Practice Makes Perfect: Objective Structured Clinical Examinations Across the UME-to-GME Continuum Improve Care of Transgender Simulated Patients

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ABSTRACT

Background Residents lack confidence in caring for transgender individuals. More exposure and practice throughout training is needed.

Objective To explore whether and how prior exposure to transgender health skills during medical school impacted competency with these skills during residency.

Methods In 2022, all 101 internal medicine residents at New York University Grossman School of Medicine participated in an objective structured clinical examination (OSCE) station as part of their annual formative assessment where they cared for a standardized patient (SP) who identified as transgender. Three SPs who were members of the transgender community were recruited through online and social media forums. Two resident groups (continuum vs noncontinuum) differed in their prior experiences with transgender OSCEs during medical school. We analyzed SPs' ratings of resident performance using checklist data and SP open-ended feedback to compare performance between groups and resident post-OSCE evaluations to understand residents' perceptions of the educational value of the case.

Results Residents with prior experience with transgender SPs (continuum) were more frequently recommended by SPs (88% [21 of 24] vs 70% [54 of 77]) to a family member or friend, were all rated professional (100% [24 of 24] vs 94% [72 of 94]) and scored better in pain information-gathering (92% vs 65%, mean summary score) and gender-affirming care skills (67% vs 52%, mean summary score). Noncontinuum residents lacked experience, missed opportunities to ask about gender identity, and needed work on demonstrating comfort and using proper language. Most residents completing a post-OSCE evaluation (80%, 41 of 51) rated the case as "very valuable."

Conclusions Spaced practice and feedback through early exposure to transgender OSCEs were valuable for skill acquisition, giving continuum residents a learning advantage compared to noncontinuum residents.

Introduction

Transgender patients (ie, individuals whose gender identity differs from their sex assigned at birth) face more barriers to care compared to their cisgender counterparts (ie, those whose gender identity aligns with their sex assigned at birth), including discrimination and postponement or refusal of care.[1,2] Among these barriers are limited physician experience and training.[3]

Educational activities exist to help clinicians gain comfort and skills in caring for transgender patients, but these vary in modalities and the type of learners these interventions target.[3,4] Research suggests that longitudinal and integrated transgender health education improves learner skill and comfort, activates learners' desire for more practice,[2] and communicates that providing gender-affirming care is important and valued.[5]

Few studies looked at the impact of longitudinal and integrated transgender health training across the undergraduate medical education (UME) to graduate medical education (GME) continuum.[4] Currently, transgender health education in medical school curricula is limited. More than half of training programs accredited by the Liaison Committee on Medical Education reported having no LGBTQIA+ training in their curricula.[6] On average, medical school curricula include an average of 5 hours of

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LGBTQIA+ health education, primarily focused on HIV, differences in sex development, and safe sex.[2,6] Additionally, medical students do not get enough exposure to transgender patients: around 40% of students reported caring for no transgender patients, and those who did have prior experience cared for fewer than 5 transgender patients.[7,8] Transgender health education at the GME level is also lacking, with only a few specialties publishing about transgender health education in both didactic and clinical settings.[6] Most specialties report minimal to no transgender health education during residency, despite multiple studies finding that residents and fellows believe in the importance and value of learning comprehensive gender-affirming skills needed to care for transgender patients.[6] This suggests there is an opportunity to include more transgender health training and exposure in medical school curricula and/or throughout training.

The aim of our study was to describe whether and how exposure to transgender health skills during medical school impacted trainees' competency in this area during residency. We describe outcomes from an objective structured clinical examination (OSCE) station where residents were tasked with managing the care of a standardized patient (SP) who identified as transgender.

KEY POINTS

What Is Known
Improving care for patients who are transgender needs more attention in residency curricula. Spaced repetition and simulation are sound educational designs that would hold promise in this domain.

What Is New
Residents in an internal medicine program who had undergone a prior objective structured clinical examination with a transgender patient in medical school at the same university showed improved performance in the care of a simulated patient who is transgender.

Bottom Line
Spaced repetition, even years apart and in a simulated setting, shows promise for improving the care of transgender patients.

