Evaluation of LGBTQ+ Health Education in the Preclinical Curriculum at a Public Midwest Medical School

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ABSTRACT

Introduction: People who identify as lesbian, gay, bisexual, transgender, and queer/questioning (LGBTQ+) face health disparities and negative health care experiences. Medical student education may be leveraged as a strategy to improve care for these patients; however, studies suggest gaps in current LGBTQ+ health education.

Objective: This project sought to evaluate how LGBTQ+ health is taught in the preclinical curriculum at a Midwest medical school.

Methods: The institution's curriculum repository was searched systematically for materials that included information on LGBTQ+ health used in preclinical courses in the 2021-2022 academic year. Information was compiled based on previously utilized evaluation tools and additional measurements developed by the authors to provide further clarity.

Results: Seventy items were identified in the curriculum repository; 38 (54%) were required for students to review. Commonly addressed topics include communication skills, terminology, and variations in sex characteristics. Topic gaps identified include mental health, cancer screening, and gender-affirming care. Among the 33 clinical skills sessions in the preclinical curriculum, 5 standardized patient cases included LGBTQ+ patient representation.

Conclusions: There was variability in coverage of LGBTQ+ health topics, with particularly more on language and variations in sex characteristics and less on mental health, cancer screening, and gender-affirming care. This study identifies opportunities to improve LGBTQ+ health education and demonstrates a framework that may be applied to evaluate curricula in other programs, to ideally enhance coverage of this material and, ultimately, improve care of LGBTQ+ patients.

INTRODUCTION

People who identify as lesbian, gay, bisexual, transgender, and queer/questioning (LGBTQ+) tend to have worse health compared to their cisgender and heterosexual counterparts[1] and may have negative experiences when seeking health care.[2] LGBTQ+ communities also face myriad health disparities,[3-5] which may be driven in part due to LGBTQ+ individuals not feeling comfortable seeking care[3,6] or insufficient clinician knowledge about preventive care for these communities.[4]

Medical education may be one area of intervention to address LGBTQ+ health disparities and improve patient experiences by equipping students with knowledge and skills to serve LGBTQ+ individuals.[2,7] In 2014, the Association of American Medical Colleges (AAMC) published a report detailing 8 domains with 30 total competencies for medical students to address the needs of LGBTQ+ patients in medical education.[7] Of note, some people who are born with variations in sex characteristics (also known as differences in sex development) or who identify as intersex also identify within the LGBTQ+ community and are considered within the "LGBTQ+" umbrella in this study, and these communities also were included in the AAMC report.[7]

Despite these guidelines, since 2018, detailed evaluations of preclinical curriculum have been reported at only 4 private medical schools, all of which have found gaps in LGBTQ+ health topic coverage.[8-11] Different strategies were used across schools to evaluate curriculum content. A team at the Medical College

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of Wisconsin recently audited its preclinical curriculum compared to a textbook on sex and gender.[8] Two other studies utilized LGBTQ+ health learning objectives from Vanderbilt University to evaluate its curricula.[9,10] A team at Boston University developed a sexual and gender minority curriculum assessment tool (SGM-CAT) based on the competencies in the AAMC report, which it used to evaluate the curriculum.[11] In addition to these comprehensive curriculum evaluations, a number of other studies utilized data from student or faculty perceptions about their curriculum, which have also identified gaps in the LGBTQ+ health-related education at medical schools.[12] This project sought to evaluate the degree to which LGBTQ+ health topics are taught in the preclinical curriculum at a public medical school in the Midwest, in a state with mixed political ideologies and diverse perspectives on gender-affirming care and LGBTQ+ issues.

METHODS

Setting

The University of Wisconsin School of Medicine and Public Health (UWSMPH) is 1 of 2 medical schools in Wisconsin and the only public medical school in the state. It is located in Madison, Wisconsin, and has 3 statewide academic campuses with hubs in La Crosse, Marshfield, and Milwaukee, and teaching sites throughout the state. The curriculum in the MD program is organized into 3 "phases." Phase 1 is the preclinical part of the curriculum and consists of the first 18 months of medical school and focuses on basic sciences while integrating public health and clinical medicine. This phase is broken into 6 integrated preclinical blocks. Phase 2 consists of 12 months of integrated clinical rotations organized into 4 thematic blocks. Phase 3 involves the last 16 months of medical school and is dedicated to career exploration, acting internships, elective courses, and internship preparation.

