

ASSESSING THE CURRENT STATUS OF AND DEVELOPING BEST PRACTICES IN
THE DELIVERY OF SEXUAL AND GENDER MINORITY CONTENT IN PA
EDUCATION: A MIXED METHODS APPROACH

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ABSTRACT

Background: A strategy aimed at reducing the health disparities experienced by sexual and gender minority (SGM) populations is to ensure health care providers are well equipped to care for them. There is a gap in the health professions literature addressing best practices for delivering this content in training. This research aims to assess the current status of and to identify PA educator beliefs about best practices in the delivery of SGM content in PA education.

Methods: This mixed methods study was guided by queer theory and curricular development practices. Quantitative data was obtained through a survey sent to all US PA programs in 2021. Questions addressed amount, delivery, and importance of lesbian, gay, bisexual, transgender, queer, (LGBTQ) content and how well students are prepared to care for LGBTQ patients. Data was analyzed with bivariate and multivariate methods. Qualitative data was obtained through 5 focus groups with expert PA educators exploring their perceptions about best practices in the delivery of SGM content in PA education. Focus groups were conducted from April to May

2024. Content analysis was completed by 2 coders using both inductive and deductive methods. A comparison of results from quantitative and qualitative analyses was conducted to evaluate for convergence.

Results: The questionnaire had a 71.8% response rate (204 out of 284 responded) and showed that the majority of PA programs teach between 1 to 3 hours on each LGBTQ content area and integrate the content throughout their curricula. Multivariate analyses showed increased odds of having adequately or well-prepared students with knowledgeable faculty members (AOR=6.16; 95% CI 2.97, 12.78) and teaching more than 3 hours of LGBTQ+ content (AOR=5.20; 95% CI 1.60, 16.82). Qualitative analyses revealed expert PA educator beliefs about best practices including topics to include in the curricula, ideal teaching approaches, necessary student competencies, and barriers and facilitators to inclusion of SGM content.

Conclusion: Convergence of findings resulted in 8 consensus best practices for the inclusion of SGM content in PA education. PA education accreditation standards require the inclusion of SGM content in PA education and findings from this study may serve as a guide for evaluating and integrating content.

Keywords: LGBTQ+, PA education, best practices, public health, sexual and gender minority, mixed methods

Assessing the current status of and developing best practices in the delivery of sexual and
gender minority content in PA education: a mixed methods approach

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CHAPTER 1: INTRODUCTION

Background

The increased health disparities experienced by people who are sexual and/or gender minorities (SGM)^{1,2} are a concerning public health problem.³ People who are SGM and have poorer physical and mental health outcomes than their heterosexual and/or cisgender peers^{3,4} and experience barriers to health care such as stigmatization and discrimination in the healthcare system.⁵ The number of people who identify as SGM is rising⁶ and there is a shortage of providers knowledgeable about their healthcare needs.^{5,7} Physician Assistants (PAs) fill gaps in healthcare⁸ including shortages in rural areas and in caring for medically underserved populations.⁹ As a growing profession,¹⁰ PAs are well suited to support improved access for people that are SGM. This requires that PAs receive the necessary training to provide high quality care to SGM patients. Currently, the literature describing the extent of SGM content in PA curricula or best practices in content delivery is sparse. The purpose of the current research is to identify proposed best practices in the delivery of SGM content for PA education through mixed methods study of current and ideal practices.

The term, SGM, is a broad term used to describe multiple identities and forms of expression including: those who identify as lesbian, gay, bisexual, asexual, transgender, Two-Spirit, queer, and/or intersex, in addition to others who may not identify with these terms but have an orientation, identity, expression, or reproductive development that is characterized by non-binary constructs of sex, gender, or sexual orientation.¹¹ By this definition, SGM populations include many diverse and distinct identities and while the term SGM is used in this paper, the author acknowledges the unique experiences, needs, and perspectives of identity

groups and individuals within identity groups as well as the potential intersectionality of any SGM identity with other historically marginalized groups.

The numbers of people who openly identify within SGM populations is growing, particularly among younger generations.⁶ In 2022, a national survey of adults showed that 7.2% of US adults consider identify as LGBTQ compared to 3.5% in 2012. This demographic shift is most pronounced among the youngest generations with 19.2% of Generation Z (born 1997-2004) and 11.2% of Millennials (born 1981-1996) reporting a LGBTQ identity.⁶ These increases have important public health implications that include addressing the health disparities experienced by SGM people and having an appropriately trained healthcare workforce that is prepared to address the unique needs of SGM patients.

Initiatives to Identify and Address Health Disparities

Health disparities experienced by SGM populations have received increased attention in the last few decades. In 2011, the Institute of Medicine (IOM) convened a committee at the request of the National Institutes of Health (NIH) to conduct a review of research on the health status of lesbian, gay, bisexual, and transgender (LGBT) populations to identify health issues and health disparities. Their findings showed that LGBT youth were at an increased risk for depression, suicidal ideation, and substance use, that they were disproportionately represented in the homeless youth population and experienced higher rates of violence and victimization than their heterosexual cisgender peers. Similarly, LGBT adults were at an increased risk for mood and anxiety disorders, depression, substance use, and suicidal ideation than heterosexual adults. Lesbians and bisexual women had higher rates of obesity and breast cancer than heterosexual women. Black and Latino men who have sex with men were disproportionately affected by HIV and AIDS and SGM people are more likely to experience stigma, discrimination, and violence.

Aging LGBT adults were more likely to have experienced stigma, discrimination, and violence across the lifespan than their heterosexual peers.¹

In response to this public health problem, multiple national initiatives were established. The American Association of Medical Colleges (AAMC) published a set of 30 recommended competencies for medical students on sexual orientation, gender identity, and sex development with a framework for curricular implementation in 2014.¹² The competencies were developed to help address the health disparities by providing education about the specific health needs of SGM people, to support medical schools in integrating this content into their curriculum, to provide a framework to assess learners, curriculum, and institutional climate, and to highlight resources and/or curricular innovations specific to SGM healthcare.¹² Similarly in 2015, the American College of Physicians (ACP) made a series of recommendations¹³ to promote equity in the healthcare system. Among these recommendations was the incorporation of LGBT health issues into medical school, residency program, and continuing medical education curricula.¹³ In 2016, the NIH made a formal designation of SGM as a population experiencing health disparities for NIH research.¹⁴ The Office of Disease Prevention and Health Promotion included goals addressing the health, safety, and well-being of LGBT people in Healthy People 2020 and Healthy People 2030.^{3,15}

Among healthcare providers including physicians, nurse practitioners, and PAs, the PA profession is the only profession that currently has accreditation standards specifically requiring delivery of curricular content on the care of SGM people.¹⁶ The standards were published in 2019 by the Accreditation Review Commission on Education for the Physician Assistant (ARC-PA) and state that “the curriculum *must* provide instruction to prepare students to provide medical care to patients with consideration for: disability status or special health care needs,

ethnicity/race, gender identity, religion/spirituality, sexual orientation, and social determinants of health.”¹⁷ These accreditation requirements apply to all United States (US) accredited PA programs. The National Commission on the Certification of Physician Assistants (NCCPA), the only certifying body in the US for PAs, also included “knowledge of human sexuality and gender identity, gender transition, and associated medical issues” as topic areas for the national certification exam beginning in 2019.¹⁸ Through these efforts, national PA organizations have indicated that SGM content is necessary in education, however there are no clear benchmarks for amount of content necessary or best practices for delivery of SGM curricula.¹⁹

Introduction

Delivering training on caring for SGM people can improve healthcare provider attitudes, knowledge, skills and behaviors,²⁰ and many healthcare professions have acknowledged the need for increased SGM content within their respective curricula.^{21–23} Numerous examples of single institution curricular activities are described in the medical education and nursing literature.^{23,24} Despite the increased attention and efforts aimed at improving SGM content in health professions education, there is a lack of information about the current amount of coverage and delivery of SGM content in the health professions. A landmark study describing the amount of SGM coverage during medical school dates back to 2011 and showed that medical students only received an average of 5 hours of instruction on caring for SGM patients across their 4 years of medical school.²¹ A follow up study conducted 2021-2022 showed the median number of hours of SGM content increased to 11.²⁵ Other studies in the medical education literature describe curricular innovations in medical schools but there is a lack of consensus in the timing or delivery of SGM content.²⁴

Research specifically on SGM content in PA education is limited. A study by Seaborne et al (2014) showed that SGM content is most frequently delivered in didactic settings in PA

education and that transgender healthcare receives the least coverage.²⁶ This 2014 study (n=106) was primarily focused on sexual health content in PA education.²⁶ While it provided valuable insights on LGBT health content in PA education, results may not be representative of all PA programs and may be outdated given the increased attention to SGM health in the last several years. Rolls et al (2020) specifically focused their research on transgender content in PA curricula described the amount of and approach to curricular delivery of transgender health content in accredited PA programs.²⁷ Their research described the number of hours devoted to transgender content, courses in which it was taught, and perceived importance of transgender content.²⁷ As the first study specifically addressing the amount of transgender health content in PA education, it made significant contributions to literature. However, the research was conducted prior to implementation of PA education accreditation standards requiring specific SGM content and did not include any information about teaching students to care for identities other than transgender identities. There are no studies in the PA education literature which describe the current status of SGM content in the curricula or best practices in content delivery.

Problem Statement

There is a gap in the current PA education literature that characterizes the extent to which future PAs are educated on caring for SGM populations despite recognition of the importance of this training.²⁸ The literature includes examples of curricular activities at single institution in addition to the previously mentioned national study which explored transgender curricular content in PA education.¹⁶ There are currently no studies which describe implementation of content for all SGM identities across PA programs nationally or that explore differences and factors associated with content delivery. PA program characteristics associated with SGM content delivery may be of interest to potential students who are encouraged to look at PA programs' curricula in making decisions about which program to attend.²⁹ Additionally, while

the PA literature does include a few publications focused on ways to include SGM content into PA education,^{16,19} best practices in content delivery have not been established. The lack of national guidelines in implementing SGM curriculum has been noted as a barrier to curriculum implementation in medical education.³⁰

The overarching goal of the current research is to establish best practices in the delivery of SGM content in PA education. The research questions are guided by Kern's 6-step model for curriculum development³¹ and are informed by a queer theoretical framework.

Research Questions

1. What is the status of SGM curriculum in PA education?
 - a. How much content is currently being delivered and what approach is being used to deliver it?
 - b. What factors (i.e. region, rural/urban, public/private) are associated with differences in the delivery of sexual and gender minority content across accredited PA programs?
2. What are PA educators' perceptions about best practices in delivering SGM content?
 - a. What are the necessary student competencies in caring for SGM individuals?
 - b. What barriers might prevent and/or what facilitators might support implementation of best practices or assessment of competencies?
3. What is the current consensus on best practices in the delivery of SGM content in PA education?

Findings from this research will support an understanding of and ability to improve PA education in this topic area. Quantitative results will fill gaps in the literature for PA education and more broadly medical education as no current benchmarks exist. Qualitatively, outcomes from this research will provide insights into possible best-practices in SGM content delivery and

PA student competencies related to caring for SGM patients. The study will contribute to strategies that support PA-delivered healthcare for SGM populations and to reduce health disparities and improve outcomes for SGM patients.

CHAPTER 2: LITERATURE REVIEW

This chapter reviews the literature on SGM content in PA and medical education and describes the theoretical paradigm and conceptual model informing the current research.

Search Strategies

The literature review was conducted through a keyword search of databases including PubMed, Elsevier Scopus, ProQuest Central, and CINAHL. Results were limited to peer-reviewed journal articles in English with no restriction on publication timeframe. Specific keywords included [(lesbian OR gay OR bisexual OR transgender) AND physician assistant AND education] which yielded 10 results of which only 4 were research studies. Search terms were thus expanded to include (LGBT AND education AND medicine) and (LGBT AND pedagogy). Duplicates from the prior search were eliminated and titles of abstracts from the queries were reviewed to restrict the literature review to peer reviewed academic literature. A total of 34 articles were reviewed. Of these, 16 quantitative, 5 qualitative, and 2 mixed methods studies were reviewed. Ten publications focused on the pedagogy of SGM content in medical and PA education were also included. A review of the literature follows and is organized according to publication type. The pedagogical literature is described first as it largely preceded the body of research in this area. It is followed by a summary of quantitative, qualitative, and mixed methods studies.

SGM Curricular Recommendations

The peer-reviewed literature includes several publications with recommendations for or examples of approaches to implementation of SGM curriculum in medical or PA school curricula. While not all research studies, the relevance of these publications to the current research is significant and are therefore included.