Methods

Setting and Participants

As part of their required annual formative assessment in 2022, New York University Grossman School of Medicine (NYUGSOM) residents in the internal medicine (IM) residency program participated in an OSCE where they rotated through multiple simulated clinical encounters with SPs. An OSCE station with an SP who identified as transgender was included with an aim of assessing how residents care for transgender patients. This case was developed by program leadership (R.E.G., a content expert on gender-affirming care, and S.Z., an expert in simulation), and reviewed by a member of the transgender community with lived experience who also served as an SP (C.L.).

We compared performance on the case between 2 groups of residents: (1) residents who had trained at the same medical school (continuum residents) and had previously participated in an OSCE at NYUGSOM as part of their UME curriculum featuring a transgender SP with feedback; and (2) residents who attended different medical schools (noncontinuum residents) and who therefore did not participate in the NYUGSOM transgender OSCE. During their first year of medical school prior to clerkship training, continuum residents attended lectures on transgender health that involved education on barriers to care and gender-affirming hormone therapies, a conversation with a transgender community member, and a workshop on inclusive sexual history taking, followed by participation in an initial OSCE case with a transgender SP.

All NYU residents (continuum and noncontinuum) attended a similar lecture regarding transgender health with more detailed information about hormones and surgery, consistent with their level of training.

OSCE Scenario

The OSCE station involved caring for a 37-year-old transgender male patient who was admitted to the hospital for abdominal pain. Residents had 10 minutes to confirm the SP's affirmed name and pronouns, evaluate the abdominal pain, complete a sexual history and relevant organ inventory, and identify the need for additional testing.

We recruited 3 transgender SPs through online and social media forums, and they were compensated as any other SP ($28/hour compensation). Each of the 3 SPs, who identified as transgender (and importantly had lived experiences to draw upon), received 3 hours of SP training on how to play the role of the patient, assess performance using the checklist, and give effective feedback. During the encounter, the SPs were instructed to act intimidated by clinicians and to not readily offer any information about their gender identity unless prompted. The SPs were to remain open with the residents if they said something awkward (and not openly offensive) and to express displeasure but remain cooperative if the resident made any overtly judgmental or offensive statements. Full resident and SP case instructions are available as online supplementary data.

Assessment

The SPs evaluated each resident's performance using a checklist that rated residents on 5 domains: information gathering (4 items), relationship development (5 items), education and counseling (3 items), gender-affirming care skills (6 items), and case-specific abdominal pain information gathering (1 item), see TABLE 1. Items were rated on a behaviorally anchored "not done," "partially done," or "well done" (WD) scale. In addition, the SP gave each resident a global recommendation and professionalism rating, using 4-point scales. Our original communication checklist was developed through the Macy Initiative on Health Communication[9] and adapted for this case to include assessment of case-specific skills in gendering-affirming care and abdominal pain information gathering. Our checklist has demonstrated internal consistency (Cronbach's alphas 0.70-0.95), significant and positive association with similar student performance metrics,[10-13] and sensitivity in capturing effects of interventions.[14,15]

Following the case, residents received both written and verbal feedback from the SPs and debriefed with a faculty observer who had expertise in caring for transgender patients. Residents completed a post-OSCE evaluation where they rated whether the case was educationally valuable and shared their experience about their participation in the case.

Data Analysis

We used a mixed methods approach to explore the potential impact prior transgender health exposure and practice during medical school may have had on competency in providing gender-affirming care during residency.

Quantitative Analysis: We calculated summary scores (mean % WD) for each item and domain. Wilcoxon rank sum tests for nonparametric data were conducted to test for statistically significant differences in performance between the 2 resident types. All checklist data were analyzed using R Core Team (2021).[16]

Qualitative Analysis: We analyzed SP open-ended feedback comments given to each resident using the framework method for content analysis.[17] This method was chosen because we used domains and items assessed on our checklist as a guide for organizing the behavior codes but remained open to other themes that emerged from the SP's feedback. Two authors (C.P.B. and J.A.W.) read through all SP comments to generate codes individually and then met regularly to discuss and jointly create a codebook. This codebook was shared with the entire study team who discussed the data and reached consensus on a final working code book. One author (C.P.B.) then applied codes to the SP comments. Comparisons were made between continuum and noncontinuum residents to identify potential differences in SP feedback about care provided.

