



Knowledge and attitude towards lesbian, gay, bisexual, and transgender healthcare concerns: A cross-sectional survey among undergraduate nursing students in a Philippine state university

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Abstract

Background: Recently, there has been an increasing concern regarding matters concerning the LGBT community that should not be overlooked. Even though the Philippines is among the Asian nations with strong public tolerance towards homosexuals, numerous individuals still encounter discrimination. And while studies have been conducted elsewhere, the literature is limited among Filipino nursing students.

Objective: This research assessed the knowledge and attitude towards lesbian, gay, bisexual, and transgender (LGBT) healthcare concerns among nursing students in the Philippines.

Methods: A descriptive, cross-sectional survey was conducted among nursing students ($N = 354$) in a public university in the Philippines. The Nursing Students' Knowledge and Attitudes of LGBT Health Concerns was used to gather survey data online in April 2022, and data were analyzed using IBM SPSS version 26 software.

Results: While a large majority of nursing students had positive attitudes, many had only low to moderate knowledge about LGBT healthcare concerns, although no significant correlation ($p = 0.081$) was found between knowledge and attitude. There were significant differences in knowledge based on gender ($p = 0.049$), religious affiliation ($p = 0.023$), and academic year level ($p < 0.001$). A significant difference was also identified in attitude based on sexual orientation ($p < 0.001$).

Conclusion: Certain measures should be taken to address the gaps in the curricular content of undergraduate nursing programs directed at the LGBT topic to deliver culturally competent care grounded in evidence-based practices for LGBT individuals.

Keywords

cross-sectional studies; cultural competency; nursing students; sexual and gender minorities; universities; Philippines; LGBT

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Background

More than ever, there has been a growing attention and focus on issues related to the LGBT community that should not be disregarded. A survey carried out between December 2015 and January 2016 found that more than 60 percent of the participants have a personal acquaintance who is attracted to individuals of the same sex or identifies as gay, lesbian, or bisexual (Statista Research Department, 2016).

Historically, the LGBT community has encountered stigma and bias, including within healthcare (Eickhoff, 2021). While individuals who identify as non-LGBT also share common concerns, those who identify as LGBT may encounter supplementary obstacles stemming from the intricacies of the coming-out experience, along with societal prejudices and biases against sexual and gender minorities (McMaster, 2018). The LGBT population faces many healthcare disparities due to stigma, lack of awareness, and insensitivity to their needs (Hafeez et al., 2017; Medina-Martínez et al., 2021). A systematic review of research works up to September

2016 found between 2% and 41.8% rate of discrimination among sexual and gender minority individuals (Ayhan et al., 2020). Approximately 13 percent of LGBT individuals in Britain have encountered healthcare staff treating them unfairly due to their sexual orientation or gender identity (Stonewall, 2018). Another review study found that members of the LGBT community face challenges when trying to access healthcare services due to the heteronormative attitudes of healthcare providers (Alencar Albuquerque et al., 2016). Moreover, LGBT individuals are also more vulnerable to substance abuse, sexually transmitted infections (STIs), and many health problems, including increased mental health problems (Hafeez et al., 2017; Medina-Martínez et al., 2021).

In 2011, the report of the Institute of Medicine (2011) indicated the necessity for an enhanced understanding of LGBT health matters among healthcare professionals. The report highlighted the importance of ensuring high-quality healthcare access for individuals within the LGBT community. In the Philippine context, even though it is among the Asian countries with a strong level of public tolerance towards

homosexuals, many LGBT individuals and those with diverse gender and sexual identities encounter instances of discrimination (Alibudbud, 2023; Statista Research Department, 2016). A recently published study reported that while Filipino healthcare providers, including doctors and nurses, generally had positive attitudes toward the needs of LGBT individuals, about 13 to 17 percent of them still preferred taking care of heterosexual patients (Rubio & Echem, 2022). In 2013, the Philippine National LGBT Community Dialogue proposed the need to formulate awareness-building initiatives uniquely directed at educational institutions to foster appreciation for differences and accentuate the health requirements of LGBT community members (United Nations Development Programme & United States Agency for International Development, 2014). Against this backdrop, the concerns and issues of the LGBT group should be given proper attention. While there have been many studies conducted about LGBT healthcare concerns conducted elsewhere, the literature is scarce among nursing students in the Philippines.

