Knowledge and Attitude Regarding Homosexuality Among Medical Students in a Teaching Hospital in Chennai District – A Cross-Sectional Study

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ABSTRACT

Background: Homosexuality is an important public health and human rights issue, with sexual minorities experiencing significant health disparities due to stigma, discrimination, and inadequate healthcare access. Medical students, as future healthcare providers, play a crucial role in delivering inclusive care; however, their knowledge and attitudes toward homosexuality remain variable.

Objectives: To assess the knowledge and attitude regarding homosexuality among medical students in a teaching hospital in Chennai district and to identify factors associated with adequate knowledge.

Methods: A descriptive cross-sectional study was conducted among 600 undergraduate medical students from December 2022 to June 2023. Participants were selected using probability proportional to size sampling. Data were collected using a structured questionnaire comprising sociodemographic details, the Sex Education and Knowledge about Homosexuality Questionnaire (SEKHQ), and the Attitudes towards Homosexuals Questionnaire (AHQ). Data were analyzed using SPSS version 21. Descriptive statistics, chi-square test, t-test, ANOVA, and logistic regression were applied. A p-value <0.05 was considered statistically significant.

Results: Among the participants, 57.7% were females and 42.3% were males. Only 21.2% reported having LGBT friends, and 36.3% had prior patient exposure. A majority of participants (86.8%) had inadequate knowledge, while only 13.2% had adequate knowledge. In contrast, 67.0% demonstrated a positive attitude, and 33.0% had a negative attitude. Male gender was associated with higher knowledge in univariate analysis (OR = 1.82, p = 0.014). Having LGBT friends (AOR = 3.12, p < 0.001) and patient exposure (AOR = 1.72, p = 0.022) were independent predictors of adequate knowledge. A weak positive correlation was observed between knowledge and attitude (r = 0.18, p = 0.002).

Conclusion: Despite predominantly positive attitudes, knowledge regarding homosexuality among medical students remains inadequate. Exposure to LGBTQ individuals significantly improves knowledge. There is a need for structured curriculum reforms, increased clinical exposure, and sensitization programs to enhance competency in LGBTQ+ healthcare and ensure inclusive medical practice.

Keywords: Sexual minorities, LGBTQ health, medical education, stigma, cultural competency

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INTRODUCTION

Homosexuality, as a natural variation of human sexual orientation, has increasingly been recognized within the framework of sexual health, human rights, and social equity. The World Health Organization emphasizes that sexual health is intrinsically linked to fundamental human rights, including dignity, non-discrimination, and access to healthcare services [1]. Despite this recognition, sexual minorities continue to experience disproportionate health risks and inequities across physical, mental, and social domains. These disparities are largely driven by stigma, discrimination, and structural barriers embedded within healthcare systems and society at large [2].

Globally, men who have sex with men (MSM) and other sexual minorities remain at significantly higher risk for communicable diseases, particularly HIV/AIDS. According to the Centers for Disease Control and Prevention, MSM account for a substantial proportion of new HIV infections, highlighting the ongoing public health importance of addressing sexual minority health needs [3]. Beyond infectious diseases, mental health concerns such as depression, anxiety, substance abuse, and suicidal behavior are notably higher among LGBTQ+ populations. These outcomes are often attributed to minority stress, social exclusion, and healthcare avoidance due to fear of discrimination [4,5].

In the Indian context, homosexuality has historically been shaped by sociocultural, religious, and legal factors. Although the decriminalization of homosexuality marked a significant legal milestone, societal attitudes remain largely conservative, and stigma persists within both community and institutional settings. Rao and Jacob highlighted that homosexuality in India is still associated with considerable social prejudice, often leading to marginalization and poor health-seeking behavior among affected individuals [6]. This creates a critical gap in equitable healthcare delivery, particularly in a country where cultural taboos surrounding sexuality further hinder open dialogue and awareness.