The same process was repeated when analyzing the resident responses on the post-OSCE evaluation to identify main themes between and across the 2 groups. Analyses of SP open-ended feedback and resident responses were carried out using Dedoose (Version 9.0.54).[18]

We ensured trustworthiness of our results by having an interdisciplinary team of both clinicians and nonclinician educational researchers within and outside of NYUGSOM who varied in their levels of expertise in transgender health education.[19] This helped to ensure our interpretations were free from biases and reflected the authentic experiences of the SPs and residents.

This project qualified as an educational quality improvement project through NYUGSOM's Institutional Review Board, and therefore resident consent was not required for participation in this project.

Results

A total of 101 residents participated in the case (continuum [n=24], noncontinuum [n=77]). See TABLE 2 for breakdown by postgraduate year (PGY) and SP rater.

Resident Performance on Case

Continuum and noncontinuum residents performed similarly in 4 of 5 domains, with significant differences in the abdominal pain information gathering domain (92% vs 65%, $P<.01$, 95% CI 0.11-0.43). Continuum residents were more frequently recommended or highly recommended compared to noncontinuum residents (88% [21 of 24] vs 70% [54 of 77] WD, $P<.05$, 95% CI 0.98-31.79) and were all rated mostly professional or completely professional (100% [24 of 24] vs 94% [72 of 77] WD, $P<.05$, 95% CI 1.35-12.50) by the SP. Continuum residents' summary scores were better overall in the gender-affirming care skills domain, compared to noncontinuum residents, though differences were not statistically significant. See TABLE 3 for full results.

SP Open-Ended Feedback Comments

Feedback comments from the SPs revealed notable differences between continuum and noncontinuum residents when it came to areas of improvement, including need for more experience and better skills in fostering SP comfort, asking about gender identity,

TABLE 1
2022 New York University Grossman School of Medicine Standardized Patient Assessment Checklist, With Reported Rating by the Standardized Patient for Each Item (N=101)

Domain	Item	Not Done, n (%)	Partially Done, n (%)	Well Done, n (%)
Information gathering	Elicited your story using appropriate questions	Impeded story by asking leading/ closed questions or more than one question at a time	Used some open-ended questions and ineffective questions, but still able to share most of your story	Facilitated the telling of your story by asking questions one at a time without leading you in your responses
		3 (3.0)	27 (26.7)	71 (70.3)
	Managed the narrative flow of your story	Not able to elicit narrative because questions not organized logically	Elicited main elements of narrative, but illogical order of questions, leading questions or multiple questions disrupted flow	Elicited full narrative by asking questions that facilitated natural flow of story
		4 (4.0)	25 (24.8)	72 (71.3)
	Clarified information by repeating to make sure he/she understood you on an ongoing basis	Did not clarify (did not repeat info provided)	Repeated information but infrequently or without the opportunity to indicate whether accurate	Repeated information and directly invited you to indicate whether accurate on an ongoing basis
		6 (5.9)	23 (22.8)	72 (71.3)
	Allowed you to talk without interrupting	Interrupted	Did not interrupt directly but cut responses short by not giving you enough time	Did not interrupt and allowed time to express thoughts fully
		3 (3.0)	10 (9.9)	88 (87.1)
Relationship development	Communicated concern or intention to help	Did not communicate intention to help/concern via words or actions	Words or actions conveyed intention to help/concern	Actions *and* words conveyed intention to help/concern
		1 (1.0)	18 (17.8)	82 (81.2)
	Nonverbal behavior enriched communication	Nonverbal behavior was negative or interfered with communication	Nonverbal behavior neither interfered with nor facilitated communication	Nonverbal behavior facilitated effective communication
		4 (4.0)	16 (15.8)	81 (80.2)
	Acknowledged emotions/ feelings appropriately	Did not acknowledge emotions/feelings	Attempted to acknowledge emotions/feelings	Acknowledged and responded to your emotions in ways that made you feel better
		3 (3.0)	19 (18.8)	79 (78.2)
	Was accepting/ nonjudgmental	Made judgmental comments or facial expressions	Did not express judgment but did not demonstrate respect either	Made comments and expressions that demonstrated respect
		0 (0.0)	18 (17.8)	83 (82.2)
	Used words you understood and/or explained jargon	Jargon made it difficult to understand	Used jargon occasionally but did not significantly interfere with understanding	Provided no opportunity for misunderstanding by avoiding or spontaneously explaining jargon
		2 (2.0)	21 (20.8)	78 (77.2)

