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EFFECTIVENESS OF HEALTH EDUCATION ON TRANS AFFIRMATIVE MEDICAL CARE AMONG MEDICAL STUDENTS- A QUASI-EXPERIMENTAL STUDY

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Abstract

Background Transgender individuals face unique healthcare challenges, often exacerbated by inadequate training and knowledge among healthcare providers. Despite legal advancements, significant gaps remain in healthcare access and quality for transgender people. Trans-affirmative care, which promotes inclusive, respectful healthcare practices, is essential for improving health outcomes. This study aimed to assess the effectiveness of a targeted health education intervention in improving medical students' knowledge, attitudes, and competencies regarding trans-affirmative medical care.

Methodology A quasi-experimental study was conducted from January to April 2024 at a tertiary care hospital in Kanchipuram, Tamil Nadu, involving third-year MBBS students. Of 136 eligible students, 68 were selected via simple random sampling, with a final sample size of 63 participants after exclusions. A pre-tested, semi-structured questionnaire assessing knowledge on transgender health was administered before and after an eight-week health education intervention on trans-affirmative care. Data were analysed using SPSS version 25, with paired t-tests comparing pre- and post-intervention knowledge and attitude scores.

Results: There was a statistically significant improvement in participants' knowledge across all categories. Understanding of transgender terminology increased from 1.43 ± 0.499 to 1.63 ± 0.485 ($p < 0.01$). Knowledge of hormone replacement therapy (HRT) improved from 1.08 ± 0.272 to 1.32 ± 0.469 ($p < 0.01$). Awareness of HRT risks increased from 1.05 ± 0.363 to 1.35 ± 0.481 ($p < 0.01$). Knowledge on creating trans-affirmative medical environments rose from 1.13±0.336 to1.32±0.469 ($p<0.01$).

Conclusion
The results show strong evidence that the health education intervention effectively improved trans affirmative medical education outcomes across multiple measures. These findings support the hypothesis that the intervention positively impacted the students' knowledge and attitudes related to trans affirmative medical care.

Keywords: Transgender Persons Education, gender minority, gender-affirming, health disparities, inclusive care

INTRODUCTION

Transgender people are individuals whose gender identity does not align with the sex they were assigned at birth. This includes people who identify as male, female, non-binary, or other genders that differ from their birth-assigned sex as per the AMA (American Medical Association.[(1)] Both the AMA and APA (American Psychological Association) recognize that transgender identities are a natural and normal variation of human

identity. These identities are not disorders but are instead part of the diversity of human experiences.[2] As per data given by World Population Review 2024, the global average estimate for transgender individuals is around 2%, with this percentage being consistent across various nations, despite challenges in accurate counting.[3] As per a survey done in 2021, in 27 of the world's most LGBTQIA (Lesbian, Gay, Bisexual, Transgender, Queer, Intersex, and Asexual) friendly countries Germany and Sweden are the countries with the highest rates of transgender populations.[3] Thailand, India, and the Philippines have visible transgender communities with significant representation of trans women, often referred to as kathoey in Thailand and hijra in India and Bangladesh. According to the 2011 Census of India, there were 487,000 self-identified transgender people.[4,5]

India's transgender community was officially recognized as a third gender in 2014, and affirmed the rights of transgender individuals. The Transgender Persons (Protection of Rights) Act, 2019, was enacted in India to provide legal protections and rights to transgender individuals.[6] Transgender people may seek gender-affirming medical treatments, such as hormone therapy or surgery. Access to such care is considered medically necessary and critical for the well-being of transgender individuals. Denying care can lead to harmful mental and physical health outcomes.[1]

