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RESEARCH ARTICLE

Attitudes Toward Caring for People Living with HIV/AIDS: A Cross-Sectional Study of Nursing Faculty in Six Countries

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Abstract:

Background:

Since the earliest study about nursing faculty and student attitudes about caring for people living with HIV/AIDS (PLHIV) in 1992, there have been less than 20 additional studies reported in the literature. Yet, PLHIV continues to report stigma and experience discrimination. Nursing faculty attitudes are part of the informal curriculum. Negativity about caring for PLHIV can adversely impact student perceptions as well as their care. Current research in this area is essentially non-existent.

Objective:

To describe the attitudes of the university nursing faculty toward caring for PLHIV; and to identify the relationship between faculty attitudes and explanatory factors such as age, education, religion, nationality, teaching in a clinical setting, years of experience, and university attributes.

Methods:

This was a multicenter cross-sectional study with nonrandomized electronic purposeful sampling. The Healthcare Provider HIV/AIDS Stigma Scale (HPASS) is a 30-item scale with three subscales: Prejudice, stereotype, and discrimination. The English and Spanish versions of the HPASS exhibit stable psychometric properties for cross-cultural research. The HPASS was delivered to university nursing faculty in six countries across three continents.

Results:

A sample of 368 nursing faculty completed the HPASS. The mean composite score was 2.41 (SD = 0.69), six-point scale with lower scores indicating more positive attitudes, with subscale scores: Stereotypes 2.55 (SD = 0.84), discrimination 2.28 (SD = 0.74), and prejudices 2.41 (SD = 0.63). Peruvian faculty had the highest scores while Canadian had the lowest. Significant correlations were observed between attitudes and the three subscales, and between the three subscales and the composite score.

Conclusion:

Attitudes of the nursing faculty toward caring for PLHIV were slightly positive to slightly negative depending on the region and country. Knowledge deficiencies about HIV persist, incorrect beliefs are common, and attitudes appear to be influenced by culture. The correlation between subscales justifies continued research to implement targeted interventions. Education about HIV/AIDS can address knowledge deficits while structured interactions with PLHIV can facilitate experiential learning.

Keywords: Acquired Immunodeficiency Syndrome, HIV Infections, Faculty, Nursing, Social Stigma, Social Discrimination, Prejudice, Healthcare Provider HIV/AIDS Stigma Scale, HPASS.

1. INTRODUCTION

Nearly 40-years have passed since the first cases of acquired immune deficiency syndrome (AIDS) were reported [1] and the human immunodeficiency virus (HIV) was isolated as the causative agent [2]. Advancements in clinical management strategies, including new pharmaceuticals, have shifted the associated AIDS from an acute and lethal illness to a chronic but manageable condition. However, reductions in prejudices, stereotypes, and discrimination have not paralleled clinical improvements. As a result, people living with HIV/AIDS (PLHIV) continue to experience substantial stigmatization and overt discrimination [3, 4].

Immediately following the discovery of HIV/AIDS, the media reported negative reactions among health professionals as they avoided caring for PLHIV, fearing the contagion [5, 6]. Although evidence suggests there has been a steady decline in discriminatory behaviors fears about contracting HIV continue to linger in nursing faculty [7 - 9], especially when patients are homosexual or intravenous drug users [10, 11]. There were positive correlations between negative attitudes toward caring for PLHIV and age, homophobia, having children [12], and religion and race [7]. However, positive nursing attitudes are necessary for respectful, compassionate, and understanding care [13].

1.1. HIV Stigma Framework

The HIV Stigma Framework [14] explains how PLHIV encounter stigmatizing situations resulting from prejudices, stereotypes, and discrimination [15]. Stigma exists as a social structure with interpersonal processes that reduces the social value and the standing of people [16] due to their HIV positive status [17]. Prejudices are the negative attitudes toward a group or members of a group [18], whereas stereotypes are the general social beliefs that are then uniformly applied to all members [19]. Discrimination, however, goes beyond mere attitudes with negative behaviors directed at members of a group, or results in less positive behaviors targeted to a specific group member with similar situations as other members [20]. With persistent stigmatizing experiences, PLHIV are vulnerable to emotional, cognitive, and behavioral damage [17]. Although health care institutions should be safe environments for PLHIV [21], most health care professionals are often unaware of their stigmatizing attitudes and behaviors [22, 23].

1.2. Nursing Students

Nursing students are not exempt from the fear of contagion as negative attitudes about caring for PLHIV persist, including refusing to administer basic care such as hygiene, shaving, and feeding in Turkey [24 - 27]. However, in Germany, Lohrmann *et al.* [28] reported positive attitudes among nursing students, especially among those who had previous contact with someone living with HIV/AIDS. Yet, most of the available

evidence about the attitudes of student nurses in caring for PLHIV is old, possibly not reflecting the contemporary reality.

Since the earliest study about nursing faculty and student attitudes regarding caring for PLHIV [29], there have been less than 20 additional studies related to students and/or faculty reported in the literature (PubMed search strategy: (((((((((nurse) OR nursing) AND faculty) OR professor) OR instructor)) AND (((HIV) OR AIDS) OR HIV/AIDS))) AND (((attitude) OR perception) OR perspective) OR belief))) AND (((stigma) OR discrimination) OR stereotyping) OR prejudice). In addition, a few recent studies, cross-sectional with small samples, are contradictory. For example, Suominen *et al.* [30] found discriminatory attitudes among nursing students in Russia, while Leyva-Moral *et al.* [31], reported positive attitudes among two cohorts of nursing students in Spain. Larger multinational comparative studies are necessary to better understand the current situation across countries and different cultures.

1.3. Nursing Faculty

The attitudes of the university nursing faculty, or nursing faculty, are important as they can become part of the informal or 'occult curriculum' [11, 32, 33]; that is, there can be implicit learning impregnated with personal values [34, 35]. Positive results about working with PLHIV have been reported among university faculty in general [36]; most positive in education [37] and dentistry faculty [38]. Leyva-Moral *et al.* [31] found that 79.8% of nursing faculty at a school in Spain indicated positive attitudes, especially among those who did not profess a religion. The results come from studies with small local samples using validated, though outdated, instruments. Evidence about the attitudes of nursing faculty is essentially non-existent.