Curricular Components

In the 2021-2022 academic year, the phase 1 curriculum included the following required learning experiences for preclinical students: 364 lectures, 18 classes with patients (eg, patient panel), 2 medium group learning sessions, 16 anatomy labs, 86 case-based learning sessions, 35 patient-centered education cases, 33 clinical skills sessions, 14 clinical learning experiences (eg, outpatient primary care preceptor clinic), 340 prework videos, 110 videos or assignments that were required to complete after lecture or another course activity, 178 other required prework learning activities (eg, a peer-reviewed journal article), and 43 other required sessions. That same year, the curriculum included the following optional aspects: 9 team-based learning sessions, 241 "core resources," and 438 "additional resources" or other optional materials. "Core resources" are written materials that are highly recommended for students to review alongside the corresponding lecture content. "Additional resources" may take the form of videos, websites, peer-reviewed articles, or other written materials that are provided to supplement students' learning, typically going in more depth or providing more context to the corresponding lecture content.

Identifying Curriculum Materials with LGBTQ+ Health Content

The institution's curriculum repository, managed through iSEEK (iSeek.ai), was searched systematically between August 2022 and September 2023 using terms related to LGBTQ+ identities for materials that included information on LGBTQ+ health used in preclinical courses in the 2021-2022 academic year. Specific terms used were "LGBT," "gay," "lesbian," "transgender," "trans," "intersex," "queer," "non-binary," "nonbinary," "homosexual," "transsexual," "sexual and gender minorities," "gender dysphoria," "gender fluid," and "gender-incongruent." All materials with any mention of LGBTQ+ health were included for review and analysis.

The standardized patient cases used to teach clinical skills sessions are not provided to students and, therefore, are not accessible through the curriculum repository. Members of the clinical skills team provided the cases that included LGBTQ+ identifying patients to the research team for review for this project. These cases are used in clinical skills sessions that involve groups with 4 students each, who work with a standardized patient actor who portrays the patient in the written case scenario. The written patient cases are provided to the standardized patient as a guide, and the precise details of what is discussed in the scenarios with students can be variable. The gender identity, pronouns, sexual orientation, and presenting concerns for each standardized patient case were recorded.

Curriculum Material Review

Information from all materials identified as having any material related to LGBTQ+ health was recorded, including the following: if it was a material that was required or optional for students to review, the block during which the material was provided, the type of material (eg, lecture, case-based learning session, team-based learning session, or anatomy session), and the amount of the material that was dedicated to LGBTQ+ health. This amount was determined based on the percentage of slides in presentations or sentences in written documents that were specific to LGBTQ+ health and were classified as $<5\%$, ≥ 5 and $<25\%$, ≥ 25 and $<50\%$, $\geq 50\%$ and $<75\%$, ≥ 75 and $<100\%$, or 100%. The percentages were determined for each material individually and designated by the amount of the material that addressed any aspect of LGBTQ+ health.

The parts of the material specific to LGBTQ+ health were compiled into a spreadsheet based on the criteria in the SGM-CAT[11] and Vanderbilt University learning objectives as described in other medical school curriculum evaluations.[9,10] Both tools were used in an effort to support a more robust evaluation of

