = .004$ ), but not compared to mental health students. There were no significant differences in number of semesters spent in current training program.

**Table 2.** Means of participant characteristics by student discipline

	Allied Health	Dentistry	Medicine	Nursing	Mental Health
	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)
Age	25.0 (3.9)	26.3 (4.3)	25.3 (3.1)	24.6 (5.4)	48.9 (10.2) <sup>m,a,d,n</sup>
Religiosity	3.4 (1.1) <sup>m,mh</sup>	3.2 (1.1) <sup>m</sup>	2.8 (1.3) <sup>a,d,n</sup>	3.7 (0.8) <sup>m,mh</sup>	2.8 (1.2) <sup>a,n</sup>
Semesters completed	3.3 (2.1)	3.7 (3.3)	3.7 (2.3)	3.3 (1.6)	2.9 (2.2)
Classroom hours on sexual health topics	18.3 (28.2) <sup>d</sup>	8.1 (10.0) <sup>a,m,n</sup>	17.3 (20.6) <sup>d</sup>	23.5 (33.6) <sup>d</sup>	15.4 (27.3)
Patient contact hours related to sexual health	6.8 (31.5) <sup>m</sup>	5.4 (0.8) <sup>m</sup>	17.6 (42.8) <sup>a,d</sup>	50.1 (14.0)	11.3 (52.3)
ATLPS score	38.6 (5.4)	37.9 (5.5)	39.8 (5.7)	38.1 (5.3)	40.5 (5.4)
Sexual orientation (N)					
Heterosexual	93 <sup>mh</sup>	45	252 <sup>mh</sup>	30	25 <sup>a,m</sup>
LGBTQ	1	3	17	1	6

Superscript letters indicate significant differences by student discipline; <sup>a</sup>allied health, <sup>d</sup>dentistry, <sup>m</sup>medicine, <sup>mh</sup>mental health, <sup>n</sup>nursing. All  $ps < .05$  or less, two tailed.

### *Relationships between personal and educational factors and ATHS*

Correlations revealed that respondents with higher estimated patient contact hours relevant to sexual health concerns ( $r(464) = -.13, p = .004$ ), more positive views towards LGBT patients as measured by the ATLPS ( $r(471) = -.50, p < .001$ ), and older age ( $r(454) = -.12, p = .009$ ) reported more positive views towards HIV and PLWH, as indicated by lower scores on the ATHS. In addition, participants who identified as LGBTQ or as another sexual minority reported more positive views toward PLWH ( $M = 19.2, SD = 4.1$ ), relative to participants who identified as heterosexual ( $M = 21.0, SD = 4.3; F(1, 472) = 4.72, p = .03$ ). ATHS total score did not show significant relationships with respondent gender, religiosity, semesters spent in current training program, or estimated classroom hours relevant to sexual health.

### *Differences in ATHS items by student discipline*

There were significant differences between student disciplines on several ATHS items (Table 3, following page). Mental health trainees were less likely to endorse concerns that working with PLWH would endanger their health ( $F(4,470) = 5.95, p < 0.001$ ), compared to students in medicine, allied health, and dentistry ( $ps < .001$ ) and compared to nursing students ( $p = .004$ ). However, mental health trainees were less likely to endorse beliefs that their programs were providing them with enough education to work safely with PLWH ( $F(4,468) = 9.17, p < 0.001$ ) compared to students in medicine, nursing, allied health, and dentistry ( $ps < .001$ ). Medical students were less likely to endorse concerns that HIV will be found to be transmittable in ways that are believed to be safe at present ( $F(4,469) = 5.59, p < 0.001$ ) than nursing ( $p = .009$ ) and dentistry students ( $p = .008$ ), but were not significantly different from allied health or mental health students. Similarly, mental health trainees were less likely to endorse these concerns compared to nursing and dentistry students ( $ps = .02$ ) and were not significantly different from allied health students. Medical students were more likely to endorse willingness to disclose patients' HIV status to their sexual partners against the patient's wishes ( $F(4,465) = 13.60, p < 0.001$ ), than nursing, allied health, mental health ( $ps \leq .001$ ), and dentistry students ( $p = .002$ ). Mental health students were less willing to refuse to

treat PLWH ( $F(4,467) = 3.71, p = 0.005$ ) compared to medical and allied health students ( $ps = .03$ ) and dentistry students ( $p = .002$ ), but were not significantly different from nursing students. Finally, although the omnibus ANOVA on whether one's unwillingness to work with PLWH would play a role in choosing where to practice geographically was significant ( $F(4,468) = 2.53, p = .04$ ), follow-up analyses did not yield any significant comparisons. There were no significant differences within the remaining items (i.e., willingness to perform mouth-to-mouth resuscitation on PLWH, mandatory HIV testing for patients admitted to the hospital, whether not wanting to work with PLWH plays a role in students' career choice and location of practice, belief that students should have the right to refuse care to PLWH). Also, there were no significant differences between student disciplines in total ATHS score.