The AAMC competencies for medical students on sexual orientation, gender identity, and sex development were developed in 2014¹² to help address the health disparities experienced by people who are SGM by providing education about their specific health needs, to support medical schools in integrating this content into their curriculum, to provide a framework to assess learners, curriculum, and institutional climate, and to highlight resources and/or curricular innovations specific to SGM healthcare. The 30 identified SGM competencies for medical students fall within eight domains: patient care, knowledge for practice, practice-based learning and improvement, interpersonal and communication skills, professionalism, systems-based practice, interprofessional collaboration, and personal and professional development. Within each domain, specific competencies focused on the care of SGM patients were described.¹² These competencies provided clear guidance on the knowledge and skills needed to provide care to SGM patients however as noted previously, they were not requirements for medical school curricula, but rather recommendations

Following publication of the AAMC competency recommendations in 2014, an increased number of publications focused on SGM content was noted in the medical education literature.³² Among these are strategies for assessing, developing, and implementing SGM curricula in medical education. For example, Holthouser et al (2017) described the development of an SGM educational model based on the AAMC competencies to teach and assess changes in attitudes, knowledge, and skills related to caring for patients who are SGM. They emphasized the importance of setting clear goals, engaging with interested students, faculty, and national experts, establishing a steering committee, and obtaining buy-in from key stakeholders.³⁰ Similarly, Pratt-Chapman et al (2022) provided a consensus of recommendations on implementing SGM training such designing training with a specific audience in mind, use of a needs assessment to identify

goals, refinement of trainings based on learner and organizational assessments, and use of adult and transformational learning theories to support learning, reflection, and behavior change. Pratt-Chapman et al (2022) additionally recommended selecting trainers with expertise or lived experience and evaluating the training to understand impact on learner knowledge, attitudes, and skills.³³

The pedagogical literature also recommended identification of curricular gaps through a needs assessment in order to target appropriate curricular revisions.^{31,34} Assessment of the curriculum was described by Zumwalt et al (2022) who developed a tool, the Sexual and Gender Minority Curriculum Assessment Tool (SGM-CAT) to evaluate SGM curricular content.³⁴ The SGM-CAT was based on the AAMC competencies and uses 12 SGM topic areas for evaluation of SGM curricular inclusion by course directors.³⁴ This tool can be used by medical school faculty to identify key SGM topic areas that are not addressed in their program's curriculum³⁴ however it does not address all 30 competencies recommended by the AAMC.

Key recommendations in medical education curricula also included the use of a common language around SGM health including defining the differences between sex and gender and use of pronouns and the development of SGM student competencies.^{34,35} Keuroghlian et al (2022) described identification of 9 student competencies that were deemed most important from the AAMC competencies which included key topics: SGM identities, health inequities, unconscious bias and power imbalance, communication and interpersonal skills, and physical examination and screenings.³⁶ The importance of integrating SGM content throughout the curriculum rather than limiting it to topics such as sexual health is described by Solotke (2019), Keuroghlian et al (2022), van Heesewijk et al (2022) and Kamal et al (2023).³⁵⁻³⁸ Non-didactic teaching methods

such as the use of SGM standardized patients and clinically based learning opportunities were also noted in multiple publications.^{37,39}

Within the PA education literature specifically, Jones et al (2020) suggested courses in which SGM content can be integrated such as inclusion of gender-affirming hormone therapy in endocrinology or pharmacology and differences of sex development in pediatrics. They also recommended offering clinical rotations focused on caring for SGM patients in addition to the inclusion of didactic content.¹⁹ Similarly, Rolls et al (2022) suggested inclusion of SGM content in both the didactic and clinical phases of PA education. They discussed the importance of delivering content in clinical medicine and patient interviewing courses and recommended integration of content across the curriculum. They also provided examples of curricular integration such as use of an interprofessional case, modules to supplement LGBTQ+ content, and offering clinical electives with a focus on caring for SGM patients.¹⁶

Quantitative Studies

A number of different types of quantitative studies have explored the status of SGM curricula in PA and medical education, student learning and curricular needs, and the impact of curricular activities. This quantitative research included cross-sectional surveys, quasi-experimental pre-post test studies, and single-group studies.

Cross-sectional

Three key quantitative cross-sectional studies described the delivery of SGM curricula across physician and PA education. Obedin-Maliver et al (2011) and Streed et al (2024) described SGM content in physician education while Seaborne et al (2015) described SGM content in PA education and Rolls et al (2020) focused on transgender content in PA education. These studies were key influences in the conceptualization and methodology of the quantitative portion of the current research.

Obedin-Maliver et al (2011) conducted a study of US and Canadian medical schools in 2009-2010 on LGBT curriculum in medical education. Their study specifically explored the number of hours devoted to teaching LGBT content, coverage of specific LGBT related topics, methods for evaluating the content, strategies used to improve coverage, and opinions of medical school deans of the content at their programs. Results showed that the median number of hours focused on LGBT content was 5 hours and was mostly delivered in the preclinical phase (median 4 hours) versus the clinical phase (median 2 hours). About one-third of medical schools (33.3%) reported 0 hours of LGBT content during the clinical years, 6.8% reported 0 hours during the preclinical years, and 3.8% reported 0 hours overall.²¹

The majority of medical schools (97%) indicated they teach students to ask if patients have sex with men, women or both when taking a sexual history and 72% of schools reported teaching the difference between behavior and identity. Coverage of 16 LGBT-related topics were identified as present or absent by medical school deans and included: sexual orientation, human immunodeficiency virus (HIV), gender identity, sexually transmitted infections (STI), safer sex, differences of sex development (DSD)/intersex, barriers to care, mental health issues, LGBT adolescents, coming out, intimate partner violence (IPV), substance use, chronic disease risk, gender-affirming surgery, body image, and transitioning. Over half (62.9%) of schools reported they teach at least half of these topics in their required curriculum with topics such as sexual orientation, HIV, gender identity, STIs, and safer sex receiving the most coverage. Topics which were covered by the fewest number of medical schools included transitioning, body image, gender-affirming surgeries, and chronic disease risk which were all taught by less than half of medical schools.²¹

Medical school deans most commonly rated their school's quality of LGBT-related coverage as fair (43.9%) with 24.2% rating coverage as either "good" or "very good" and 25.8% rating it as "poor" or "very poor." The majority of schools (66.7%) reported LGBT content was integrated in various parts of the curriculum and 24.2% reported delivery of LGBT content in discrete modules. Most medical schools (78.0%) reported not offering LGBT focused clinical sites, 5.3% reported having LGBT-focused required clinical sites, and 19.1% reported having them available as electives. Methods for evaluation teaching of LGBT-related content included written exams (55.3%), evaluation by standardized patients (34.8%), and faculty observed interactions (31.8%). Almost one-third of medical schools (28.8%) did not evaluate the teaching of LGBT topics.²¹

A follow up study to explore the depth and breadth of SGM content in physician training in the US and Canadian medical schools was conducted by Streed et al (2024). They found content increased to a median of 11 hours with a median of hours occurring during the pre-clinical phase of training and a median of 3 hours in the clinical phase. Medical school deans most commonly responded that the quality of LGBTQI+ health coverage was "fair" and fewer reported coverage as "very poor," "poor," or "fair" than in 2011. The majority (72.9%) of teaching LGBTQI+ content was done through lectures and small groups. About one-third (32.9%) of medical schools did not offer LGBTQ+ health-focused clinical experiences and 25.9% offered them as electives only. Methods reported for improving LGBTQ+ health content included having access to LGBTQ+ health and health disparities curricula, having online curricula available and having faculty who were willing and able to teach the content.²⁵

The Seaborne et al (2015) study in 2014 used a 24-item survey based on similar surveys of medical school curricula and was sent to 181 accredited US PA programs. The response rate

was 59% and showed that LGBT topics received less coverage than general sexual health topics such as birth control and sexually transmitted infections. Topics specific to LGBT health that received the most coverage included sexual orientation, gender identity, and sexually transmitted infections in people who are LGBT. Transgender health received the least coverage. The majority of programs indicated that the coverage of LGBT sexual health topics was important, but only 20% reported the content was well covered and 4% reported it was extremely well covered.²⁶

Rolls et al (2020) conducted a study of PA programs (n=236) in 2018 to describe the delivery of content specific to the care of people who are transgender. This study further aimed to assess the perceived value of this content, to identify barriers to implementation, and to identify relationships between program factors and curricular delivery. Results showed that 85.6% of programs reported teaching at least 1 hour of transgender content and 14.4% taught less than 1 hour. Content was reported to be delivered a part of a course or lecture by 75% of programs. Courses in which transgender content was reported by program directors included: medical interviewing (44.1%), women's health or OBGYN (31.4%), problem-based learning (17.8%), endocrinology (11.0%), urology (9.3%), infectious disease (6.4%) and objective structured clinical examinations or simulation (5.9%).²⁷

Common topics that were covered specific to the healthcare of people who are transgender included differences between sex and gender, health disparities, health access or barriers to care, mental health, and preferred names and pronouns. The majority of programs did not report delivering content on caring for gender diverse adolescents or children, hormone therapy, or surgical treatments. Less than half (48.7%) of PA programs reported that they assess student knowledge or skills related to caring for transgender patients. Overall coverage of

transgender health issues was reported to be ‘acceptable’ by 47.9% of programs. The most significant barriers to content delivery identified included lack of time and lack of faculty expertise. In their analysis of variables, Rolls et al (2020) found statistically significant associations between the perceived importance of transgender content and delivering transgender curriculum and between having a knowledgeable faculty member and content delivery. Program directors’ perceptions about content delivery (i.e. very good, good, acceptable, poor, very poor) also had a significant association with the presence of transgender content in the curriculum.²⁷

These three descriptive studies provided important insights into the status of SGM content in medical and PA educational curricula. They showed that medical and PA schools did not rate their coverage of SGM content highly at the time the studies were conducted.^{21,26,27} Two of the studies, Obedin-Maliver (2011) and Seaborne et al (2015), both found that transgender related health topics (i.e. gender-affirming hormone therapy or surgical procedures) received less coverage than other SGM topics,^{21,26} suggesting this was an identified curricular need. The Rolls et al (2020), while more recent than the others, was conducted prior to the implementation of PA accreditation standards requiring SGM content and focused specifically on transgender curricular content. There are no studies in PA education which address curricular inclusion of all SGM identities across programs since implementation of the accreditation standards. Lamb and Burke (2019) described the need for national audit of SGM curricular content to identify curriculum gaps.⁴⁰ A review of the PA education literature by Saunders and McWeeney (2022) noted that additional research on the depth and breadth and best methods of delivery of SGM is needed.⁴¹ The current research aims to address this gap in the literature.

Additional quantitative studies in the medical and PA education literature evaluated student learning needs related to SGM content and the impact of SGM content delivery. Student

learning needs were evaluated through multiple methods including surveys of student perceptions about curricular inclusion and their self-reported confidence, knowledge, attitudes, and skills specific to caring for SGM patients. Impact of curricular activities were demonstrated in quasi-experimental studies that assess knowledge, skills, and confidence following SGM curricular activities. These studies are relevant to the current research as they provide evidence of the gaps in the SGM curricula in PA and medical school training and that delivery of curricular activities does impact student outcomes. A brief summary of quantitative studies exploring these areas follows.

A cross-sectional survey of interprofessional health professions students conducted by Bleasdale et al (2022) asked students to rate their perception of a number of SGM topics on a Likert scale. No SGM topics were identified as receiving “in-depth” or “too much” coverage with the majority of topics identified as receiving “too little” or “basic” coverage.⁴² Similarly, an survey conducted by Parameshawaran et al (2017) studied medical student experiences, knowledge, and attitudes toward LGBTQ people and healthcare at a single institution. Results showed that vast majority (84.9%) of medical students indicated they either “strongly disagreed” or “disagreed” that they had received LGBTQ specific healthcare instruction and 72.9% reported they were “very unconfident” or “unconfident” in caring for transgender patients.⁴³ Vasudevan (2022) et al studied MD, PA and nutrition student self-reported knowledge, skills, and attitudes in caring for transgender patients at a single institution and found that all students rated their knowledge and skills in caring for transgender patients below the midpoint on the scale which ranged from very low (0) to very high (6).⁴⁴ The lack of SGM curricular inclusion^{42,43} and low student self-reported knowledge⁴⁴ and confidence⁴³ found in these studies support the need for identification of best practices in SGM content delivery.