TABLE 1
2022 New York University Grossman School of Medicine Standardized Patient Assessment Checklist, With Reported Rating by the Standardized Patient for Each Item (N=101) (continued)

Domain	Item	Not Done, n (%)	Partially Done, n (%)	Well Done, n (%)
Education and counseling	Asked questions to see what you understood	Did not check to see what you understood	Checked what you understood in a cursory manner (ie, asked only "any questions?")	Checked your understanding through specific questioning and/or asking you to repeat back information
		4 (4.0)	27 (26.7)	70 (69.3)
	Provided clear explanations/ information	Gave no explanations or gave confusing explanations which made it impossible to understand information	Information was somewhat clear but still led to some difficulty in understanding	Provided small bits of information at a time and summarized to ensure understanding
		1 (1.0)	12 (11.9)	88 (87.3)
	Collaborated with you to identify and decide on possible next steps/plan	Did not give you opportunity to weigh in on next steps *or* didn't discuss next steps at all	Told you next steps and asked if you agree, but no sense of collaboration	Elicited your views on next steps, shared her/his ideas, and mutually developed plan of action
		4 (4.0)	27 (26.7)	70 (69.3)
Gender-affirming care skills	Clarified your pronouns	Did not ask	Elicited your pronouns in a way that felt interrogatory	Asked you about your pronouns in an affirming way (eg, offered their own, or asked for your pronouns)
		6 (5.9)	23 (22.8)	72 (71.3)
	Asked about your gender identity	Did not ask	Got information about your gender identity through indirect means (eg, asking if you take medications or surgeries)	Asked your directly what about your gender identity (eg, how do you identify your gender?)
		7 (6.9)	47 (46.5)	47 (46.5)
	Probed about medically relevant information regarding transition (use of hormones and surgery), including an organ inventory	Did not do *or* asked inappropriate/ intrusive and unnecessary questions about your genitalia	Appropriately elicits some information about your transition but did not fully elaborate or clarify why this was relevant	Fully elicited relevant information about your transition to this time in a comfortable manner. Elicited a clear understanding of what pelvic organs you currently have.
		5 (5.0)	45 (44.6)	51 (50.5)
	Made you feel welcome and comfortable as a trans-identified patient	Did not address your gender identity in a way that made you feel comfortable	Addressed your gender identity awkwardly but seemed to be trying to help	Made you feel comfortable and normalized your gender identity without making you feel different than other patients
		5 (5.0)	34 (33.7)	62 (61.4)

TABLE 1
2022 New York University Grossman School of Medicine Standardized Patient Assessment Checklist, With Reported Rating by the Standardized Patient for Each Item (N=101) (continued)

Domain	Item	Not Done, n (%)	Partially Done, n (%)	Well Done, n (%)
	Asked an affirming sexual history	Did not elicit more than basic information about sex life (eg, having sex with current partner)	Awkwardly asked about sexual risk in clinical ways, but not enough to rule out pregnancy	Elicited enough information to rule out pregnancy *and* asked about HPV risk and pap history. Was relatively smooth and affirming.
		9 (8.9)	51 (50.5)	41 (40.6)
	Discussed and partnered with you about the possibility of a pelvic examination	Did not mention pelvic examination	Mentioned pelvic examination, but used gendered language and did not recognize the potential discomfort associated with it	Asked about the possibility of doing a pelvic examination, recognizing you might be hesitant and did not use gendered language
		9 (8.9)	31 (30.7)	61 (60.4)
Abdominal pain information gathering	Elicited a current description of the pain and clarified the plan	Did not ask about current pain	Asked about current pain, but did not clarify the plan to address it	Asked about current pain, reassured that the workup would help identify a cause, and a plan moving forward
		6 (5.9)	23 (22.8)	72 (71.3)

