Scientific Research Publishing

Open Journal of Internal Medicine, 2024, 14, 259-268
https://www.scirp.org/journal/ojim
ISSN Online: 2162-5980
ISSN Print: 2162-5972

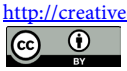
Assessment of Online Transgender Healthcare Teaching Modules for Internal Medicine Residents and Fellows

Elizabeth M. Lamos, Rana Malek

Department of Medicine, University of Maryland School of Medicine, Baltimore, MD, USA
Email: elamo001umsom@gmail.com, rmalek@som.umaryland.edu

How to cite this paper: Lamos, E.M. and Malek, R. (2024) Assessment of Online Transgender Healthcare Teaching Modules for Internal Medicine Residents and Fellows. *Open Journal of Internal Medicine*, **14**, 259-268.
https://doi.org/10.4236/ojim.2024.142023

Received: May 30, 2024
Accepted: June 25, 2024
Published: June 28, 2024



Abstract

Background: Transgender healthcare is not a formal learning requirement in Internal Medicine residency or fellowship. The National LGBTQ Task Force appealed to urgently train clinicians on the effective care of transgender patients. Few studies address the successful implementation of transgender healthcare teaching and education in graduate medical education. **Purpose:** The purpose was to design an online asynchronous curriculum to address the need for improved transgender healthcare education in graduate medical education and assess change in knowledge and comfort in transgender healthcare for residents and fellow learners. **Methods:** A 6-module curriculum was developed using established guidelines and ACGME competencies as a framework for content. To assess curriculum effectiveness, participants received anonymous pre- and post-curriculum surveys which included a multiple-choice knowledge assessment, Likert scale comfort questions focusing on healthcare skills, and open-ended feedback questions. **Results:** Twenty-six internal medicine residents and fellows participated in the curriculum (2022-2023). There was a 69% post-survey response rate. Participants improved their gender-affirming knowledge after completing the curriculum ($p < 0.05$). Comfort in using pronouns, recognizing barriers to care and initiation of gender-affirming medical treatment significantly increased ($p < 0.05$). All participants agreed on the importance of what they were asked to learn and that their knowledge and skills increased. Resource access improved post curriculum ($p < 0.05$). Participants found the content was comprehensive and accessible, but indicated the automated narrator and module navigation could be improved. Post-curriculum, a variety of anticipated practice improvement strategies were shared. **Conclusion:** This online curriculum was successful in increasing knowledge and comfort in transgender care for IM residents and fellows. It provides a promising framework to address this gap

in curricular content.

Keywords

Education, Fellow, Resident, Transgender

1. Introduction

A barrier to transgender healthcare is clinician knowledge and comfort. Up to 50% of respondents to the National Transgender Discrimination Survey noted they had to educate their clinician on transgender healthcare [1]. With more individuals pursuing gender-affirming hormone therapy, the knowledge of healthcare professionals must be increased. While educational efforts have focused on undergraduate medical education, few have focused on graduate medical education (GME) where trainees have the first opportunity to engage in this medical care [2].

A review of published transgender health educational interventions found that only two studies had a primary GME audience, and the variability in types of educational intervention did not allow for clear guidance of best practices in GME [2]. Others have summarized gaps in and barriers to transgender healthcare teaching interventions and approaches to facilitate success [3]-[5]. Residency directors have reported the most common opportunities to improve transgender healthcare teaching included targeted curricula, faculty willing to teach and more time to teach curricula [4]. In a survey of endocrine fellows, 58% indicated that their education would be improved by online training modules [6]. Recognizing that an additional innovative curriculum was needed to address the transgender healthcare education gap in GME, we developed an online self-directed asynchronous program of 6 modules. We hypothesized that asynchronous learning modules would be an effective curriculum to improve knowledge and comfort in transgender healthcare for internal medicine (IM) residents and fellows.