Despite the legal advances, significant gaps remain in healthcare access for transgender individuals. According to a UNDP report, transgender individuals often face discrimination and stigma, lack inclusive healthcare facilities, and inadequate training among healthcare providers in health settings, which affects their willingness to seek care and leads to poorer health outcomes.[7,8] Many transgender people prefer to avoid public health services due to past experiences of discrimination.[9] The Indian government has launched various schemes to improve healthcare access for marginalized groups, including transgender people. For instance, the National Health Mission has incorporated policies to address the specific needs of transgender individuals, although the effectiveness and reach of these policies are still evolving.[10] Improving healthcare for transgender individuals requires a multi-faceted approach, including the sensitization of healthcare providers, the establishment of dedicated healthcare services, and the implementation of anti-discrimination policies is crucial for encouraging better health-seeking behaviour among transgender individuals.[11]

The term "trans-affirmative care," as defined by the UNDP, emphasizes a healthcare approach that is respectful, inclusive, and supportive of transgender individuals. While the UNDP itself may not always provide a single, explicit definition, the concept can be synthesized from various UNDP reports and publications on transgender health and rights. trans-affirmative care refers to a comprehensive and respectful healthcare approach designed to address the specific health needs of transgender individuals. This approach encompasses: Ensuring that transgender individuals are treated with dignity and respect, including using correct names and pronouns. Creating a healthcare environment that is inclusive of transgender individuals involves training healthcare providers to understand and address the unique needs related to gender identity, including hormone therapy and gender-affirming surgeries. Providing services that address physical and mental health needs, including access to psychological support, peer networks, and gender-affirming care. Maintaining the confidentiality of transgender individuals and safeguarding their privacy in all interactions with the healthcare system. Ensuring that transgender individuals have equal access to healthcare services without facing discrimination or barriers. Trans affirmative care ensures improved health outcomes such as access to appropriate care and Early intervention, Reduction in Mental Health Issues such as decreased stigma and discrimination, and access to supportive services, and Enhanced Quality of Life and Equity in Healthcare.[11]

Incorporating trans-affirmative care into medical education helps students develop a deeper understanding of transgender health issues and culturally competent care. This knowledge is crucial for providing effective and respectful care to transgender patients. Training in trans-affirmative care can boost medical students' confidence in handling transgender patients and addressing their specific health needs, leading to better patient interactions and care. Medical students trained in trans-affirmative care are more likely to advocate for and implement inclusive practices in their future workplaces, contributing to systemic improvements in healthcare. Knowledgeable and empathetic healthcare professionals are better positioned to influence health policies and practices that support the rights and needs of transgender individuals. The study aimed to assess the effectiveness of a targeted health education intervention in increasing medical students' knowledge, attitudes, and competencies regarding trans-affirmative medical care.

METHODOLOGY

A quasi-experimental study was conducted from January to April 2024 in a tertiary care hospital in Kanchipuram district, Tamil Nadu. The study population included all the students of the college belonging to the third year of MBBS, as they start their outpatient services. The participants who were chronic absentees were excluded from the study. Based on a previous study done in the United States by Micheal D. Bear et al with an alpha error of 0.05, 90% power of the study, 95% Confidence level, and a non-response rate of 10%, the minimum sample size required for the study was calculated as 62 by using Open Epi (v 3.01 updated on 2013, USA) sample size calculator.[12]

In total, 63 students participated in this study. A pretested semi-structured questionnaire was designed and validated by the Department of Community Medicine and General Medicine experts. It consisted of three sections in total. Section 1 had socio-demographic details of the study participants. Section two consisted of questions related to their knowledge and attitude regarding transgender health and their felt needs. This questionnaire was applied to the participants, and baseline data were collected using Google Forms. Health education on trans-affirmative care was provided to the students twice a week on Tuesdays and Fridays for two months, accounting for eight sessions per month. Each session was taken for 45 minutes. The materials used were a PowerPoint presentation. Sessions 1 to 3 mainly consisted of an introduction to transgender identities and the challenges faced by transgender individuals, an overview of trans trans-affirmative model and healthcare disparities and needs of transgender individuals. Session 4 was on Mental health and well-being in the transgender Community which mainly concentrated on the topics of prevalence of depression in the community, social discrimination, and abuse faced by them, Interactive sessions were carried on by small group discussions and case study discussion. Session 5 to 7 were primarily based on the healthcare requirements and on medical needs and their health-seeking behaviour and factors determining it. Session 8 consisted of group discussion based on the sessions taken before, and an assessment was done at the end of the session. Lost to follow-up was minimized by taking attendance during all sessions. Post-interventional assessment was done, and the data collected was transferred to an MS Excel sheet.