1.4. Objective

The purpose of this study was to understand the attitudes of the nursing faculty toward caring for PLHIV and to identify the relationship between attitudes and potential explanatory factors including age, education, religion, nationality, teaching in a clinical setting, years of experience, and university attributes.

2. MATERIALS AND METHODS

2.1. Study Design

This was an international multicenter cross-sectional study with a nonrandomized purposeful sample.

2.2. Setting and Participants

The schools of nursing from 30 universities were invited to participate from three targeted regions: North America, South America, Europe (Spain and England). Universities were chosen for ease of access to develop a diverse sample with English and Spanish speaking countries. About half the universities agreed to participate (2 Canada, 1 Colombia, 3 Peru, 8 Spain, 1 United Kingdom, 1 United States). The deans and department directors from each university shared the study

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information with their nursing faculty by email with a direct link to the anonymous questionnaire.

2.3. Data Collection

Data were collected with a digital version of the Healthcare Provider HIV/AIDS Stigma Scale, or HPASS [39] from September 2016 to July 2017. The HPASS is a 30-item valid and reliable scale with three subscales: Prejudice, stereotype, and discrimination. The internal consistency and test-retest reliability for the overall scale (Cronbach's alpha between 0.88 and 0.94), and the three individual subscales (Cronbach's alpha between 0.80 and 0.93) are excellent [39, 40]. Furthermore, in a cross-cultural scale translation study of Chinese and Canadian medical students, the content validity index average was 0.88, while the ICC was 0.87 [40]. As the instrument incorporates a six-point Likert scale, ranging from complete disagreement (1) to complete agreement (6) (the lower the score, the more positive attitude) in response to statements about attitudes and beliefs regarding PLHIV, ambiguous midline responses are eliminated [39]. A Spanish version, or HPASS-ESP [41], was produced for Peru, Colombia, and Spain using forward and reverse translation, with expert assessment and correction for context, content, and culture [42]. - see the supplemental file for the complete HPASS-ESP instrument. The assessment was completed by 12 nursing faculty in three different Spanish-speaking countries. In addition to the HPASS, sociodemographic data were collected.

2.4. Ethical Considerations

Before being able to complete the digital questionnaire, each nursing faculty was required to review the introductory information about the study, including detailed information about the research team, aim of the study, time for completion, and risks and benefits. As such, the nursing faculty were able to make an informed decision prior to agreeing to participate by entering the questionnaire. Participation was voluntary, anonymous, and without compensation for participating. Physical data and records, although without identifying information, were maintained in a safe locked file accessible

only to the research team while digital data was secured through password protected programs on a secure server. The study was approved by the university institutional review board (Protocol #19213).

2.5. Data Analysis

Descriptive information for all explanatory and response variables are provided as n (%) or mean (standard deviation). The association of the explanatory variables and outcomes (composite score and subscale scores) was determined through linear modeling [43]. The models included the subscale scores, the composite score as a response variable, and the explanatory variables. The factors significantly associated with the outcome, the direction of the association, and the strength of the relationship emerged from the modeling. Also, a sensitivity analysis was completed, accounting for potential clustering across the six countries [44, 45]. Finally, a correlation analysis was completed to measure the direction and strength of potential associations across the three considered subscales (Altman, 1991). All analyses were conducted using R version 3.4.1 [46] and Stata 14.0 [47]. The study is reported according to the STROBE (Strengthening the Reporting of Observational Studies in Epidemiology), following the minimum requirements for reporting cross-sectional studies [48].

3. RESULTS

A total of 368 nursing faculty from Canada, Colombia, Peru, Spain, United States, and United Kingdom responded to the HPASS questionnaire. The mean age of the participants was 47.5 years (SD = 11.0) and the majority self-identified as female (280; 76.1%). Nursing faculty reported an average teaching experience of 13.2 years (SD = 10.8); most with completed postgraduate studies (36.5% held a doctoral degree and 45.3% had a master's degree). Participants primarily taught at the undergraduate level (256; 70.9%). For the most part, the participants self-identified as Catholic (190; 54.0%), and nearly half indicated religion was either 'important' or 'very important' in their lives (174; 47.8%). An additional 25.3% (89) of the participants self-identified as agnostic/atheists (Table 1).

Table 1. Participant Descriptive Data (mean and standard deviation).

Socioeconomic Information (mean/SD)	n (%)	N
Gender		368
Male	88 (23.90)	
Female	280 (76.10)	
Age	47.5 (11.00)	362
Religion		352
Catholic	190 (54.00)	
Agnostic/Atheist	89 (25.30)	
Other	73 (20.73)	
Importance of Religion		364
Very important	98 (26.90)	
Important	76 (20.90)	
Somewhat important	51 (14.00)	
Not important	46 (12.60)	
Not important at all	80 (22.00)	

(Table 1) contd....

I prefer not to answer	13 (3.57)	
Highest Academic Degree Achieved		364
Doctoral	133 (36.50)	
Master	165 (45.30)	
Nurse Specialist	29 (7.97)	
Advanced Practitioner	5 (1.37)	
Registered Nurse	27 (7.42)	
I prefer not to answer	5 (1.37)	
Working as Clinical and Faculty		366
Yes	180 (49.2)	
No	182 (49.7)	
I prefer not to answer	4 (1.09)	
Teaching Level		361
Doctoral	17 (4.71)	
Master	24 (6.65)	
Undergraduate	256 (70.90)	
Both	60 (16.60)	
I prefer not to answer	4 (1.11)	
Teaching Experience, Years (mean/SD)	13.2 (10.80)	323
Country:		360
USA	65 (18.10)	
Colombia	44 (12.20)	
Spain	145 (40.30)	
UK	22 (6.110)	
Peru	63 (17.50)	
Canada	21 (5.830)	
Type of University		360
Private	229 (63.60)	
Public	131 (36.40)	
HPASS composite score	2.41 (0.69)	339
Stereotyping subscale score	2.55 (0.84)	339
Discrimination subscale score	2.28 (0.74)	337
Prejudices subscale score	2.41 (0.63)	338

Table 2. HPASS composite score and subscale scores (means and standard deviations).

