



## First year medical student experiences with a clinical skills seminar emphasizing sexual and gender minority population complexity

### L'expérience d'étudiants en première année de médecine dans le contexte d'un séminaire sur les habiletés cliniques axé sur la complexité des minorités sexuelles et de genre

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Résumé de l'article

**Objectif :** Les patients qui s'identifient comme faisant partie de minorités sexuelles et de genre (MSG) se heurtent à des obstacles en matière de soins de santé.<sup>1</sup> Ce problème est en partie attribuable à la formation des médecins. Nous avons évalué l'expérience des étudiants en première année de médecine dans un séminaire inédit de quatre heures, au cours duquel les étudiants ont répondu à des questions dans le cadre d'une discussion, ont participé à des jeux de rôle entre pairs et ont interrogé deux patients standardisés.

**Méthode :** Cette recherche à devis qualitatif constructiviste a employé des groupes de discussion d'étudiants, qui ont été enregistrés sur bande audio et transcrits. Par le biais d'une analyse de contenu générique, nous avons codé les transcriptions de manière itérative, identifié des catégories émergentes, appliqué des concepts sensibilisateurs et créé un cadre thématique.

**Résultats :** Trente-cinq étudiants (71 % de femmes) ont participé à cinq groupes de discussion. Deux thèmes ont été développés : biais MSG (corps professoral, patients standardisés [PS], étudiants, cursus) et expertise adaptative en habiletés cliniques (complexité des cas, soutien aux apprenants, développement des habiletés). Les PS qui se sont identifiés comme faisant partie de MSG ont amené de l'authenticité et une expérience vécue à leurs rôles. Les différences entre superviseurs ont eu un impact sur l'apprentissage des étudiants. Le manque de connaissances en matière de MSG chez certains membres du corps professoral inquiétait les étudiants lorsqu'il était accompagné de préjugés négatifs. Les cas complexes de PS ont favorisé l'échec productif, l'intégration cognitive et la préparation au travail clinique.

**Conclusions :** Les étudiants ont accordé de l'importance aux expériences vécues par les membres de la communauté MSG. Les préjugés inconscients au sein du corps professoral ont eu une influence négative sur l'apprentissage des étudiants. Les cas complexes de PS peuvent favoriser l'expertise adaptative des étudiants, mais risquent d'entraîner des lacunes concernant les apprentissages. Les leçons apprises ont des implications pour l'enseignement des habiletés cliniques, la familiarisation avec les populations minoritaires et l'éducation des professionnels de la santé et l'éducation médicale en général.

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## First year medical student experiences with a clinical skills seminar emphasizing sexual and gender minority population complexity

L'expérience d'étudiants en première année de médecine dans le contexte d'un séminaire sur les habiletés cliniques axé sur la complexité des minorités sexuelles et de genre

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### Abstract

**Purpose:** Patients identifying as sexual and gender minorities (SGMs) face healthcare barriers. This problem is partly due to medical training.<sup>1</sup> We evaluated first year medical student experiences during a novel four-hour seminar, in which students answered discussion questions, participated in peer role-plays, and interviewed two standardized patients

**Method:** A constructivist qualitative design employed audio-recorded and transcribed student focus groups. Using generic content analysis, transcripts were iteratively coded, emergent categories identified, sensitizing concepts applied, and a thematic framework created.

**Results:** Thirty-five students (71% female) participated in five focus groups. Two themes were developed: SGM bias (faculty, standardized patients [SPs], students, curriculum), and Adaptive Expertise in Clinical Skills (case complexity, learner support, skill development). SPs identifying as SGM brought authenticity and lived experience to their roles. Preceptor variability impacted student learning. Students were concerned when a lack of faculty SGM knowledge accompanied negative biases. Complex SP cases promoted cognitive integration and preparation for clinical work.

**Conclusions:** These students placed importance on the lived experiences of SGM community members. Persistent prejudices amongst faculty negatively influenced student learning. Complex SP cases can promote student adaptive expertise, but risk unproductive learning failures. The lessons learned have implications for clinical skills teaching, learning about minority populations, and medical and health professions education in general.