Quasi-experimental Pre-posttest Studies

A number of quasi-experimental studies evaluated the impact of inclusion of various SGM curricular components on variables such as student self-reported knowledge, attitudes towards SGM patients, skills, and confidence. Hart et al (2021), used a pre-posttest survey in which PA students rated their knowledge, attitudes, skills at baseline and voluntarily attending a transgender health lecture. Students who attended the lecture had statistically significant improvements in knowledge and skills at post-test.⁴⁵ The impact of a 10-hour LGBTQ curriculum on MD student knowledge and confidence was studied by Minturn et al (2021). They found statistically significant improvements in knowledge of culturally sensitive terminology and in self-confidence related to eliciting information about sexual behavior, anatomy, gender identity, and articulating the health needs of LGBT patients.⁴⁶

Single-group studies

Single-group studies explored the impact of implementing SGM content in the curricula. Srinivasa et al (2023) described outcomes from a 4-week medical student elective course at Harvard Medical School offered since 2016, in which students spent approximately 150 clinical hours embedded in various clinical settings. They found that about a half of those who participated in the elective planned to pursue general medicine, that the experience enhanced their interest in LGBTQ health, and that it allowed them to master core knowledge.⁴⁷ McCave et al (2019) studied student reported outcomes from an interprofessional case on a transgender emergency room patient. Over the 2 years studied, the majority of students rated the experience as either useful or very useful.⁴⁸ This quantitative literature shows that students can gain knowledge, skills, and confidence^{46,49} through SGM curricular activities and that they valued these learning opportunities.^{47,48}

Qualitative Studies

The qualitative literature on SGM content in medical and PA education offers additional perspectives on the needs of future providers and the experiences of faculty in implementing content. A study by Sequeria et al (2012) explored medical students' perceptions of LGBT educational content offered at one medical school and identified themes which included lack of exposure to LGBT specific content, the importance of the content to their future work as physicians, and recommendations that SGM content be part of required curriculum.⁵⁰ In their study Kortess-Miller et al (2018), identified a lack of curricula in formal education as a major theme.⁵¹ Yang (2021) conducted semi-structured interviews with medical students and course teachers after offering courses on gender for clinical psychiatric education. Themes identified in their analysis included the value of case-based teaching in connecting knowledge to practice, that hearing the narratives of LGBT people is impactful, that discussions promote effectiveness of case-based learning, and that time can be a barrier to case-based teaching.⁵²

A qualitative study specifically focused on PA education was conducted by Saunders et al (2022). They explored PA students' comfort and perceived level of bias in taking a sexual history in a simulated patient encounter. After receiving instruction on SGM health issues and in sexual history taking, students participated in a non-heteronormative simulated patient encounter in which their role was to take a sexual history. They identified language appropriateness, preparedness, pronoun use, and comfort or discomfort with the subject matter as themes related to student reported comfort and biases. They concluded that curricular activities can help build student comfort and reduce potential biases in caring for patients for who are SGM.⁵³

Davy et al (2015) focused their qualitative research on faculty experiences, behaviors, and intentions on the inclusion of LGBT curricular content. This research further conducted thematic analyses of medical, health, and social care accreditation standards in the United

Kingdom. Through semi-structured interviews, they explored faculty experiences and beliefs about facilitators and barriers to inclusion of LGBT curricular content. They found that while accreditation policies may require instruction on diverse communities and identities, they rarely stipulate the type or range of content included. Time and space in the curriculum were barriers to inclusion particularly with increased emphasis on including more technical aspects of health conditions and their treatments. Teaching of LGBT content was often based on personal pedagogical decisions and whether or not faculty felt capable of teaching the content.⁵⁴

Mixed Methods Studies

Another key study in the formation of this dissertation was a single institution mixed methods study by Lindberg et al (2019) which aimed to identify education and training needs on LGBT health topics, to identify barriers to teaching military medical students to care for LGBT patients, and to make recommendations for implementing curriculum to bridge gaps in knowledge or comfort in caring for LGBT patients. They applied Kern's curriculum development model³¹ as a framework to conduct surveys and semi-structured interviews with faculty members involved in the development, implementation or review of the curriculum.⁵⁵ While the study did not address all steps of Kern's model,³¹ it approached questions about curricular delivery through the lens of a curriculum development model and employed both qualitative and quantitative methods to identify curricular gaps and ideas for implementation.⁵⁵

Quantitatively, results from Lindberg et al (2019) were similar to other quantitative studies on SGM curriculum. They found that faculty rated curricular content on terminology, history-taking skills, preventative medicine, transgender health, use of evidence-based medicine, and prevention of discrimination as "poor" to "adequate." No areas received ratings of "very well" addressed.⁵⁵ Qualitatively, the semi-structured interviews resulted in 6 themes which

included: suspected barriers to curricular change, protective factors that promote change, implementation strategies and resources, vulnerabilities to change, and next steps.⁵⁵

Summary of the Literature

The peer reviewed literature on SGM curricular content in PA and medical education includes multiple pedagogical articles however research studies in this area remain limited. Two descriptive studies that focused on the delivery of content across PA programs nationally were reviewed.^{26,27} Two additional studies evaluated changes in PA students' knowledge, skills, and attitudes towards transgender patients before and after an educational intervention,⁴⁵ and explored PA student bias and comfort in taking a sexual history with a SGM patient.⁵³ Five additional SGM curricular related studies that included PA students in addition to other health professions learners were also reviewed.^{44,46,48,56,57} Because of the limited research in the PA literature, publications focused on medical education were also included. Of the total studies reviewed, 16 focused on LGBT identities or curricula^{20,21,26,37,42,43,46,47,49–51,53–56,58,59} and 7 focused specifically on transgender identities or content.^{27,44,48,48,52,57,60}

Review of this body of literature indicates there are some suggested strategies for inclusion of SGM curricular content and that our current knowledge about the delivery of curriculum across programs is limited. The pedagogical literature provided recommended medical student competencies,¹² however they are not required and there are no comparable established competencies for PA students. Studies describing the delivery of curricular across programs nationally were conducted prior to the implementation of PA program accreditation standards specifically requiring SGM content. Of those, one focused specifically on transgender curricular content²⁷ and did not address other SGM identities. The research evaluating SGM curricular needs showed there is too little coverage of SGM content according to students^{42,43} and faculty surveyed⁵⁵ signaling that improved content delivery is needed. Barriers to curricular

integration included lack of time, faculty expertise, and a lack of national guidelines or best practices.^{27,30,38,54} Multiple studies showed that implementation of SGM training improved student and provider knowledge, skills, competencies, or comfort in caring for SGM patients.^{20,32,45–47,49,57} The inclusion of SGM curriculum is an identified need and supports better care for SGM patients, however the current status of SGM content delivery in PA education is unclear. There are no current national benchmarks or identified best practices in delivering SGM content in PA education. The current research aims to address this gap in the literature through evaluating current practices and PA educators' perceptions about best practices in content delivery to development of a consensus on SGM curricula in PA education.

Theoretical Paradigm

Queer theory provides the interpretative framework for the qualitative inquiry. Theoretical paradigms or interpretative frameworks help shape how the research is conducted and understood.⁶¹ As a theoretical paradigm, queer theory counters socially constructed notions, such as heterosexuality and binary genders that have historically been treated as the sexual and gender “norms.”^{38,61,62} Heteronormativity and cis-normativity are key concepts in queer theory and suggest that heterosexual cisgender identities are the accepted standard.⁶³ In its focus on disrupting these concepts, queer theory is a form of social criticism and historical analysis.⁶¹ Heteronormativity and cis-normativity are and have been embedded in people, social institutions such as higher education, and systems⁶² including healthcare. Queer theory seeks to question normalcy and to develop new ways of understanding sexuality and gender.^{38,62} As a theoretical paradigm, it can be applied to both research and education to reevaluate the accepted norms, boundaries, and limitations of current practices.⁶³

When used as a framework in medical education, queer theory creates opportunities to question how and when students are taught about LGBTQ+ healthcare. Students have

historically either not been taught specifically about the care of LGBTQ patients and/or have learned that the bodies and experiences of people who are SGM are abnormal.³⁸ Homosexuality and gender non-conformity have been pathologized in medicine for decades.⁶⁴ For example, both homosexuality and having a transgender identity were previously treated as mental disorders.⁶⁵ The pathologizing of homosexual and transgender orientations and behaviors are practices which queer theory seeks to disrupt.⁶⁴ Researchers have applied queer theory in medical education and care to expose the biases which underlie dissemination of biomedical knowledge about people's bodies and behaviors.^{38,66,67} SGM content should not be taught as "special" or "other" topics, but as part of the curriculum necessary to ensure healthcare providers are prepared to care for all patients. Through the lens of queer theory, this inquiry seeks to understand the education of PA students about the care of people who are SGM as non-pathological and as a necessary means to address health disparities.

Curriculum Development Model

Using queer theory as a framework, this research applies Kern's 6-step approach for curriculum development to support identification of best practices. This curriculum development model is based on assumptions that medical educators have a responsibility to meet the needs of their learners, patients, and society, that they should be held accountable for curricular outcomes and that curriculum is best established through a systematic process. The 6-step approach is not linear as each step may inform another. The 6 steps are: 1. Problem Identification and General Needs Assessment, 2. Targeted Needs Assessment, 3. Goals and Objectives, 4. Educational Strategies, 5. Implementation, and 6. Evaluation and Feedback.³¹ The public health problem of the disparities experienced by SGM people has been established, however the current approach to curricular delivery at the national level and the ideal approach will be focuses of the current research. Within Step 3 (Goals & Objectives), competencies may established as observable

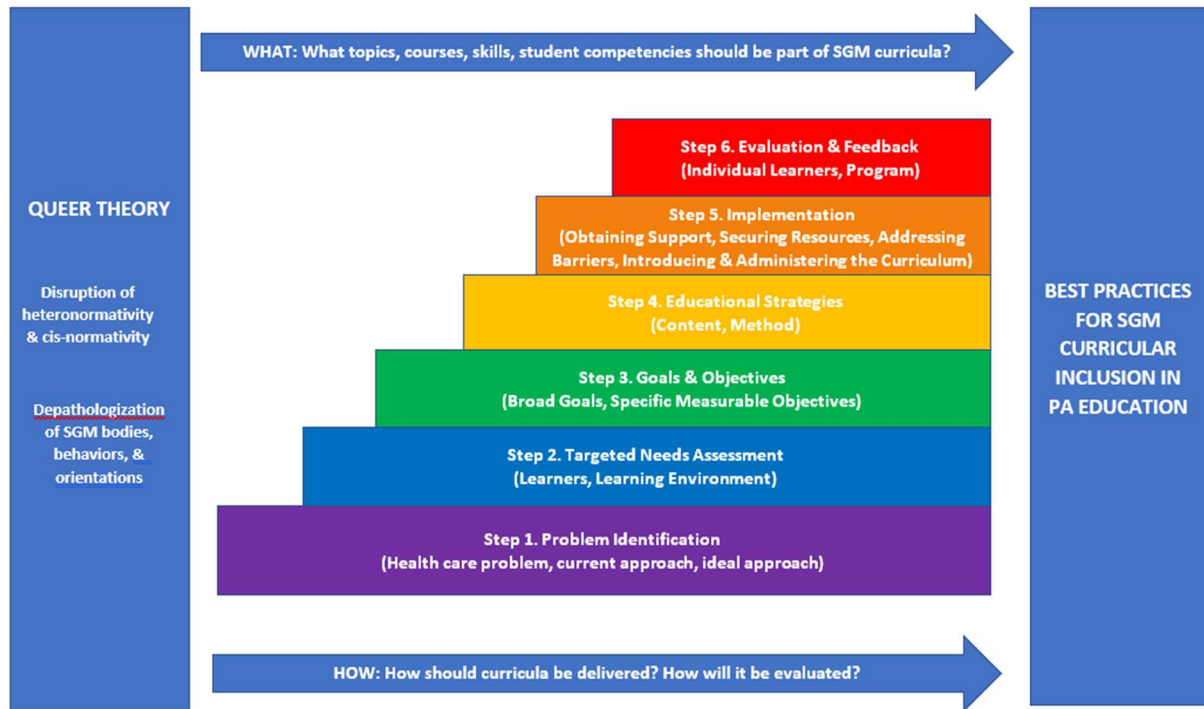
behaviors that integrate knowledge, attitudes, and skills and can be measured across a continuum of proficiency.³¹ The qualitative work of this study will explore PA educator perceptions about competencies for PA students related to caring for SGM patients. Both the quantitative and qualitative components will address various aspects of steps 4,5, &6.