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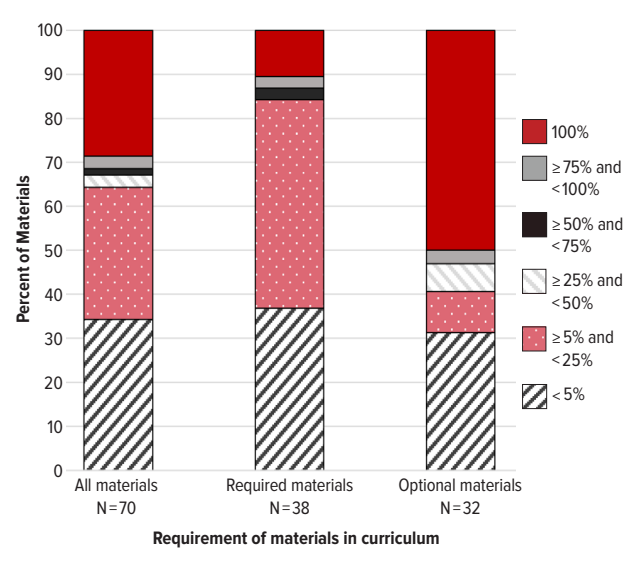
the curriculum with opportunities for comparison of curricula across programs as these tools were used at different institutions. Given the variable nature of what might be discussed specifically in standardized patient cases, these cases were included for the "standardized patient cases" learning objective but were not included as containing information about any other specific topics.

Materials also were given a rating on the depth of their coverage of each learning objective or tool criteria. The rating when material on the topic was present could be "+," "++," or "+++." The criteria for this rating scale were developed by the authors, and then 1 author (TIJ) scored the materials accordingly, and all questions were discussed with the senior author (EMP) to come to consensus. This scale was developed as the authors found that the frequency of times a topic in the SGM-CAT or Vanderbilt University learning objectives was mentioned across curriculum items did not correlate consistently to the amount of material in total that students received on the topic, as one curriculum item may mention the topic peripherally while another devotes the majority of the material in the item to the topic. For each topic in the SGM-CAT and Vanderbilt University learning objectives, all corresponding content for the topic across all required and optional curriculum materials was compiled and the depth rating was made based off of the compilation on each topic across the preclinical curriculum. Of note, the standardized patient cases were excluded from the determination of amount and depth of the material dedicated to LGBTQ+ health given the high potential for variability between different actors and how scenarios unfold depending on student approaches and questions.

The depth rating "+" corresponds to limited coverage of topic; for example, the topic is mentioned in a sentence or figure in 1 or more materials but further context not provided. The depth rating "++" corresponds to moderate coverage of topic, in which the topic is explained in some detail, however, there are essential gaps that are not covered. For example, for the SGM-CAT item "contraception, family planning, and fertility," a rating of "++" was made for the required preclinical curriculum materials because across all required materials, fertility (including fertility preservation) and aspects of family planning were discussed related to LGBTQ+ health, but there was very limited discussion of contraception within LGBTQ+ health. Specifically, this included content from a lecture about fertility, conception, and family planning that described key considerations related to this topic for LGBTQ+ communities in clinical care (eg, the importance of discussing fertility preservation before initiating gender-affirming hormonal medications or surgery that long-term estrogen exposure may damage testicles) as well as hypothetical cases students were led through in order to learn about fertility options (eg, cryopreservation, gestational carrier) for different couples (specifically a transgender woman in a relationship with a cisgender woman and a transgender man in a relationship with a cisgender man). The only mention of contraception related to LGBTQ+ health was a note in a lecture about LGBTQ+ health equity that stated that medical provider discrimination may include chastising someone for not taking birth control despite it being irrelevant to them in a same-sex relationship. There was no discussion around the fact that some providers may not offer contraceptives to female patients in a same-sex relationship due to an assumption that they don't need contraception, as well as no discussion about the fact that testosterone is not a form of contraception, which can be a common misconception.

Figure 1. Percentage of the Required and Optional Materials by the Degree They Were Devoted to LGBTQ+ Health



Abbreviation: LGBTQ+, lesbian, gay, bisexual, transgender, and queer/questioning.

The depth rating "+++" corresponds to thorough coverage of topic, in which the topic is explained to a level of detail that would provide sufficient coverage for a medical student to have at least a basic understanding of the full concept, but not necessarily including all detail that an expert in this field would have. For example, the Vanderbilt University learning objective topic "gender dysphoria vs transgender" in required materials received a rating of "+++" because the 1 curriculum item that addressed this, which was a lecture about terminology, defined transgender and gender dysphoria and also explained how the terms were similar and different.