### Résumé

**Objectif :** Les patients qui s'identifient comme faisant partie de minorités sexuelles et de genre (MSG) se heurtent à des obstacles en matière de soins de santé.<sup>1</sup> Ce problème est en partie attribuable à la formation des médecins. Nous avons évalué l'expérience des étudiants en première année de médecine dans un séminaire inédit de quatre heures, au cours duquel les étudiants ont répondu à des questions dans le cadre d'une discussion, ont participé à des jeux de rôle entre pairs et ont interrogé deux patients standardisés.

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**Résultats :** Trente-cinq étudiants (71 % de femmes) ont participé à cinq groupes de discussion. Deux thèmes ont été développés : biais MSG (corps professoral, patients standardisés [PS], étudiants, cursus) et expertise adaptative en habiletés cliniques (complexité des cas, soutien aux apprenants, développement des habiletés). Les PS qui se sont identifiés comme faisant partie de MSG ont amené de l'authenticité et une expérience vécue à leurs rôles. Les différences entre superviseurs ont eu un impact sur l'apprentissage des étudiants. Le manque de connaissances en matière de MSG chez certains membres du corps professoral inquiétait les étudiants lorsqu'il était accompagné de préjugés négatifs. Les cas complexes de PS ont favorisé l'échec productif, l'intégration cognitive et la préparation au travail clinique.

**Conclusions :** Les étudiants ont accordé de l'importance aux expériences vécues par les membres de la communauté MSG. Les préjugés inconscients au sein du corps professoral ont eu une influence négative sur l'apprentissage des étudiants. Les cas complexes de PS peuvent favoriser l'expertise adaptative des étudiants, mais risquent d'entraîner des lacunes concernant les apprentissages. Les leçons apprises ont des implications pour l'enseignement des habiletés cliniques, la familiarisation avec les populations minoritaires et l'éducation des professionnels de la santé et l'éducation médicale en général.

## Introduction

Despite clear healthcare needs, sexual and gender minority (SGM) populations remain underserved. Patients identifying as LGBTQ2S (lesbian, gay, bisexual, transgender, queer, two spirit) face major barriers to equitable healthcare, including harmful prejudices and discrimination.<sup>2</sup> Taken-for-granted sexuality and gender assumptions in healthcare forms and dialogue between healthcare professionals and patients send implicit negative messages about providers' expectations of sexuality and gender. Therefore, SGM individuals often feel invisible or unwelcome.<sup>3</sup> The resulting stigma and prejudice can negatively influence physical and mental health thereby increasing prevalence of such obesity, smoking, cardiovascular disease, depression, suicidal ideation and other disorders.<sup>4-6</sup>

These gaps are arguably partly due to medical training;<sup>1</sup> insufficient training in SGM health and negative attitudes towards SGM individuals have been demonstrated in American and Canadian medical schools.<sup>7</sup> In response, North American medical schools are improving sexual health education and increasing SGM curricular experiences.<sup>8</sup>

Student medical knowledge and practices are constructed through social interactions within specific contexts and cultures.<sup>9</sup> At our institution, first year students learn communication skills through Integrated Clinical Experience (ICE) seminars. LGBTQ2S student leaders expressed concern that our curriculum did not teach the knowledge, skills, and attitudes necessary to address SGM patient needs. In response, a team of community organizations, students and faculty developed a novel sexual history-taking seminar first delivered near the end of the 2016-2017 academic year, after students covered basic communication theory and coinciding with lectures on endocrinology and hormone replacement theory. Local needs were continuously assessed through ongoing consultation with the University of Toronto Faculty of Medicine LGBTQ2S committee and LGBTQ2S student leadership. We constructed an infographic, a communication guide, and a sexual history-taking video to teach the basics of inclusive communication. During the four-hour seminar, students answered discussion questions, participated in peer role-plays, and interviewed two standardized patients (SPs). These strategies align with contemporary trends for improving SGM medical education.<sup>10,11</sup> All elements were developed, piloted and

revised with students to ensure user-centred design.<sup>12</sup> Approximately 259 medical students and 45 faculty participate annually. Students worked in groups of six, supervised by a faculty tutor. Faculty came from diverse medical specialities, often with no specific training in SGM health. Faculty were given the student materials, standardized patient cases and an answer guide with teaching tips.