	USA N=60	Colombia N=42	Spain N=132	UK N=21	Perú N=57	Canada N=21
HPASS	2.44 (0.60)	2.44 (0.64)	2.28 (0.57)	2.03 (0.63)	3.05 (0.68)	1.83 (0.43)
Stereotype	2.60 (0.76)	2.52 (0.78)	2.39 (0.68)	2.15 (0.98)	3.36 (0.73)	1.89 (0.68)
Discrimination	2.31 (0.61)	2.35 (0.74)	2.14 (0.64)	1.88 (0.63)	2.91 (0.82)	1.70 (0.37)
Prejudice	2.43 (0.64)	2.51 (0.68)	2.32 (0.52)	2.10 (0.62)	2.81 (0.68)	1.96 (0.21)

Overall, the HPASS responses resulted in a mean composite score of 2.41 (SD = 0.69). The subscale mean scores were 2.55 (SD = 0.84) for stereotypes, 2.28 (SD = 0.74) for discrimination, and 2.41 (SD = 0.63) for prejudices (Table 2). By country, the highest mean composite and subscale scores were observed among Peruvian nursing faculty and the lowest among Canadian faculty.

Linear analysis indicates for all faculty from all the universities, except for Colombia and Peru, the composite scores and subscales were lower to the reference university (USA) (Table 2). Canadian nursing faculty showed statistical

significance in both the total HPASS (p=0.002) and the three subscales (prejudice p = 0.009; discrimination p = 0.006; stereotypes p = 0.007). The Peruvian nursing faculty scores were significantly higher in both the total HPASS (p=0.001) and its 3 subscales (prejudice p = 0.006; discrimination p = 0.001; stereotypes p = 0.001) (Table 3).

The results of the total HPASS were significantly higher in public universities (p = 0.038) as opposed to private universities. As for the prejudice subscale, significantly lower scores were observed in the participants self-identifying as advanced nurse practitioners (p = 0.032). In public

Table 3. Explanatory variables associated with each subscale and the HPASS composite score.

		HPASS		PREJUDICES		DISCRIMINATION		STEREOTYPES	
		Estimate (Std. error)	p-value						
Age		0.01 (0.01)	0.094	0 (0)	0.44	0.01 (0.01)	0.095	0.01 (0.01)	0.123
Education	Doctoral	0.14 (0.09)	0.14	0.01 (0.09)	0.873	0.15 (0.1)	0.164	0.2 (0.12)	0.041
	Master	0.21 (0.17)	0.212	0.11 (0.16)	0.504	0.19 (0.18)	0.303	0.28 (0.21)	0.186
	Nurse Specialist	-0.05 (0.43)	0.913	0.26 (0.42)	0.528	-0.02 (0.48)	0.964	-0.25 (0.55)	0.647
	Advanced Practitioner	-0.18 (0.15)	0.243	-0.32 (0.15)	0.032	-0.23 (0.17)	0.178	-0.05 (0.2)	0.797
	RN	0.94 (0.62)	0.127	0.91 (0.59)	0.126	1.24 (0.68)	0.072	0.61 (0.78)	0.436
Religion	Religious	-0.08 (0.13)	0.515	0.06 (0.12)	0.654	-0.16 (0.14)	0.28	-0.07 (0.16)	0.647
Importance of religion	Important	-0.03 (0.11)	0.8	0.09 (0.11)	0.401	-0.01 (0.12)	0.948	-0.12 (0.14)	0.41
	Somewhat important	-0.01 (0.13)	0.958	0.24 (0.13)	0.065	-0.07 (0.15)	0.66	-0.07 (0.17)	0.663
	Not important	-0.16 (0.14)	0.249	0.08 (0.14)	0.581	-0.21 (0.16)	0.193	-0.24 (0.18)	0.173
	Not important at all	-0.43 (0.16)	0.009	-0.1 (0.15)	0.502	-0.44 (0.18)	0.015	-0.58 (0.2)	0.004
Country	Colombia	-0.01 (0.16)	0.962	0.05 (0.15)	0.76	0.04 (0.17)	0.835	-0.08 (0.2)	0.688
	Spain	-0.31 (0.21)	0.133	-0.28 (0.2)	0.168	-0.29 (0.23)	0.208	-0.36 (0.26)	0.176
	UK	-0.32 (0.19)	0.098	-0.27 (0.19)	0.148	-0.37 (0.22)	0.097	-0.3 (0.24)	0.214
	Peru	0.57 (0.14)	0.001	0.38 (0.14)	0.006	0.56 (0.16)	0.001	0.7 (0.18)	0.001
	Canada	-0.56 (0.18)	0.002	-0.46 (0.17)	0.009	-0.56 (0.2)	0.006	-0.62 (0.23)	0.007
Clinical setting	No	0 (0.09)	0.967	0.14 (0.09)	0.104	-0.03 (0.1)	0.791	-0.04 (0.11)	0.735
Years of experience		0 (0.01)	0.646	0 (0.01)	0.983	0.01 (0.01)	0.246	0 (0.01)	0.86
University funding	Public	0.4 (0.19)	0.038	0.36 (0.18)	0.049	0.39 (0.21)	0.064	0.42 (0.24)	0.078

* Independent linear model for each subscale and composite score.

Table 4. Correlation analysis between the hpass subscales and the composite score.

Scales and Composite	r	p-value
Stereotype & Discrimination	0.77	< 0.0001
Stereotype & Prejudice	0.59	< 0.0001
Discrimination & Prejudice	0.70	< 0.0001
Total HPASS & Stereotype	0.92	< 0.0001
Total HPASS & Prejudice	0.77	< 0.0001
Total HPASS & Discrimination	0.94	< 0.0001

universities, for the same subscale, significantly higher scores were observed ($p = 0.045$). In the “discrimination” subscale, significantly higher scores were observed among the registered nurses ($p = 0.034$). Finally, in the “stereotypes” subscale, significantly higher scores were observed among faculty holding a doctoral degree ($p = 0.041$). There were no statistically significant findings related to the other variables (Table 3).

