

Transformative Impact: Advancing Resident Competence and Confidence in Gender-Affirming Care Through a Multimodal Transgender Health Curriculum

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ABSTRACT

Introduction: Transgender and gender-diverse individuals face well-documented health disparities, often due to limited provider knowledge and training. There is a growing body of evidence that emphasizes the importance of integrating transgender health content into medical education.

Objective: We sought to evaluate the impact of a longitudinal multimodal educational intervention on obstetrics and gynecology residents' knowledge, confidence, and comfort in providing gender-affirming care.

Methods: An educational transgender and gender-diverse curriculum incorporating didactics, clinical experiences, and surgical exposure was implemented within the obstetrics and gynecology residency program at a single academic medical center over 1 year. Residents (n=20) completed matched pre- and post-intervention surveys assessing self-reported knowledge, confidence, and comfort. Open-ended survey responses were analyzed using conventional content analysis.

Results: Residents demonstrated substantial improvements across multiple domains of transgender and gender-diverse care, including understanding of transgender care, confidence in counseling for gender-affirming surgery, comfort with hormone therapy management, and comfort describing hormone effects. Qualitative analysis identified themes of enhanced clinical awareness, shifts in professional identity through transformative learning, and awareness of systemic barriers that may impact provision of care.

Conclusions: A structured, longitudinal multimodal educational intervention significantly improved obstetrics and gynecology residents' preparedness to provide gender-affirming care. These findings support the integration of a formal transgender and gender-diverse health education curriculum into graduate medical education to enhance clinical competency and promote equitable health care.

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INTRODUCTION

Transgender and gender-diverse (TGD) individuals experience significant health disparities and barriers to care, in part due to widespread social and economic marginalization and limited provider knowledge regarding their unique health needs.¹ The American College of Obstetricians and Gynecologists (ACOG) has called for obstetrics and gynecology (OB-GYN) providers to deliver inclusive care and to educate themselves and their teams about the needs of TGD individuals. ACOG asserts the need for affirming, evidence-based care and identifies formal education in TGD health as essential to reducing inequities and improving outcomes.² This emphasis is echoed in the World Professional Association for Transgender Health's Standards of Care, Version 8, which underscores the importance of provider competence in gender-affirming care and calls for structured educational programs to address current knowledge gaps.³

TGD patients may require a range of services, including hormone therapy management, gender-affirming surgeries, fertility preservation counseling, and routine gynecologic care. It is essential that OB-GYN providers are equipped and comfortable providing this care. However, many providers feel underprepared to offer these services. A growing body of literature highlights that TGD patients often experience stigma, misgendering, and denial of care in health care settings.⁴

Despite growing consensus around the need for improved training, comprehensive residency-level TGD curricula remain

uncommon in the published literature. Educational interventions within residency training programs are needed to prepare future providers to meet the needs of this population. Surveys of OB-GYN residency program directors indicate that fewer than half of programs currently offer formal education on transgender health, though there is strong interest among both residents and faculty in expanding such training.⁵ Insufficient curricular exposure contributes to discomfort and lack of preparedness among trainees, which may perpetuate disparities in access to competent care for TGD patients.

Recent interventions, including simulation-based and case-based curricula, have demonstrated that targeted educational programs can significantly improve resident knowledge, comfort, and confidence in providing care to TGD patients, with effects persisting beyond the immediate post-intervention period.^{6,7} Systematic reviews further support that multicomponent training on lesbian, gay, bisexual, and transgender (LGBT) health—particularly when developed in collaboration with community members, leads to measurable improvements in provider knowledge, attitudes, and clinical skills.⁸

In response to these needs, the University of Wisconsin School of Medicine and Public Health Department of Obstetrics and Gynecology developed and implemented a structured TGD health curriculum within its residency program. We hypothesized that participation in this curriculum would lead to increased self-reported knowledge, confidence, and comfort among residents in delivering gender-affirming care. This study evaluates the first stage of this educational intervention in a small sample of OB-GYN residents, assessing its impact on residents' readiness to provide inclusive care.