## **Discussion**

Negative attitudes about HIV among healthcare providers likely contribute to the prevalence of health disparities in PLWH. Thus, it is critical to identify factors linked with positive or negative attitudes toward HIV among health professions students, which can ultimately impact health professions training in areas disproportionately affected by HIV like the Southeastern U.S. In addition, further research ultimately can help improve provision of care and patients' experience of care. In this study, we compared attitudes and beliefs about working with PLWH in a sample of health professions students in Georgia and explored associations between students' personal and educational factors and their attitudes toward HIV. While previous research typically examined attitudes within health professions disciplines, this study was unique in that it compared attitudes toward HIV across a number of fields including nursing, allied health, medicine, dentistry, and psychology. In particular, the inclusion of psychology students is notable given the growing trend toward integrated HIV care and the expanding role of mental health in multidisciplinary healthcare teams.

Overall, results showed both similarities and differences in attitudes toward HIV and PLWH across health professions student fields. Several of the findings appeared to differentiate mental health trainees from those in medical, dental, nursing, or



**Table 3.** Means of ATHS items and ATHS total score by student discipline

Item	Overall	Allied Health	Dentistry	Medicine	Nursing	Mental Health
	M (SE)	M (SE)	M (SE)	M (SE)	M (SE)	M (SE)
ATHS Total Score	20.91 (0.20)	20.49 (0.45)	21.77 (0.62)	20.96 (0.26)	21.28 (0.76)	20.00 (0.78)
I am concerned that working with patients living with HIV/AIDS may endanger my health	2.28 (0.04)	2.32 (0.08) <sup>mh</sup>	2.47 (0.11) <sup>mh</sup>	2.30 (0.05) <sup>mh</sup>	2.34 (0.14) <sup>mh</sup>	1.65 (0.14) <sup>m,a,d,n</sup>
My professional education is providing me with enough information to work safely with patients living with HIV/AIDS (R)	3.03 (0.04)	3.18 (0.08) <sup>mh</sup>	3.17 (0.11) <sup>mh</sup>	3.02 (0.05) <sup>mh</sup>	3.19 (0.13) <sup>mh</sup>	2.29 (0.14) <sup>a,d,m,n</sup>
I am concerned that in the future we will find that HIV/AIDS can be transmitted in ways now thought safe	2.10 (0.03)	2.10 (0.07)	2.40 (0.10) <sup>m,mh</sup>	2.03 (0.04) <sup>d,n</sup>	2.47 (0.13) <sup>m,mh</sup>	1.90 (0.13) <sup>d,n</sup>
I would be willing to perform mouth-to-mouth resuscitation on patients with HIV/AIDS (R)	2.34 (0.04)	2.43 (0.08)	2.20 (0.12)	2.38 (0.05)	2.13 (0.14)	2.16 (0.14)
I would disclose against their wishes the HIV positive status of patients to their sexual partners	2.26 (0.04)	1.97 (0.09) <sup>m</sup>	2.02 (0.12) <sup>m</sup>	2.50 (0.05) <sub>a,d,mh,n</sub>	1.88 (0.15) <sup>m</sup>	1.80 (0.15) <sup>m</sup>
All patients admitted to the hospital should be HIV-tested	2.65 (0.04)	2.66 (0.08)	2.73 (0.11)	2.62 (0.05)	2.75 (0.14)	2.71 (0.14)
Not wanting to work with patients with HIV/AIDS will play a role in my career choice	1.81 (0.03)	1.89 (0.07)	1.96 (0.11)	1.76 (0.05)	1.81 (0.13)	1.77 (0.13)

R = Indicates a positively-worded item that was reverse-scored to compute the ATHS total score. The original score was used for the purposes of this table and individual item analyses. Superscript letters indicate significant differences by student discipline; <sup>a</sup>allied health, <sup>d</sup>dentistry, <sup>m</sup>medicine, <sup>mh</sup>mental health, <sup>n</sup>nursing. All *ps* < .05 or less, two tailed.