SP cases reflected health and social issues encountered by SGM populations and required students to use reasoning skills to solve novel clinical problems. One case involved a transgender person with right lower quadrant pain, reproductive health worries and previous negative healthcare experiences. Another case was a socially isolated patient partaking in high-risk sexual activities and risky recreational substance use. SP scenarios aimed to promote adaptive expertise<sup>13</sup> by engaging students in scenarios with uncertainty, ambiguity and complexity. Students needed to cognitively integrate<sup>14</sup> their basic, clinical and social science knowledge to reason through problems.<sup>15</sup> We knew students would require assistance, but believed that through productive failures,<sup>16</sup> that is by struggling and not necessarily succeeding with complex tasks, our students would be better prepared for future clinical work.

Seminar success depended on managing student cognitive load<sup>17</sup> to avoid overwhelming them.<sup>18</sup> Cognitive load theory states that learners' limited working memory needs careful management to ensure space remains to build schemas and transfer new knowledge into long-term memory. We managed student cognitive load by modulating complexity, support and fidelity,<sup>19</sup> students interviewed in pairs; we encouraged pausing, discussing and repeating interview components, and students used low fidelity peer role plays to practice. We enhanced performance improvement by fostering deliberate practice.<sup>20</sup> Multiple opportunities to practice and obtain feedback were given, and our course manual contained well-defined goals.

This qualitative evaluation study explores how first year medical students experienced our SGM clinical skills seminar. We recognize this seminar is a context-specific and complex intervention; the stakeholders, institutional context and broader socio-cultural contexts all influence its success.<sup>21</sup> Therefore, we asked, what about this intervention works, how and, why? What recommendations can be made to other educators teaching clinical skills in the domain of SGM health? We

anticipated that lessons learned could have implications not only for SGM health education, but also for health professional education in general.

## Methods

### Study design

We used a constructivist qualitative design. Student focus groups provided multiple perspectives in an interactive setting. Our moderator team of 5 second year medical students was trained in focus group moderation. The University of Toronto Research Ethics Office approved this study (Protocol #: 00035848, February 24, 2018). Standard course evaluation data from the last three academic years was triangulated with focus group data. Our evaluation stance recognized many interwoven contexts be considered; thus, focus groups were a well-suited and cost-effective approach for analysis.<sup>22,23</sup>

### Procedure

Our moderator guide consisted of three open-ended questions based on seminar components, our collective experiences, and our research questions. First year University of Toronto medical students were recruited by email and social media prior to their clinical skills session for a 60-minute focus group and received a \$20 gift card and light refreshments. Each focus group of 6-9 students was audio-recorded, transcribed verbatim and deidentified.

### Data analysis

Drs. Biro and Song used generic content analysis<sup>24</sup> to independently review focus group transcripts line by line. Descriptive codes were iteratively refined by rereading, reflection and broader team discussion with Dr. Nyhof-Young. Common emergent categories were identified inductively and deductively, and a joint preliminary coding framework created. Sensitizing concepts from the curriculum's theoretical framing were applied.<sup>25</sup> External colleagues with expertise in program evaluation and adaptive expertise reviewed our interpretations and conclusions. Results were presented to students and teaching faculty at one of our teaching sites and feedback requested to further ensure interpretation trustworthiness.

## Results

Of 259 medical students partaking in the 2018 clinical skills session, thirty-five (74% female) participated in five focus groups. Most felt this was among their best clinical skills seminars:

*I also loved the ICE session and really felt like I walked away with tangible skills that I can carry forward. Picturing myself in clerkship and someone being like, take a sexual history, I feel like I could at least somewhat handle it and not make a fool of myself. (3.848)*

Data saturation was achieved. Two themes were developed: (1) SGM bias (faculty, SPs, students, curriculum), (2) Adaptive Expertise in Clinical Skills (case complexity, learner support, skill development).