METHODS

The study was conducted at a large academic medical center in Wisconsin. A structured transgender and gender-affirming health curriculum was integrated into the OB-GYN residency program during the 2024-2025 academic year. The year-long, longitudinal curriculum included didactics, surgical experiences, and a clinical rotation at the inaugural Gender Affirming Care Clinic (established August 2024) within the Department of Obstetrics and Gynecology. Didactic sessions included 2 additional 90-minute lectures during resident teaching, delivered by faculty members who regularly treat TGD patients. The lectures focused on general office care and surgical management. Surgical experiences included hysterectomies with and without oophorectomy performed with an attending physician. The residents' clinical rotation involved counseling patients on surgical and hormonal interventions, evaluating and staffing TGD patients with an attending physician, and learning to start and titrate gender-affirming hormone therapy. The aim of this pilot curriculum was to improve residents' knowledge, confidence, and comfort in providing care to TGD patients. The study was

reviewed by University of Wisconsin Institutional Review Board and determined to be exempt.

OB-GYN residents who participated in the gender-affirming care curriculum during the 2024-2025 academic year were invited to complete pre- and post-intervention surveys assessing outcomes in 3 domains: knowledge, confidence, and comfort. An anonymous, web-based survey administered via Qualtrics (Qualtrics, LLC) was distributed to residents prior to and 1 year after curriculum implementation. The survey was designed to collect evaluative feedback for ongoing program improvement and to capture residents' reflections on the subject matter and its future application to clinical practice. Results from each resident were matched to their pre- and post-intervention responses. The survey included closed-ended Likert-scale questions and open-ended questions to elicit insights into residents' knowledge, experiences, and goals related to gender-affirming care (Appendix 1). Survey responses were then grouped into 3 categories for analysis: positive (very good or excellent), neutral (good), and negative (fair or poor).

Quantitative survey data were exported from Qualtrics and analyzed using RStudio (Posit). The open-ended responses were imported into MaxQDA version 24.7.0 (VERBI Software GmbH) for qualitative analysis.

A conventional content analysis approach was applied. This inductive method draws codes and categories directly from participants' words rather than relying on a predefined framework. The process involved immersion in the data, systematic organization of preliminary codes, and iterative refinement of a codebook to identify emerging patterns (Appendix 2). Once the codebook was finalized, codes were grouped into categories to develop overarching themes. Transformative learning theory was applied to support interpretation. This theory describes how perspectives or assumptions may evolve through engagement with new knowledge, reflection on prior experiences, and navigating new or unfamiliar situations.⁹⁻¹¹ In this study, theory was used after coding to structure themes and to interpret how residents reflected on changes in confidence, knowledge, and professional identity. Inclusion of theory at this stage strengthened analytic rigor. Qualitative analysis was conducted by a research team member who is a health professions educator (KK).