Health inequalities and disparities will persist unless healthcare providers on the frontlines are informed about the distinct healthcare necessities of this minority group (Cornelius & Carrick, 2015; Jones, 2021). As nurses' attitudes, knowledge, and beliefs impact the care received by LGBT people, nurses bear the responsibility to possess competence and show sensitivity toward the healthcare needs of marginalized individuals like LGBT individuals (McMaster, 2018; Oruche & Zapolski, 2020; Stewart & O'Reilly, 2017). Should nursing schools fail to adequately equip aspiring nurses to deliver optimal and culturally competent affirmative care, the perpetuation of health inequalities for LGBT individuals will likely continue (Cornelius & Carrick, 2015; Jones, 2021).

It has been recommended to include in the undergraduate nursing curricula LGBT content to promote cultural competence or improve both the theoretical and practical components of the nursing curriculum relative to LGBT health (Ercan Sahin & Aslan, 2020; Jones, 2021; Strong & Folse, 2015). Therefore, to ensure that nurses can provide culturally affirmative care to LGBT patients and are ready to meet the unique needs of the LGBT community, it is necessary to assess their current knowledge and attitudes towards LGBT healthcare concerns. Studies like this are pivotal in moving for inclusivity and diversity, shaping educational approaches, and promoting equitable care.

Studies have been conducted internationally to assess the knowledge and attitude of nursing and medical students on LGBT healthcare concerns and found knowledge gaps and areas of improvement. For instance, Cornelius and Carrick (2015) found significant knowledge deficits regarding LGBT health care among nursing students in the United States of America. The authors recommended that supplementary teaching approaches might be necessary to assist students in gaining a greater sense of ease when offering care to LGBT individuals. McMaster (2018), among Japanese nursing students, recommended the need for further education concerning people who identify as LGBT. Arthur et al. (2021) noted that although medical students generally held positive attitudes toward LGBT patients, their awareness and confidence in dealing with such patients displayed variability;

over half of the participants had not received specific training regarding the healthcare requirements of LGBT individuals. Della Pelle et al. (2018) study disclosed the need for nurses to increase cultural competencies among sexual minority groups. Moreover, Chapman et al. (2012) emphasized the need to develop strategies to prevent discriminatory practices and tackle and address biased attitudes among student health professionals.

Despite the existence of these studies, the literature is scarce among nursing students in the Philippines. Hence, this study aimed to assess the knowledge and attitude towards LGBT health care concerns among nursing students in a public tertiary institution in the Philippines.

Methods

Study Design

This was a descriptive, cross-sectional survey study.

Participants/Samples

All nursing students were invited to participate in the study. However, only 354 out of 536 nursing students of a public university in the Philippines responded to the survey and were included in the analysis, obtaining a response rate of 66%. Moreover, the adequacy of the sample size was computed using the sample size calculator by Raosoft (2004).

Instruments

The Nursing Students' Knowledge and Attitudes of LGBT Health Concerns (NKALH) survey by Cornelius and Carrick (2015) was adopted for this study. The researcher was granted permission to use the instrument by the original developers through email correspondence. The survey was divided into three parts. The first part of the survey collected the demographic information of the participants: academic year level, gender, age, sexual orientation, and religious affiliation. Students were also asked to identify any personal relationships to LGBT individuals, if they had taken a course or training regarding LGBT health concerns, answerable by "yes" or "no," and if they had taken care of an LGBT client, also answerable by a "yes" or "no."

The second part of the survey comprised 37 items to assess students' knowledge about various areas of LGBT health care. The items were answerable by "true," "false," or "don't know." One point was given for every correct answer. The scores were summed up and were interpreted using original Bloom's cut-off points as follows: low knowledge (0 to 21), average knowledge (22 to 29), and high knowledge (30 to 37).

The third part was a 26-item, 5-point Likert scale that assessed students' attitudes toward providing LGBT health care. Participants had to respond to options ranging from "1-strongly agree" to "5-strongly disagree". The questions assessed attitudes toward willingness to care, nursing responsibilities, comfort, and same-sex intimate relationship opinions. For this study, the following scale of means was used: unfavorable (1.00-2.33), ambivalent (2.34-3.66), and favorable (3.67-5.00). The original NKALH had an overall reliability coefficient of 0.77. The test-retest reliability reported strong correlations between the two measurements among 30 nursing students in Greece (Fradelos et al., 2022). For this

study, the Kuder-Richardson 21 reliability value of the knowledge questionnaire was 0.62, and Cronbach's alpha score for the composite attitude scale was 0.76. Authors of the NKALH explained that items on the instrument were based on related literature and were examined by content experts on LGBT health care. For this study, the instrument was reviewed and evaluated by three local nursing experts.