**Table 3 (cont'd).** Means of ATHS items and ATHS total score by student discipline

Item	Overall	Allied Health	Dentistry	Medicine	Nursing	Mental Health
	M (SE)	M (SE)	M (SE)	M (SE)	M (SE)	M (SE)
Not wanting to work with patients with HIV/AIDS will play a role in the choice where I practice geographically	1.76 (0.04)	1.89 (0.08)	1.94 (0.11)	1.70 (0.05)	1.84 (0.13)	1.55 (0.14)
I believe I have the right to refuse to treat a patient with HIV/AIDS	1.98 (0.04)	1.88 (0.09)	2.00 (0.12)	2.02 (0.05)	1.91 (0.15)	1.97 (0.15)
I would refuse to treat a patient with HIV/AIDS	1.52 (0.03)	1.54 (0.07) <sup>mh</sup>	1.71 (0.09) <sup>mh</sup>	1.51 (0.04) <sup>mh</sup>	1.59 (0.11)	1.16 (0.11) <sup>a,d,m</sup>

R = Indicates a positively-worded item that was reverse-scored to compute the ATHS total score. The original score was used for the purposes of this table and individual item analyses. Superscript letters indicate significant differences by student discipline; <sup>a</sup>allied health, <sup>d</sup>dentistry, <sup>m</sup>medicine, <sup>mh</sup>mental health, <sup>n</sup>nursing. All *ps* < .05 or less, two tailed.

allied health programs. Compared to students in other fields, mental health students indicated that their education was not providing them with enough information about working safely with PLWH. Indeed, the lack of HIV- and sexual health-specific education in mental health training programs has been noted in the literature (Schmeller-Berger, Handal, Searight, & Katz, 1998; Wiederman & Sansone, 1999), and though efforts have been made to address this problem (American Psychological Association Office on AIDS, 2013) our findings show that mental health students still perceive training gaps in their education. Despite this concern, mental health students indicated more favorable attitudes toward HIV and PLWH than their counterparts on several items. This finding may reflect a value difference in mental health professions surrounding openness to and acceptance of individual and cultural diversity, which is a major competency area in mental health training programs (American Counseling Association, 2014; American Psychological Association, 2011). Moreover, evidence shows that progressive, liberal values may be overrepresented in psychology and mental health, which, like conservative views, can impact attitudes and behaviors toward patients (Redding, 2001). Finally, more favorable attitudes toward HIV among mental health trainees could reflect differences in their scope of practice. Mental health providers traditionally practice in settings or contexts that

limit their occupational exposure to HIV, and as such may be less concerned that working with PLWH would endanger their health or be concerned about exposure to HIV through transmission routes that are yet unknown.

Medical students' scores indicated that they were more likely than all other disciplines to disclose a patient's HIV status to the patient's partner without his or her consent, which may reflect differing perspectives on HIV reporting and confidentiality. Medical students' inclination to disclose may arise from a public health and infection control perspective, as well as current partner notification laws in Georgia, which state that physicians may disclose to a patient's partner who is perceived to be at risk for acquiring HIV, provided that the patient is notified beforehand (State of Georgia, 2013). Other professions may be more inclined to counsel the patient to disclose his or her HIV status to their partners, or may be less likely to encounter patients' partners and/or engage in discussions about sex and HIV transmission. Despite this finding, mean scores across student fields were relatively low, suggesting that students were generally unlikely to disclose a patient's status without consent.

Nursing and mental health trainees indicated that they were less inclined to refuse to treat PLWH compared to students in other disciplines, which could reflect

cultural differences between fields. Although empathy and compassion for patients with diverse backgrounds is valued across health professions (Fields et al., 2011), mental health and nursing training programs historically have placed more emphasis on training students on these skills (Constantine, 2001; Von Dietze & Orb, 2000), which may translate into these students' lower likelihood of treatment refusal. In addition, nursing and dental students were more likely than medical or mental health students to be concerned about HIV transmission routes that are yet unknown. Nurses may have higher risks of occupational exposure to HIV than other health professionals due to more frequent exposure to bodily fluids and the possibility for needle sticks (CDC, 2011). Despite this concern, it is important to note that nursing students were not more likely to refuse care. However, it is unclear what may drive dental students' concerns about exposure to HIV, as there are no documented HIV infections due to occupational exposure among dentists (CDC, 2003).

The few findings involving allied health students may be associated with the fact that allied health encompasses a wide range of disciplines that may have heterogeneous attitudes toward HIV. As our sample of allied health students was not large enough to make detailed comparisons, future studies would benefit from comparing HIV attitudes across different allied health professions. There were no significant differences between health professions in total ATHS scores; however, given the brevity of the scale and that the items reflected multiple dimensions of HIV-related attitudes, this finding was not entirely surprising. In addition, there were no significant differences between student discipline on several items related to not wanting to work with or provide care for PLWH. Item means suggested that, on average, the prospect of working with PLWH was not likely to affect students' career-related decisions, and that students had neutral attitudes about performing mouth-to-mouth resuscitation on PLWH, and compulsory HIV testing for patients admitted to the hospital.