Conceptual Model

The conceptual model for this study was informed by principles of queer theory and sought to explore the delivery of SGM content in PA education and best practices through a normative lens of SGM people, their healthcare needs, and the inclusion of relevant content in educational curricula. The conceptual model further applied Kern's 6-steps of curriculum development³¹ in posing research questions to identify best practices for SGM curricular inclusion in PA education. See Figure 1.

Best practices in education are instructional methods which efficiently and effectively convey knowledge and skills to students⁶⁸ and would facilitate optimal implementation of SGM curriculum in PA education. They include a wide variety of activities, approaches, and policies that positively impact student outcomes.⁶⁹ Benchmarking is one strategy for implementing best practices in education as it allows institutions to determine how they are doing in comparison to others and to identify what they can adapt within their own curriculum.⁷⁰ Implementation of theoretically supported learning activities and evidence based activities are also educational best practices.⁶⁹ Through application of the conceptual model, identification of a consensus for best practices of SGM curricula in PA education involved: benchmarking of current SGM content and identification of best educational and evaluation methods.

Figure 1: PA Education SGM Best Practices Conceptual Model Based



CHAPTER 3: METHODS

This chapter describes the methodology for the current study which includes both quantitative and qualitative methods.

The study was approved by the Duke University Health System Institutional Review Board (IRB) which was identified as the IRB with authority over the research. A reliance agreement between East Carolina University and Duke University Health System IRBs was completed.

Research Design

A convergent mixed methods design was selected to answer the research questions. Through use of both qualitative and quantitative approaches, a mixed methods design has the strengths of both methods and minimizes the limitations of each individual method. Comparison of data obtained through each method can additionally provide different perspectives and enhance the understanding of the topic area.⁷¹ Quantitative and qualitative data in this study was collected, analyzed independently, and then compared for convergence. The data from each method was merged for interpretation using a joint display.⁷¹

The conceptual model described in Chapter 2 posed questions about what the current and ideal practices were regarding the delivery of SGM content in PA education. Comparison and convergence of the quantitative data and qualitative content provided a more thorough understanding of the research topic than either method would alone. See Appendix D

Quantitative Methods

The quantitative portion of the study was conducted through an online survey of US PA programs as part of the annual PAEA Program survey. It was completed by PA program directors to assess practices related to SGM content in the curricula. The author received the

Support to Advance Research (STAR) award which allowed for inclusion of 10 research questions in the PAEA program survey in 2021.⁷²

Survey Development & Content

The author, in collaboration with other content experts, developed a 10-item survey tool which asked PA programs to describe the number of hours devoted to teaching SGM content for each of the following identities: lesbians, gay men, bisexual, transgender, or genderqueer/other gender. The survey also assessed courses in which content was taught, whether it was taught during the preclinical or clinical phases of PA education, how well program graduates were prepared to care for LGBTQ patients, how important the content was in the curriculum, and if content delivery aligned with the institutional mission. The full survey can be found in Appendix 2. The survey also gathered PA program data such as US Census Region, program cohort size, urban or rural locale, institution type (public, private, or hybrid) and affiliation with an academic health center.

Study Population

The survey was sent to all accredited US PA programs in November 2021 (n=284) as part of the annual PAEA Program Survey completed by PA Program Directors. PA programs surveyed included all 4 US Census Bureau regions and divisions: Northeast (n=78), Midwest (n=65), South (n=101), and West (n=39). The PAEA Research Team contacted non-responding programs via email and phone with reminders to complete the survey until January 2022 when the survey period closed.⁷³

Measures

Independent Variables: The study included 5 independent variables: (1) US Census region (Northeast, Midwest, South, West), (2) rurality (rural/urban as defined by the National Center for Education Statistics),⁷⁴ (3) academic health center (AHC) status (yes/no), (4) class

cohort size (small-25 or fewer students, medium-26-50 students, large -more than 50 students), and (5) institution type (public/private/public-private hybrid). For logistic regression analysis, institution type was further condensed to public (public and public/private hybrid) and private. Public-private hybrids were grouped with public institutions as programs receiving public funds making them subject to bans on diversity, equity, and inclusion programs and trainings in some states that apply to public institutions.⁷⁵

Outcome Variables: Eighteen categorical outcome variables were assessed in this analysis: (1) LGBTQ knowledgeable faculty (yes/no); (2) LGBTQ identifying faculty (yes/no); (3) faculty LGBTQ clinical practice (yes/no); (4) faculty LGBTQ research (yes/no); (5) gender neutral restroom (yes/no); (6) pronoun process (yes/no); (7) LGBTQ public facing materials (yes/no); (8) LGBTQ content mission aligned (yes/no); (9) clinical rotation (yes/no); (10) Importance of LGBTQ content (very important, somewhat important, neutral, somewhat unimportant, and very unimportant) and was re-coded in 2 different ways: important (very or somewhat important) and neutral/unimportant (neutral, somewhat, or very unimportant) and as very important (very important) versus all other responses; (11) 3+ hours of lesbian content; (12) 3+ hours of gay content; (13) 3+ hours of bisexual content; (14) 3+ hours of transgender content; (15) 3+ hours of genderqueer content. Variables 11 to 14 included 4 options: 0 hours, 1-2 hours, 2-3 hours, and 3+ hours, and were re-coded to reflect 0-3 hours and 3+ hours; (16) 3+ LGBTQ hours for any content area (0-3 hours/ 3+ hours); (17) preclinical (PCY) content (integrated throughout the preclinical/didactic curriculum, taught as a discrete LGBTQ unit, taught within a single course, and unsure). This was recoded as yes (integrated throughout) or no (discrete LGBTQ unit or taught within a single course); (18) student preparedness (very well prepared,

adequately prepared, minimally prepared, and not at all prepared) was condensed into very well/adequately prepared and minimally/not at all prepared.

Data Analysis

Data analysis included bivariate and multivariate analysis. SPSS software was used for all statistical analyses with statistical significance at a p-value of ≤ 0.05 .⁷⁶

Bivariate Analysis

Bivariate analysis was used to evaluate relationships between program variables (region, cohort size, rural/urban locale, affiliation with an academic health center) and outcomes (alignment with mission, importance of content, gender neutral restrooms, mechanisms for pronouns, public facing materials, teaching more than 3 hours of SGM content, integration of content, presence of a clinical rotation, student preparedness). Fisher's exact tests were selected due to a smaller sample size and some cells had expected frequencies less than 5.⁷⁷

Multivariate Analysis

Binary logistic regression was conducted to identify predictors of programs teaching more than 3 hours for any type of SGM content. Predictor variables included in the model were LGBTQ+ knowledgeable faculty, openly LGBTQ+ faculty, LGBTQ+ content rated very important, presence of a clinical rotation with LGBTQ+ focused learning outcomes, US Census Region, size, institution type, and AHC status. The basic assumptions of binary logistic regression include independence of observations, no perfect collinearity among independent variables, and linearity of continuous predictors.⁷⁸ All variables in this analysis were categorical and were believed to be independent of each other. In the initial model, there was perfect separation with importance of LGBTQ+ content when initially coded as either not important/neutral or somewhat/very important. Perfect separation was addressed by re-coding importance of LGBTQ+ and separating very important from all other responses. Perfect

separation also occurred with institution type which was addressed by re-coding public-private hybrid institutions with public institutions.

Analyses were conducted to identify predictors of reported student preparedness. Reported student preparedness was either not at all/minimally prepared or adequately/very well prepared. Predictor variables that were selected each had a statistically significant association with student preparedness in bivariate analysis and included: teaching more than 3 hours in any content area, having LGBTQ+ knowledgeable faculty, having mechanisms in place for pronoun integration into official identification or the learning management systems, and having LGBTQ+ public facing materials.

Qualitative Methods

Semi-structured focus groups were conducted with PA educators across the US with expertise in the delivery of SGM content. PA educators were eligible to participate if they were at least 18 years of age, could write and speak in English, and had prior experience in either delivering or overseeing the delivery of SGM content in PA curricula.

The Consolidated Criteria for Reporting Qualitative Research (COREQ)⁷⁹ was used to guide data collection, analysis, and reporting.

Participant Sampling and Recruitment

The planned number of focus groups was 3 to 6, including 4 to 6 participants per group. Prior research showed that code saturation, the point in which no new issues are identified in the data, is reached after 4 focus groups.⁸⁰ A systematic review of qualitative studies further demonstrated that saturation can be achieved with 7 to 9 interviews or 4-8 focus group discussion, particularly in research with homogeneous populations and narrow objectives.⁸¹ The study population, PA educators with expertise in SGM curricular delivery, is believed to be

relatively homogenous and the focus of the qualitative inquiry is narrowly defined indicating between 3 to 6 focus groups of 4 to 6 participants is sufficient to reach saturation.

Strategies for recruitment included direct emails to potential participants in addition to general postings on the Physician Assistant Education Association's (PAEA) Sexual and Gender Minority Special Interest Group and the Research Professional Learning Community online platforms to share with PA faculty with expertise in the topic area. Potential participants who were emailed directly were identified by having a peer-reviewed publication in the Journal of PA Education on LGBTQ+ curricular content or having been selected via a peer-review process to present on this topic at the national PAEA Education conference. Prospective participants were emailed or read an online posting explaining the study with a link to sign up for focus group participation. Upon selecting a focus group date, prospective participants completed an eligibility screening form and were provided with the consent form to complete electronically. After consenting, participants completed a basic survey that collected individual and PA program data.

A total of 16 people consented to participate in the focus groups. One individual who consented did not participate in a focus group due to scheduling conflicts.

Data Collection

The interview guide was drafted by the author, a content expert, with input from a qualitative methodology expert. Questions were aligned with conceptual model which was informed by queer theory⁶⁵ and based on Kern's 6 steps for curricular development.³¹ Interview questions addressed SGM topics that should be included in the curriculum, ideal approaches to content delivery, student competencies, evaluation of competencies, and challenges and facilitators to implementing best practices. The focus group also included use of Zoom whiteboard in which participants using an emoji indicated which topics, courses in which content should be included, delivery approaches, and competencies they believed are necessary for all

PA program graduates. Focus groups were conducted by Zoom between April and May 2024 and were between 75-90 minutes. All focus groups were recorded and auto transcribed via Zoom.

Transcripts were reviewed and corrected by the author.

Qualitative Analysis

Both deductive and inductive analysis were used to analyze the focus group data.

Organization of the data analysis was conducted using Nvivo version 14 software.⁸² Initially, two coders independently reviewed and then discussed the same 2 transcripts to develop the initial coding framework. The same coders then conducted line by line coding of the two transcripts and modified the coding framework. The remaining focus groups were double coded by the 2 coders who met regularly to discuss the transcripts and content and to modify the codebook as needed. Deductive analysis involving using pre-determined categories as codes indicated data saturation with good representation of each code in the data⁸³ with analysis of all 5 focus groups. The inductive analysis in which new codes were identified from data⁸³ also reached saturation in the absence of new codes emerging in analysis of the final focus group. The codebook is found in Appendix G.

After completion of coding for all 5 focus groups, codes were further grouped into the corresponding step in the conceptual model (see Appendix H). After summarizing the data according to the conceptual model, coders met with qualitative research experts to discuss the identified major content areas. A high-level summary of the descriptive and interpreted data was provided to all 15 participants via email in August 2024 for member checking. Member checking emphasizes the expertise of participants and supports increased validity of qualitative results.^{84,85} Participants were given 2 weeks to respond to the following 2 questions regarding the summary, “Does this reflect your experience?” and “Is there anything you wish to add?” Forty percent (n=6) of the focus group participants responded to the member checking. Of these, one

participant indicated they had something to add to the findings and this feedback was incorporated in the final qualitative analysis.

Mixed Methods Analysis

Data was merged through a joint display for interpretation with the aim of identifying best practices through consensus. Consensus was operationalized for this purpose as either: convergence of the quantitative and qualitative results or clear consensus among focus groups in the focus groups (i.e. content area coded in all 5 focus groups and cited multiple times).

CHAPTER 4: RESULTS

Quantitative

Descriptive

PA Program Data

A total of 204 programs out of 284 responded to the PAEA program survey resulting in an overall response rate of 71.8%. Responding programs represented all 4 US Census Regions which included: Northeast (n=56, 27.5%), Midwest (n=52, 25.5%), South (n=71, 34.8%), and West (n=25, 12.3%). Of the programs who responded, 86.8% (n=177) were located in urban regions, 70.1% (n=143) were not affiliated with academic health centers, 57.4% (n=117) had medium-sized cohorts, 66.2% (n=135) and were private institutions. See Table 1 for additional PA program information.