RESULTS

Seventy items in the preclinical curriculum were identified in the curriculum repository as having material related to LGBTQ+ health. This included 23 lectures, 8 core resources, 1 case-based learning session, 24 additional resources, 4 materials for clinical skills sessions, 1 prework video, and 9 other required preparation materials. Thirty-eight (54%) items were required for students to review and 32 (46%) were optional. Across the 33 required

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clinical skills sessions in the preclinical curriculum, 4 sessions included at least 1 case that portrayed an LGBTQ+ identifying patient, and 5 total patient cases were identified.

There was wide variability regarding how much of the required and optional material was dedicated to LGBTQ+ health-related content. This is displayed graphically in Figure 1. Among required course materials, almost half (46%) of the materials consisted of between 5% and 25% LGBTQ+ health content, with 36% having less than 5%, 3% from 50% to 75%, 3% from 75% to 100%, and 10% were fully dedicated to LGBTQ+ health content. Among optional course materials, half (50%) were 100% focused on LGBTQ+ health content, with 31% having less than 5%, 9% having 5% to 25%, 6% having 25% to 50%, and 3% having 75% to 100 % of their content devoted to LGBTQ+ health content.

The number of required and optional materials that addressed the Vanderbilt University learning objectives and SGM-CAT criteria, as well as the depth provided for each item, are displayed in Tables 1 and 2, respectively. The most frequently addressed of the Vanderbilt University learning objective topics were "communication/interview skills," embryology–variations in sex characteristics, and "embryology–gender vs sex." (Note that the language used in the tool for "embryology–variations in sex characteristics" was "disorders of sex development;" however, given the outdated and pathologizing nature of this terminology, we use "variations in sex characteristics"[13] instead.) The depth of coverage for these 3 topics was comprehensive across both the required and optional materials (consistent rating of "+++"). Other topics that were not covered as frequently but had a high depth rating included "embryology – changing terminology" and "gender dysphoria vs transgender."

The following topics were never mentioned in the required or optional curriculum materials: "availability/efficacy of rectal microbicides," "eating disorders in MSM (men who have sex with men)," "gay couples and fertility options," "increased heart disease rate in lesbians," "puberty suppression in management of trans youth," and "vaginitis spread in lesbians."

Table 1. Frequency of Vanderbilt University LGBTQ+ Health Learning Objectives, as Reported in Other Studies,[9,10] in Required and Optional Preclinical Curriculum Materials

Topic	Both	Required Materials		Optional Materials	
	N	N	Depth	N	Depth
Communication/interview skills	24	15	+++	9	+++
Embryology: variations in sex characteristics[a]	20	8	+++	12	+++
Embryology – gender vs sex	13	6	+++	7	+++
Assumptions/biases	9	6	++	3	+
Transitioning options and associated risks	8	2	+	6	++
Standardized patient cases	6	6	++	0	N/A
Embryology – changing terminology	5	2	+++	3	+++
LGBTQ+[b] patients and having children	5	3	++	2	++
Intake forms	4	2	++	2	++
Problem-based learning integration	4	4	++	0	N/A
Exclusive WSWs: Pap, breast exams, and HPV screening	3	0	N/A	3	++
HIV in MSM	3	1	+	2	+
LGBTQ+[b] teen issues	3	1	+	2	+++
Sexually transmitted infection recommendations in MSM	3	1	+	2	+
Substance abuse screening	3	1	+	2	+++
Depression and suicide rates in LGBTQ+[b] teens/adults	2	0	N/A	3	+++
Depression screening	2	0	N/A	2	++
Gender dysphoria vs transgender	2	1	+++	1	+++
Hormone therapy pharmacology	2	1	+	1	++
MSMs and need of hepatitis A/HPV shot	2	1	+	1	+++
Sexually transmitted infections in lesbians	2	1	+	1	+
Anal cancer risks, treatment, anal Pap in MSM	1	0	N/A	1	+
Anal Paps	1	0	N/A	1	++
Gay teen issues	1	0	N/A	1	+
Lesbian nulliparity and risk of breast/ovarian/cervical cancer	1	0	N/A	1	+
Lesbian obesity	1	0	N/A	1	+
Availability/efficacy of rectal microbicides	0	0	N/A	0	N/A
Eating disorders in MSM	0	0	N/A	0	N/A
Gay couples and fertility options	0	0	N/A	0	N/A
Increased heart disease rate in lesbians	0	0	N/A	0	N/A
Puberty suppression in management of trans youth	0	0	N/A	0	N/A
Vaginitis spread in lesbians	0	0	N/A	0	N/A

Abbreviations: HPV, human papillomavirus; LGBT, lesbian, gay, bisexual, and transgender; LGBTQI, lesbian, gay, bisexual, transgender, questioning/queer, and intersex; MSM, men who have sex with men; Pap, Papanicolaou test; WSW, women who have sex with women.