2. Methods

2.1. Curriculum and Research Design

In response to a call for research to address diversity, equity, and inclusion, we proposed and were awarded a grant through the Building Trust and Equity in Internal Medicine Training Grant program to develop and implement online transgender healthcare teaching modules for trainees in Internal Medicine. To better understand the background of our IM residents, we administered a brief survey which indicated that 83% had indicated at least 2 or more hours of prior transgender healthcare training in medical school. However, 71% went on to report zero hours of transgender healthcare training in internal medicine residency despite most of these trainees having medically cared for a transgender

individual (83%) [7]. To address this gap, prior studies of transgender healthcare educational interventions in GME were reviewed (Figure 1). We then identified valuable educational content. This included using feedback from three existing undergraduate medical education (UME) didactic lectures focusing on transgender healthcare from 2020-2022. These included Transgender Competent Care, Health Equity in Transgender Care, and Preventative Care for Transgender Patients which received 94%, 97% and 61% excellent or above average student satisfaction ratings for the session and teaching materials, respectively. The areas of focus from the didactic lecturers were expanded using evidence-based guidelines and best-practice recommendations [8]-[10] to create a 6-module evidence-based online curriculum (2.2 hr.). This curriculum was then mapped for ACGME (Accreditation Council for Graduate Medical Education) competencies and milestones (Table 1). Using the ACGME milestone framework provided a learner-centered approach to this educational curriculum [11]. Modules included an Overview of Transgender Competent Care, Health Vulnerabilities, Creating an Inclusive Environment, Feminizing Hormone Treatment, Masculinizing Hormone Treatment, and Preventative Care of the Transgender Individual. Each module included embedded content assessment questions with immediate feedback and post-module action items which were recommended practical take-away steps. The curriculum was assigned to all internal medicine (IM) residents during their ambulatory rotation (N = 18) and endocrinology fellows (N = 8) during the study period. Access to the curriculum was provided through a website portal.