Participant identity was always kept confidential, and the data was used only for research purposes. The procedures followed were per the Institutional Ethical Committee and with the Helsinki Declaration of 1975 as revised in 2000. Written informed consent was obtained from the study participants before obtaining the information from them. Data was entered into MS Excel and was analyzed using the statistical package for Social Sciences (SPSS) version 25. The final data was tabulated, and percentages were calculated for categorical variables, and mean and standard deviation were calculated for measurable data. Data normality was checked, and a paired t-test was used to compare the pre-intervention and post-intervention knowledge and attitude scores.

RESULTS

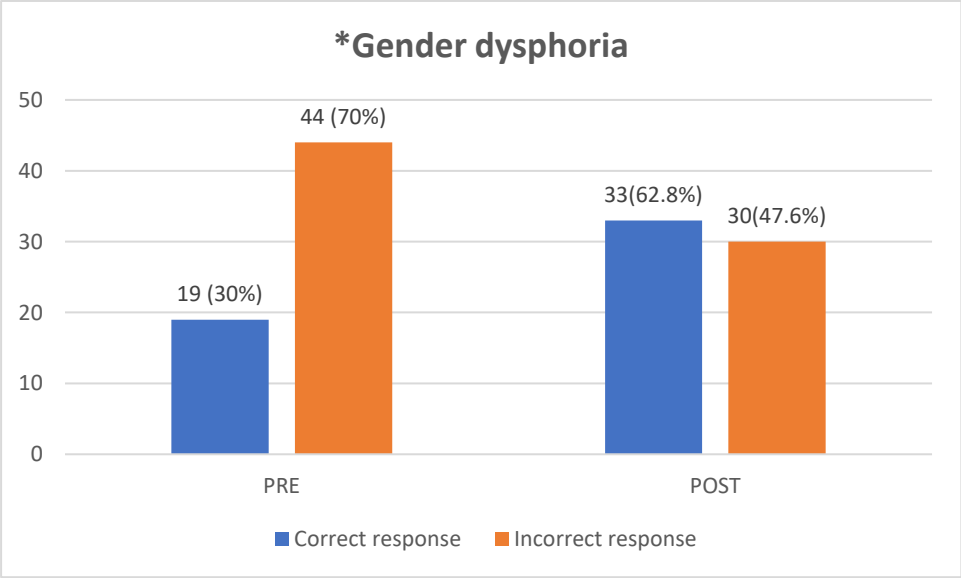
A quasi-experimental study was done among 63 undergraduate students. An initial assessment was done, followed by teaching the caregivers and providing psychosocial stimulation to the children and caregivers, consisting of age-appropriate play and communication activities. Sociodemographic variables were collected for 63 participants. The intervention was provided for two two-month period, and reassessment of their knowledge was done after six months, followed by data entry in MS Excel and analysis using SPSS version 25. Data was normally distributed, which was checked by a Q-Q plot. A paired t-test was used to find the improvement in. An independent t-test was used to compare the mean differences between the two groups.

Table 1: Distribution of Sociodemographic details of the participants on enrolment (N=63)

S.No	Variables	Categories	Intervention group n (%)
1.	Gender	Male	33(52.4%)
		Female	30(47.6%)
2.	Previous LGBTQIA-related education	Yes	12(19.1%)
		No	51(80.9%)
3.	Religion	Hindu	37(58.73%)
		Christianity	12(19.1%)
		Islam	9(14.2%)
		Other	3(4.8%)
		None	2(3.17%)

The sociodemographic characteristics of the participants at enrollment reveal a fairly even gender distribution, with 52.4% of participants being male and 47.6% female. A large majority of participants (80.9%) reported having no previous education related to LGBTQIA topics. In terms of religion, more than half of the participants (58.73%) identified as Hindu, followed by other religions. This data indicates a diverse participant group in terms of gender, religious affiliation, and prior exposure to LGBTQIA-related education