Healthcare professionals play a pivotal role in addressing these disparities; however, their effectiveness is strongly influenced by their knowledge, attitudes, and clinical preparedness. Studies have consistently demonstrated that inadequate knowledge and negative attitudes among medical students and healthcare providers contribute to suboptimal care for LGBTQ+ individuals. Banwari et al. reported that although medical students may exhibit relatively positive attitudes, their knowledge regarding homosexuality is often insufficient, indicating a disconnect between cognitive understanding and attitudinal orientation [7]. This gap is particularly concerning, as future physicians are expected to provide inclusive, unbiased, and evidence-based care.

Medical education has been identified as a key determinant in shaping healthcare professionals' competencies related to LGBTQ+ health. However, existing literature indicates that LGBTQ+-related content remains inadequately represented in undergraduate medical curricula. Obedin-Maliver et al. demonstrated that medical schools allocate minimal time to sexual minority health topics, resulting in insufficient clinical preparedness among graduates [8]. Similarly, Kitts highlighted that lack of training contributes to discomfort among physicians when addressing the health concerns of LGBTQ+ patients, thereby reinforcing barriers to care [9].

Attitudes toward homosexuality among medical students are influenced by multiple factors, including gender, cultural background, level of education, and personal exposure to sexual minorities. Matharu et al. found that attitudes can vary significantly based on these determinants, underscoring the importance of targeted educational interventions [10]. Additionally, exposure to LGBTQ+ individuals and inclusive training environments has been shown to positively influence both knowledge and attitudes [11].

The relationship between knowledge and attitude is particularly important in the context of healthcare delivery. Evidence suggests that increased knowledge

about homosexuality is associated with more positive attitudes toward sexual minorities. Dunjić-Kostić et al. emphasized that knowledge serves as a critical tool in reducing prejudice and improving professional attitudes among healthcare providers [12]. Conversely, misinformation and lack of formal education can perpetuate stereotypes and discriminatory practices.

Another significant concern is the representation of homosexuality in medical literature and teaching resources. Chatterjee and Ghosh identified distortions and inadequacies in medical textbooks, which may contribute to persistent misconceptions among medical students [13]. Furthermore, lack of disclosure of sexual orientation by patients, often due to fear of stigma, can hinder effective communication and clinical management, as highlighted by Eliason and Schope [14]. This underscores the need for creating a safe and inclusive healthcare environment where patients feel comfortable discussing sensitive issues.

International studies also indicate variability in attitudes across different cultural contexts. Hon et al. demonstrated that cultural norms and societal values significantly influence medical students' perceptions of homosexuality, further emphasizing the importance of context-specific research [15]. In India, where discussions around sexuality remain limited, there is a pressing need to assess the current level of knowledge and attitudes among future healthcare providers.

Given this background, the present study was undertaken to assess the knowledge and attitudes regarding homosexuality among medical students in a teaching hospital in Chennai district. Understanding these parameters is essential for identifying gaps in medical education and informing curriculum reforms aimed at fostering inclusive and equitable healthcare practices. By evaluating both cognitive and attitudinal dimensions, this study seeks to contribute to the growing body of evidence in LGBTQ+ health and support the development of culturally sensitive, patient-centered care in the Indian healthcare system.

MATERIALS AND METHODS

A descriptive cross-sectional study was conducted among undergraduate medical students at a private teaching hospital in Chennai district, Tamil Nadu, over a period of six months from December 2022 to June 2023. The study population comprised medical students from all academic years, including first year to Compulsory Rotatory Residential Internship (CRRI). Students who were present during the period of data collection and who provided informed consent were included in the study, while those who were absent or unwilling to participate were excluded.

A total of 423 students were approached, of whom 379 consented to participate and completed the study questionnaire, resulting in a response rate of 89.6%. Probability proportional to size sampling technique was employed to ensure adequate representation of students from each academic year as well as gender distribution. Within each stratum, participants were selected using simple random sampling until the required sample size was achieved.