[a]The language used for this item was "disorders of sex development," however given the outdated and pathologizing nature of this terminology, we use "variations in sex characteristics"[13] instead.

[b]The acronym used for these items was either "LGBTQI" or "LGBT;" however, for clarity and consistency with the rest of the manuscript, this is instead listed as "LGBTQ+."

The most frequently addressed SGM-CAT topics were "terminology and language use," "development of gender and sexual identity across lifespan," and "comprehensive sexual history." There were many materials that mentioned information related to "development of gender and sexual identity across lifespan," but the majority (12 of 15) were in optional course materials, and the depth of coverage of this topic in the required curriculum was minimal. The SGM-CAT topics with the most comprehensive coverage based on depth ratings were "terminology and language use," "comprehensive sexual history," "health and health care disparities and inequities," and "health care trust and dis-

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crimination." While all SGM-CAT topics were mentioned at least once across the required and optional materials, the topic "mental health" was addressed only in optional course materials. The number of materials that mentioned SGM-CAT topics are displayed in Figure 2.

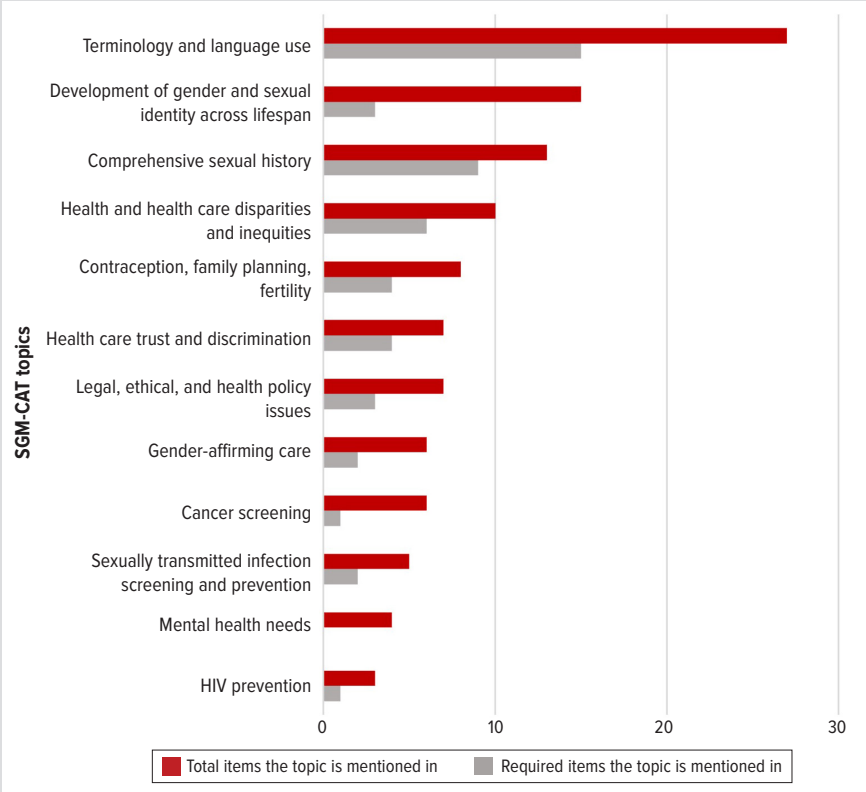
Among the 33 required clinical skills sessions in the preclinical curriculum, 4 sessions included standardized patients with LGBTQ+ identities, with 5 total LGBTQ+ patient cases. These sessions focused on inclusive sexual history, reproductive endocrinology, gastrointestinal conditions, and motivational interviewing. The patients represented include 3 men (all use he/him pronouns), 1 woman (she/her), and 1 nonbinary person (they/them). Further information is not provided in this manuscript given that these cases may continue to be used in the curriculum for student instruction.