Data Collection

The data were collected through an online survey (Google Form) in April 2022 containing online informed consent and questions and answer options. Written permission to conduct the study was secured from the Office of the Dean. After administrative clearance had been granted, the class chairperson of each section was contacted through email or Facebook Messenger. To avoid undue influence, the researcher did not personally recruit the participation of students in this study. The students were recruited through a general Facebook announcement containing the link to the survey. The chairperson of each section was asked to facilitate the posting and distribution of the study link to each section's exclusive Facebook groups and Messenger group chats. The responses were then downloaded, analyzed, and interpreted. The respondents answered all items in the survey.

Data Analysis

The data gathered from this investigation were analyzed using the IBM SPSS software version 26. Frequency, percentage, standard deviation (SD), and mean (M) were utilized to describe the data. Testing of data normality was performed and showed a non-normal distribution; hence, the Kruskal-Wallis H test and Mann-Whitney U test were employed to compare the means between categories. The Spearman rho correlation was used to test the relationship between knowledge and attitude. The alpha level of significance was set at 0.05.

Ethical Consideration

The Ethics Committee of the West Visayas State University approved on April 2022 the conduct of the present study with Protocol Number WVSU.URERC-2022.PR_002. Before responding to the survey questions, all participants were required to provide their informed and voluntary consent to participate in the study, demonstrating their willingness to be a part of the research.

Results

Table 1 shows the demographic profile of nursing students. The average age of the students was 20.53 (SD =1.11) years old, and one-third (33.6%) of the respondents were in Level 3 or third year in the nursing program. The majority were females (74.3%), with heterosexual orientation (76.3%), Roman Catholics (80.8%), personally know someone who is LGBT (98.6%), have never taken care of an LGBT patient (90.7%), and have not taken a course on LGBT healthcare (93.8%).

Table 2 shows that a little over half (55.4%) of the respondents had a moderate level of knowledge about LGBT healthcare concerns, with a mean score of 22.57 (SD=4.69) in a 37-item test questionnaire. It also shows that nearly all

(97.5%) reported positive attitudes toward LGBT healthcare concerns, with an overall mean of 4.34 (SD = 0.30).

Table 1 Demographic profile of participants

| Category | Frequency | Percent |
|---|-----------|---------|
| Entire group | 354 | 100.00 |
| Age group [M = 20.53, SD = 1.11] | | |
| Year level | | |
| Level 1 | 86 | 24.3 |
| Level 2 | 92 | 26.0 |
| Level 3 | 119 | 33.6 |
| Level 4 | 57 | 16.1 |
| Gender | | |
| Male | 89 | 25.1 |
| Female | 263 | 74.3 |
| Transgender | 1 | 0.3 |
| Non-binary | 1 | 0.3 |
| Sexual orientation | | |
| Heterosexual | 270 | 76.3 |
| Homosexual (Lesbian/Gay) | 17 | 4.8 |
| Bisexual | 51 | 14.4 |
| Others (Pansexual, Gender Fluid, Queer) | 16 | 4.5 |
| Religious identity/affiliation | | |
| Roman Catholic | 286 | 80.8 |
| Non-Roman Catholic | 68 | 19.2 |
| Monthly income [Median = PHP 40,000] | | |
| Lower income (PHP 40,000 and below) | 194 | 54.8 |
| High income (Above 40,000) | 160 | 45.2 |
| Do you personally know someone who is LGBT? | | |
| No | 5 | 1.4 |
| Yes | 349 | 98.6 |
| Have you ever taken care of an LGBT patient? | | |
| No | 321 | 90.7 |
| Yes | 33 | 9.3 |
| Have you ever taken a course on LGBT healthcare? | | |
| No | 332 | 93.8 |
| Yes | 22 | 6.2 |