Correlational analysis showed a statistically significant association ($p < 0.001$) between the three different subscales and between the scores of the subscales and the HPASS composite score (Table 4). Results from the sensitivity analysis, considering potential clustering across the six countries, did not differ from those obtained through other

analyses.

4. DISCUSSION

Generally, the attitudes of the nursing faculty towards caring for PLHIV are slightly to solidly positive; however, there are notable differences between countries. In addition, there are specific areas for improvement in each country. Apart from Peru, the results are consistent with the findings reported in the few but recent investigations. For example, Leyva *et al.* [31] in a cross-section study with a small local nursing faculty sample, reported positive attitudes improving over time. Their study also revealed the persistent presence of false myths and the lack of knowledge about HIV/AIDS. Significantly better, more favorable, attitudes were identified among nursing faculty

who reported having no religious beliefs. Furthermore, in a science faculty study in three universities in Venezuela, Méndez *et al.* [37] determined the skills and knowledge specific to PLHIV were unfavorable, the latter being significantly associated with older age ($p < 0.005$). Attitudes toward PLHIV were favorable, although no significant differences were found in sociodemographic variables.

4.1. Attitudes and Behaviors

Positive attitudes are related to increased caring behaviors [49, 50]. Nursing education has long played an important role in the development of caring attitudes [51], the acquisition of knowledge [52], and the advancement of caring behaviors [53]. According to Watson [54], for nurses caring is “*the moral ideal of nursing whereby the end is protection, enhancement, and preservation of human dignity*” (p. 29). However, negative nursing faculty attitudes towards caring for PLHIV can adversely impact the attitudes of students and the care they provide. The impact of nursing faculty attitude can be partly explained in relation to their comfort teaching content about specific populations. For example, Sirota [11] described “*a long skew toward negative attitudes*” (p. 222). For more than half of the nursing faculty ($n=733$) regarding homosexuality. In this study, less than 30% of the faculty reported they were prepared to teach students about homosexuality with almost 90% indicating a “*sense of ignorance about what content to teach and how to teach it*” (p. 225). The implication is nursing faculty are not comfortable teaching what they do not understand.

4.2. Graduate Education and Advance Practice

The data from this study indicate that nursing faculty working as advanced practice nurses, or nurse practitioners, have the lowest “prejudice” subscale of all participants. Likewise, nursing faculty working as non-advanced practice registered nurses, including those with doctoral degrees, had the lowest subscale scores for “discrimination” and “stereotypes”. Continuing education and professional development can impact the acquisition of knowledge and result in positive changes in attitudes. For example, Farley *et al.* [55] reported better, more favorable attitudes of caring for HIV-infected pregnant women among certified nurse practitioners as compared to registered nurses in a sample of 121 health care workers in the United States. However, significant differences were only found for the subscale about childcare ($p=0.001$). This finding can be explained by the advanced clinical education and the daily contact they have with PLHIV in clinical practice. Furthermore, Hamama *et al.* [56] reported a positive correlation with empathetic attitudes ($r = 0.36$, $P < 0.001$) and negative significant correlation with avoidant attitudes ($r = -0.34$, $P < 0.001$) among the nurses working in specialized HIV/AIDS clinics in Russia, compared with those only working in general clinics. Daily work interactions between providers and PLHIV seem to result in more positive caring attitudes.

4.3. South America, Culture, and Context

In Peru, nursing faculty HPASS scores were higher than the other countries, including neighboring Colombia with the

second highest scores. This may be due, among other reasons, to the high HIV-related stigma that exists in Latin America [57] and to the marked discrimination experienced by lesbian, gay, transgender, and bisexual people, or LGTB community [58]. In Latin America, there is a close relationship between *machismo* and the meanings associated with sexuality, and therefore to sexually transmitted infections such as HIV [59, 60]. In the Latino community, ideas about *machismo* contribute to discrimination against women and gay men and enhance homophobia and sexual coercion [61]. The higher scores might be associated with the *machismo* prevailing in Peruvian society, including the health sector [62, 63], and therefore the discrimination experienced by the collective LGTB. Other investigations have found differences associated with religion [7, 31, 64], not being the case in this study. These differences could be due to reasons of sampling and variability of socio-cultural contexts in which participants share cultural meanings associated with sexuality and HIV but not with religious affiliation.

4.4. Faculty and Student Caring Behaviors

Nursing faculty caring behaviors can positively influence the caring behavior of students [65]. When nursing faculty exhibit positive attitudes and role model caring behaviors toward PLHIV, nursing students will manifest the same caring attitude and behaviors. Developing professional education for nursing faculty about caring for PLHIV is an essential strategy to advance positive and caring attitudes. According to Camillo *et al.* [66], nursing faculty need to develop critical and constructive approaches to teaching students about HIV/AIDS, including sharing personal experiences from PLHIV in classroom presentations and discussions. In this regard, Feijoo-Cid *et al.* [67] concluded that the expert patient illness narrative is an effective teaching method, resulting in a high level of satisfaction among undergraduate nursing students. This method has shown satisfactory results in developing cultural sensitivity, respect, and trust in others [68].

4.5. Mentoring and Education

In a setting external to the classroom with experienced HIV nurses and PLHIV as mentors, Worthington *et al.* [69] reported rural Canadian nurses clinically managed HIV care and provided person-centered care to PLHIV. Through qualitative interviews, the participants reported positive changes in terms of knowledge, attitudes, and practices. Similarly, including PLHIV as simulated patients for teaching pretest and posttest HIV counselling in medical students reduced HIV-related stigma and increased comfort with providing HIV-related care [70]. In other educational settings, a population of Iranian schoolteachers ($n=1.838$), Hoseinpour *et al.* [71], reported educating teachers about general HIV/AIDS concepts resulted in a statistically significant improvements in attitudes about PLHIV. Similarly, Lohmann *et al.* [72] reported Belizean faculty from other academic settings were significantly more comfortable with PLHIV with prior experience teaching sexual topics and knowledge about HIV/AIDS. Knowledge deficits across a variety of settings suggests that knowledge deficits about sexually transmitted infections contribute to persistent myths about PLHIV. Social

stigma, and discriminatory behavior, are important issues [36] from schoolteachers to health professionals and university faculty.