Fig 1 Pre and Post intervention comparison on the knowledge of Gender Dysphoria



Gender Dysphoria* *The discomfort or distress caused by a discrepancy between a person's gender identity and their sex assigned at birth*

Figure 1 illustrates the effect of an educational intervention on participants' understanding of the term "gender dysphoria" in the medical context. Before the intervention, 17.2% of participants selected Response 1, which likely reflects a less accurate or uninformed understanding. After the intervention, this decreased to 6.3%, indicating an improvement in comprehension. Similarly, Response 2 saw a reduction from 32.8% pre-intervention to 15.6% post-intervention, suggesting a shift away from incorrect interpretations. Conversely, the percentage of participants selecting Response 3 increased from 18.8% to 25%, reflecting a slight improvement for some. The most notable change occurred with Response 4, where the proportion of participants selecting the most accurate response increased from 29.7% pre-intervention to 51.6% post-intervention.

Fig 2 Pre and post intervention comparison on Mental health evaluation

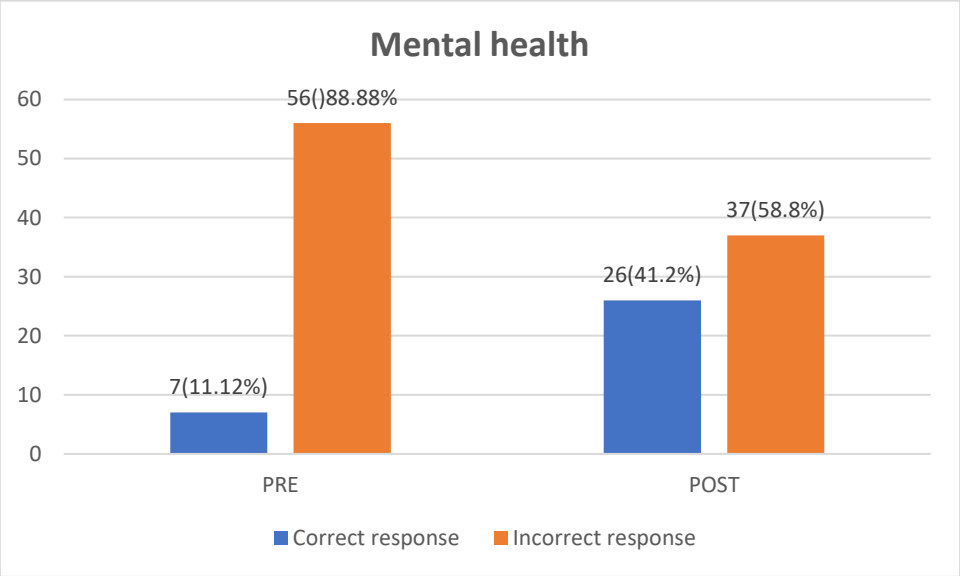


Table :2 Comparison of pre intervention and post intervention knowledge (N=63)

(Paired t t-test)

S.No	Variables Questions	Categories	Intervention group Mean (SD)	df	t value	Sig
1.	Term used for individuals who doesn't align with their birth sex	Pre	1.43+0.499	62.0	4.01	**< 0.01***
		Post	1.63 + 0.485			
2.	Hormone commonly administered as a part of HRT	Pre	1.08 + 0.272	62.0	4.40	**< 0.01***
		Post	1.32 + 0.469			

3	Potential risk associated with HRT for transgender	Pre	1.05 + 0.363	62.0	5.17	**<0.01***
		Post	1.35 + 0.481			
4	How can healthcare providers contribute to creating a trans affirmative medical environment	Pre	1.13 + 0.336	62.0	3.82	**<0.01***
		Post	1.32 + 0.469			
5	WHO's stance on transgender health	Pre	1.11 + 0.317	62.0	5.17	**<0.01***
		Post	1.14 +0.496			