		Not Recommend, n (%)	Recommend With Reservations, n (%)	Recommend, n (%)	Highly Recommend, n (%)
Global ratings	Overall, would you recommend this health provider to a family member or friend?	7 (6.9)	19 (18.8)	58 (57.4)	17 (16.8)

		Not at all professional, n (%)	Somewhat Professional, n (%)	Mostly Professional, n (%)	Completely Professional, n (%)
Global ratings	Overall, how would you rate this health provider's professionalism?	1 (1.0)	4 (4.0)	34 (33.7)	62 (61.4)

and using gender-affirming language (see TABLE 4 of SP-reported areas of improvement).

Resident Lack of Experience

The SPs noted when residents demonstrated a clear lack of experience with transgender patients, and this occurred exclusively with noncontinuum residents. Residents' lack of experience was noted as a barrier to obtaining relevant clinical information related to the patient's gender identity needed to address the abdominal pain.

> "Clearly less experienced with the trans stuff, in a way that meant not getting all the clinically relevant information … The real issue was lack of training/experience and not being able to get past that to provide the care needed for the patient." (SP1)

TABLE 2
Number of Residents who Participated in the OSCE Case Overall and Within Each Learner Type (Continuum vs. Noncontinuum), by Postgraduate Year and Standardized Patient Rater

Participants	Overall, n (%) (N=101)	Continuum, n (%) (N=24)	Noncontinuum, n (%) (N=77)
PGY			
PGY-1	19 (18.8)	3 (12.5)	16 (20.8)
PGY-2	64 (63.4)	15 (62.5)	49 (63.6)
PGY-3	18 (17.8)	6 (25.0)	12 (15.6)
SP rater			
SP1	29 (28.7)	7 (29.2)	22 (28.6)
SP2	30 (29.7)	11 (45.8)	19 (24.7)
SP3	42 (41.6)	6 (25.0)	36 (46.8)

Abbreviations: OSCE, objective structured clinical examination; PGY, postgraduate year; SP, standardized patient.

SP Discomfort

Though uncommon, SPs described encounters that made them feel uncomfortable, which happened only with noncontinuum residents who exhibited awkwardness and nervous nonverbal communication.

> "Seemed very uncomfortable—not making eye contact, constantly looking down at papers … the palpable discomfort definitely made it an overall challenging experience as the patient." (SP1)

Missed Opportunities to Ask About Gender Identity

Only noncontinuum residents avoided talking about patient's gender identity, which the SPs hypothesized was due to residents' lack of experience and fear of causing discomfort.

> "Didn't seem to know how to deal with me as a trans patient and didn't ask many relevant questions. Didn't talk about gender and sexuality and sexual practices at all." (SP3)

> "Skipped over sexual history completely, didn't actually confirm whether I was trans … Felt like inexperience with trans-care meant avoiding questions for fear of causing discomfort." (SP1)

Need for Proper Language

When it came to specific skills, most noncontinuum residents received feedback about needing to use more inclusive/affirming language and preferred terminology when talking with transgender patients.

> "Some work could be done about using less gendered language and affirming gender identity … improvement on language and communication would be helpful." (SP2)

Resident Post-OSCE Evaluations

Fifty-one residents completed the resident post-OSCE evaluations (continuum [n=14], noncontinuum [n=37]). We found no clear differences in experience or perceived value of the case between continuum and noncontinuum residents. Most residents across the 2 groups (80%, 41 of 51) rated the case to be "very valuable," attributing it to the opportunity to practice skills in a safe space.

A Safe Space to Practice With Transgender Patients

Many residents identified the opportunity to practice with transgender patients and discuss their care in a safe space, with feedback from the SP, to be helpful.