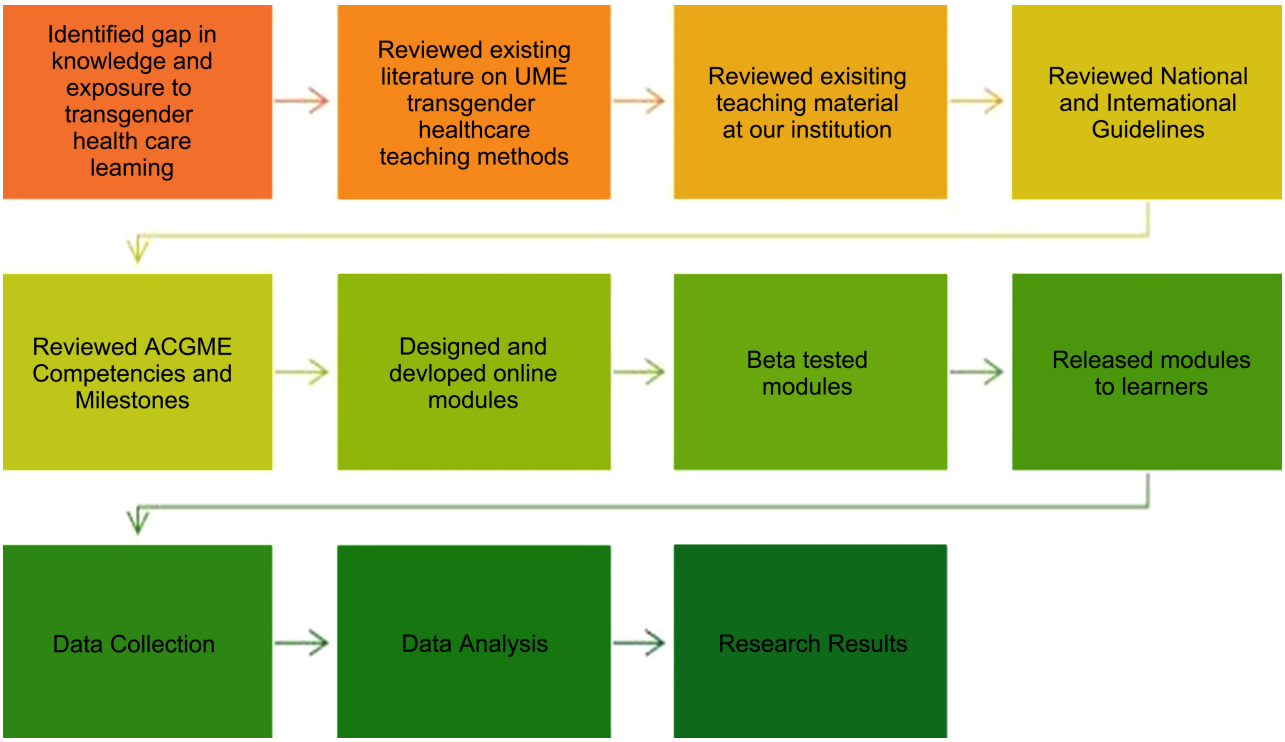


Figure 1. Research design.

Table 1. Module content mapped to ACGME Internal Medicine Competencies and Milestones [12].

Module	ACGME Internal Medicine Competency						ACGME Internal Medicine Milestone Opportunity
	PC	MK	SBP	PBL	PR	ICS	
An Overview of Transgender Competent Care	x	x	x	x	x	x	PC1, PC2, PC3, PC5 MK1 SBP1, SBP2 PBL1 PR 1, PR2, PR3 ICS1
Health Vulnerabilitites	x	x	x			x	PC1, PC3, PC5 MK1 SBP1, SBP2, SBP3 ICS1
Creating an Inclusive Environment			x	x	x	x	SBP1, SBP2, SBP3 PB1, PBL2 PR 1, PR2, PR3 ICS1, ICS2
Feminizing Hormone Treatment	x	x		x			PC1, PC2, PC3, PC5 MK1, MK2, MK3 PBL1
Measculinizing Hormone Treatment	x	x		x			PC1, PC2, PC3, PC5 MK1, MK2, MK3 PBL1
Preventative Care of the Transgender Individual	x	x		x			PC1, PC2, PC3. PC5 MK1, MK2, MK3 PBL1

Abbreviations: Interpersonal and Communication Skills (ICS), Medical Knowledge (MK), Patient care (PC), Practice Based Learning and Improvement (PBL), Professionalism (PR), System Based Practice (SBP).

2.2. Assessment and Statistical Analysis

To assess curriculum effectiveness, anonymous pre- and post-surveys included a multiple-choice knowledge assessment, Likert scale comfort questions focusing on healthcare skills, and the opportunity for open-ended feedback. Analysis included all participants, without any exclusions.

The project met the definition of *Non-Human Subject Research* (NHSR) as determined by the University of Maryland School of Medicine Institutional Review Board (HP-00099861 and HP-00108764). Quantitative data were summarized using means and standard deviations (SD) using the unpaired t-test. Qualitative data were assessed using the Fisher Exact Test due to the small sample size. A P-value < 0.05 indicated that the difference had statistical significance.

3. Results

3.1. Pre- and Post-Curriculum Evaluation

Twenty-six residents and fellows participated from 2022-2023 with a 69% post-survey response rate (Table 2). This included 8 Endocrine fellows and 18 Internal Medicine residents. At baseline, seventy-three percent of trainees indicated that they had 2+ hours of prior transgender health teaching. Sixty-five percent indicated discomfort or neutral comfort with transgender competent care and 73% reported average to terrible resources. The group indicated that they were extremely or very interested in learning more about transgender competent care (73%).

Table 2. Pre- and post-curriculum evaluation.