***p < 0.05 is statistically significant**

The table 2 presents a comparison of pre-intervention and post-intervention knowledge scores using paired t-tests among 63 participants. For all variables, there was a statistically significant improvement in knowledge following the intervention. Participants' understanding of the term used for individuals who do not align with their birth sex improved significantly, with the mean score increasing from 1.43 (±0.499) pre-intervention to 1.63 (±0.485) post-intervention ($t=4.01$, $p<0.01$). Knowledge about hormones commonly administered as part of hormone replacement therapy (HRT) also showed a significant increase, with the mean score rising from 1.08 (±0.272) to 1.32 (±0.469) ($t=4.40$, $p<0.01$).

Participants' awareness of potential risks associated with HRT for transgender individuals improved significantly, with the mean score increasing from 1.05 (±0.363) to 1.35 (±0.481) ($t=5.17$, $p<0.01$). Similarly, knowledge of how healthcare providers can contribute to creating a trans-affirmative medical environment improved from 1.13 (±0.336) to 1.32 (±0.469) ($t=3.82$, $p<0.01$). Lastly, participants' understanding of the World Health Organization's stance on transgender health showed a smaller yet significant increase from 1.11 (±0.317) to 1.14 (±0.496) ($t=5.17$, $p<0.01$).

DISCUSSION

The present study, which aimed to assess the effectiveness of health education on trans-affirmative medical care among medical students, demonstrated a diverse participant group in terms of gender, religion, and prior exposure to LGBTQIA-related education. In this study, 52.4% of participants were male, and 47.6% were female. A similar distribution was observed in a study by Sharma et al. (2020), where 53% of the participants were male and 47% were female, supporting the relevance of gender-balanced education efforts in healthcare training programs.[13]

This study revealed that 19.1% of participants had prior exposure to LGBTQIA-related education, while 80.9% had none. These results align with Sreedharan et al. (2012), who reported that 18% of medical students had prior education on LGBTQIA topics, with the vast majority (82%) having little or no formal training[14]. This low percentage highlights a common gap in medical curricula regarding LGBTQIA health, an area that requires attention. In terms of religious affiliation, the current study found that 58.73% of participants identified as Hindu, 19.1% as Christian, and 14.2% as Muslim, which aligns with the general religious demographic of India, where Hinduism is the dominant religion. However, previous studies, such as Farah et al. (2024), suggest that individuals from more conservative religious backgrounds may hold less supportive views of transgender health issues.

Despite this potential barrier, the present study did not encounter significant challenges in engaging participants from various religious backgrounds in trans-affirmative education [15].

When compared to global findings, the 80.9% of participants in this study lacking prior LGBTQIA-related education aligns with a study by Stroumsa et al. (2019), which found that less than 20% of medical students in the United States had received sufficient training on transgender health before clinical practice. This highlights a universal need for more comprehensive LGBTQIA health education worldwide.[16] The diversity in gender and religious backgrounds among participants underscores the importance of tailoring educational interventions to address potential biases and promote inclusivity in trans-affirmative care. These findings align with the conclusions of Gosling et al. (2003), who emphasized that diversity in medical education can enhance the effectiveness of training programs aimed at addressing transgender health issues.[17]

This study demonstrated a significant improvement in the knowledge of medical students on trans-affirmative medical care following a health education intervention. The increase in knowledge across all assessed variables highlights the intervention's effectiveness in filling educational gaps related to transgender healthcare, a concern similarly identified in other studies. The significant improvement in understanding the term for individuals who do not align with their birth sex (mean increase from 1.43 to 1.63, $p<0.01$) aligns with previous studies that emphasize the necessity of addressing basic transgender terminology in medical education. In this study, there was a 13.99% increase in knowledge post-intervention. Comparably, Stroumsa et al. (2019) reported a 15% increase in medical students' understanding of transgender-related terminology after targeted education interventions, demonstrating the effectiveness of structured programs in improving fundamental knowledge.[16]