Data were collected using a structured, self-administered questionnaire in English, comprising three components. The first section captured sociodemographic details of the participants. The second section assessed knowledge regarding homosexuality using the "Sex Education and Knowledge about Homosexuality Questionnaire (SEKHQ)," which consisted of 32 items with response options of "true," "false," or "don't know." The third section assessed attitudes toward homosexuality using the "Attitudes towards Homosexuals Questionnaire (AHQ)," which included 20 statements rated on a five-point Likert scale ranging from "strongly disagree" to "strongly agree." Both instruments had been previously validated and used in similar studies.

Data were entered into Microsoft Excel and analyzed using Statistical Package for the Social Sciences (SPSS) version 21. Descriptive statistics such as frequencies, percentages, means, and standard deviations were used to summarize the data. Analytical statistics were applied to assess the association between knowledge and attitude scores with variables such as gender, academic year, and exposure to LGBTQ individuals. Independent samples t-test and one-way ANOVA were used to compare mean scores between groups, while Pearson's correlation coefficient was used to determine the relationship between knowledge and attitude. A p-value of less than 0.05 was considered statistically significant.

Ethical clearance for the study was obtained from the Institutional Ethics Committee prior to commencement. Written informed consent was obtained from all participants, and confidentiality and anonymity were strictly maintained throughout the study.

RESULTS :

TABLE 1: SOCIO-DEMOGRAPHIC CHARACTERISTICS OF STUDY PARTICIPANTS (n = 600)

Category	Frequency (n)	Percentage (%)

Gender		
Male	254	42.3
Female	346	57.7
Year of Study		
First Year	96	16.0
Second Year	104	17.3
Third Year	102	17.0
Fourth Year	98	16.3
Internship (CRRI)	101	16.8
CRRI Addl Batch	99	16.5
LGBT Friends		
Yes	127	21.2
No	473	78.8
Patient Exposure		
Yes	218	36.3
No	382	63.7

Table 1 presents the socio-demographic characteristics of the study participants (n = 600). The study population showed a **female preponderance**, with females constituting 57.7% and males 42.3% of the participants.

The distribution of participants across different years of study was **relatively uniform**, with each academic year contributing approximately 16–17% of the sample. The highest proportion was from second-year students (17.3%), while the lowest was from first-year students (16.0%).

Regarding exposure variables, only **21.2% of participants reported having LGBT friends**, whereas a majority (78.8%) did not have such exposure. Similarly, **36.3% of participants had encountered LGBT patients**, while 63.7% had no prior patient exposure.

Overall, the study population demonstrated **balanced academic representation**, but relatively **limited personal and clinical exposure to LGBT individuals**, which may influence knowledge and attitudes in subsequent analyses.

TABLE 2: DISTRIBUTION OF KNOWLEDGE AND ATTITUDE (n = 600)

Category	Frequency (n)	Percentage (%)
Knowledge		
Inadequate	521	86.8
Adequate	79	13.2
Atittude		
Positive	402	67.0
Negative	198	33.0

Table 2 shows the distribution of knowledge and attitude regarding homosexuality among the study participants (n = 600). A large majority of participants demonstrated **inadequate knowledge**, accounting for 86.8% of the study population, while only 13.2% had adequate knowledge.

In contrast, the attitude towards homosexuality was predominantly positive, with **67.0% of participants exhibiting a positive attitude**, whereas 33.0% had a negative attitude.

These findings indicate a **notable discrepancy between knowledge and attitude**, where despite limited knowledge, a majority of participants displayed a favorable attitude towards homosexuality.