Evaluation		Pre (N = 26)	Post (N = 18)
Hours of Teaching	Zero	27% (6)	
	Up to 2 hours	50% (13)	
	> 2 hours	23% (7)	
Comfort with Transgender Competent Care	Somewhat or extremely comfortable	35% (9)	
	Neutral, somewhat or extremely uncomfortable	65% (17)	
Interest in learning	Very or extremely interested	73% (19)	
	Moderately, slightly or not interested	27% (7)	
KNOWLEDGE ASSESSMENT (% correct)*		57% (SD 16.1)	87% (SD 9.6)
Comfort Asking Pronouns or Name†	Somewhat or extremely comfortable	62% (16)	94% (17)
	Neutral, somewhat or extremely uncomfortable	38% (10)	6% (1)
Comfort Recognizing Barriers to Care†	Somewhat or extremely comfortable	62% (16)	100% (18)
	Neutral, somewhat or extremely uncomfortable	38% (10)	0% (0)
Comfort with Initiating Gender-Affirming Medical Treatment†	Somewhat or extremely comfortable	35% (9)	78% (14)
	Neutral, somewhat or extremely uncomfortable	65% (17)	22% (4)
Access to Resources†	Good or excellent	27% (7)	100% (18)
	Average, poor, or terrible	73% (19)	0% (0)
Belief That What They Are Being Asked to Learn Was Important	Somewhat or strongly agree		100% (18)
	Neutral, somewhat or strongly disagree		0% (0)
Knowledge and Skills Increased	Somewhat or strongly agree		100% (18)
	Neutral, somewhat or strongly disagree		0% (0)

*$P < 0.05$ using unpaired t test; †$P < 0.05$ using Fisher Exact Test; SD: Standard Deviation.

After the curriculum, residents and fellows had a statistically significant quantitative change in gender-affirming knowledge, $p < 0.05$ (Table 2). Qualitative results showed that comfort in using pronouns, recognizing barriers to care and initiation of gender-affirming medical treatment significantly increased with completion, $p < 0.05$ (Table 2). One hundred percent of post-survey participants somewhat or strongly agreed that what they were asked to learn was important and their knowledge and skills increased. Participants indicated that they now had good or excellent resources ($p < 0.05$).

3.2. Open-Ended Feedback

A summary of responses to the survey open-ended questions is included in Table 3. Open-ended responses reported that the content was comprehensive and easy to understand. The use of automated narration and module navigation could be improved. Practice improvement strategies included creating electronic health record smart phrases, reconsidering their history taking approach and pronoun use.

Table 3. Open-ended curriculum feedback.

What Was Best Part?	What Could Be Improved?	New Take away Strategy
• Management of hormone affirming care* • Information on preventative medicine* • Easy and organized* • Great source of information* • Quiz questions* • Well-rounded, easy to understand* • Provided resources and EBM • Health care needs of transgender people • Great refresher of all primary care concepts	• Functionality of modules* • The robotic voice * • Too much introduction with repetition and redundancy* • More information on addressing fertility/cryopreservation • Add a playback speed option	• Using pronouns every visit* • Changing how I take a sexual history from a patient* • Changing the way I ask about gender identity and sexual behavior • More dosage practice and medical management practice • I'd like to print a booklet or create a smart phrase unique to transgender patients that I can reference moving forward • I understand screening for transgender people more • More discussion on initiating HRT • Implement discussions of fertility with transgender patients who are interested • Continuing trying to make the most comfortable environment for transgender community in healthcare settings • Take home STI testing • Creating a smart phrase or reference guide for myself for transgender patients

*Comments combined by theme and reported by multiple participants.

4. Discussion

This online curriculum focused on multiple aspects of transgender healthcare and successfully improved knowledge and comfort in transgender healthcare for IM residents and endocrinology fellows. Learners responded favorably to the curriculum, indicated an improvement in resources and intent to make practice improvement changes. This experience was highly valued and met valuable ACGME metrics.

Transgender individuals indicate that they feel the need to teach their medical provider about transgender healthcare, which likely contributes to the negative healthcare experience for this community [1]. This patient feedback identifies a gap in current medical education and an opportunity to intervene. Focusing on trainee education is an early and critical step to addressing this gap. This online and asynchronous curriculum provided consistent evidence-based foundational knowledge (based on resources such as national guidelines and best practice) and allowed learners to re-engage the material in a flexible timeframe. Cooper et al. summarized the limited body of studies looking at the effectiveness of teaching modalities for students and residents to learn about the care of sexual and gender minorities [13]. The studies predominantly focused on student interventions but did include several residents and rare fellow participant studies. Resident and fellow interventions that included transgender healthcare included online modules, lecture with patients or study cases, a workshop, and standardized patients. In review, five studies were identified that focused on online transgender health modules [14]-[18]. Online content ranged from 1 to 6 modules depending on the intervention with modules being between 8 minutes to 1 hour in duration. These studies demonstrated improved transgender health knowledge and/or self-efficacy in transgender healthcare. Our curriculum adds to this body of knowledge. Our curriculum addressed deficient areas of content noted by other studies including barriers to care, transitioning, chronic disease risk, and substance use, for example [4] [5]. To our knowledge, this is the only online transgender healthcare curriculum mapped to ACGME competencies and milestones. We believe that mapping the curriculum to the ACGME milestones strengthens the curriculum and allows the learner a standardized metric to evaluate their educational progress in this focus area [11].