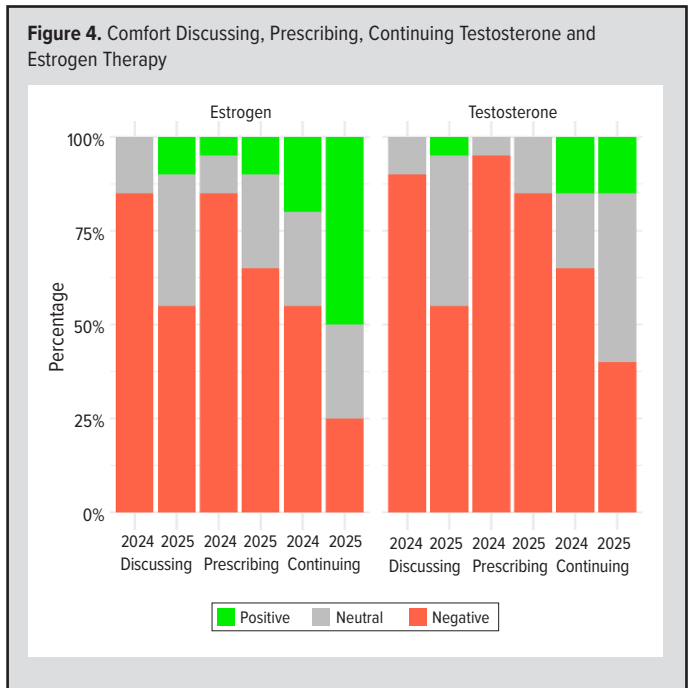
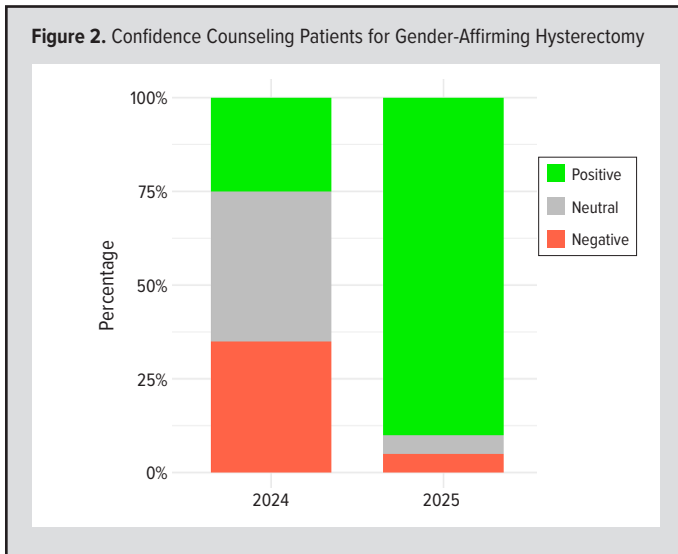
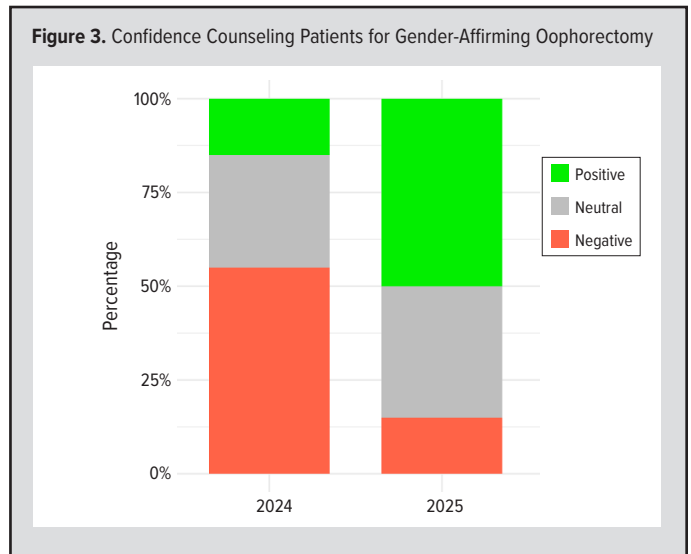
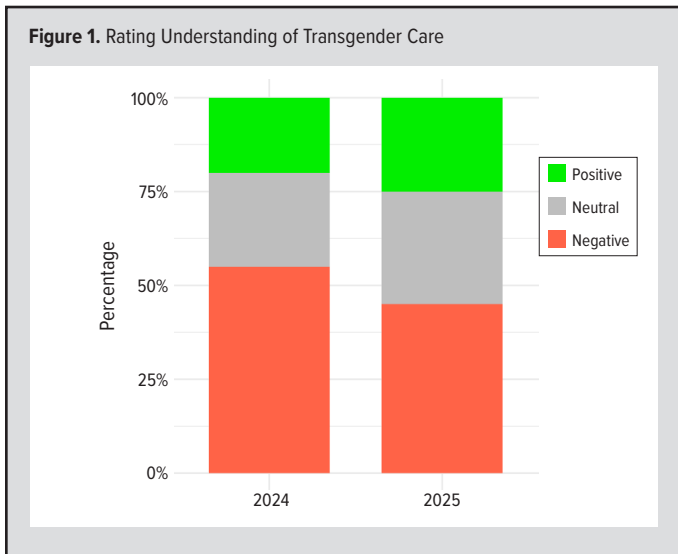
RESULTS

In total, 20 residents were invited to participate, and all completed the survey in both 2024 and 2025, resulting in a 100% matched pre- and post-intervention response rate. Survey responses were categorized as positive, neutral, or negative to facilitate interpretation.

Quantitative Findings

Understanding of Transgender Care

Residents demonstrated increased understanding of transgender care following curriculum implementation (Figure 1). Negative responses decreased from 55% in 2024 to 45% in 2025, while



positive responses increased from 20% to 25%, and neutral responses rose slightly from 25% to 30%. These results indicate a trend toward improved overall self-reported knowledge.

Confidence in Counseling for Gender-Affirming Surgery

Resident confidence in counseling patients for gender-affirming hysterectomy improved substantially after curriculum implementation (Figure 2). Negative responses decreased from 35% in 2024 to 5% in 2025, and neutral responses declined from 40% to 5%, while positive responses increased from 25% to 90%. Confidence in counseling patients for gender-affirming oophorectomy also improved (Figure 3). Negative responses decreased from 55% in 2024 to 15% in 2025, and positive responses more than tripled from 15% to 50%. These findings demonstrate a clear shift toward greater resident confidence and preparedness in counseling patients on gender-affirming surgery.