Table 2 Level of knowledge about and attitude towards LGBT healthcare concerns

| Variables | Frequency | Percent |
|---|-----------|---------|
| Knowledge [M = 22.57, SD = 4.69] | | |
| High | 20 | 5.6 |
| Moderate | 196 | 55.4 |
| Low | 138 | 39.0 |
| Attitude [M = 4.34, SD = 0.30] | | |
| Favorable | 345 | 97.5 |
| Ambivalent | 9 | 2.5 |
| Unfavorable | 0 | 0.0 |

Table 3 shows the significant differences in the knowledge and attitude toward LGBT healthcare concerns according to selected variables. It is shown that there were significant differences in the knowledge about LGBT healthcare concerns when grouped according to gender ($U = 10073.000$, $p = 0.049$), religious affiliation ($U = 8005.500$, $p = 0.023$), and year level ($H = 26.349$, $p < 0.001$). There were also significant differences in attitudes toward LGBT healthcare concerns when grouped according to sexual orientation ($H = 18.977$, $p < 0.001$).

Table 3 Differences in knowledge and attitude towards LGBT healthcare concerns

| Variables | Knowledge | | | Attitude | | |
|--|-----------|------------------|--------|-----------|------------------|--------|
| | Mean Rank | Statistical test | p | Mean Rank | Statistical test | p |
| Sex^a | | 10073.000* | 0.049 | | 11640.500 | 0.939 |
| Male | 158.18 | | | 175.79 | | |
| Female | 182.70 | | | 176.74 | | |
| Religious affiliation^a | | 8005.500* | 0.023 | | 8963.000 | 0.315 |
| Roman Catholic | 183.51 | | | 180.16 | | |
| Non-Roman Catholic | 152.24 | | | 166.31 | | |
| Monthly income^a | | 15123.500 | 0.678 | | 14227.000 | 0.177 |
| Lower income | 179.54 | | | 170.84 | | |
| High income | 175.02 | | | 185.58 | | |
| Personally know an LGBT | | 646.600 | 0.319 | | 784.500 | 0.698 |
| No | 132.30 | | | 159.90 | | |
| Yes | 178.15 | | | 177.75 | | |
| Taken care of an LGBT patient^a | | 4320.500 | 0.081 | | 4500.500 | 0.155 |
| No | 147.92 | | | 201.62 | | |
| Yes | 180.54 | | | 175.02 | | |
| Taken a course on LGBT healthcare^a | | 3397.500 | 0.583 | | 3564.500 | 0.851 |
| No | 189.07 | | | 173.52 | | |
| Yes | 176.73 | | | 177.76 | | |
| Year level^b | | 26.349* | <0.001 | | 4.113 | 0.250 |
| Level 1 | 131.53 | | | 188.16 | | |
| Level 2 | 180.30 | | | 186.59 | | |
| Level 3 | 192.19 | | | 172.26 | | |
| Level 4 | 211.66 | | | 157.70 | | |
| Sexual orientation^b | | 1.583 | 0.663 | | 18.977 | <0.001 |
| Heterosexual | 177.22 | | | 164.50 | | |
| Homosexual | 206.09 | | | 202.88 | | |
| Bisexual | 170.84 | | | 222.61 | | |
| Others | 173.00 | | | 226.19 | | |

Note: ^aMann-Whitney U test, ^bKruskal-Wallis H test, * $p < 0.05$

Table 4 shows no correlation (Spearman rank $r = 0.094$, $p = 0.081$) between nursing students' knowledge and attitude about LGBT healthcare concerns.

Table 4 Correlation between knowledge and attitude about LGBT healthcare concerns

| Variables | Correlation Coefficient | p-value |
|------------------------|-------------------------|---------|
| Knowledge and attitude | 0.093 | 0.081 |

Discussion

LGBT individuals may experience healthcare disparities as a result of a lack of cultural competency education (McCormick, 2021), and due to the scarcity of literature in the Philippine setting, this investigation of knowledge and attitude of Filipino nursing students toward LGBT healthcare concerns was done. In this research, while a little over half of the respondents were moderately knowledgeable about LGBT healthcare concerns, it is also noteworthy that over one-third had low knowledge. This result is unsurprising as a course specifically directed to LGBT content is still limited and only integrated with some Philippine undergraduate nursing curriculum courses. It has been noted that students indicated that the nursing curriculum's portion of LGBT health was insufficient, and there is a need to educate and train their nursing faculty members about LGBTQ content (Eickhoff, 2021; Ercan Sahin & Aslan, 2020). Some scholars have noted gaps in the nursing undergraduate curricula on LGBTQ cultural competence to consider the complex health needs of LGBT individuals across the lifespan, with students commenting on the need to include LGBT cultural competence in nursing education (McCormick,