4.6. Limitations and Strengths

This study has several important limitations. First, this study used a self-administered questionnaire that can result in participants responding to what they believe is a desirable image [73]. However, this potential bias was reduced through the anonymous digital data collection. Second, the convenience samples in specific cities of the different countries might not represent the entire country. Also, the use of purposeful sampling strategy could have similarly influenced the results [74]. Despite this limitation, this study was the largest sample size reported in the literature and the only study that compared the context of different countries. As such, the potential for bias from the limitations is balanced with the heterogeneity in the socio-cultural and contextual reality of the participants. With this study, additional research, qualitative with semi-structured interviews based on these findings, can further explore the attitudes from an individual perspective.

CONCLUSION

In general, attitudes of the nursing faculty towards caring for PLHIV were slightly positive, with specific subscales requiring improvement. Myths and knowledge deficits about HIV/AIDS remain problematic and the attitudes appear to be influenced by nationality. University faculty in nursing and the other health sciences need to take a critical but constructive approach to improving HIV/AIDS education, including the incorporation of real-world experiences with PLHIV in the classroom.

This is the first study to report a correlation between attitudes and the three dimensions (prejudices, discrimination, and stereotypes) among nursing faculty. In addition, there was a significant correlation between the three subscales and the HPASS composite. This finding justifies continued research with the HPASS to develop targeted interventions to address deficits. Since all the factors are related, an educational activity, for example, designed to improve attitudes, will impact the three dimensions.

Finally, there are three recommendations specific to future areas for research and practice. First, the inclusion of more participants from different universities in the countries represented in this study can improve the fidelity of the findings. Furthermore, including participants from additional countries in South America (*e.g.* Argentina, Bolivia, Chile, and Colombia) may provide more information about the impact of nationality, as well as culture, on the HPASS scores. Second, qualitative research is necessary to explain the reasons for the composite HPASS and subscale scores. For example, a qualitative study can directly explore the influence of nursing faculty attitudes on student attitudes and, more importantly, their behaviors in providing care for PLHIV. Finally, theory-derived, evidence-informed interventions need to be developed to advance the knowledge and attitudes of nursing faculty about caring for PLHIV. This study was necessary to understand the current situation prior to implementing targeted

interventions to improve faculty attitudes about caring for PLHIV.

LIST OF ABBREVIATIONS

AIDS	= Acquired Immunodeficiency Syndrome
HIV	= Human immunodeficiency virus
HPASS	= Healthcare Provider HIV/AIDS Stigma Scale
HPASS-ESP	= Healthcare Provider HIV/AIDS Stigma Scale, Spanish version
PLHIV	= People living with HIV/AIDS
STROBE	= Strengthening the Reporting of Observational Studies in Epidemiology

AUTHORS' CONTRIBUTIONS

All authors participated in the manuscript submitted for journal review. The following authors were involved in the stated phases of the project: Study conception (JLM); study design (JEE, JLM, PAP); data collection (JLM, SKS, JEE, SKC); data analysis (JLM, DMS, GGV, KDC, PAP); data interpretation (JEE, JLM, KDC, PAP); drafting the manuscript (DMS, JEE, JLM, MFC, PAP, SKC); table development (DMS, GGV, KDC); substantial revisions to the manuscript (JLM, KDC, PAP), critical revisions to the final manuscript (JLM, KDC, PAP); and senior scholar guidance (JEE, PAP, SKC).

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

This study was approved by the Institutional Review Board at Texas Woman's University, Texas, US (Protocol #19213).

HUMAN AND ANIMAL RIGHTS

Not applicable.

CONSENT FOR PUBLICATION

Not applicable.

AVAILABILITY OF DATA & MATERIALS

The datasets analyzed during the current study are available from the Open Science Framework at DOI: 10.17605/OSF.IO/GUA9K.

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CONFLICT OF INTEREST

The authors declare no potential or existing conflicts of interest, financial or otherwise.

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SUPPLEMENTARY MATERIAL

Supplementary material is available on the publishers website along with the published article.