Comfort With Hormone Therapy Management

Resident comfort in discussing estrogen and testosterone ther-

apy improved following curriculum implementation (Figure 4). For estrogen, negative responses decreased from 85% to 55%, while neutral responses increased from 15% to 35%, and positive responses emerged at 10% post-intervention. For testosterone, negative responses declined from 90% to 55%, with neutral responses rising from 10% to 40% and positive responses appearing at 5%.

Resident comfort with prescribing estrogen and testosterone therapy also improved (Figure 4). For estrogen, negative responses decreased from 85% to 65%, while neutral and positive responses increased from 10% to 25% and 5% to 10%, respectively. For testosterone, negative responses declined from 95% to 85%, and neutral responses increased from 5% to 15%.

Resident comfort with continuing estrogen and testosterone

therapy improved significantly post-intervention (Figure 4). For estrogen, negative responses decreased from 55% to 25%, while positive responses increased from 20% to 50%. For testosterone, negative responses declined from 65% to 40%, with neutral responses rising from 20% to 45%. Overall, these results suggest that residents gained confidence and comfort in discussing, prescribing, and continuing estrogen and testosterone therapy.

Comfort Describing Hormone Effects

Residents' ability to describe both the irreversible and potential adverse effects of hormone therapy improved following curriculum implementation (Figure 5). Understanding of the irreversible effects of estrogen and testosterone increased, demonstrated by 30% and 35% reductions, respectively, in negative responses and corresponding increases in neutral or positive perceptions. Knowledge of potential adverse side effects also improved. For estrogen, negative responses decreased from 65% to 35%, while neutral responses increased from 20% to 55%. For testosterone, negative responses declined from 85% to 50%, with neutral responses increasing from 15% to 45%. A small proportion of residents reported positive responses post-intervention. Collectively, these changes indicate enhanced resident knowledge and confidence in recognizing, discussing, and counseling patients on hormone-related effects and risks.

Qualitative Findings

Analysis of open-ended responses yielded 14 unique codes grouped into 4 overarching themes (Appendix 2).

Clinical Exposure and Applied Learning

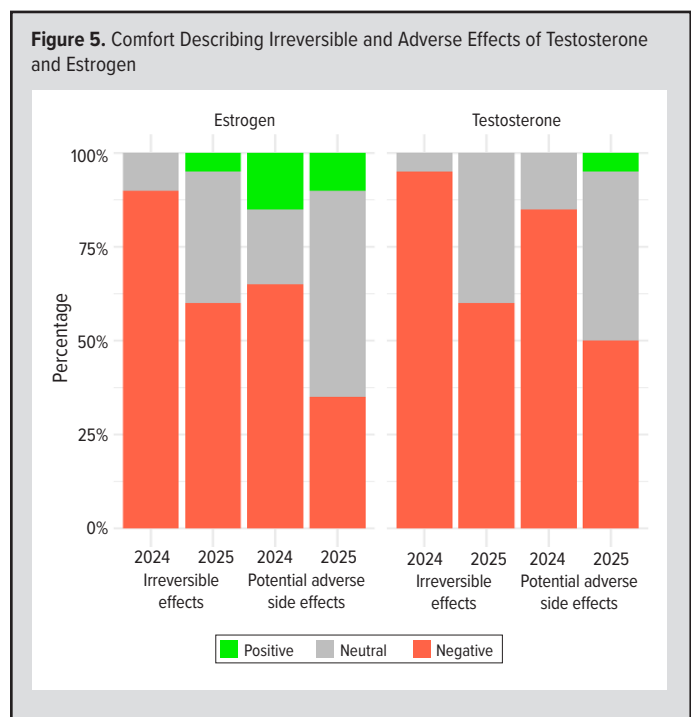
Residents consistently cited clinical exposure--particularly hands-on learning in the Gender Affirming Care Clinic -- as a valuable component of the curriculum. Key takeaways included improved knowledge in hormone replacement therapy management, patient counseling, and procedural understanding. Residents emphasized that learning through direct patient care, rather than passive instruction, strengthened their clinical confidence. Limited clinic time was a recurrent concern, with residents requesting more frequent and active participation to support skill development.

Barriers and Challenges to Practice

Residents noted several external and systemic barriers, including political climate, legal constraints, limited access to a small patient population, and perceived knowledge gaps among colleagues. Some expressed concern that these challenges may hinder their ability to continue providing gender-affirming care beyond residency.