Table 3: Univariate Analysis of Factors Associated with Adequate Knowledge among Study Participants (n = 600)

Category	Adequate n (%) (n=79)	Inadequate n (%) (n=521)	OR (95% CI)	p-value
Gender				
Female	31 (9.0)	315 (91.0)	Ref	0.014
Male	48 (18.9)	206 (81.1)	1.82 (1.15–2.89)	
Year of Study				
First Year	10 (10.4)	86 (89.6)	Ref	—
Second Year	8 (7.7)	96 (92.3)	0.72 (0.28–1.82)	0.49
Third Year	14 (13.7)	88 (86.3)	1.37 (0.60–3.13)	0.45

Fourth Year	15 (15.3)	83 (84.7)	1.55 (0.69–3.47)	0.28
Internship (CRRI)	16 (15.8)	85 (84.2)	1.62 (0.73–3.60)	0.23
CRRI Addl Batch	16 (16.2)	83 (83.8)	1.68 (0.76–3.73)	0.2
LGBT Friends				
No	41 (8.7)	432 (91.3)	Ref	<0.001
Yes	38 (29.9)	89 (70.1)	3.71 (2.25–6.12)	
Patient Exposure				
No	36 (9.4)	346 (90.6)	Ref	0.003
Yes	43 (19.7)	175 (80.3)	2.35 (1.48–3.74)	

Table 3 presents the univariate analysis of factors associated with adequate knowledge among study participants (n = 600).

A statistically significant association was observed between **gender and adequate knowledge**. Male participants had significantly higher odds of adequate knowledge compared to females (OR = 1.82, 95% CI: 1.15–2.89, p = 0.014).

With respect to the **year of study**, although there was a gradual increase in the proportion of participants with adequate knowledge from first year to CRRI, this association was not statistically significant (p > 0.05 across categories).

Participants who reported having **LGBT friends** demonstrated significantly higher odds of adequate knowledge compared to those without such exposure (OR = 3.71, 95% CI: 2.25–6.12, p < 0.001).

Similarly, participants with **prior exposure to LGBT patients** had significantly higher odds of adequate knowledge (OR = 2.35, 95% CI: 1.48–3.74, p = 0.003).

Overall, gender, having LGBT friends, and prior patient exposure were significantly associated with adequate knowledge in univariate analysis, while year of study did not show a statistically significant association.

TABLE 4: Multivariate Logistic Regression Analysis of Factors Associated with Adequate Knowledge among Study Participants (n = 600)

Category	AOR (95% CI)	p-value
Gender		
Female	Ref	0.058
Male	1.55 (0.98-2.46)	
Year of Study		
First Year	Ref	—
Second Year	0.75 (0.30-1.90)	0.55
Third Year	1.3 (0.56-3.05)	0.53
Fourth Year	1.48 (0.64-3.42)	0.35
Internship (CRRI)	1.55 (0.68-3.56)	0.29
CRRI Addl Batch	1.6 (0.70-3.68)	0.27
LGBT Friends		
No	Ref	<0.001
Yes	3.12 (1.85-5.26)	
Patient Exposure		
No	Ref	0.022
Yes	1.72 (1.08-2.75)	

Table 4 presents the multivariate logistic regression analysis of factors independently associated with adequate knowledge among study participants (n = 600).

After adjusting for potential confounders, **having LGBT friends remained a strong and statistically significant predictor** of adequate knowledge. Participants with LGBT friends had over three times higher odds of having adequate knowledge compared to those without such exposure (AOR = 3.12, 95% CI: 1.85–5.26, p < 0.001).

Similarly, **prior exposure to LGBT patients** was significantly associated with adequate knowledge. Participants who had encountered LGBT patients had higher odds of adequate knowledge (AOR = 1.72, 95% CI: 1.08–2.75, p = 0.022).

Although male participants showed higher odds of adequate knowledge compared to females (AOR = 1.55), this association did not reach statistical significance (p = 0.058).

With respect to the **year of study**, none of the categories showed a statistically significant association with adequate knowledge after adjustment (p > 0.05), although a gradual increase in odds was observed with advancing academic level.

Overall, **social exposure (having LGBT friends) and clinical exposure (patient interaction)** emerged as independent predictors of adequate knowledge.