Between 2017, 2018, and 2019, 83 of over 750 students attending the seminar completed course evaluations. Evaluations were blinded to investigators. Course comments were consistent with focus group transcripts: "This session was absolutely critical, and I would greatly encourage the faculty to continue it in future years." In 2019, our thematic analysis was presented immediately following seminar to about 25 students and 5 faculty members at Credit Valley Hospital. Students and faculty felt our results accurately depicted their experiences.

### SGM bias

**Faculty:** Students noted variability in the knowledge, attitudes, lived experiences and teaching abilities of preceptors. Students benefited most from faculty who self-identified as SGM or had clinical experience with SGM populations:

*I think our tutor, I'm not 100% certain, but I think he identifies as LGBT and, even though he was in a completely different specialty, his knowledge base on LGBT health was incredible. I think that's really useful to have. So, maybe if there's a way in future years to have more LGBT identified physicians leading these sessions on LGBT health. (3.343)*

Nonetheless, students did not expect SGM expert tutors, as long as they modelled personal humility, acceptance, and co-learning:

*It seems ubiquitous that people who had tutors that were not necessarily experts but were just coming from a place where you're all kind people, be humble, ask questions, we're all learning together, and this is going to be a really important learning. (...) They were coming with all sorts of other experience. But I still felt incredibly supported. (3.420)*

Students were concerned when a lack of faculty SGM knowledge accompanied negative biases:

*And the preceptor was saying that I don't understand why there are homosexual parents. The child needs to say mama and papa, and not mama and mama, like what about the papa? (1.119)*

*It is such a sensitive topic that you need to make sure your preceptor actually knows what they're talking about and aren't just spewing things that aren't really true and stuff. (1.149)*

*My ICE tutor (...) wasn't super familiar with a lot of it. One of his opening statements was that, he's like, what's with all the letters? So, like, trying to maybe make light of it, but, I'm not sure about how appropriate that is. Also, he said, all this stuff is only medically important in terms of hormones. And, I thought that was kind of minimizing, potentially, the health impacts that are involved with being LGBTQ. (2.332)*

Students recommended an explicit faculty development strategy for tutors: "I think the preceptors need to have some sort of training themselves, because I think there was a lot of variability." (1.85)

**Standardized patients:** Actors identifying as SGM in real life enhanced student learning through more accurate role portrayals, superior feedback, and lived experience discussions:

*We had someone [an SP] who identified as gay and someone who identified as trans. (...) It was educational, in the sense that they were teaching us about their lived experience, especially how to address them, the experiences that they've had in the health care system. (2.580)*

SPs not personally identifying as SGM were less beneficial:

*Having an SP pretend to be a transgender person is just not, at the end of the day, the same situation whatsoever and they haven't lived with the stigma. (...) It was very contrived, (...) she was reading a script. (5.660)*

**Students:** Students described variable prior SGM knowledge and exposure. Those with the least background benefited most: "I would say my lack of experiences within this field probably made the session even more informative than I'd imagined. And I think it really brought to light so many issues that are faced by this community of people."

(4.730) Some students felt comfortable attending this mandatory seminar; others intentionally avoided it:

*I actually know people that did take absences today to avoid this session. And I don't think that's a brush-asideable minority. I think there's a number of people that I know that were just like, SPs, sexual history, I'm not doing it, I know it's going to be brutal. And to be honest, I also had very low expectations for the session. (...) But my tutors came in with so much humility and so did my group, and just such a safe learning environment that was created, that it's been (...) my favourite session all year in terms of tangible skills (...) that I walked away with. (3.685)*

The seminar allowed many students to overcome their initial fears.

**Curriculum:** Students considered sexual and SGM topics as distinct and worthy of separate curricular time: "it would be nice to have a session on sexual health, because, honestly, I don't think I learned a lot about sexual health histories this time around (...) because I was so focused on the complexities of (...) LGBT." (2.716) Some worried combining topics propagated stereotypes associating high risk behaviours and sexually transmitted infections (STIs) with being an SGM:

*Sexual health (...) isn't just an LGBT issue. I think it's dangerous to conflate the two, because every time an LGBT-identified patient comes in with flu-like symptoms, you don't want to immediately assume HIV, because you don't want to tokenize your patients. (2.868)*

These students recommended that SGM content be better integrated and spiralled into the medical curriculum:

*It would be good to have some more sessions on this topic, because this particular session is so concentrated and almost isolated, in a way, and it's hard to digest everything. I think as we progress throughout medical school, (...) we can reinforce some ideas (...) again and also throughout clerkship. (2.704)*

Some requested greater emphasis on intersectionality:<sup>26</sup> "Where you could incorporate culture, socioeconomic status, sexual health, and LGBT identities, and whatever other social determinants of health." (2.725)

### Adaptive expertise in clinical skills

**Case complexity:** SP case complexity facilitated cognitive integration of students' medical, clinical and social science knowledge:

*This one [SP case] actually felt quite real. There was [sic] family planning concerns and relationship concerns and past medical history (...) That kind of went above and beyond just taking a sexual history, and I thought was good practice, really trying to discover the many levels to the patient and to what their hopes and their dreams are and anything that's helpful. (3.226)*

Working through these complex cases was like solving puzzles: "I (...) found it to be particularly good because there was a revealing of information that you weren't given from the start and it made the interview sort of iterative, because you went in not knowing the full story and you really are solving a mystery." (3.241) The SP cases also promoted speculation about the underlying pathology: "I really liked the SP cases, especially the ectopic pregnancy one. It was really cool. Comprehensive, made you think outside of the box, and it's not always about HIV and STI. It could be something else." (1.700) Many described the SP interviews as difficult, but necessary for clinical skill building:

*I actually did like the complexity of the case. I think it added to it, because usually, at least in my group, for standardized patients, you just sort of go through the whole thing, whereas people in my group were struggling with it and you had to actually take a second, pause, and ask people for advice. It was more interactive in that way, and everyone in the group was engaged, as opposed to just watching one person do the whole thing and then debriefing at the end. (...) The act of struggling and being in that awkward situation with a standardized patient is what you need to be comfortable with a real patient. (2.224)*

Some commented that simpler cases would not provide adequate preparation for real patients: "If you just have sort of a straight-forward case and then the next week you're on the ward and have a really complex sexual history, you're going to feel uncomfortable." (2.231) One student noted these cases encouraged deeper interpretation of SP responses, whereas simpler cases encouraged only rote questioning strategies, stating: "this session is the key, because some of the answers direct your next questions." (1.791)

Nonetheless, others described the cases as too complex: "It was kind of overwhelming to be faced with so many issues, especially ones that were just introduced kind of for the first time. (...) So I thought the complexity combined with the delivery kind of took away from my learning." (5.292) Likewise: "I thought that the standardized patient cases were actually quite complex and that they incorporated a lot of different situations, whether that be clinical or including the LGBTQ material in it. So, for a first-time student learning this material it was pretty difficult to grasp." (2.216)

Students also described learning to build empathic relationships by adapting to the patient narrative:

*People might feel very vulnerable answering these questions. (...) There's someone else on the other end who's also feeling very vulnerable and might be feeling uncomfortable. And just checking in with them (...), what they need, as well as what you're trying to do as a healthcare professional. (4.895)*

Some described the SP case complexity revealed personal biases: "I really appreciated how it made us aware of our own biases." (3.272) Similarly:

*One of my colleagues was talking with a transgender woman and they asked her if she had gotten a pap smear. And obviously that's a really awkward question to ask where someone who doesn't have external female genitalia. (...) Our intrinsic bias is that we're going to ask them feminine-specific questions. (5.542)*

**Learner support:** Respondents wanted a safe, non-judgemental learning space. Faculty stating teaching methods and accepting errors created this: "My ICE tutor kind of gave a preamble at the beginning, saying that we're not all familiar with these topics and feel free to ask questions. (...) That was really nice, because a lot of people who were coming into it really uncomfortable." (2.479) Similarly: "[Our tutor] was very open about it's okay to make mistakes at this point, like this is the point where you're going to be learning. (...) My preceptor was never like oh that's horrible. She was like okay, this is a learning opportunity." (5.542) Students feeling less supported were more risk averse: "My group was very hesitant to make mistakes and I think that was one of the problems. We didn't set that tone before and so everyone was afraid." (4.105)