Transformative Impact and Professional Identity

Residents described transformative shifts in how they viewed their role as future providers. Exposure to gender-affirming care challenged assumptions, increased confidence, and encouraged residents to envision themselves as advocates for TGD patients.



These reflections align with transformative learning theory, which suggests that engaging with new content and reflecting critically on prior experiences can lead to meaningful shifts in identity and practice.

Recommendations for Curricular Improvement

Residents offered constructive feedback to enhance the curriculum. Suggestions included diversifying clinical vignettes, increasing the frequency of learning sessions, and incorporating “chunks of learning” to reinforce complex content. Additional follow-up sessions to strengthen applied skills were also recommended. These observations underscore the importance of continuous curricular refinement to address learner needs and deepen competency.

DISCUSSION

Implementation of a transgender and gender-diverse health curriculum within the OB-GYN residency program was associated with notable improvements in residents' knowledge, confidence, and comfort in providing gender-affirming care. These findings align with a growing body of evidence indicating that targeted, multimodal educational interventions can enhance trainee competencies in this area. Multiple systematic reviews and interventional studies have demonstrated increased understanding of transgender health concepts, improved confidence in counseling for gender-affirming surgery, and greater comfort with hormone therapy management.^{7,12-15} These outcomes have important implications not only for OB-GYN training but also for internal medicine, pediatrics, and family medicine programs seeking to strengthen provider competence in gender-affirming care.

A key observation in this study was the marked improvement in the residents' comfort describing irreversible and adverse effects of hormone therapy for estrogen and testosterone. This aligns with consensus recommendations from the Endocrine Society and recent reviews emphasizing the need for clinicians to clearly communicate the benefits, risks, and timelines associated with hormone therapy.^{16,17} The ability to discuss these effects is essential for informed consent and patient-centered care and is a core competency in transgender medicine. The improvement observed suggests that focused curricular content effectively addressed gaps and mirrors outcomes reported in other educational interventions.^{16,17}

The qualitative findings enriched interpretation of the quantitative results, offering insight into residents' experiences, perceived curricular value, and desired enhancements. Content analysis is well established in medical education as a method for understanding learner perspectives and evaluating curricular impact beyond quantitative metrics.^{9,10} Residents highlighted the value of integrated learning opportunities, such as participation in the Gender Affirming Care Clinic, and identified barriers consistent with those described in the literature, including the importance of institutional support and faculty development.^{18,19}

Overall, this study supports the integration of structured, multimodal transgender care curricula to address critical gaps in resident education. Such interventions are essential for preparing clinicians to deliver affirming, evidence-based care to TGD patients and for reducing disparities rooted in provider knowledge deficits and systemic bias.^{16,18,20} The combined quantitative and qualitative findings offer a nuanced understanding of curricular impact and inform ongoing refinement of TGD health education.

Strengths and Limitations

Strengths of this study include its longitudinal, multimodal design incorporating didactic, clinical, and surgical components. The use of matched pre- and post-intervention surveys enabled within-subject comparison, providing a clear picture of individual-level change over time. Alignment between quantitative improvements and qualitative reflections added depth to understanding residents' experiences and highlighting elements contributing to transformative learning.

However, many observed changes did not reach statistical significance, likely due to the small sample size and limited statistical power. As a result, statistical analysis was not performed and is acknowledged as a limitation. Outcome measures were based on self-reporting, and several participants provided brief qualitative responses. Interpretation of qualitative findings may reflect analyst background; reflexivity and positionality were addressed to enhance transparency (See Appendix 2). Future studies with larger cohorts will be better positioned to detect statistically significant differences.

CONCLUSIONS

Implementation of a structured, multimodal transgender and gender-diverse health curriculum significantly improved OB-GYN residents' knowledge, confidence, and comfort in providing gender-affirming care. Quantitative improvements were observed in multiple domains, including hormone therapy management and surgical counseling, while qualitative findings highlighted transformative learning experiences and informed curricular refinement. These results support incorporation of longitudinal TGD education into graduate medical training and underscore the value of preparing future clinicians to deliver inclusive, affirming care.