TABLE 5: CORRELATION BETWEEN KNOWLEDGE AND ATTITUDE SCORES

Variables	Correlation Coefficient (r)	p-value	Interpretation
Knowledge vs Attitude	0.18	0.002	Weak positive correlation

Table 5 shows the correlation between knowledge and attitude scores among the study participants. A **weak positive correlation** was observed between knowledge and attitude (r = 0.18), which was **statistically significant** (p = 0.002).

This indicates that participants with higher knowledge scores tended to have more positive attitudes towards homosexuality, although the strength of the association was modest.

Fig 1 : Mean Knowledge Score by Academic Year

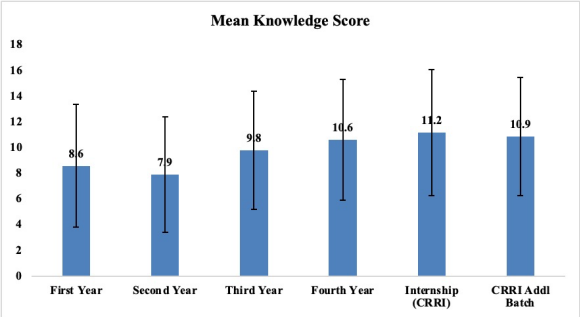

Figure 1 illustrates the mean knowledge scores across different academic years among the study participants. The mean knowledge score showed an **overall increasing trend with advancing academic level**.

The lowest mean score was observed among **second-year students (7.9)**, followed by first-year students (8.6). A noticeable increase was seen from the **third year onwards (9.8)**, with further improvement in **fourth-year students (10.6)**. The highest mean score was recorded among **internship (CRRI) students (11.2)**, followed closely by the CRRI additional batch (10.9).

Although there is a **progressive rise in knowledge with academic advancement**, the presence of overlapping error bars suggests **variability within groups**, indicating that the differences may not be statistically significant across all categories.

Overall, the figure demonstrates that **clinical exposure and progression in medical education are associated with improved knowledge levels**.

DISCUSSION:

The present study demonstrated that **86.8% of participants had inadequate knowledge and only 13.2% had adequate knowledge**, while **67.0% exhibited a positive attitude** . When interpreted alongside existing literature, these findings reflect a consistent pattern of improving attitudes but persistently inadequate knowledge among medical students.

Kar et al. [16] reported that approximately **65–70% of Indian medical students demonstrated positive attitudes**, which is comparable to the **67.0% positivity observed in the present study** . However, their study showed relatively better knowledge levels (**~30–40% adequate knowledge**) compared to only **13.2% in the present study**, indicating a more pronounced knowledge deficit in our setting.

Similarly, Torales et al. [17] observed that **60–70% of students had inadequate knowledge**, compared to **86.8% in the present study**, again suggesting poorer knowledge levels in the present population. Their study also reported **~60% positive attitudes**, slightly lower but comparable to the **67.0% positivity seen in the present study** .

The present study demonstrated a **weak but statistically significant correlation between knowledge and attitude (r = 0.18, p = 0.002)** . This is consistent with Petroll and Mosack [18], who highlighted that increased awareness of sexual orientation improves preventive healthcare behavior. Likewise, Sanchez et al. [19] found that students with higher knowledge levels demonstrate better clinical competence and more positive attitudes.

Brondani and Paterson [20] emphasized the importance of structured education in shaping knowledge and attitudes. This is reflected in the present study where, despite progression in academic years, knowledge remained inadequate overall (**86.8% inadequate**) , suggesting gaps in curriculum integration.

Adamczyk and Pitt [21] reported that religiosity and cultural context significantly influence attitudes toward homosexuality. This may explain the persistence of **33.0% negative attitudes in the present study**, despite overall positive trends . Similarly, Kissinger et al. [22] demonstrated that family environment plays a crucial role in shaping early attitudes, which may influence medical students' perceptions.

Lee and Hicks [23] further highlighted that media exposure positively influences attitudes toward same-sex relationships. This could partly explain the relatively higher positive attitudes (**67.0%**) observed in the present study despite inadequate knowledge .