2021). If nursing faculty members are not well-versed in LGBT health concerns, they may struggle to teach these topics to their students effectively. This lack of expertise can contribute to the perception that these issues are unimportant. Consistent with prior research, significant knowledge gaps were also identified among nursing students in the United States (Cornelius & Carrick, 2015), Greece (Fradelos et al., 2022), and Taiwan (Wang et al., 2022). Variable awareness concerning LGBT patients' health issues has been reported even among medical students (Arthur et al., 2021). An integrative review also registered many nurses and midwives as having insufficient knowledge about LGBTQ health issues (Stewart & O'Reilly, 2017).

Despite the knowledge deficits about healthcare concerns, respondents in this research displayed positive attitudes toward care delivery and responsibilities to LGBT patients and healthcare concerns. An integrative review disclosed evidence suggesting that student attitudes toward LGBT individuals may be shifting more positively (Lim & Hsu, 2016). Studies in countries like Greece (Fradelos et al., 2022) and Taiwan (Wang et al., 2019) also reported that nursing students held positive attitudes toward LGBT patients. Another research, however, still noted only a medium-level attitude towards LGBT individuals among nursing students (Özdemir & Erenoğlu, 2022). Constant monitoring and assessment of students' attitudes towards LGBT individuals may still be necessary.

This study also demonstrated that the female gender had significantly higher knowledge about LGBT healthcare concerns than the male gender. Perhaps in our sample, females had more interest in and exposure to LGBT health

needs and concerns. It has been reported that male nursing students had more unfavorable attitudes toward LGBT individuals (Özdemir & Erenoğlu, 2022). Another study conducted elsewhere noted that female primary care providers indicated a stronger inclination for additional training when contrasted with their male counterparts (Rowe et al., 2017). More attention may be given to male nursing students to increase awareness about LGBT health concerns.

According to this study, Roman Catholics had significantly higher knowledge than non-Roman Catholics. Similarly, earlier research among nursing students in Greece noted a statistically significant difference in attitudes among the different religious groups, with Muslims and Protestants having lower mean knowledge scores when compared to Christians and atheists/non-religious people (Fradelos et al., 2022). Knowledge scores were likewise found to have a significant association with religious beliefs and the frequency of attending religious services among both medical and nursing students in Australia (Chapman et al., 2012). A scoping review revealed a strong link between religious affiliation and unfavorable attitudes toward LGBTQ individuals observed in academic and professional circles (Westwood, 2022). Nonetheless, despite Roman Catholicism being the predominant religion in the Philippines and while the findings of this study appear that Roman Catholics may have a deeper understanding of LGBT healthcare concerns, the researcher considers that it is not sufficient to make a blanket statement and arrive at a firm conclusion about the knowledge of any religious group, including Roman Catholics, regarding LGBT healthcare concerns. It is vital to approach this finding sensitively and avoid generalizing about any religious or cultural group. Knowledge and understanding of LGBT healthcare concerns can vary widely among individuals within any religious community, and the level of knowledge and awareness about LGBT healthcare concerns depends on various factors, such as individual education and exposure to LGBT healthcare concern information. Given the limited scope of our sample, our findings highlight the need for further research in this area.

Moreover, significant differences were noted in nursing students' knowledge based on their academic year level. In this study, Dunn's Post Hoc Test revealed that Level 1 or first-year students had significantly lower knowledge about LGBT healthcare concerns compared to Level 2 ($p < .001$), Level 3 ($p < .001$), and Level 4 ($p < .001$). Consistent with the literature, the finding of this study suggests that students in the lower academic year level are likely to have less knowledge compared to those in the higher academic year level. This expected finding may be explained by the idea that topics concerning sexuality are typically tackled in the second year of the 4-year undergraduate nursing program in the Philippines. A study in the United States also reported more knowledge about LGBT healthcare concerns among RN-BSN students (Cornelius & Carrick, 2015).