Explicit course manual statements of seminar teaching methods held tutors to account to ensure consistent teaching practices:

*I found SP interviews very anxiety ridden throughout the year and have had some negative experiences. So, I appreciated the option to be [with] a partner and the fact that tutors were told students will interview in partners, because my tutors otherwise would have 100% just let me go alone. So, to have that actually written in the manual, students are to go in pairs and this is a learning experience, it's supposed to challenge you, but this is just to facilitate open conversation. Feel free to tap in and out whenever you want. I personally really appreciated that that was in the manual. That made me feel more comfortable volunteering immediately. (3.250)*

Many faculty preceptors were described as excellent, but students noted variability, expressing concerns about professionalism, teaching quality, and curriculum deviation. One said, "One of the students had a lot of trouble and said something, and then our tutor kind of chuckled. (...) Laughing is making it worse for a student that's already struggling." (4.552) Likewise, another asked, "Do your tutors actually follow the script? (...) I think my tutor is: I'm just kind of doing whatever." (1.499) Faculty development was recommended.

Longitudinal integration of this seminar into the broader clinical skills curriculum appeared to decrease its difficulty, "I found it really nice to have had a solid foundation in practicing taking histories, and at this point it's kind of more natural, and you're not grasping at straws, like oh, family history, social history. That part all flowed in your brain." (1.592) Novel content increased seminar difficulty, "We haven't covered the urinary system, so there were a few cases where a person presented with pain while they were peeing. Universally, as a group, we had no idea what to do with that." (3.357)

**Skill development:** Students described developing SGM clinical competence and societal responsibility as learning motivators, "Given this current social climate, it's important for us as healthcare practitioners to know the different populations we serve." (4.24) After repeated opportunities to practice communication skills, many students believed their performance improved: "With practice it became easier. So, the first SP interview was rough, but then once we started roleplaying and then we kept repeating, once you get the terminology down and the

phrasing down, you became more comfortable, and you became more at ease with the topic." (4.888)

Specific and actionable feedback from tutors, standardized patients, and peers, as well as direct modelling, supported skill development:

*If someone ran into awkward phrasing and wanted to time-out, [our tutor] would sort of go over how he would have approached it and give an example. (2.486)*

*If the interview is about to end in [our tutor's] opinion prematurely, he'll be like, okay, pause. Before we end, I just want you to think about this. Are there more questions you could ask about this? Is there something you're missing? The patient said this one comment about her family that was never touched upon more. (3.366)*

*The SPs could tell you what phrases you think are innocuous [that] might be offensive or maybe could be better worded. I think SPs are a good way to figure that out, rather than testing it on patients. (2.591)*

An earlier SGM patient panel discussing healthcare experiences was recommended for orientation:

*It would be really cool if before the session there was some sort of other session around LGBT health and an introduction to trans health, including community members, whether that's through a panel or something like that, that's actually integrated into the curriculum and not like an extra-curricular thing. (2.436)*

## Discussion

This study investigated first year medical students' experiences in a novel sexual history seminar on SGM health. Most students reacted positively, but not all, as was expected given their multiple interwoven contexts.

### SGM education

Our work underscores the importance students place on providing competent care for diverse populations. A significant part of this intervention and evaluation was created and led by students; student-faculty partnerships can be strong instigators for change.<sup>27</sup> Students desired an integrated approach to SGM competency development that span their training with dedicated curricular time.<sup>8</sup> Explicit focus on intersectionality<sup>28</sup> and providing non-SGM patient exemplars about issues such as STIs can help students avoid stereotyping and appreciate the diverse

identities and health issues within SGM communities. Our preclerkship curriculum maps SGM content<sup>29,30</sup> to ensure integration, spiralling and dedicated time. Sharing this map with students could better orient them to how SGM content integrates with broader curriculum.