Table 1: PA Program Data

Total Programs (n=204), n (%)	
Region	
Northeast	56 (27.5%)
Midwest	52 (25.5%)
South	71 (34.8%)
West	25 (12.3%)
Rurality	
Urban	177 (86.8%)
Rural	27 (13.2%)
AHC Status	
Non-AHC	143 (70.1%)
AHC	61 (29.9%)
Cohort Size	
small (≤ 25)	30 (14.7%)
medium (26-50)	117 (57.4%)
large (> 51)	57 (27.9%)
Institution Type	
Private	135 (66.2%)
Public	64 (31.4%)
Hybrid	5 (2.5%)

Amount and Delivery of SGM Content

Eighty-one percent (n=165) of PA programs reported that they integrated SGM content throughout their curricula rather than teaching it in discrete units or courses. Between 78% to 81% of programs reported teaching 0 to 3 hours of SGM content depending on content type queried (lesbian, gay, bisexual, transgender, and genderqueer). Twenty-one percent of programs (n=39) reported teaching more than 3 hours about caring for lesbians, 21.7% (n=40) for gay men, 20.1% (n=37) for people who are bisexual, 20.2% for people who are transgender (n=37), and 18.8% (n=34) for people who are genderqueer. Programs located in the West represented a greater proportion of those teaching more than 3 hours for all content groups compared to other regions. Rural programs reported teaching more than 3 hours less frequently (n=4, 17.4%) than urban programs (n=35, 21.7%).

Medical Interviewing courses had the most PA programs reporting inclusion of SGM content for lesbian (n=156, 76.5%), gay (n=155, 76.0%), bisexual (n=155, 76.0%), transgender (n=154, 75.5%), and genderqueer (n=139, 68.1%) content. Transgender content had the highest reported inclusion in Endocrinology (n=60, 29.4%) compared to the lower coverage for lesbian (n=23, 11.3%), gay (n=23, 11.3%), and bisexual (n=23, 11.3%) content. Of those queried, lesbian (n=117, 57.4%) and transgender (n=97, 47.5%) identities received the most coverage in obstetrics and gynecology courses in comparison to gay content (n=27, 13.2%) which was the lowest. In urology and infectious diseases, the most coverage was reported for gay men (n=110, 53.9%) compared to coverage for transgender (n=79, 38.7%) and genderqueer (n=72, 35.5%). Fewer than half of programs include any SGM content in problem-based learning activities or observed structured clinical examinations (OSCEs). Other courses or lectures reported as including SGM content included: behavioral health (n=11), prevention or health promotions (n=6), special populations (n=9), community health (n=4), professionalism (n=3), pediatrics

(n=2), surgery (n=2), diversity (n=2), with LGBTQ+ panels (n=2), and pharmacology (n=2). See Table 2 for additional details about content included in specific courses, lectures, and learning activities.

Table 2: US PA Program Courses Including LGBTQ Content

	Medical Interviewing	Endocrinology	OBGYN	Urology	Infectious Diseases	Problem- based Learning	OSCE	Other
Lesbian Content	156(76.5%)	23(11.3%)	117(57.4%)	40(19.6%)	90(44.1%)	70(34.3%)	46(22.5%)	53(26.0%)
Gay Content	155(76.0%)	23(11.3%)	27(13.2%)	80(39.2%)	110(53.9%)	72(35.3%)	43(21.1%)	53(26.0%)
Bisexual Content	155(76.0%)	23(11.3%)	79(38.7%)	47(23.0%)	96(47.1%)	61(29.9%)	36(17.6%)	54(26.5%)
Transgender Content	154(75.5%)	60(29.4%)	97(47.5%)	55(27.0%)	79(38.7%)	60(29.4%)	48(23.5%)	56(27.5%)
Gender queer Content	139(68.1%)	29(14.2%)	66(32.4%)	39(19.1%)	72(35.3%)	50(24.5%)	30(14.7%)	51(25.0%)

OSCE, observed structured clinical examination

Twenty-nine programs (14.2%) reported having either a required or elective clinical rotation with learning objectives on caring for people who are LGBTQ. A higher percentage of programs in the Northeast (n=11, 19.6%) reported having a LGBTQ+ clinical rotation than those in other regions. Programs affiliated with an AHC and programs with medium to large cohorts also represented greater proportions of the programs with LGBTQ+ clinical rotations.

Faculty Characteristics

Sixty-five percent of programs (n=132) reported having a faculty member who is knowledgeable about caring for patients for who are LGBTQ+, 25.5% reported having an openly LGBTQ+ faculty member (n=52), 11.8% reported having a faculty member whose clinical practice focuses on caring for LGBTQ+ patients (n=24), and 6.4% reported having a faculty member who conducts research on LGBTQ+ health (n=13).

Program Characteristics

Eighty-six percent PA of programs (n=167) reported that LGBTQ+ content aligns with the values or mission of the institution and 88.6% (n=171) reported that the content is important or very important. For rurality, 65.4% of rural programs (n=17) and 88.8% of urban programs (n=150) reported alignment of LGBTQ+ content with the mission. Content was rated as important or very important by 80.8% of rural programs (n=21) and 89.8% of urban programs (n=150). Fifty-nine percent of programs (n=121) reported having a mechanism in place for inclusion of pronouns in official identification, name badges, or the learning system, 42.2% (n=86) reported having a gender-neutral bathroom for use by students, faculty, staff, or visitors, and 47.1% (n=96) reported having public facing materials on LGBTQ+ inclusion.

Student Preparedness

Fifty-five percent of programs reported that students are adequately prepared (n=113) and 5.4% reported students are very well prepared (n=11) to care for SGM patients.

Table 3: PA Program Demographics, Characteristics, and Student Outcomes

	LGBTQ knowledge able faculty	LGBTQ faculty	Faculty LGBTQ clinical practice	Faculty LGBTQ research	Gender neutral restroom	Pronoun process	LGBTQ public material	LGBTQ content mission aligned	LGBTQ clinical rotation	LGBTQ content important/ very important	3+ hours lesbian content	3+ hours gay content	3+ hours bisexual content	3+ hours trans content	3+ hours gender- queer content	PCY content integrated	Graduates very well/ adequately prepared
Total	132 (64.7%)	52 (25.5%)	24 (11.8%)	13 (6.4%)	86 (42.2%)	121 (59.3%)	96 (47.1%)	167 (85.6%)	29 (14.2%)	171 (88.6%)	39 (21.2%)	40 (21.7%)	37 (20.1%)	37 (20.2%)	34 (18.8%)	165 (80.9%)	124 (60.7%)
Region																	
Northeast	41 (73.2%)	18 (32.1%)	9 (16.1%)	5 (8.9%)	25 (44.6%)	39 (69.6%)	25 (44.6%)	49 (89.1%)	11 (19.6%)	52 (94.%)	12 (23.5%)	12 (23.5%)	12 (23.5%)	9 (17.6%)	9 (18.0%)	46 (82.1%)	40 (72.7%)
Midwest	31 (59.6%)	10 (19.2%)	5 (9.6%)	2 (3.8%)	29 (55.8%)	38 (73.1%)	32 (61.5%)	43 (87.8%)	7 (13.5%)	48 (98.0%)	7 (14.6%)	7 (14.6%)	6 (12.5%)	7 (14.9%)	6 (13.0%)	40 (76.9%)	26 (54.2%)
South	44 (62.0%)	14 (19.7%)	5 (7.0%)	5 (7.0%)	18 (25.4%)	29 (40.8%)	25 (35.2%)	55 (82.1%)	7 (9.9%)	53 (80.3%)	13 (20.3%)	13 (20.3%)	13 (20.3%)	13 (20.3%)	13 (20.3%)	61 (85.9%)	43 (66.2%)
West	16 (64.0%)	10 (40.0%)	5 (20.0%)	1 (4.0%)	14 (56.0%)	15 (60.0%)	14 (56.0%)	20 (83.3%)	4 (16.0%)	18 (78.3%)	7 (33.3%)	8 (38.1%)	6 (28.6%)	8 (38.1%)	6 (28.6%)	18 (72.0%)	15 (65.2%)
Rurality																	
Urban	116 (65.5%)	50 (28.2%)	22 (12.4%)	12 (6.8%)	74 (41.8%)	107 (60.5%)	86 (48.6%)	150 (88.8%)	25 (14.1%)	150 (89.8%)	35 (21.7%)	36 (22.4%)	33 (20.5%)	33 (20.6%)	30 (19.0%)	140 (79.1%)	08 (65.1%)
Rural	16 (59.3%)	2 (7.4%)	2 (7.4%)	1 (3.7%)	12 (44.4%)	14 (51.9%)	10 (37.0%)	17 (65.4%)	4 (14.8%)	21 (80.8%)	4 (17.4%)	4 (17.4%)	4 (17.4%)	4 (17.4%)	4 (17.4%)	25 (92.6%)	16 (64.0%)
AHC Status																	
Non-AHC	94 (65.7%)	30 (21.0%)	15 (10.5%)	9 (6.3%)	59 (41.3%)	81 (56.6%)	61 (42.7%)	116 (83.5%)	19 (13.3%)	122 (88.4%)	25 (19.2%)	26 (20.0%)	24 (18.5%)	25 (19.4%)	22 (17.3%)	116 (81.1%)	86 (63.2%)
AHC	38 (62.3%)	22 (36.1%)	9 (14.8%)	4 (6.6%)	27 (44.3%)	40 (65.6%)	35 (57.4%)	51 (91.1%)	10 (16.4%)	49 (89.1%)	14 (25.9%)	14 (25.9%)	13 (24.1%)	12 (22.2%)	12 (22.2%)	49 (80.3%)	38 (69.1%)
Cohort Size																	
Small (≤25)	21 (70.0%)	6 (20.0%)	1 (3.3%)	0 (0.0%)	9 (30.0%)	16 (53.3%)	14 (6.9%)	23 (82.1%)	1 (3.3%)	21 (77.8%)	4 (16.0%)	4 (16.0%)	4 (16.0%)	5 (20.0%)	4 (16.0%)	24 (80.0%)	18 (72.0%)
Medium (26-50)	71 (60.7%)	27 (23.1%)	18 (15.4%)	8 (6.8%)	52 (44.4%)	71 (60.7%)	53 (45.3%)	97 (86.6%)	19 (16.2%)	102 (91.1%)	24 (22.4%)	25 (23.4%)	22 (20.6%)	21 (19.8%)	19 (18.1%)	95 (81.2%)	69 (61.6%)
Large (≥ 51)	40 (70.2%)	19 (33.3%)	5 (8.8%)	5 (8.8%)	25 (43.9%)	34 (59.6%)	29 (50.9%)	47 (85.5%)	9 (15.8%)	48 (88.9%)	11 (21.2%)	11 (21.2%)	11 (21.2%)	11 (21.2%)	11 (21.6%)	46 (80.7%)	37 (68.5%)
Institution Type																	
Private	42 (65.6%)	23 (35.9%)	7 (10.9%)	3 (4.7%)	31 (48.4%)	47 (73.4%)	36 (56.3%)	55 (93.2%)	5 (7.8%)	51 (87.9%)	15 (25.9%)	15 (25.9%)	15 (25.9%)	15 (25.9%)	14 (24.1%)	108 (80.0%)	38 (66.7%)
Public	85 (63.0%)	27 (20.0%)	16 (11.9%)	10 (7.4%)	53 (39.3%)	72 (53.3%)	57 (42.2%)	108 (82.4%)	23 (17.0%)	116 (88.5%)	24 (19.7%)	25 (20.5%)	22 (18.0%)	22 (18.2%)	20 (16.8%)	54 (84.4%)	84 (64.6%)
Hybrid	5 (100.0%)	2 (40.0%)	1 (20.0%)	0 (0.0%)	1 (20.0%)	2 (40.0%)	3 (60.0%)	4 (80.0%)	1 (20.0%)	4 (100.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	3 (60.0%)	2 (50.0%)