> "Really appreciated the opportunity to practice appropriate terminology, alleviate some of my anxiety, and gain some experience discussing common medical issues with a trans patient in such a supportive environment." (Noncontinuum resident)

Opportunity to Practice Nongendered Language

Several residents mentioned how practicing using nongendered, patient-centered language was especially helpful in improving skills and comfort.

> "Extremely helpful in being familiarized with accepted and acceptable terminologies used during this select and often emotionally charged exchange." (Noncontinuum resident)

> "Just great opportunity to ask questions about gender, identity, organ inventory and practice using nongendered language." (Continuum resident)

TABLE 3
Differences in Performance Between Continuum and Noncontinuum Residents as Rated by Standardized Patient Using 2022 New York University Grossman School of Medicine Assessment Checklist

Domain	Item	Continuum, N=24	Noncontinuum, N=77	Stat Testing *P* value
Global	SP reports that they would recommend this health provider to a family member or friend	No. (%) of residents who received Recommend/Highly Recommend rating		
		21 (87.5)	54 (70.1)	.02[a] 95% CI -0.98, -31.79 Significant
	SP rating of resident professionalism	No. (%) of residents rated mostly Professional/Completely Professional		
		24 (100)	72 (93.5)	.03[a] 95% CI 1.35, 12.50 Significant
Gender-affirming care skills	Clarified your pronouns	No. (%) of residents rated Well Done		
		21 (87.5)	51 (66.2)	.08 95% CI -3.40, 37.51 Not Significant
	Asked about your gender identity	12 (50.0)	35 (45.5)	.79 95% CI -18.16, 27.64 Not Significant
	Probed about medically relevant information regarding transition (use of hormones and surgery), including an organ inventory	17 (70.8)	34 (44.2)	.02[a] 95% CI 4.55, 47.20 Significant
	Made you feel welcome and comfortable as a trans-identified patient	17 (70.8)	45 (58.4)	.22 95% CI -9.98, 33.20 Not Significant
	Asked an affirming sexual history	12 (50.0)	29 (37.7)	.34 95% CI -10.18, 35.24 Not Significant
	Discussed and partnered with you about the possibility of a pelvic examination	17 (70.8)	44 (57.1)	.20 95% CI -8.73, 34.70 Not Significant
	Summary score mean, % (SD)	66.7 (0.33)	51.5 (0.36)	.07 95% CI -0.01, 0.31 Not Significant
Information gathering	Elicited your story using appropriate questions	19 (79.2)	52 (67.5)	.39 95% CI -8.36, 30.22 Not Significant
	Managed the narrative flow of your story	21 (87.5)	51 (66.2)	.06 95% CI -3.34, 37.39 Not Significant
	Clarified information by repeating to make sure he/she understood you on an ongoing basis	18 (75.0)	54 (70.1)	.73 95% CI -15.64, 24.14 Not Significant
	Allowed you to talk without interrupting	19 (79.2)	69 (89.6)	.16 95% CI -29.58, 6.53 Not Significant
	Summary score mean, % (SD)	80.2 (0.35)	73.4 (0.34)	.27 95% CI -0.10, 0.23 Not Significant

TABLE 3
Differences in Performance Between Continuum and Noncontinuum Residents as Rated by Standardized Patient Using 2022 New York University Grossman School of Medicine Assessment Checklist (continued)