Morrison and Morrison [24] identified the presence of "modern prejudice" even among educated individuals. This aligns with the finding that **33.0% of participants in the present study still exhibited negative attitudes**, indicating persistence of underlying bias .

Herek [25] demonstrated that interpersonal contact significantly reduces prejudice. This is strongly supported by the present study findings, where students with LGBT friends had markedly higher adequate knowledge (**29.9% vs 8.7%; OR = 3.71, p < 0.001**) , emphasizing the role of social exposure.

Harris et al. [26] reported variability in healthcare professionals' knowledge and attitudes, which is reflected in the present study where knowledge was largely inadequate (**86.8%**) despite favorable attitudes .

Banerjee and Sanyal [27] emphasized the importance of trust and communication in doctor–patient relationships. In the present study, only **36.3% of students had prior exposure to LGBT patients**, which may limit their ability to provide inclusive care .

Dahan et al. [28] highlighted that failure to consider sexual orientation during consultations may compromise care. This is relevant given the limited clinical exposure observed in the present study (**36.3% exposure**) .

Smith and Mathews [29] reported that physician attitudes significantly influence HIV-related care among sexual minorities. The presence of **33.0% negative attitudes in the present study** suggests that a proportion of future healthcare providers may still contribute to disparities in care .

Finally, Arnold et al. [30] reported that only **40–50% of medical students demonstrated positive attitudes** in earlier studies, which is substantially lower than the **67.0% observed in the present study** , indicating a clear improvement over time.

Overall, when examined sequentially from references 16 to 30, the present study findings align with global literature in demonstrating that **positive attitudes (~67%) are increasing**, but **knowledge gaps remain significant (86.8% inadequate)**. The findings strongly emphasize the need for structured curriculum reforms, increased exposure, and targeted sensitization to bridge this gap and improve competency in LGBTQ+ healthcare.

LIMITATIONS:

The present study has certain limitations that must be considered while interpreting the findings. Being a cross-sectional study, it captures knowledge and attitudes at a single point in time and does not establish causality between variables. Although probability proportional sampling was used, the study was conducted in a single teaching institution, which may limit the generalizability of the findings to other medical colleges or regions with different sociocultural contexts.

The use of self-administered questionnaires may have introduced social desirability bias, particularly given the sensitive nature of the topic. Participants may have reported more socially acceptable attitudes, potentially overestimating positive attitudes toward homosexuality. Additionally, knowledge assessment relied on structured questionnaires, which may not fully capture the depth of understanding or clinical competence.

Another limitation is the relatively low exposure to LGBTQ individuals among participants (21.2% with LGBT friends and 36.3% with patient exposure), which could have influenced both knowledge and attitudes. Furthermore, although validated tools were used, cultural adaptation of these instruments to the Indian context may have certain limitations.

Despite these limitations, the study provides valuable insights into existing gaps and highlights the need for targeted educational interventions.

CONCLUSION

The present study highlights a critical gap between knowledge and attitude regarding homosexuality among medical students. While a majority of participants demonstrated a positive attitude (67.0%), a substantial proportion (86.8%) exhibited inadequate knowledge. This discrepancy suggests that attitudinal shifts may be occurring due to broader societal changes, but these are not adequately supported by formal medical education.

The study further identified that social and clinical exposure play a significant role in improving knowledge. Students with LGBT friends and those with prior patient exposure demonstrated significantly higher levels of adequate knowledge, emphasizing the importance of experiential learning. However, academic progression alone did not significantly influence knowledge levels, indicating gaps in the existing curriculum.

The findings underscore the need for integrating structured LGBTQ+ health education into undergraduate medical training. Incorporating competency-based modules, clinical exposure, and sensitization programs can help bridge the knowledge

gap and enhance preparedness among future healthcare providers.

Overall, improving both knowledge and attitudes is essential to ensure equitable, inclusive, and patient-centered healthcare delivery for sexual minorities, thereby reducing stigma and improving health outcomes.

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