As for attitude, there were also significant differences when grouped according to sexual orientation. Dunn's Post Hoc Test revealed that heterosexuals had significantly higher knowledge than bisexuals ($p < .001$) and other sexual orientations ($p = .019$). For this study, bisexuals and those with different gender orientations may feel uncomfortable discussing health issues concerning them, and they may avoid

learning about their health risks and concerns compared to heterosexual students due to some personal biases. Nonetheless, the author cannot derive a strong conclusion at the moment on this result, and further research is needed for this aspect of the study results. Nevertheless, a study in Greece likewise disclosed a significant difference in the responsibility to care based on sexual orientation (Fradelos et al., 2022). Significant differences in attitude based on gender and sexual orientation were also reflected in the study in Australia (Chapman et al., 2012) and Georgia (Wilson et al., 2014).

Lastly, the result of this study is contrary to the findings of researchers in the United States (Cornelius & Carrick, 2015) and Australia (Chapman et al., 2012), which found a significant correlation between knowledge and attitude concerning LGBT health and individuals. Analysis of the present investigation reported no significant relationship between knowledge and attitude toward LGBT healthcare concerns. Knowledge alone might not be sufficient to change nursing students' attitudes, which can be shaped by a complex interplay of other factors that may not be easily influenced solely by knowledge. There is also some evidence on different health-related topics and contexts reporting no relationship between knowledge and attitude (De Castro et al., 2022; Sabouhi et al., 2011). In this study, despite having only low to moderate knowledge, nursing students included in this study still had favorable attitudes towards LGBT patients, and their understanding of specific LGBT concerns does not necessarily influence their attitude towards LGBT individuals. Perhaps the nursing education curricula might not sufficiently cover LGBT health concerns, and students had limited opportunity to learn about them. Regardless, nursing students are taught to provide fair treatment and a non-discriminatory approach to their care, hence the positive attitude towards LGBT individuals. The International and local nursing ethical code advocates equitable care for everyone, and nurses are duty-bound to provide patient care without discrimination, demonstrating respect for all individuals (American Nurses Association, 2018; Philippine Regulatory Board of Nursing, 2004). Nevertheless, with the growing societal attention and interest in LGBT health, nursing education needs to prepare graduates who possess cultural competence, enabling them to address the health requirements of this susceptible and marginalized group of individuals (McCormick, 2021; Min et al., 2023).

Implications of the Study

This study has important implications for nursing education and practice. The survey on knowledge and attitudes towards LGBT healthcare concerns among nursing students highlights the importance of promoting inclusivity, cultural competence, and equitable healthcare delivery in nursing education and practice. Based on the study results, nursing schools need to carefully examine the current curriculum to integrate LGBT topics, and approaches should be made to address the existing gaps in the knowledge of nursing students to ensure and better prepare future professional nurses to deliver culturally competent affirmative care grounded on best available evidence in the care of LGBT individuals. Moreover, nursing educators should actively work to reduce gender discrimination and biases through education, training, and open discussions. Doing so can help create a healthcare

system that is more sensitive and responsive to the needs of sexual and gender minorities, ultimately leading to better patient outcomes and a more inclusive healthcare environment.

Limitations of the Study

Given the limitations of this research, this research warrants replication on a larger scale, and the use of other research designs, such as a qualitative investigation and mixed method study, are strongly recommended to validate and expand the study's findings. The researcher also warrants caution in the interpretation and use of the findings of this study and to approach this topic with sensitivity and avoid generalizing based only on this study result.

Conclusion

This study highlights that despite favorable attitudes, there are significant gaps in nursing students' knowledge about LGBT healthcare concerns. Understanding and familiarizing oneself with the needs of the LGBT community is crucial for establishing effective communication and cultivating trust within this specific group. The result also enhances the importance of improving the nursing program's theoretical and practical aspects concerning LGBT health. Measures should be made to address the gaps in the curricular content of undergraduate nursing programs directed at the LGBT topic to deliver culturally competent affirmative care grounded in evidence-based practices for LGBT individuals. Additional training and education with LGBT health content may be needed to address some of these knowledge voids, help nursing students become more aware of the healthcare concerns and needs of these sexual minority groups, and potentially aid in diminishing existing health disparities and overcoming the obstacles to the healthcare of this specific population.

Declaration of Conflicting Interest

The author has no conflict of interest to declare.

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Authors' Contributions

The author contributed substantially to the conception, finalization, and writing of the final version of this article.

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Data Availability

The datasets generated during and analyzed during the current study are available from the corresponding author upon reasonable request.

Declaration of Use of AI in Scientific Writing

Nothing to disclose.

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