Domain	Item	Continuum, N=24	Noncontinuum, N=77	Stat Testing *P* value
Relationship development	Communicated concern or intention to help	21 (87.5)	61 (79.2)	.36 95% CI -8.90, 23.58 Not Significant
	Nonverbal behavior enriched communication (eg, eye contact, posture)	20 (83.3)	61 (79.2)	.60 95% CI -14.55, 20.77 Not Significant
	Acknowledged emotions/feelings appropriately	19 (79.2)	60 (77.9)	.93 95% CI -18.93, 19.29 Not Significant
	Was accepting/nonjudgmental	20 (83.3)	63 (81.8)	.87 95% CI -16.47, 18.37 Not Significant
	Used words you understood and/or explained jargon	18 (75.0)	60 (77.9)	.82 95% CI -23.42, 16.04 Not Significant
	Summary score mean, % (SD)	81.7 (0.34)	79.2 (0.30)	.47 95% CI -0.13, 0.18 Not Significant
Education and counseling	Asked questions to see what you understood	18 (75.0)	52 (67.5)	.52 95% CI -14.06, 27.28 Not Significant
	Provided clear explanations/information	22 (91.7)	66 (85.7)	.44 95% CI -8.87, 18.92 Not Significant
	Collaborated with you to identify and decide on possible next steps/plan	17 (70.8)	53 (68.8)	.75 95% CI -19.64, 22.85 Not Significant
	Summary score mean, % (SD)	79.2 (0.32)	74.0 (0.33)	.44 95% CI -0.10, 0.20 Not Significant
Abdominal pain information gathering	Elicited a current description of the pain and clarified the plan	22 (91.7)	50 (64.9)	.02[a] 95% CI 10.41, 41.33 Significant
	Summary score mean, % (SD)	91.7 (0.28)	64.9 (0.48)	.01[a] 95% CI 0.11, 0.43 Significant

[a] Statistically significant *P* values signal that differences in performance between residents are not explainable by chance alone.

Lack of Prior Exposure With Transgender Patients

Residents across both groups described having few prior clinical encounters with transgender patients and described how the case increased their comfort and preparation for caring for transgender patients.

> "We have talked about how to respect trans patients a fair amount but have not had many opportunities to treat them, this was a good learning experience to become more comfortable." (Noncontinuum resident)

> "Really good to have a safe space to practice this as I have had very little experience caring for trans patients. This will make me more comfortable and confident in the future." (Continuum resident)

Enthusiasm for the Future

A few residents described a sense of humility and enthusiasm about continuing to learn more about and practice caring for transgender patients in the future.

> "I still need help likely in working up this situation medically but will feel much more comfortable and more prepared to effectively work with a patient who may be transgender. I think there will need to be more practice, but I look forward to that." (Noncontinuum resident)

TABLE 4
Areas for Improvement in Providing Gender-Affirming Care as Perceived by Standardized Patients (SPs) and Given as Feedback to Residents

Areas for Improvement	SP Feedback Comments
Resident lack of experience with transgender patients	The nonverbal communication (ie, physical discomfort) and tension in the room made the whole thing feel very uncomfortable. Relevant clinical info was mostly obtained, but the *inexperience in trans-specific patient care showed*. (SP1) *Provider was definitely trying*. I felt effort and attempts to respect. The apology was sincere, and I believe improvement is possible. Ask if patients are trans instead of noting they are female. *Admitting lack of knowledge early is not bad or something to be ashamed of*. It is okay to do so and express care after. (SP2) Well-intentioned but *didn't seem to entirely understand what it meant when discussing the fact that I am transgender*. (SP3) Clearly has zero experience with trans patients and didn't know how much or how little to focus on my identity … Needs more practice. (SP3) Was extremely uncomfortable with me and didn't have a good understanding of the case or how to deal with a trans patient. *Definitely needs to work on how to talk to and about trans people and their bodies*. (SP3)
SP discomfort	Was very intimidated with me being trans and didn't know how to bring it up or talk about it. *Made me feel like I was being interrogated and made me feel extremely guarded*. (SP3) Could have smoother questioning about sex and gender characteristics. *Comments during sexual questioning were a bit awkward*. (SP2) *Did not know how to talk about my body*. Made me feel like they didn't believe me about pregnancy not being a possibility, which made me feel guarded. (SP3) Discomfort around asking about gender identity set a tone of awkwardness for the rest of the encounter, especially since there was really no time spent before building up any rapport. *Not bad, just seemed very, very nervous, and the fumbling around how to ask about trans identity made me as the patient feel uncomfortable*. (SP1)
Missed opportunities to ask about gender identity	Seemed nervous or uncomfortable with caring for a trans patient. *Didn't ask directly about gender identity* but did a great job assessing all symptom areas and explaining clinical care. (SP1) *Mostly avoided* specifically addressing gender and details of sexual history. (SP1) Felt very uncomfortable as a trans patient—jumped right to the sexual history without asking about my pain or symptoms, *felt like gender stuff was addressed very poorly*. (SP1)
Need for proper language	Needs to get more comfortable with talking about trans people. *Well-intentioned but wasn't sure what language to use*. (SP3) Do not use "Mr. or Ms." until after asking pronouns. [Resident] *used gendered terms to discuss body*. (SP2) Minor areas for *improvement around wording things in a more trans-inclusive way and addressing transness more directly*. (SP1)