Collaboration with information technology (IT) support was valuable but did have an upfront cost. This initial investment in online curricula addresses any financial or time-commitment barriers for training programs and provides a knowledge foundation which trainees can leverage in patient interactions. A drawback of online modules is the effort to keep the content detailed enough to provide valuable learning but not so specific that it quickly becomes out-of-date.

This study focused on this specific curriculum in a singular cohort at one institution limiting generalizability of the data. The cohort size was small and limited the ability to do subgroup analysis of the fellow versus resident data. In addition, we found the post-survey response rate encouraging but future inves-

tigation should prioritize how to maximize the post-survey response rate. This curriculum fails to evaluate the impact on patient outcomes, an area of future study. Despite these limitations, the authors believe that these findings should be used to design larger confirmatory studies of this or similar curricula in a wider and more diverse learner group.

5. Conclusion

Online learning is one way to ensure learners receive foundational knowledge of gender-affirming care and to reduce the teaching gap identified during IM training. By mapping this curriculum to ACGME milestones, trainees can assess their academic growth and development in this focus area. This curriculum was successful in increasing knowledge and comfort in transgender healthcare for IM residents and fellows. It provides a promising framework to address this curricular subject material until future ACGME input.

Acknowledgements

The authors acknowledge the University of Maryland Office of Medical Education for their IT assistance in constructing and supporting the online curriculum.

Funding

Support for this manuscript comes in part from a "Building Trust through Diversity, Health Care Equity, Inclusion and Diagnostic Excellence in Internal Medicine Training" grant sponsored by the Alliance for Academic Internal Medicine (AAIM), the American Board of Medicine (ABIM), the ABIM Foundation, the American College of Physicians (ACP), and the Josiah Macy Jr. Foundation.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

[1] Grant, J.M., *et al.* (2011) Injustice at Every Turn: A Report of the National Transgender Discrimination Survey. https://transequality.org/sites/default/files/docs/resources/NTDS_Report.pdf

[2] Nolan, I.T., Blasdel, G., Dubin, S.N., Goetz, T.G., Greene, R.E. and Morrison, S.D. (2020) Current State of Transgender Medical Education in the United States and Canada: Update to a Scoping Review. *Journal of Medical Education and Curricular Development*, **7**, 1-13. https://doi.org/10.1177/2382120520934813

[3] Van Heesewijk, J., Kent, A., Van de Grift, T.C., Harleman, A. and Muntinga, M. (2022) Transgender Health Content in Medical Education: A Theory-Guided Systematic Review of Current Training Practices and Implementation Barriers & Facilitators. *Advances in Health Sciences Education*, **27**, 817-846.

https://doi.org/10.1007/s10459-022-10112-y

[4] Kopel, J., Beck, N., Almekdash, M.H. and Varma, S. (2023) Trends in Transgender Healthcare Curricula in Graduate Medical Education. *Baylor University Medical Center Proceedings*, **36**, 620-626. https://doi.org/10.1080/08998280.2023.2228140

[5] Obedin-Maliver, J., Goldsmith, E.S., Stewart, L., White, W., Tran, E., Brenman, S., *et al.* (2011) Lesbian, Gay, Bisexual, and Transgender–Related Content in Undergraduate Medical Education. *JAMA*, **306**, 971-977. https://doi.org/10.1001/jama.2011.1255