REFERENCES

- [1] Centers for Disease Control (CDC). Update on acquired immune deficiency syndrome (AIDS)--United States. *MMWR Morb Mortal Wkly Rep* 1982; 31(37): 507-508, 513-514. [PMID: 6815471]
- [2] Gallo RC, Salahuddin SZ, Popovic M, *et al.* Frequent detection and isolation of cytopathic retroviruses (HTLV-III) from patients with AIDS and at risk for AIDS. *Science* 1984; 224(4648): 500-3. [http://dx.doi.org/10.1126/science.6200936] [PMID: 6200936]
- [3] Munro L, Marshall Z, Bauer G, Hammond R, Nault C, Travers R. (Dis)integrated care: Barriers to health care utilization for trans women living with HIV. *J Assoc Nurses AIDS Care* 2017; 28(5): 708-22. [http://dx.doi.org/10.1016/j.jana.2017.06.001] [PMID: 28838570]
- [4] Wagner AC, Girard T, McShane KE, Margolese S, Hart TA. HIV-related stigma and overlapping stigmas towards people living with HIV among health care trainees in Canada. *AIDS Educ Prev* 2017; 29(4): 364-76. [http://dx.doi.org/10.1521/aeap.2017.29.4.364] [PMID: 28825863]
- [5] Associated Press. New York, NY: The New York Times 1987; 21.
- [6] Associated Press. New York, NY: The New York Times 1987; 16.
- [7] Stringer KL, Turan B, McCormick L, *et al.* HIV-related stigma among healthcare providers in the deep South. *AIDS Behav* 2016; 20(1): 115-25. [http://dx.doi.org/10.1007/s10461-015-1256-y] [PMID: 26650383]
- [8] Vorasane S, Jimba M, Kikuchi K, *et al.* An investigation of stigmatizing attitudes towards people living with HIV/AIDS by doctors and nurses in Vientiane, Lao PDR. *BMC Health Serv Res* 2017; 17(1): 125. [http://dx.doi.org/10.1186/s12913-017-2068-8] [PMID: 28183300]
- [9] Waluyo A, Culbert GJ, Levy J, Norr KF. Understanding HIV-related stigma among Indonesian nurses. *J Assoc Nurses AIDS Care* 2015; 26(1): 69-80. [http://dx.doi.org/10.1016/j.jana.2014.03.001] [PMID: 24759060]
- [10] Røndahl G, Innala S, Carlsson M. Nursing staff and nursing students' attitudes towards HIV-infected and homosexual HIV-infected patients in Sweden and the wish to refrain from nursing. *J Adv Nurs* 2003; 41(5): 454-61. [http://dx.doi.org/10.1046/j.1365-2648.2003.02553.x] [PMID: 12603570]
- [11] Sirota T. Attitudes among nurse educators toward homosexuality. *J Nurs Educ* 2013; 52(4): 219-27. [http://dx.doi.org/10.3928/01484834-20130320-01] [PMID: 23506172]
- [12] Peate I, Suominen T, Välimäki M, Lohrmann C, Muinonen U. HIV/AIDS and its impact on student nurses. *Nurse Educ Today* 2002; 22(6): 492-501. [http://dx.doi.org/10.1054/nedt.2002.0747] [PMID: 12387763]
- [13] Watson J. Intentionality and caring-healing consciousness: A practice of transpersonal nursing. *Holist Nurs Pract* 2002; 16(4): 12-9. [http://dx.doi.org/10.1097/00004650-200207000-00005] [PMID: 12060941]
- [14] Earnshaw VA, Chaudoir SR. From conceptualizing to measuring HIV stigma: A review of HIV stigma mechanism measures. *AIDS Behav* 2009; 13(6): 1160-77. [http://dx.doi.org/10.1007/s10461-009-9593-3] [PMID: 19636699]
- [15] Mahajan AP, Sayles JN, Patel VA, *et al.* Stigma in the HIV/AIDS epidemic: A review of the literature and recommendations for the way forward. *AIDS* 2008; 22(Suppl. 2): S67-79. [http://dx.doi.org/10.1097/01.aids.0000327438.13291.62] [PMID: 18641472]
- [16] Goffman E. *Stigma: Notes on the management of spoiled identity.* Englewood Cliffs, NJ: Prentice Hall 1963.
- [17] Turan B, Budhwani H, Fazeli PL, *et al.* How does stigma affect people living with HIV? The mediating roles of internalized and anticipated HIV stigma in the effects of perceived community stigma on health and psychosocial outcomes. *AIDS Behav* 2017; 21(1): 283-91. [http://dx.doi.org/10.1007/s10461-016-1451-5] [PMID: 27272742]
- [18] Stangor C. *Handbook of prejudice, stereotyping and discrimination.* New York, NY: Psychology Press 2009; pp. 1-22.
- [19] Link BG, Phelan JC. Conceptualizing stigma. *Annu Rev Sociol* 2001; 27(1): 363-85. [http://dx.doi.org/10.1146/annurev.soc.27.1.363]
- [20] Dovidio JF, Hewstone M, Glick P, Esses VM. *SAGE Handbook of Prejudice, Stereotyping, and Discrimination.* Thousand Oaks, CA: SAGE Publications 2010.
- [21] Leyva-Moral JM, Loayza-Enriquez BK, Palmieri PA, *et al.* Adherence to antiretroviral therapy and the associated factors among people living with HIV/AIDS in Northern Peru: A cross-sectional study. *AIDS Res Ther* 2019; 16(1): 22. [http://dx.doi.org/10.1186/s12981-019-0238-y] [PMID: 31462291]
- [22] Nyblade L, Srinivasan K, Mazur A, *et al.* HIV stigma reduction for health facility staff: Development of a blended-learning intervention. *Front Public Health* 2018; 6(165): 165. [http://dx.doi.org/10.3389/fpubh.2018.00165] [PMID: 29977887]
- [23] Leyva-Moral JM, de Dios Sánchez R, Lluva-Castaño A, Mestres-Camps L. Living with constant suffering: A different life following the diagnosis of HIV. *J Assoc Nurses AIDS Care* 2015; 26(5): 613-24. [http://dx.doi.org/10.1016/j.jana.2015.04.006] [PMID: 25998265]
- [24] Bektaş HA, Kulakaç O. Knowledge and attitudes of nursing students toward patients living with HIV/AIDS (PLHIV): A Turkish perspective. *AIDS Care* 2007; 19(7): 888-94. [http://dx.doi.org/10.1080/09540120701203352] [PMID: 17712692]
- [25] Earl CE. Thai nursing students' knowledge and health beliefs about AIDS and use of universal precautions: A cross-sectional descriptive research study. *AAOHN J* 2010; 58(8): 331-4. [http://dx.doi.org/10.1177/216507991005800804] [PMID: 20669861]
- [26] Bitton A, Fifield J, Ratcliffe H, *et al.* Primary healthcare system performance in low-income and middle-income countries: A scoping review of the evidence from 2010 to 2017. *BMJ Glob Health* 2019; 4(Suppl. 8):e001551 [http://dx.doi.org/10.1136/bmjgh-2019-001551] [PMID: 31478028]
- [27] Li Y, Scott CS, Li L. Chinese nursing students' HIV/AIDS knowledge, attitudes, and practice intentions. *Appl Nurs Res* 2008; 21(3): 147-52. [http://dx.doi.org/10.1016/j.apnr.2006.10.004] [PMID: 18684408]
- [28] Lohrmann C, Välimäki M, Suominen T, Muinonen U, Dassen T, Peate I. German nursing students' knowledge of and attitudes to HIV and AIDS: Two decades after the first AIDS cases. *J Adv Nurs* 2000; 31(3): 696-703. [http://dx.doi.org/10.1046/j.1365-2648.2000.01326.x] [PMID: 10718890]
- [29] Mueller CW, Cerny JE, Amundson MJ, Waldron JA. Nursing faculty and students' attitudes regarding HIV. *J Nurs Educ* 1992; 31(6): 273-9. [PMID: 1320109]
- [30] Suominen T, Laakkonen L, Lioznov D, *et al.* Willingness to take care of HIV positive people: Responses from Russian nursing students. *Nord J Nurs Res* 2015; 35(2): 71-6. [http://dx.doi.org/10.1177/0107408314560323]
- [31] Leyva-Moral JM, Terradas-Robledo R, Feijoo-Cid M, *et al.* Attitudes to HIV and AIDS among students and faculty in a school of nursing in Barcelona (Spain): A cross-sectional survey. *Collegian* 2017; 24(6): 593-601. [http://dx.doi.org/10.1016/j.colegn.2016.10.006]
- [32] Tanner CA. The teacher-proof curriculum. *J Nurs Educ* 1992; 31(6): 243-4. [PMID: 1320104]