Discussion

Our findings suggest that continuum residents may have had a learning advantage due to their previous participation in a transgender OSCE during medical school. Continuum residents, compared to noncontinuum residents, exhibited better performance on the domains of case-specific information gathering, gender-affirming care skills, and global ratings. Furthermore, continuum residents' greater experience and comfort in this area was highlighted by the fact that their noncontinuum counterparts exclusively received SP feedback about their lack of experience and comfort.

The fact that continuum residents performed better on several domains that they were similarly assessed in during medical school and exhibited greater confidence and competence in caring for a transgender SP demonstrates the durability of their skills and their ability to generalize learning from a previous exposure to this new encounter. This advantage aligns with the concept of distributed practice where learning becomes more durable when opportunities for practice are spaced out over time (compared to massed together during a short period of time) and new learning encounters build upon previous learning.[5,6,20-25] These findings suggest that trainees benefit from repeated exposures to and practice with transgender health skills over time as it promotes retrieval, consolidation, and competency in providing affirming care to transgender patients.

Residents across both groups did not score as high on the gender-affirming care skills item "made SP feel welcome and comfortable as a trans-identified patient" (continuum=71% [17 of 24] vs noncontinuum=58% [45 of 77]), which identifies a curricular gap. One area that may address this gap is the use of nongendered terms, preferred terminology, and inclusive/affirming language, which was frequently identified as a challenge by SPs and residents. Currently, transgender health topics covered in UME and GME curricula focus little on interpersonal skills, such as affirming patients and use of language.[6] Experiential learning opportunities, such as OSCEs, with transgender patients within UME and GME curricula is one strategy for providing trainees with valuable exposure to transgender patients, practice with inclusive and affirming language and interpersonal skills, and feedback about their performance from individuals who identify as transgender or nonbinary.[2,26-28] Most medical schools and residencies have SPs, but including members of the transgender community with lived experiences in the development and implementation of transgender OSCEs is imperative.

Overall, our results suggest the following steps forward for transgender health education: (1) Introducing transgender health training early in medical education can provide trainees with learning advantages that may improve their skill and comfort with caring for transgender patients; (2) Skills acquisition around how to build rapport, affirm patients, and use appropriate language is an important and desired area of improvement; and (3) Experiential opportunities (OSCEs or patient-as-teacher forums) should be incorporated within UME and/or GME curricula so trainees can interact and practice with and receive feedback from transgender patients to improve their gender-affirming care skills.

One limitation is that we did not collect data on noncontinuum residents' prior transgender health experiences. Our findings indicated that regardless of noncontinuum residents' prior experiences (or lack thereof) in their respective medical schools, continuum residents exhibited better performance that may be attributed to our medical school's transgender health curriculum. We also did not look at residents' prior experiences with real transgender patients; therefore, their performance on this case may not reflect their care in actual practice. Third, differences in ratings among 3 different SPs may be a confounding factor. However, each SP saw a fairly equal distribution of continuum vs noncontinuum residents; the pattern in which continuum residents performed better in specific domains persisted when we looked within individual SP's ratings; and all SPs consistently identified the same areas of improvement, giving us confidence in our results. Lastly, other factors, such as training in a large American city with a sizeable population of transgender individuals, may explain the differences between groups, limiting the generalizability of our results to other training programs.

Future research should look at whether integrating transgender OSCEs across the UME-to-GME continuum improves trainees' interactions with transgender patients beyond the simulated environment.

Conclusions

Our data demonstrate that exposure and the opportunity to practice clinical interactions with a transgender-identified SP during medical school is associated with better performance in caring for transgender SPs during residency.

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