	LGBTQ knowledge able faculty	LGBTQ faculty	Faculty LGBTQ clinical practice	Faculty LGBTQ research	Gender neutral restroom	Pronoun process	LGBTQ public material	LGBTQ content mission aligned	LGBTQ clinical rotation	LGBTQ content important/ very important	3+ hours lesbian content	3+ hours gay content	3+ hours bisexual content	3+ hours trans content	3+ hours gender- queer content	PCY content integrated	Graduates very well/ adequately prepared
	132 (64.7%)	52 (25.5%)	24 (11.8%)	13 (6.4%)	86 (42.2%)	121 (59.3%)	96 (47.1%)	167 (85.6%)	29 (14.2%)	171 (88.6%)	39 (21.2%)	40 (21.7%)	37 (20.1%)	37 (20.2%)	34 (18.8%)	165 (80.9%)	124 (64.9%)
Region																	
Northeast	41 (73.2%)	18 (32.1%)	9 (16.1%)	5 (8.9%)	25 (44.6%)	39 (69.6%)	25 (44.6%)	49 (89.1%)	11 (19.6%)	52 (94.%)	12 (23.5%)	12 (23.5%)	12 (23.5%)	9 (17.6%)	9 (18.0%)	46 (82.1%)	40 (72.7%)
Midwest	31 (59.6%)	10 (19.2%)	5 (9.6%)	2 (3.8%)	29 (55.8%)	38 (73.1%)	32 (61.5%)	43 (87.8%)	7 (13.5%)	48 (98.0%)	7 (14.6%)	7 (14.6%)	6 (12.5%)	7 (14.9%)	6 (13.0%)	40 (76.9%)	26 (54.2%)
South	44 (62.0%)	14 (19.7%)	5 (7.0%)	5 (7.0%)	18 (25.4%)	29 (40.8%)	25 (35.2%)	55 (82.1%)	7 (9.9%)	53 (80.3%)	13 (20.3%)	13 (20.3%)	13 (20.3%)	13 (20.3%)	13 (20.3%)	61 (85.9%)	43 (66.2%)
West	16 (64.0%)	10 (40.0%)	5 (20.0%)	1 (4.0%)	14 (56.0%)	15 (60.0%)	14 (56.0%)	20 (83.3%)	4 (16.0%)	18 (78.3%)	7 (33.3%)	8 (38.1%)	6 (28.6%)	8 (38.1%)	6 (28.6%)	18 (72.0%)	15 (65.2%)
Rurality																	
Urban	116 (65.5%)	50 (28.2%)	22 (12.4%)	12 (6.8%)	74 (41.8%)	107 (60.5%)	86 (48.6%)	150 (88.8%)	25 (14.1%)	150 (89.8%)	35 (21.7%)	36 (22.4%)	33 (20.5%)	33 (20.6%)	30 (19.0%)	140 (79.1%)	08 (65.1%)
Rural	16 (59.3%)	2 (7.4%)	2 (7.4%)	1 (3.7%)	12 (44.4%)	14 (51.9%)	10 (37.0%)	17 (65.4%)	4 (14.8%)	21 (80.8%)	4 (17.4%)	4 (17.4%)	4 (17.4%)	4 (17.4%)	4 (17.4%)	25 (92.6%)	16 (64.0%)
AHC Status																	
Non-AHC	94 (65.7%)	30 (21.0%)	15 (10.5%)	9 (6.3%)	59 (41.3%)	81 (56.6%)	61 (42.7%)	116 (83.5%)	19 (13.3%)	122 (88.4%)	25 (19.2%)	26 (20.0%)	24 (18.5%)	25 (19.4%)	22 (17.3%)	116 (81.1%)	86 (63.2%)
AHC	38 (62.3%)	22 (36.1%)	9 (14.8%)	4 (6.6%)	27 (44.3%)	40 (65.6%)	35 (57.4%)	51 (91.1%)	10 (16.4%)	49 (89.1%)	14 (25.9%)	14 (25.9%)	13 (24.1%)	12 (22.2%)	12 (22.2%)	49 (80.3%)	38 (69.1%)
Cohort Size																	
Small (≤25)	21 (70.0%)	6 (20.0%)	1 (3.3%)	0 (0.0%)	9 (30.0%)	16 (53.3%)	14 (6.9%)	23 (82.1%)	1 (3.3%)	21 (77.8%)	4 (16.0%)	4 (16.0%)	4 (16.0%)	5 (20.0%)	4 (16.0%)	24 (80.0%)	18 (72.0%)
Medium (26-50)	71 (60.7%)	27 (23.1%)	18 (15.4%)	8 (6.8%)	52 (44.4%)	71 (60.7%)	53 (45.3%)	97 (86.6%)	19 (16.2%)	102 (91.1%)	24 (22.4%)	25 (23.4%)	22 (20.6%)	21 (19.8%)	19 (18.1%)	95 (81.2%)	69 (61.6%)
Large (≥ 51)	40 (70.2%)	19 (33.3%)	5 (8.8%)	5 (8.8%)	25 (43.9%)	34 (59.6%)	29 (50.9%)	47 (85.5%)	9 (15.8%)	48 (88.9%)	11 (21.2%)	11 (21.2%)	11 (21.2%)	11 (21.2%)	11 (21.6%)	46 (80.7%)	37 (68.5%)
Institution Type																	
Private	42 (65.6%)	23 (35.9%)	7 (10.9%)	3 (4.7%)	31 (48.4%)	47 (73.4%)	36 (56.3%)	55 (93.2%)	5 (7.8%)	51 (87.9%)	15 (25.9%)	15 (25.9%)	15 (25.9%)	15 (25.9%)	14 (24.1%)	108 (80.0%)	38 (66.7%)
Public	85 (63.0%)	27 (20.0%)	16 (11.9%)	10 (7.4%)	53 (39.3%)	72 (53.3%)	57 (42.2%)	108 (82.4%)	23 (17.0%)	116 (88.5%)	24 (19.7%)	25 (20.5%)	22 (18.0%)	22 (18.2%)	20 (16.8%)	54 (84.4%)	84 (64.6%)
Hybrid	5 (100.0%)	2 (40.0%)	1 (20.0%)	0 (0.0%)	1 (20.0%)	2 (40.0%)	3 (60.0%)	4 (80.0%)	1 (20.0%)	4 (100.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	3 (60.0%)	2 (50.0%)

Bivariate Analysis

Statistically significant associations were found between US Census Region and having a gender-neutral bathroom ($p=.002$), having mechanisms in place to incorporate pronouns ($p<.001$) and having LGBTQ+ inclusive public facing material ($p=0.025$). Programs in the South represented the largest proportion of those without gender-neutral restrooms, mechanisms in place for pronouns, and LGBTQ+ inclusive public facing materials. Fisher's exact test showed a statistically significant relationship between US Census Region and reported importance of SGM content ($p=.004$). Programs located in the West ($n=5$, 21.7%) and the South ($n=13$, 19.7%) represented the highest proportions of those rating importance of LGBTQ+ content as unimportant or neutral. A statistically significant relationship between rurality and rating of importance was also identified ($p=.004$). Programs located in urban areas represented a higher proportion of those rating SGM content as somewhat or very important (see Table 3).

Statistically significant associations between student preparedness having a LGBTQ knowledgeable faculty ($p<.001$), mechanisms in place for pronouns ($p=.007$), public facing LGBTQ materials ($p=.02$), teaching more than 3 hours for lesbian ($p<.001$), gay ($p<.001$), bisexual ($p<.001$), transgender ($p<.001$), and genderqueer ($p<.001$) content, and integrating content throughout the curriculum ($p=.007$) were also identified.

Table 4: PA Program Data and SGM Program Characteristics

LGBTQ Content Aligned with Mission				Importance of LGBTQ Content			Gender Neutral Restroom			Mechanism to Incorporate Pronouns			Public Facing Material			3+ Hours LGBTQ+ Content		
US Census Region	No/unsure	Yes	P	Unimportant /neutral	Somewhat /very important	P	No	Yes	P	No	Yes	P	No	Yes	P	0-3	3+	P
Northeast	6 (10.9%)	49 (89.1%)	.682	3 (5.5%)	52 (94.5%)	.003	31 (55.4%)	25 (44.6%)	.002	17 (30.4%)	39 (69.6%)	<.001	31 (55.4%)	25 (44.6%)	.025	39 (76.5%)	12 (23.5%)	.365
Midwest	6 (12.2%)	43 (87.8%)		1 (2.0%)	48 (98.0%)		23 (44.2%)	29 (55.8%)		14 (26.9%)	38 (73.1%)		20 (38.5%)	32 (61.5%)		41 (85.4%)	7 (14.6%)	
South	12 (17.9%)	55 (82.1%)		13 (19.7%)	53 (80.3%)		53 (74.6%)	18 (25.4%)		42 (59.2%)	29 (40.8%)		46 (64.8%)	25 (35.2%)		53 (80.0%)	13 (20.0%)	
West	18 (78.3%)	20 (83.3%)		5 (21.7%)	18 (78.3%)		11 (44.0%)	14 (56.0%)		10 (40.0%)	15 (60.0%)		11 (44.0%)	14 (56.0%)		14 (66.7%)	7 (33.3%)	
Rurality																		
Urban	19 (11.2%)	150 (88.8%)	<.001	17 (10.2%)	150 (89.8%)	.004	103 (58.2%)	74 (41.8%)	.836	70 (39.5%)	107 (60.5%)	.408	91 (51.4%)	86 (48.6%)	.305	127 (78.4%)	35 (21.6%)	.789
Rural	9 (34.6%)	17 (65.4%)		5 (19.2%)	21 (80.8%)		15 (55.6%)	12 (44.4%)		13 (48.1%)	14 (51.9%)		17 (63.0%)	10 (37.0%)		19 (82.6%)	4 (17.4%)	
Size																		
Small	5 (17.9%)	23 (82.1%)	.833	6 (22.2%)	21 (77.8%)	.149	21 (70.0%)	9 (30.0%)	.356	14 (46.7%)	16 (53.3%)	.764	16 (53.3%)	14 (46.7%)	.786	21 (84.0%)	4 (16.0%)	.844
Medium	15 (13.4%)	97 (86.6%)		10 (8.9%)	102 (91.1%)		65 (55.6%)	52 (44.4%)		46 (39.3%)	71 (60.7%)		64 (54.7%)	53 (45.3%)		84 (77.8%)	11 (22.2%)	
Large	8 (14.5%)	47 (85.5%)		6 (11.1%)	48 (88.9%)		32 (56.1%)	25 (43.9%)		23 (40.4%)	34 (59.6%)		28 (49.1%)	29 (50.9%)		41 (78.8%)	39 (21.1%)	
AHC Status																		
Non-AHC	23 (16.5%)	116 (83.5%)	.258	16 (11.6%)	122 (88.4%)	1.000	84 (58.7%)	59 (41.3%)	.757	62 (43.4%)	81 (56.6%)	.277	82 (57.3%)	61 (42.7%)	.066	106 (80.9%)	25 (19.1%)	.325
AHC	5 (8.9%)	51 (91.1%)		6 (10.9%)	49 (89.1%)		34 (55.7%)	27 (44.3%)		21 (34.4%)	40 (65.6%)		26 (42.6%)	35 (57.4%)		40 (74.1%)	14 (25.9%)	
Institution Type																		
Private	23 (17.6%)	108 (82.4%)	.103	15 (11.5%)	116 (88.5%)	1.0	82 (60.7%)	53 (39.3%)	.437	63 (46.7%)	72 (53.3%)	.012	78 (57.8%)	57 (42.2%)	.150	99 (80.5%)	24 (19.5%)	.303
Public	4 (6.8%)	55 (93.2%)		7 (12.1%)	51 (87.9%)		33 (51.6%)	31 (48.4%)		17 (26.6%)	47 (73.4%)		28 (43.8%)	36 (56.3%)		43 (74.1%)	15 (25.9%)	
Hybrid	1 (20.0%)	4 (80.0%)		0 (0.0%)	4 (100.0%)		3 (60.0%)	2 (40.0%)		3 (60.0%)	2 (40.0%)		2 (40.0%)	3 (60.0%)		4 (100.0%)	0 (0.0%)	