- [33] Tanner CA. The meaning of curriculum: Content to be covered or stories to be heard? *J Nurs Educ* 2004; 43(1): 3-4. [http://dx.doi.org/10.3928/01484834-20040101-04] [PMID: 14748528]
- [34] Chuang AW, Nuthalapaty FS, Casey PM, et al. To the point: Reviews in medical education-taking control of the hidden curriculum. *Am J Obstet Gynecol* 2010; 203(4): 316.e1-6. [http://dx.doi.org/10.1016/j.ajog.2010.04.035] [PMID: 20541735]
- [35] Thompson TL, Emrich K, Moore G. The effect of curriculum on the attitudes of nursing students toward disability. *Rehabil Nurs* 2003; 28(1): 27-30. [http://dx.doi.org/10.1002/j.2048-7940.2003.tb01718.x] [PMID: 12567819]
- [36] Cobos-Sanchiz D, Morón-Marchena JA, Reyes-Costales EM, López-Jarquín EJ. A propósito del sida: Un estudio cualitativo sobre percepción y actitudes de estudiantes y profesorado universitario en Chontales, Nicaragua. *Poblac Salud Mesoam* 2013; 10(2): 1-21. [http://dx.doi.org/10.15517/psm.v10i2.8517]
- [37] Méndez MA, Mejía MA, D'Ávila MC. Actitud de docentes de licenciatura en Educación hacia SIDA. *MedULA* 2010; 19(2): 87-94.
- [38] Pagliari AV, Garbin CAS, Garbin AJL. HIV attitudes and practices among professors in a Brazilian dental school. *J Dent Educ* 2004; 68(12): 1278-85. [http://dx.doi.org/10.1002/j.0022-0337.2004.68.12.tb03878.x] [PMID: 15576817]
- [39] Wagner AC, Hart TA, McShane KE, Margolese S, Girard TA. Health care provider attitudes and beliefs about people living with HIV: Initial validation of the Health Care Provider HIV/AIDS Stigma Scale (HPASS). *AIDS Behav* 2014; 18(12): 2397-408. [http://dx.doi.org/10.1007/s10461-014-0834-8] [PMID: 24965675]
- [40] Xie H, Yu H, Watson R, et al. Cross-cultural validation of the health care provider HIV/AIDS stigma scale (HPASS) in China. *AIDS Behav* 2019; 23(4): 1048-56. [http://dx.doi.org/10.1007/s10461-018-2312-1] [PMID: 30306438]
- [41] Leyva-Moral JM, Dominguez-Cancino KA, Guevara-Vasquez GM, Edwards JE, Palmieri PA. Faculty attitudes about caring for people living with HIV/AIDS: A comparative study. *J Nurs Educ* 2019; 58(12): 712-7. [http://dx.doi.org/10.3928/01484834-20191120-06] [PMID: 31794038]
- [42] Palmieri PA, Leyva-Moral JM, Camacho-Rodriguez DE, et al. Hospital survey on patient safety culture (HSOPSC): A multi-method approach for target-language instrument translation, adaptation, and validation to improve the equivalence of meaning for cross-cultural research. *BMC Nurs* 2020; 19(1): 23. [http://dx.doi.org/10.1186/s12912-020-00419-9] [PMID: 32308560]
- [43] McCullagh P, Nelder JA. Generalized linear models. London, England: Chapman and Hall 1989. [http://dx.doi.org/10.1007/978-1-4899-3242-6]
- [44] Esarey J, Menger A. Practical and effective approaches to dealing with clustered data. *Political Science Research and Methods* 2019; 7(3): 541-59. [http://dx.doi.org/10.1017/psrm.2017.42]
- [45] Ibragimov R, Müller UK. t-Statistic based correlation and heterogeneity robust inference. *J Bus Econ Stat* 2010; 28(4): 453-68. [http://dx.doi.org/10.1198/jbes.2009.08046]
- [46] R Core Development Team. R: A language and environment for statistical computing 2017. Available from: <https://www.R-project.org/>
- [47] StataCorp. Stata statistical software: Release 14 2015. Available from: <https://www.stata.com/>
- [48] von Elm E, Altman DG, Egger M, Pocock SJ, Gøtzsche PC, Vandenbroucke JP. Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement: Guidelines for reporting observational studies. *BMJ* 2007; 335(7624): 806-8. [http://dx.doi.org/10.1136/bmj.39335.541782.AD] [PMID: 17947786]
- [49] Dyson J. Nurses' conceptualizations of caring attitudes and behaviours. *J Adv Nurs* 1996; 23(6): 1263-9. [http://dx.doi.org/10.1046/j.1365-2648.1996.13326.x] [PMID: 8796477]
- [50] Watson J. Nursing: The philosophy and science of caring. Boulder, CO: University Press of Colorado 2008.
- [51] Eron LD. The effect of nursing education on attitudes. *Nurs Res* 1955; 4(1): 24-7. [http://dx.doi.org/10.1097/00006199-195506000-00003] [PMID: 14384085]
- [52] Benner P. From novice to expert. *Am J Nurs* 1982; 82(3): 402-7. [PMID: 6917683]
- [53] Bevis EO, Watson J. Toward a caring curriculum: A new pedagogy for nursing. New York, NY: National League for Nurses 1989.
- [54] Watson J. Nursing: Human science and human care: A theory of nursing. Norwalk, CT: Appleton-Century-Crofts 1985.