[6] Davidge-Pitts, C.J., Nippoldt, T.B. and Natt, N. (2018) Endocrinology Fellows' Perception of Their Confidence and Skill Level in Providing Transgender Healthcare. *Endocrine Practice*, **24**, 1038-1042. https://doi.org/10.4158/ep-2018-0307

[7] Malek, R., Sarmiento, M. and Lamos, E. (2022) ODP410 Exposure to Transgender Teaching in Internal Medicine Residents and Established Providers. *Journal of the Endocrine Society*, **6**, A660-A661. https://doi.org/10.1210/jendso/bvac150.1366

[8] Hembree, W.C., Cohen-Kettenis, P.T., Gooren, L., Hannema, S.E., Meyer, W.J., Murad, M.H., *et al.* (2017) Endocrine Treatment of Gender-Dysphoric/Gender-Incongruent Persons: An Endocrine Society* Clinical Practice Guideline. *The Journal of Clinical Endocrinology & Metabolism*, **102**, 3869-3903. https://doi.org/10.1210/jc.2017-01658

[9] Coleman, E., Radix, A.E., Bouman, W.P., Brown, G.R., De Vries, A.L.C., Deutsch, M.B., *et al.* (2022) Standards of Care for the Health of Transgender and Gender Diverse People, Version 8. *International Journal of Transgender Health*, **23**, S1-S259. https://doi.org/10.1080/26895269.2022.2100644

[10] D. of F. and C. M. UCSF Gender Affirming Health Program (2024) Guidelines for the Primary and Gender-Affirming Care of Transgender and Gender Nonbinary People. https://transcare.ucsf.edu/guidelines

[11] Eno, C., *et al.* (2024) Milestones Guidebook for Residents and Fellows. https://www.acgme.org/globalassets/PDFs/Milestones/MilestonesGuidebookforResidentsFellows.pdf

[12] Accreditation Council for Graduate Medical Education (ACGME) (2024) Internal Medicine Milestones the Accreditation Council for Graduate Medical Education. https://www.acgme.org/Specialties/Internal-Medicine/Milestones

[13] Cooper, R.L., Ramesh, A., Radix, A.E., Reuben, J.S., Juarez, P.D., Holder, C.L., *et al.* (2023) Affirming and Inclusive Care Training for Medical Students and Residents to Reduce Health Disparities Experienced by Sexual and Gender Minorities: A Systematic Review. *Transgender Health*, **8**, 307-327. https://doi.org/10.1089/trgh.2021.0148

[14] Streed, C.G., Hedian, H.F., Bertram, A. and Sisson, S.D. (2019) Assessment of Internal Medicine Resident Preparedness to Care for Lesbian, Gay, Bisexual, Transgender, and Queer/Questioning Patients. *Journal of General Internal Medicine*, **34**, 893-898. https://doi.org/10.1007/s11606-019-04855-5

[15] Vance, S.R., Lasofsky, B., Ozer, E. and Buckelew, S.M. (2018) Teaching Paediatric Transgender Care. *The Clinical Teacher*, **15**, 214-220. https://doi.org/10.1111/tct.12780

[16] Vance, S.R., Deutsch, M.B., Rosenthal, S.M. and Buckelew, S.M. (2017) Enhancing Pediatric Trainees' and Students' Knowledge in Providing Care to Transgender Youth. *Journal of Adolescent Health*, **60**, 425-430. https://doi.org/10.1016/j.jadohealth.2016.11.020

[17] Vance, S.R., Buckelew, S.M., Dentoni-Lasofsky, B., Ozer, E., Deutsch, M.B. and

Meyers, M. (2020) A Pediatric Transgender Medicine Curriculum for Multidisciplinary Trainees. *MedEdPORTAL*, **16**, Article No. 10896. https://doi.org/10.15766/mep_2374-8265.10896

[18] Ufomata, E., Eckstrand, K.L., Spagnoletti, C., Veet, C., Walk, T.J., Webb, C., *et al.* (2020) Comprehensive Curriculum for Internal Medicine Residents on Primary Care of Patients Identifying as Lesbian, Gay, Bisexual, or Transgender. *MedEdPORTAL*, **16**, Article No. 10875. https://doi.org/10.15766/mep_2374-8265.10875