### *Implications for interprofessional education*

As the treatment of HIV moves toward an integrated model of care (e.g., Bottonari & Stepleman, 2010; Chetty & Maharaj, 2013; Zaller et al., 2007), it is becoming increasingly important for providers to work collaboratively to arrive at patient-centered

decisions and treatment plans. However, because individual differences in providers' training, attitudes, and personal characteristics can interfere with collaboration (Hall, 2005), addressing ways to look beyond these similarities at the pre-licensure level may alleviate problems with multidisciplinary teamwork (Oandasan & Reeves, 2005). In this study, health professions students' attitudes toward HIV, personal attributes, and educational experiences varied across disciplines. This diversity among trainees arguably could enrich interprofessional training experiences aimed at improving culturally-competent, patient-centered HIV care. For instance, health professions students may benefit from reflecting on their own positive or negative biases about PLWH, and what factors may contribute to these beliefs (e.g., religion, sexual orientation, personal or clinical experiences relevant to HIV) (Kopacz et al., 1999). If given a safe, nonjudgmental environment, trainees can be encouraged to share and discuss their views, and engage in perspective-taking activities when students from other disciplines share divergent views. Such experiential exercises could equip students with the ability to self-reflect, communicate, and empathize with providers who may not share their perspective about PLWH, thus fostering a more collaborative working environment. These discussions could also familiarize trainees with the roles of different providers in integrated HIV care and facilitate the use of multidisciplinary treatment plans in the future (Penwell-Waines et al., in press).

Our results also demonstrated that some students perceived deficiencies in their training on HIV, that sexual health training was associated with more positive attitudes toward HIV, and that positive attitudes about LGBT-identified patients were linked with similar attitudes toward PLWH. These findings support the expansion of sexual health education for providers, which is sorely lacking in health professions training programs the United States (Ford, Barnes, Rompalo, & Hook, 2013). In other words, rather than instituting an HIV-specific education module as suggested in previous studies (e.g., Carney et al., 1994), implementing a broader interprofessional sexual health curriculum could increase students' comfort and competence with a range of interrelated issues including HIV, healthy sexuality, sexual dysfunction, and sexual orientation and gender identity (Ford et al., 2013; West et al., 2012). In addition, multidisciplinary

training in sexual health could improve future providers' ability to communicate with colleagues from other disciplines about these often-overlooked topics in a forthright, informed, and culturally-competent manner.

### Limitations

Our study had several limitations. Our participants' demographics and cultural backgrounds may not be representative of health professions students in general, as the study was conducted in Georgia. Most participants identified as white, female, and quite religious, and mental health trainees were older and consisted of a larger proportion of LGBT individuals than the other student groups. In addition, mental health trainees were recruited from psychology graduate programs, and it is possible that trainees from other disciplines (e.g., social work) may possess different attitudes toward PLWH. Though these issues may limit generalizability, it is arguably important to focus research on regions of the country that have historically reported more negative attitudes about HIV, as well as identify factors linked with more positive attitudes among health professionals who work in these areas as well. In addition, the ATHS measured attitudes about HIV patient care, which precludes direct comparisons to other studies that assess different facets of attitudes and beliefs about HIV using other measures. It is possible that health professions students may have reported more positive attitudes on more global measures.

### Conclusion

This study was among the first to directly compare multiple different health professions students on a measure of attitudes toward HIV and patient care for PLWH. Overall, the results demonstrate that attitudes about patient care with PLWH vary across health professions student fields, which may in part reflect differences in professional cultures, educational experiences, risks of exposure to HIV by profession, or students' personal beliefs or values. Together, these findings indicate the need for additional comparative research across healthcare disciplines that can test causal models of how educational and personal characteristics and experiences affect and are affected by students' attitudes toward HIV. Ultimately, such research may help narrow HIV attitudinal

and knowledge gaps between disciplines, advance interprofessional HIV and sexual health education for future generations of health care providers, and improve quality of care for and health outcomes among persons living with HIV.

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### Corresponding Author

Kathryn R. Macapagal, PhD  
Postdoctoral Research Fellow

Center for Healthcare Studies  
Northwestern University  
Feinberg School of Medicine  
420 East Superior Street  
10th Floor  
Chicago, IL 60611-2927

[kathryn.macapagal@northwestern.edu](mailto:kathryn.macapagal@northwestern.edu)