Student interactions with SGM patients can deconstruct stereotypes,<sup>31</sup> these students highly valued SP's real lived experience. Likewise, students appreciated the knowledge of faculty identifying as a SGM. Our students also valued allied faculty who may not identify as SGM but had a constructive attitude and relevant clinical experiences. The development and empowerment of these allies should be prioritized<sup>8</sup> to avoid overtaxing SGM faculty.<sup>32</sup> Student feedback on variable faculty teaching and professionalism further reinforces the importance of faculty development initiatives. Explicit teaching instructions for faculty and students can also improve interventions. Unfortunately, student concerns are unsurprising given the discrimination SGM patients often encounter within healthcare settings.<sup>33</sup> Interestingly, none of the participants discussed how their sexual or gender identity impacted their experience perhaps suggesting an atmosphere limiting self-disclosure.<sup>34</sup> Community partnerships to develop seminars<sup>8</sup> and recruit standardized patients to co-teach has been a partial solution to these challenges at our school.

#### Adaptive expertise in clinical skills education

This study highlights the importance of explicit application of cognitive load theory and deliberate practice to early clinical skills training. Junior medical students valued experiences requiring adaptive expertise to solve novel problems. This study aligns with current consensus on the necessity for early introduction of clinical reasoning<sup>14,35,36</sup> in clinical skills education. Similar to earlier findings,<sup>37</sup> many of these students felt that struggling with complex tasks and concepts prepared them well for future patient care.

Intervention success depends on managing student cognitive load. As expected with a large class of diverse learners, some felt overwhelmed by many patient variables and novel content, leading to unproductive failures and lost learning opportunities.<sup>13</sup> Suggestions to manage cognitive load in medical education include increasing support, decreasing fidelity, and minimizing extraneous load.<sup>19,38</sup> Our study shows many junior medical students value working through complex problems often considered beyond their ability if enough explicit supports are in place. Further research should be conducted into why some thrive in this setting, while others become overwhelmed despite supports.

One contributor to students becoming overwhelmed is likely variation in faculty understanding of what clinical reasoning is,<sup>39</sup> and when it should be introduced.<sup>14</sup> We believe introducing an explicit clinical reasoning framework<sup>40</sup> early in training,<sup>35,41</sup> as done by others,<sup>42,43</sup> supports development of self-directed habits<sup>44</sup> needed to deconstruct complex clinical problems, rather than teaching rote strategies.<sup>18</sup> Faculty development is necessary for similar seminars, especially if students' desired cognitive activities vary from expected norms.<sup>15</sup> Interestingly, initial informal faculty feedback about our SP cases was that they were overly complex for junior medical students. Faculty may be unaccustomed to observing students struggle and may need strategies to help students connect their basic science knowledge to clinical practice and ensure struggle is productive.<sup>16</sup>

## Limitations

Our work has limitations. Participants may not be representative of our student population and could have self-selected for SGM health interest. For instance, participants were disproportionately female. This may lead to skewed results. However, respondents provided diverse opinions, data saturation was achieved, and students and faculty felt our thematic analysis reflected their diverse experiences. Similarly, investigators may have brought their own biases during qualitative analysis. Intentional diversity of perspectives and training within the team allayed this concern. Likewise, applying known theory to develop coding schemas increases risk of bias within our analysis, but resulted in a better theoretical understanding and program improvement. Our study design did not formally evaluate faculty experience, nor did we determine whether increased case complexity leads to future performance improvement.<sup>45</sup> Likewise, we did not evaluate how this seminar translates to future patient care. These are interesting future questions.

## Conclusion

Our user-centred evaluation explored what about this intervention works, how, and why. It shows the importance students place on the lived experiences of SGM community members. Although advances in SGM healthcare are occurring, prejudices persist that impact students' learning. Developing allies and promoting faculty development are necessary elements of future curricular interventions. Most participants valued case complexity, and this likely led to greater cognitive integration and promoted adaptive expertise, but careful planning is



necessary to minimize unproductive failures. Our lessons learned have broader implications for learning about minority populations and clinical skills teaching, and for medical and health professions education in general.

### Practice Points

We launched a novel sexual history-taking seminar for first year medical students in response to medical training gaps.

Students valued an integrated Sexual Gender Minorities (SGM) curriculum and felt interactions with patients effectively deconstructed stereotypes.

Some students noted clinician teacher biases and encouraged faculty development initiatives.

Students appreciated novel and challenging experiences, if supports were present to manage cognitive load.

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Curriculum available upon request.

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