Knowledge about hormones commonly used in hormone replacement therapy (HRT) also improved significantly in this study, with the mean score increasing from 1.08 to 1.32 ($p<0.01$), reflecting a 22.22% improvement. This is consistent with research by Safer et al. (2016), who reported a 20% increase in knowledge related to hormone therapy after educational interventions for healthcare providers.[18] Participants' awareness of the risks associated with HRT for transgender individuals improved significantly, with the mean score increasing from 1.05 to 1.35 ($p<0.01$), marking a 28.57% improvement. Similarly, Poteat et al. (2017) found a 25% increase in knowledge regarding the risks and benefits of HRT after targeted training programs on transgender health.[19]The increase in knowledge about creating a trans-affirmative medical environment, from 1.13 to 1.32 ($p<0.01$), represents a 16.81% improvement. This is in line with the findings of Snelgrove et al. (2017), who reported a 15% improvement in medical students' and professionals' understanding of how to provide gender-affirming care after structured interventions.[20]

The modest yet significant improvement in participants' understanding of the World Health Organization's stance on transgender health (mean increase from 1.11 to 1.14, $p<0.01$) shows a 2.7% increase. This is consistent with Bauer et al. (2015), who also reported a 5% improvement in awareness of international health guidelines following educational interventions on transgender health, emphasizing the need for continuous updates in medical education.[21] The significant improvements in knowledge across all measured categories in this study, ranging from 2.7% to 28.57%, align with similar research, emphasizing the effectiveness of targeted health education in improving medical students' competencies in transgender healthcare. These findings underscore the importance of integrating structured LGBTQIA+ health education into medical school curricula globally.

The study employed a structured health education intervention focused on trans-affirmative medical care, resulting in statistically significant improvements in participants' knowledge. Pre- and post-intervention assessments, along with paired t-tests, confirmed these changes. The study addresses a gap in LGBTQIA+ healthcare education, making the findings relevant for future curriculum development. Participants from diverse religious backgrounds and a balanced gender distribution provided insight into the intervention's effectiveness across different sociodemographic groups.

The small sample size of 63 participants limits the generalizability of the results, with larger samples needed for more robust data and detailed subgroup analysis. The study measured only immediate knowledge improvement, with no follow-up to assess long-term retention, highlighting the need for longitudinal studies. The reliance on self-reported data introduces potential bias, despite statistical evidence of improvement. The absence of a control group restricts comparison of the intervention's effectiveness. Additionally, the study focuses solely on knowledge acquisition, without assessing skills or attitude changes, which are essential for translating knowledge into clinical practice

Future studies could benefit from utilizing mixed-methods approaches, combining quantitative assessments with qualitative interviews or focus groups. This would provide deeper insights into participants' experiences and perceptions of the intervention, capturing nuances that quantitative data alone may miss. Additionally, exploring the barriers and facilitators to implementing trans-affirmative care in clinical settings could offer valuable information for designing more effective training programs. Collaborating with transgender individuals as co-researchers or advisors could also ensure that the intervention aligns with the needs and concerns of the community it aims to serve.

CONCLUSION

This study successfully demonstrated that a targeted educational intervention significantly improved medical students' knowledge about trans-affirmative care. The intervention enhanced understanding in key areas such as transgender terminology, hormone replacement therapy (HRT), associated risks, and creating supportive healthcare environments. These findings underscore the critical need for comprehensive LGBTQIA+ health education in medical training globally. Aligning with the World Health Organization's (WHO) emphasis on integrating gender-affirming care into healthcare systems and the United Nations Development Programme's (UNDP) promotion of respectful, inclusive healthcare practices, this study highlights the importance of such education. The WHO advocates for inclusive care to improve health outcomes and equity, while the UNDP stresses creating non-discriminatory healthcare environments. In India, the Transgender Persons (Protection of Rights) Act, 2019, represents a significant step towards protecting transgender rights and improving healthcare access. Overall, integrating trans-affirmative care into medical education, supported by global and national health initiatives, is essential for preparing healthcare providers to deliver respectful and effective care to transgender individuals.

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