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Appendices: Available at www.wmjonline.org

REFERENCES

1. Rastogi A, Menard L, Miller GH, et al. Health and wellbeing: a report of the 2022 U.S. Transgender Survey. Advocates for Transgender Equality. June 2025. Accessed July, 2025. https://transequality.org/sites/default/files/2025-06/USTS_2022Health%26WellbeingReport_WEB.pdf
2. ACOG Committee Opinion No. 823: health care for transgender and gender diverse individuals. *Obstet Gynecol.* 2021;137(3):e75-e88. doi:10.1097/AOG.0000000000004294
3. Coleman E, Radix AE, Bouman WP, et al. Standards of care for the health of transgender and gender diverse people, version 8. *Int J Transgend Health.* 2022;23(Suppl 1):S1-S259. doi:10.1080/26895269.2022.2100644
4. Moseson H, Zazanis N, Goldberg E, et al. The imperative for transgender and gender nonbinary inclusion: beyond women's health. *Obstet Gynecol.* 2020;135(5):1059-1068. doi:10.1097/AOG.00000000000003816
5. Vinekar K, Rush SK, Chiang S, Schiff MA. Educating obstetrics and gynecology residents on transgender patients: a survey of program directors. *Obstet Gynecol.* 2019;133(4):691-699. doi:10.1097/AOG.00000000000003173
6. Kreines FM, Quinn GP, Cardamone S, et al. Training clinicians in culturally relevant care: a curriculum to improve knowledge and comfort with the transgender and gender diverse population. *J Assist Reprod Genet.* 2022;39(12):2755-2766. doi:10.1007/s10815-022-02655-1
7. Schmidt CN, Stretten M, Bindman JG, Pettigrew G, Lager J. Care across the gender spectrum: a transgender health curriculum in the Obstetrics and Gynecology clerkship. *BMC Med Educ.* 2022;22(1):706. doi:10.1186/s12909-022-03766-0
8. Damery S, Sekoni AO, Retzer A, et al. Impact of education and training on LGBT-specific health issues for healthcare students and professionals: a systematic review of comparative studies. *BMJ Open.* 2025;15(1):e090005. doi:10.1136/bmjopen-2024-090005
9. Hsieh HF, Shannon SE. Three approaches to qualitative content analysis. *Qual Health Res.* 2005;15(9):1277-1288. doi:10.1177/1049732305276687
10. Elo S, Kyngäs H. The qualitative content analysis process. *J Adv Nurs.* 2008;62(1):107-115. doi:10.1111/j.1365-2648.2007.04569.x
11. Mezirow J. Transformative learning as discourse. *J Transform Educ.* 2003;1(1):58-63. doi:10.1177/1541344603252172
12. Mains-Mason JB, Ufomata E, Peebles JK, et al. Knowledge retention and clinical skills acquisition in sexual and gender minority health curricula: a systematic review. *Acad Med.* 2022;97(12):1847-1853. doi:10.1097/ACM.00000000000004768
13. Thompson H, Coleman JA, Iyengar RM, Phillips S, Kent PM, Sheth N. Evaluation of a gender-affirming healthcare curriculum for second-year medical students. *Postgrad Med J.* 2020;96(1139):515-519. doi:10.1136/postgradmedj-2019-136683
14. Hana T, Butler K, Young LT, Zamora G, Lam JSH. Transgender health in medical education. *Bull World Health Organ.* 2021;99(4):296-303. doi:10.2471/BLT.19.249086

15. Ahmad T, Schreyer L, Fung R, Yu C. Transgender health objectives of training for adult endocrinology and metabolism programs: outcomes of a modified-delphi study. *PLoS One*. 2024;19(5):e0301603. doi:10.1371/journal.pone.0301603
16. Libman H, Safer JD, Siegel JR, Reynolds EE. Caring for the transgender patient: grand rounds discussion from Beth Israel Deaconess Medical Center. *Ann Intern Med*. 2020;172(3):202-209. doi:10.7326/M19-3813
17. Safer JD, Tangpricha V. Care of transgender persons. *N Engl J Med*. 2019;381(25):2451-2460. doi:10.1056/NEJMc1903650
18. Van Sickels N, Wong JWH, Villacorta-Cari E, Lee SE, Fallin-Bennett K. State-of-the-art review: data and trust to improve care for transgender and gender-diverse patients. *Clin Infect Dis*. 2025;80(2):e16-e30. doi:10.1093/cid/ciae480
19. Kremen J, Quint M, Tham R, et al. Barriers experienced by and educational needs of clinicians who provide care for transgender, nonbinary, and gender-diverse young adults in the Mid-Atlantic and Southern United States. *PLoS One*. 2025;20(6):e0326420. doi:10.1371/journal.pone.0326420
20. de Vries E, Kathard H, Müller A. Debate: Why should gender-affirming health care be included in health science curricula?. *BMC Med Educ*. 2020;20(1):51. doi:10.1186/s12909-020-1963-6

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