Table 2. Frequency of SGM-CAT[11] LGBTQ+ Health Topics Across Required and Optional Preclinical Curriculum Materials

Topic	Both	Required Materials		Optional Materials	
	N	N	Depth	N	Depth
Terminology and language use	27	15	+++	12	+++
Development of gender and sexual identity across lifespan	15	3	+	12	++
Comprehensive sexual history	13	9	+++	4	+++
Health and health care disparities and inequities	10	6	+++	4	+++
Contraception, family planning, and fertility	8	4	++	4	+
Legal, ethical, and health policy issues	7	3	++	4	++
Health care trust and discrimination	7	4	+++	3	++
Cancer screening	6	1	+	5	+++
Gender-affirming care	6	2	+	4	++
Sexually transmitted infection screening and prevention	5	2	+	3	++
Mental health	4	0	N/A	4	++
HIV prevention	3	1	+	2	+

Abbreviations: SGM-CAT, sexual and gender minority curriculum assessment tool; LGBTQ+, lesbian, gay, bisexual, transgender, and queer/questioning.

Figure 2. Frequency of Items That Mention Each of the 12 SGM-CAT Topics Across Preclinical Curriculum



Abbreviations: SGM-CAT, sexual and gender minority curriculum assessment tool.

DISCUSSION

This evaluation of the preclinical curriculum at a public institution in the Midwest determined that while several topics related to LGBTQ+ health are covered in the curriculum, there remain multiple gaps in how comprehensively some topics are addressed and whether some topics are addressed at all—particularly among materials that students are required to engage with. Topics with more comprehensive coverage included communication/interview skills, terminology/language use, a comprehensive sexual history, and variations in sex characteristics. Notable gaps identified in the curriculum based on the evaluation tools utilized included mental health, sexually transmitted infection screening and prevention, cancer screening, and gender-affirming care. Four of 33 clinical skills sessions were found to have standardized patients with LGBTQ+ identities. There was also variability of coverage of the topics across the required versus optional course materials, which is important to consider as students could miss key information if they solely utilize the required materials.

To our knowledge, 4 other medical schools in the United States have conducted comprehensive evaluations of how their curriculum covers LGBTQ+ health topics since 2018. Of note, all of these programs are at private medical schools and are located in Massachusetts,[11] Washington, DC,[9,10] and Wisconsin.[8] While the framework utilized at these schools varied from one another and the procedure used in this study, there were areas of strengths and weaknesses identified in the curriculum across all schools as it related to LGBTQ+ health content coverage. For example,

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compared to the findings, as reported by course directors from the institution that developed and utilized the SGM-CAT,[11] our curriculum similarly had multiple instances where the following topics were discussed: terminology and language, health disparities and inequities, and health care discrimination and trust. Differences between the 2 preclinical curricula included that our curriculum appears to have less information on gender-affirming care and mental health but more information on a comprehensive sexual history and contraception, family planning, and fertility. Compared to the 2 studies that evaluated their curricula based on the Vanderbilt University learning objectives,[9,10] the only topics that were not covered across all 3 curricula were vaginitis spread in lesbians and availability/efficacy of rectal microbicides. When comparing topics that were covered across the 3 curricula, it was variable which topics were covered to a more comprehensive extent. Communication and interviews skills were covered comprehensively across all 3 curricula. Compared to the 2 other institutions,[9,10] our institution appeared to have more material devoted to embryology and variations of sex characteristics and less related to depression screening and aspects of gender-affirming care.

In 2011, it was reported that there was median of 5 hours of LGBTQ+ curriculum delivered in preclinical and clinical curriculum at medical schools across the United States and Canada.[14] Given that the LGBTQ+ content in our curriculum is integrated into blocks with other content and different teaching formats and the curriculum evaluation methods we used, it is difficult to accurately determine the hours spent on LGBTQ+ preclinical curriculum in this study. More important than the number of hours, however, is the breadth and depth of relevant topics students learn that will enable them to optimize care and health outcomes for LGBTQ+ patients across a wide range of clinical specialties.