Table 5: Student Preparedness and PA Program Characteristics

		Not/minimally prepared	Adequately prepared	Very well prepared	P value
Region	Northeast	15 (27.3%)	36 (65.5%)	4 (7.3%)	0.5
	Midwest	22 (45.8%)	25 (52.1%)	1 (2.1%)	
	South	22 (33.8%)	39 (60.0%)	4 (6.2%)	
	West	8 (34.8%)	13 (56.5%)	2 (8.7%)	
Rurality	Urban	58 (34.9%)	99 (59.6%)	9 (5.4%)	0.8
	Rural	9 (36.0%)	14 (56.0%)	2 (8.0%)	
AHC Status	Non-AHC	50 (36.8%)	79 (58.1%)	7 (5.1%)	0.6
	AHC	17 (30.9%)	34 (61.8%)	4 (7.3%)	
Size	Small (≤ 25)	7 (28.0%)	16 (64.0%)	2 (8.0%)	0.7
	Medium (26-50)	43 (38.4%)	64 (57.1%)	5 (4.5%)	
	Large (≥ 51)	17 (31.5%)	33 (61.1%)	4 (7.4%)	
Institution Type	Private	46 (35.4%)	78 (60.0%)	6 (4.6%)	0.7
	Public	19 (33.3%)	33 (57.9%)	5 (8.8%)	
	Hybrid	2 (50.0%)	2 (50.0%)	0 (0.0%)	
LGBTQ Knowledgeable faculty	Yes	27 (20.9%)	93 (72.1%)	9 (7.0%)	<.001
	No	40 (64.5%)	20 (32.3%)	2 (3.2%)	
LGBTQ faculty	Yes	12 (23.5%)	35 (68.6%)	4 (7.8%)	0.1
	No	55 (39.3%)	78 (55.7%)	7 (5.0%)	
Faculty LGBTQ clinical practice	Yes	6 (25.0%)	16 (66.7%)	2 (8.3%)	0.4
	No	61 (36.5%)	97 (58.1%)	9 (5.4%)	
Faculty LGBTQ research	Yes	3 (21.1%)	9 (69.2%)	1 (7.7%)	0.5
	No	64 (36.0%)	104 (58.4%)	10 (5.6%)	
Gender neutral restroom	Yes	25 (29.4%)	52 (61.2%)	8 (9.4%)	0.1
	No	42 (39.6%)	611 (57.5%)	3 (2.8%)	
Mechanism for pronouns	Yes	33 (27.7%)	76 (63.9%)	10 (8.4%)	.007
	No	34 (47.2%)	37 (51.4%)	1 (1.4%)	
LGBTQ public material	Yes	26 (27.7%)	59 (62.8%)	9 (9.6%)	.02
	No	41 (42.3%)	54 (55.7%)	2 (2.1%)	
LGBTQ content aligns with mission	Yes	53 (32.5%)	99 (60.7%)	11 (6.7%)	0.4
	Unsure	10 (55.6%)	8 (44.4%)	0 (0.0%)	

	No	4 (44.4%)	5 (55.6%)	0 (0.0%)	
LGBTQ clinical rotation	Yes	8 (27.6%)	19 (65.6%)	2 (6.9%)	
	No	59 (36.4%)	94 (58.0%)	9 (5.6%)	0.7
LGBTQ content important/ very important	Unimportant/neutral	12 (54.5%)	9 (40.9%)	1 (4.5%)	
	Somewhat/very	55 (32.5%)	104 (61.5%)	10 (5.9%)	0.1
3+ hours lesbian content	>3 hours	4 (10.5%)	29 (76.3%)	5 (13.2%)	
	0-3 hours	60 (43.2%)	73 (52.5%)	6 (4.3%)	<.001
3 + hours gay content	>3 hours	4 (10.3%)	30 (76.9%)	5 (12.8%)	
	0-3 hours	60 (43.5%)	72 (52.2%)	6 (4.3%)	<.001
3+ hours bisexual content	>3 hours	4 (11.1%)	27 (75.0%)	5 (13.9%)	
	0-3 hours	60 (42.6%)	75 (53.2%)	6 (4.3%)	<.001
3+ hours transgender content	>3 hours	2 (5.6%)	29 (80.6%)	5 (13.9%)	
	0-3 hours	62 (44.3%)	72 (51.4%)	6 (4.3%)	<.001
3+ hours of genderqueer content	>3 hours	2 (6.1%)	26 (78.8%)	5 (15.2%)	
	0-3 hours	60 (42.6%)	75 (53.2%)	6 (4.3%)	<.001
Integrated content	Yes	49 (30.4%)	101 (62.7%)	11 (6.8%)	
	No	18 (60.0%)	12 (40.0%)	0 (0.0%)	0.007

Multivariate Analysis

Logistic regression was performed to identify the effects of having a knowledgeable faculty member, having a mechanism in place for pronoun identification and usage, having LGBTQ+ public facing materials, and teaching more than 3 hours of any LGBTQ+ content area on student preparedness. The model explained 32.4% (Nagelkerke R²) of the variance in student preparedness. The adjusted odds ratio (AOR) of having adequately or well-prepared students in programs with LGBTQ+ knowledgeable faculty members were 6.16 times than that of programs without knowledgeable faculty (95% CI 2.97 to 12.78). The AOR for having adequately or well-prepared students in programs teaching more than 3 hours of any LGBTQ+ content area were 5.20 times than those teaching fewer hours (95% CI 1.60 to 16.82). See

Table 6

Logistic regression was also performed to identify predictors for PA programs teaching more than 3 hours for any SGM content area. The model was statistically significant $X^2=36.33$, $p<.001$ and correctly classified 79.4% of the cases. The predictor variable with the largest effect was a rating of LGBTQ+ content as very important which had an adjusted odds of 9.15 (95% CI 2.53-33.04, $p<.001$). See Table 7.

Table 6: PA Program Predictors of Reported Student Preparedness to Care for LGBTQ+ Patients

Predictor Variable	AOR	95% CI		P
3+ hours LGBTQ+ any content area	5.20	1.60	16.82	.006
LGBTQ+ Knowledgeable Faculty	6.16	2.97	12.78	<.001
Mechanism for Pronouns	1.83	.83	4.01	.134
LGBTQ+ Public Facing Materials	1.20	.55	2.62	.644

Table 7: Predictors of teaching 3+ hours of LGBTQ+ content

Predictor Variable	AOR	95% CI		P
Faculty Knowledgeable	2.64	.93	7.53	.070
Faculty LGBTQ+	1.87	.76	4.64	.176
LGBTQ+ Content Very Important	9.15	2.53	33.04	<.001
LGBTQ+ Clinical Rotation	2.50	.93	6.68	.069
<i>US Census Region</i>				
Northeast				.854
Midwest	.94	.29	3.03	.919
South	1.24	.41	3.743	.705
West	1.67	.45	6.213	.447
<i>Cohort Size</i>				
Small				.705
Medium	.98	.24	3.903	.973
Large	.66	.15	3.003	.595
AHC	1.08	.42	2.78	.872
Public or Public-Private Hybrid	1.43	.53	3.86	.481

Quantitative Results Summary

The percentage of PA programs teaching more than 3 hours of lesbian content was 21.2% (n=39), more than 3 hours of gay content was 21.7% (n=40), more than 3 hours of bisexual content was 20.1% (n=37), more than 3 hours of transgender content was 20.1% (n=37), and more than 3 hours of genderqueer or other gender content was 18.8% (n=34). Integration of LGBTQ+ content throughout the curriculum was reported by 80.9% (n=165) of PA programs and 64.9% (n=124) reported graduates were adequately or very well prepared to care for LGBTQ+ patients. Positive associations between having a LGBTQ+ faculty member ($p<.001$), teaching more than 3 hours of LGBTQ+ content ($p<.001$), integrating content throughout the curriculum ($p=.007$), having mechanisms in place for pronouns ($p=.007$), and having LGBTQ+ facing public materials ($p=.02$) and student preparedness were found. Multivariate analyses showed increased odds of having adequately or well-prepared students with knowledgeable faculty members (AOR=6.16; 95% CI 2.97, 12.78) and teaching more than 3 hours of LGBTQ+ content (AOR=5.20; 95% CI 1.60, 16.82). Logistic regression modelling also showed rating LGBTQ+ as important or very important to be a significant predictor of teaching more than 3 hours of LGBTQ+ content (AOR=9.15, 95% CI 2.53, 33.04).

Qualitative

Fifteen participants across 5 focus groups participated in the study. Forty-seven percent of participants (7/15) identified as female, 40.0% as male (6/15), 6.7% (1/15) as trans male/man, and 6.7% (1/15) as genderqueer/gender non-conforming. Forty-seven percent (7/15) were ages 30 to 38 and 35.7% (5/15) were ages 50-59. One participant identified as Hispanic, Latino, or Spanish in origin and one identified as Black or African American. Ten out of 15 (66.7%) participants indicated they consider themselves part of the LGBTQ+ community, 3 out of 15 (20%) did not consider themselves part of the community and 1 out of 15 (6.7%) declined to answer. One participant did not complete the individual demographic survey therefore data is missing for 6.7% (1/15) on the above variables. See Table 8.

Surveys completed by focus group participants about their respective PA programs indicated that 40.0% (6/15) were located in the Northeast US Census Region, 26.7% (4/15) were located in the West, 20.0% (3/15) were located in the South, and 13.3% (2/15) were in the Midwest. Forty-seven percent (7/15) were private institutions and an additional 46.7% (7/15) were public institutions. Similarly, 46.7% (7/15) were affiliated with an academic health center and 46.7% (7/15) were not. Data was missing for one institution except for its US Census Region. Additional PA program data can be found in Table 9.

Table 8: Focus Group Participant Demographics (n=15)

Variable	n(%)
Gender	
Female	7(46.7%)
Male	6(40.0%)
Trans male/man	1(6.7%)
Genderqueer/non-conforming	1(6.7%)
Age (years)*	
30-39	7(46.7%)
40-49	1(6.7%)
50-59	5(33.3%)
60-69	1(6.7%)
Ethnicity*	
Hispanic/Latino/Spanish in origin	1(6.7%)
Not Hispanic/Latino/Spanish in origin	13(86.7%)
Race*	
Black or African American	1(6.7%)
White	13(86.7%)
Identify as a member of the LGBTQ+ Community*	
Yes	10(66.7%)
No	3(20%)
Decline to answer	1(6.7%)

*missing, n=1(6.7%)

Table 9: Programs Represented by Focus Group Participants

Variable	n(%)
Region	
Northeast	6(40.0%)
Midwest	2(13.3%)
South	3(20.0%)
West	4(26.7%)
Institution type*	
Private	7(46.7%)
Public	7(46.7%)
AHC Status*	
AHC	7(46.7%)
Non-AHC	7(46.7%)
Cohort Size*	
< 25 students	1(6.7%)
25-50 students	5(33.3%)
51-75 students	5(33.3%)
76-100 students	2(13.3%)
100+ students	1(6.7%)
Rurality	
Urban	13(86.7%)
Rural	0(0.0%)
Missing	2(13.3%)

*missing, n=1(6.7%)

The conceptual model using both queer theory⁶² and Kern's 6 steps for curriculum development³¹ provided a useful framework to understand expert PA educators' beliefs about best practices for SGM content in PA education. Specifically, focus group data was aligned with the following steps of the model: 1) Problem Identification & Needs Assessment, 2) Educational Strategies, 3) Goals and Objectives, 4) Evaluation and Feedback, and 5) Implementation. The content that emerged within each step is described below and is summarized in Table 10. Example quotes for each code are located in Appendix H.

Problem Identification and Needs Assessment

Importance of SGM Content in PA Education

Focus group participants described a variety of reasons for why inclusion of SGM content in PA education is important. Among these were personal reasons such as identifying as or having a family who identifies as a member of the LGBTQ+ community, preparing for increasing populations of patients who identify as LGBTQ+, and to improve education and reduce bias in healthcare. Examples of the importance of SGM content were shared by focus group participants, *"I am part of the LGBTQ community, and I find it very interesting the fact that when I went through PA school and graduated I did not have, I did not feel like I had very much content directed towards the LGBT community and really would like to see that increase quite a bit more."* Another stated, *"Considering based on the most recent updates from the Gallup polls, you know, Gen Z, about 22% identify as part of the queer community, so we're gonna be seeing more patients and we need more access to good holistic care."* Improving health outcomes for SGM patients was another reason for inclusion of content in the curriculum discussed by focus group participants. One focus group participant shared,

I think it's really important for PA students to have a good foundational understanding of sexual and gender minority medicine, because we have too many health disparities that those folks are experiencing in healthcare settings. The stories we hear are quite sad,

being refused treatment, or, you know, inappropriate treatment based on, you know, factors that really, honestly shouldn't impact folks' care.

Educational Strategies

Topics to Include in the Curriculum

Multiple SGM topics were identified by participants as necessary parts of PA curricula.

Topic categories represented 6 key areas which included: 1) fundamentals and vocabulary, 2) history taking and physical examination, 3) laboratory and diagnostic assessment, 4) pharmacology, 5) clinical medicine, and 6) PA professionalism and practice.