- [55] Farley JE, Hayat MJ, Murphy J, Sheridan-Malone E, Anderson J, Mark H. Knowledge, attitudes, and practices of OB/GYN nurses and auxiliary staff in the care of pregnant women living with HIV. *J Assoc Nurses AIDS Care* 2014; 25(2): 158-67. [http://dx.doi.org/10.1016/j.jana.2013.04.004] [PMID: 23876818]
- [56] Hamama L, Tartakovsky E, Eroshina K, et al. Nurses' job satisfaction and attitudes towards people living with HIV/AIDS in Russia. *Int Nurs Rev* 2014; 61(1): 131-9. [http://dx.doi.org/10.1111/inr.12074] [PMID: 24308493]
- [57] Johnson M, Samarina A, Xi H, et al. Barriers to access to care reported by women living with HIV across 27 countries. *AIDS Care* 2015; 27(10): 1220-30. [http://dx.doi.org/10.1080/09540121.2015.1046416] [PMID: 26168817]
- [58] Barrientos J. Situación social y legal de gays, lesbianas y personas transgénero y la discriminación contra estas poblaciones en América Latina. *Sexualidad. Salud Soc* 2016; 22: 331-54.
- [59] Cianelli R, Ferrer L, McElmurry BJ. HIV prevention and low-income Chilean women: *machismo*, *marianismo* and HIV misconceptions. *Cult Health Sex* 2008; 10(3): 297-306. [http://dx.doi.org/10.1080/13691050701861439] [PMID: 18432428]
- [60] Quevedo-Gómez MC, Krumeich A, Abadía-Barrero CE, Pastrana-Salcedo E, van den Borne H. *machismo*, public health and sexuality-related stigma in Cartagena. *Cult Health Sex* 2012; 14(2): 223-35. [http://dx.doi.org/10.1080/13691058.2011.629682] [PMID: 22085396]
- [61] Marín BV. HIV prevention in the Hispanic community: Sex, culture, and empowerment. *J Transcult Nurs* 2003; 14(3): 186-92. [http://dx.doi.org/10.1177/1043659603014003005] [PMID: 12861921]
- [62] Palmieri PA. A handbook for caring science: Expanding the paradigm. New York, NY: Springer Publishing Company 2019; pp. 493-510.
- [63] Palmieri PA. Global advances in human caring literacy. New York, NY: Springer Publishing Company 2017; pp. 71-88.
- [64] Kinyanda E, Weiss HA, Mungherera M, et al. Psychiatric disorders and psychosocial correlates of high HIV risk sexual behaviour in war-affected Eastern Uganda. *AIDS Care* 2012; 24(11): 1323-32. [http://dx.doi.org/10.1080/09540121.2011.647676] [PMID: 22272693]
- [65] Labrague LJ, McEnroe-Petitte DM, Papatathanasiou IV, Edet OB, Arulappan J. Impact of instructors' caring on students' perceptions of their own caring behaviors. *J Nurs Scholarsh* 2015; 47(4): 338-46. [http://dx.doi.org/10.1111/jnu.12139] [PMID: 25959595]
- [66] Camillo SdeO, Maiorino FT, Chaves LC. O ensino de enfermagem sobre HIV/AIDS sob a ótica da cidadania. *Rev Gaúcha Enferm* 2013; 34(3): 117-23. [http://dx.doi.org/10.1590/S1983-14472013000300015] [PMID: 24344593]
- [67] Feijoo-Cid M, Moriña D, Gómez-Ibáñez R, Leyva-Moral JM. Expert patient illness narratives as a teaching methodology: A mixed method study of student nurses satisfaction. *Nurse Educ Today* 2017; 50: 1-7. [http://dx.doi.org/10.1016/j.nedt.2016.11.029] [PMID: 27998806]
- [68] Davidson L. Recovery, self management and the expert patient – Changing the culture of mental health from a UK perspective. *J Ment Health* 2005; 14(1): 25-35. [http://dx.doi.org/10.1080/09638230500047968]
- [69] Worthington CA, O'Brien KK, Mill J, Caine V, Solomon P, Chaw-Kant J. A mixed-methods outcome evaluation of a mentorship intervention for Canadian nurses in HIV care. *J Assoc Nurses AIDS Care* 2016; 27(5): 677-97. [http://dx.doi.org/10.1016/j.jana.2016.02.011] [PMID: 27039195]
- [70] Jaworsky D, Gardner S, Thorne JG, et al. The role of people living with HIV as patient instructors - reducing stigma and improving interest around HIV care among medical students. *AIDS Care* 2017; 29(4): 524-31. [http://dx.doi.org/10.1080/09540121.2016.1224314] [PMID: 27577683]
- [71] Hoseinpour AM, Moghadam ZE, Saeidi M. The knowledge and attitude of teachers about HIV/AIDS; before and after training in Khorasan Razavi Province, Iran. *International Journal of Pediatrics* 2015; 3(6.2): 1161-68.
- [72] Lohmann T, Tam P, Hopman WM, Wobeser W. Knowledge of and attitudes towards HIV/AIDS among school teachers in Belize. *Int J Infect Dis* 2009; 13(5): e228-35. [http://dx.doi.org/10.1016/j.ijid.2008.11.023] [PMID: 19250849]
- [73] Parahoo K. Nursing research Principles, process, and issues. 3rd ed.

Houndmills, UK: Red Globe Press 2014.
[74] Waltz CF, Strickland OL, Lenz ER, Eds. Measurement in nursing and

health research. New York, NY: Springer Publishing Company 2016.
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