While there were a number of LGBTQ+ health topics in the preclinical curriculum identified with limited coverage, we will focus on areas we believe are particularly important given health disparities faced by LGBTQ+ communities. There was a major deficit in the preclinical curriculum of information about mental health—including depression and suicide—as it relates to LGBTQ+ health. Given that LGBTQ+ individuals face disproportionate rates of mental health conditions, substance use, self-harm, and suicide,[3] it is essential to consider how physician education can be leveraged to address these health disparities. Similarly, our evaluation found a paucity of content on cancer screening for LGBTQ+ communities in the required preclinical curriculum, which also is essential to address given the higher rates of cancer but lower rates of screening in these populations, and it is thought that the lack of clinician knowledge contributes to this disparity.[4] Lastly, our curriculum lacked information on many aspects of gender-affirming care. Transgender individuals experience numerous health inequities, and medical education has been identified as a mechanism to improve care and health for this population.[5] While a variety of specific curriculum interventions have been studied related to LGBTQ+ health, including gender-affirming care,[12] we are not aware of interventions that focus specifically on mental health or cancer screening. However, these topics all are encompassed within competencies published in the 2014 AAMC report, which includes clinical scenarios and discussion points that address the topics that could be integrated in medical school curricula.[7]

There are a number of aspects that need to be considered to fully unpack the landscape of LGBTQ+ health education and medical student learning. Due to the integrated nature of this curriculum, LGBTQ+ topics were spread longitudinally across the preclinical curriculum. In this longitudinal fashion, it is important to strive for consistency in inclusive language use across all coursework. As described in a recently published article, this should include using person-first language, avoiding stereotypes, and using gendered language accurately and only when necessary.[15] The clinical curriculum also should be evaluated to confirm vertical integration of these topics from the preclinical curriculum. Of note, this may look different across individual institutions based on the organization of content in the preclinical curriculum. Beyond the core curriculum, educators also should consider how students are using optional resources or extracurricular activities in their learning about LGBTQ+ health.

It is also important to consider how the landscape of topic coverage in the curriculum may or may not align with student knowledge or preparedness to care for LGBTQ+ patients. Therefore, future study with student input is needed to solidify the key curricular components that will prepare medical students to care for LGBTQ+ patients in appropriate and affirming manners. Future studies that examine how students' skills and knowledge about LGBTQ+ health are assessed during medical school and how that translates to patient care outcomes would be important. This also would be an essential step in clarifying the optimal distribution and depth of coverage of LGBTQ+ health topics in medical school education, with the goal to best prepare all students to care for LGBTQ+ individuals.

Strengths and Limitations

A key strength of this study is that it includes a comprehensive search and review of all materials provided in the preclinical curriculum, such as required lectures, required prework materials, and optional materials for additional information, among other curricular materials. Another strength is that we quantified the amount of LGBTQ+ health-related content in each material, which provides additional context into how much of this content students were provided.

Limitations of this study are that only the preclinical curriculum for 1st and 2nd year phase 1 medical students in 1 time period was evaluated, and materials were identified from a data-

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base search using selected key terms. It is important to note that some relevant material might not have explicitly included the search terms we used, and, therefore, some material could have been missed. There is also variability in the language and terminology used between different instructors. Furthermore, we did not assess the degree to which students used the optional materials. Lastly, while we made an effort to quantify the amount of the material that focused on LGBTQ+ health, we do not know the precise time that faculty members spent teaching this content or the time that students spent learning the content.

CONCLUSIONS

Existing frameworks for curriculum evaluation were leveraged and adapted to evaluate and quantify the coverage of LGBTQ+ health topics in the UWSMPH preclinical curriculum. This study identifies areas of strength and opportunities for improvement in the delivery of LGBTQ+ content in this preclinical curriculum. It further demonstrates a framework that may be applied to evaluate curricula in other programs and ideally promote enhanced coverage of this material and improve health, health care, and experiences of LGBTQ+ patients.

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