An example of fundamentals and vocabulary as a key content area was described by a focus group participant, *"I ... think one of the fundamental things that has to be taught is vocabulary. The language surrounding SGM populations. I think if you're talking to any patient and you don't understand how to talk to them, or don't understand the words that they're saying to you, you don't have the ability to be as present with them."* Another focus group participant described history taking and physical examinations, *"we call it the skills for patient assessment and that's sort of the physical exam and ... medical interview skills. And so that's one of the places that we introduce like, how to ask about someone's ... sexual history and their... you know, gender identity as part of the social history and not given this, making assumptions."*

Content for a laboratory and diagnostic assessment was described by a focus group participant as, *"In clinical lab medicine, there needs to be, you need to talk about the impact of gender affirming hormone care on certain lab values, and when those lab values shift from, you know the assigned sex of birth."* Another described the need for inclusion in pharmacology courses, *"We also see this trickle into our pharmacology course, where this is one thing, that, or one area that I really think we could do better is probably broadening how much we talk about gender affirming care in our pharmacology course."* Integration of content into clinical medicine

courses was also described by focus group participants. For example, on focus group participant shared,

In clinical medicine, we do this thing where we're... systems based. So, when we go to pulmonary, they get a 10 min lecture on binding, and I throw in some external videos where they can hear from young folks who don't have access to top surgery to talk about their binding experiences. There we do the same thing, we ... talk, we have stuff in geriatrics and psych, you know, literally musculoskeletal, we talk about the bone impacts of puberal suppression and limited, if you're if you're ... exogenous sex levels, if your GAT [gender affirming treatment] levels are not adequate. So, it's not like, it doesn't need to be more than a slide or 2 each of these topics.

An example of PA professionalism and practice course content was provided by another focus group participant,

So one of the other places we incorporate this, we have a longitudinal course, it's called Mission and Practice. And it's sort of our professional practice course but it also is our course where we address cognitive decision-making problems, where we address legal issues, history of the PA profession, but also how do we address bias in healthcare. And we do a..., I think we call it a gender, gender and sexuality workshop as part of that. And I ... co-teach it with a gender studies instructor. And so, what's interesting with that one is that it, we teach all the constructs there around, like how we bring, like different versions of like ... sort of what does your gender mean and like, do you bring, like a different part of your gender to work or to home, or to like all of these different parts.

Ideal Teaching Approaches

Approaches to delivering SGM content described by participants included: 1) offering clinical experiences, 2) using expert speakers to deliver content, 3) queering the curricula, 4) using case & problem-based learning, 5) use of self-reflection and self-assessment, and 6) use of standardized patients with lived experience. Clinical experiences discussed were clinical rotations with SGM patient populations, shadowing opportunities in the preclinical phase of PA education, and service opportunities. One focus group participant shared an example of a clinical service learning opportunity,

I organized a vaccination event at [redacted] so students accompanied by some faculty who were supervising them, in collaboration with the county health department and the state department of health, which had to provide the actual vaccines and refrigeration, and you know all sorts of stuff that are required to pull this off..., and it was a wonderful,

very popular event. And I would equip students because they did sort of rotating through various different activities from recruiting among the Pride revelers to you know, screening, health questionnaires, doing the actual vaccinations whatever it may be. And so one of the, you know, components of this was to go out and just sort of talk to people so that they could get more comfortable talking with queer people.

Participants also discussed expert speakers as inclusion of people with lived experience either individually or in panel in addition to lectures delivered by subject matter experts as ideal teaching approaches. One focus group participant shared how they've incorporated panels of people with lived experience, *"we have a lecture specifically on trans care that we give that's followed by a panel of trans people who talk about what their experience has been accessing healthcare, to give an idea."* Another described the role of subject matter experts,

I actually bring in some heavy hitters, I think who people are very much respected [redacted] if you all know who [redacted] is, and then [redacted] out of New York. And they come in and talk to our students. ... I do a community health panel which [redacted] talks about the community health needs of sexual gender minority populations. And then, [redacted], I do bring in the STI piece, and [redacted] comes in and talks about the STI piece. But then I set aside 20 to 30 min for people to self-select to go into a breakout room and just discuss and talk with them, and they get so much out of it.

Queering of the curricular content was a concept based on queer theory and conceptualized by the author as an approach that included mention of regular incorporation of non-hetero/non-cis normative language or patient examples and the need to thread SGM content longitudinally across the curriculum. Examples of queering the curriculum with use of non-hetero/non-cis normative cases included the following statement by one focus group participant,

So any of the cases that we use in the program in the first year and the second year, has a really specific eye toward like you know, having 2 parents of the same sex and ... just having a whole case that uses the pronoun, they, when someone's gender isn't important to the medicine that we're talking about... that's not the point of the case. It's just... presented that way and hopefully becomes kind of part of the background that's understood and accepted.

Another participant shared, *“a lot of our cases we have now adapted to people that are just not, you know, straight, white 40-year-old men.”* Threading the content throughout the curriculum was described by another focus group participant,

So we threaded SGM health as well as intersectional frameworks, you know, for health, throughout. So it's kind of everywhere. And I think it's really important for it to be everywhere and not sort of it's own little thing in the corner over there. Because, you know. LGBTQIA +++++ people are everywhere. We're not just in the corner somewhere. And you know, our identities reflect the complexities of the world that we live in, so I think that sort of the intersectional approach made sense.

Another focus group participant stated, *“I think the courses that should cover content are multiple. You know, you can see how the topics fit throughout the curriculum, and it shouldn't necessarily be one course, housed in you know, one area per se.”*

Participants also described the use of case-based learning in small groups to facilitate learning about SGM health as an ideal teaching method. A focus group participant shared, *“I assign all kinds of different things where they either work in groups or in pairs, sometimes they have small discussions in class where I'll give them each, you know, a scenario, a video or something, and then it goes from a smaller conversation to a bigger conversation where everyone joins in.”* Student self-reflection and self-assessment were identified as strategies to promote recognition of bias, exploration of values, and processing of personal discomfort with topics or language. An example was given by one focus group participant, *“It's better when you can assign students some stuff to do at home so that they can get through a little bit of their own discomfort, and maybe start addressing some of their own biases before you bring them into the classroom.”* Standardized patients and observed structured clinical examinations (OSCEs) were described as learning opportunities for students to practice using pronouns and taking a non-hetero/non-cis normative sexual history and organ inventory. One focus group participant said, *“As we move into the adult medicine, which is like our clinical medicine, a big, you know, the*

meat and potatoes of PA school, we... make sure that there are simulated patients. We have someone who is representative again of the LGBTQIA+ community.”

Goals & Objectives

Necessary SGM Competencies

Competencies described as recommended requirements for all graduating PA students included knowledge and skills-based competencies.

Knowledge

Knowledge was one key competency category which included several sub-categories: 1) clinical knowledge, 2) knowledge of LGBTQ+ health disparities, 3) understanding the legal issues related to providing care to people who are SGM and the impact of legal issues on LGBTQ+ patients, and 4) knowing what resources or referrals to use to support care of the LGBTQ+ patients.

Clinical knowledge was described by participants as knowing treatment options for patients who are gender diverse, being able to prescribe human immunodeficiency virus (HIV) pre-exposure prophylaxis (PrEP) and gender affirming medical treatment and knowing the appropriate screenings and preventative care needed for patients who are SGM. Necessary clinical knowledge described by one focus group participant was, *“Everybody should know the basics of what trans hormone therapy is, even if they’re not prescribing it, they should understand what folks are on.”* For knowledge about legal issues, participants discussed the need for students to understand the unique legal and ethical information related to the care of aging SGM patients or adolescents and how to navigate disclosures, documentation, and insurance issues. Knowledge of legal issues affecting LGBTQ+ patients was described by one focus group participant as, *“we talk about chosen family and ... kind of the legal documents required, so that people are prepared to be able to make medical decisions for each other if it's, if there's an issue*

around that, I guess I'm, at any rate, so chosen family, the concept of that, the legalities related to that."

Knowledge of LGBTQ+ health disparities included understanding of social determinants of health and those that are uniquely experienced by people who are SGM. This was described by a focus group participant as,

You know, there are specific health disparities and specific health needs that are associated with each different population. And I think one competency is being able to identify those, like as a specific knowledge piece in addition to a communication piece of being able to navigate those conversations carefully, I think even knowing about those health disparities is a ... competency for sure.

Knowledge of resources and referrals was described by participants as the ability to identify culturally appropriate resources particularly when the provider is not able to provide the care themselves. An example provided by one focus group participant was,

Having the competency to know where in your community to send these people, right? Like as a primary care provider say, I don't know how to do transgender pregnancy, I don't know how to do gender affirming care, I don't know how to do your testosterone, so you can still have sex, I don't know these things, so I know who can do it for you, though.

Skills

Cultural competence in providing care to SGM patients was discussed as a necessary competency for PA students. Participants described cultural competence as the ability to apply knowledge of health disparities to the care of SGM patients, to recognize bias and address their own biases, the ability to deliver trauma-informed care. The ability to communicate effectively using correct pronouns, terminology, and in taking social, sexual, and medical histories was also described as components of cultural competency. One focus group participant stated,

I think we should know how to, like Participant 1 had mentioned earlier, be aware of biases and recognize biases. We should be able to ask a comprehensive and inclusive social and sexual history. We should be able to differentiate between sex and gender. We should be able to differentiate between identity and then behavioral risk and we should be able to talk about you know, specific, sort of general screening and then screening for specific populations that

again, based on like risk or exposure, and that could be on age, sexual orientation, gender identity and behavior.

Another stated,

I think we've talked about like I think, just generally some of the concepts we've talked about already kind of emphasize a lot of them. But I think you know definitely knowledge of SGM health disparities, clinical skills in SGM care, communication skills. We talked earlier about addressing bias and stereotypes, interdisciplinary collaboration. And I'm trying to think of more or less, like having, providing patient-centered care.

Evaluation & Feedback

Evaluation of Competencies

Discussion of student competency evaluation included mention of both formative and summative assessment methods. Examples of formative assessment methods were student self-reflections on their own biases, following a clinical experience with SGM patients, or after listening to a panel of people with lived experience. One focus group participant stated, *“Sometimes I think reflections are helpful. I do a big reflection... it's around the social history, and it's asking people just like to reflect on what they're comfortable or uncomfortable within asking in the social history.”*

The use of OSCE's and standardized patients with someone who is representative of a SGM group was discussed in all focus groups as a tool for evaluating competency as either formative or summative assessments. A focus group participant shared, *“what would be my like best-case scenario for assessment might be an OSCE with someone ... that represents a sexual and gender minority.”*

Evaluations from clinical preceptors on skills and clinical knowledge and evaluation of knowledge on written examinations were additional strategies for evaluating competencies described by participants. A focus group participant shared, *“I think I think there is a role for like multiple choice questions, especially around medication screening, lab tests, lab parameters, like that kind of stuff.”* Use of the program exit survey or through pre- and post- surveys of

students were mentioned as methods which could be used to evaluate programmatic level competency. An example shared by a focus group participant was, *“We have exit survey interviews with our... students on their way out and we are very mission focused program so we attach everything to the mission and then the mission is really underserved populations and we include, you know it, sexual gender minority under that cause, I mean, that's where it belongs.”*

Implementation

Challenges to Implementation

Participants described several challenges to implementing the proposed best practices discussed during focus groups. Challenges were: 1) lack of clear benchmarks, 2) bias, 3) lack of faculty knowledge, 4) generational differences, 5) program priorities, 6) time constraints, 7) lack of clinical sites, 8) the legislative and/or political climate, and 9) safety and vulnerability.

The lack of specificity in the ARC-PA standards was described as a challenge in implementing curriculum by a focus group participant, *“When you look at the ARC-PA standards, you know you have to teach about it, but it doesn't say how you know or what.”* Bias as a barrier was described as faculty members or students who are unsupportive of integration of SGM content and religious objections to inclusion of content. For example, one focus group participant shared, *“Not having a faculty who is all in and all on board with updating our curriculum to be, you know, to normalize, to normalize these things within the curriculum is our own biggest barrier.”* Participants also described a lack of faculty at their programs with expertise or comfort in delivering content related to SGM health. An example shared by a focus group participant was,

You know one of the difficulties with many programs that I see posting in the PA Educators Facebook Group is they feel inadequately prepared to deliver even a ... foundational lecture on the use of pronouns or talking about the differences between gender and gender identity, sexual orientation, and that's kind of like a 101 lecture.

Generational differences were described by participants as a discrepancy between the beliefs of students and some faculty that there is still discrimination and bias against SGM people. For example, a focus group participant stated,

And what has been interesting to me is learning that this younger generation has a view that, like people in SGM populations are ... accepted now and there, there isn't really like lasting discrimination. They ... can get married, they can love whoever they want, they can... And so they don't understand the continued focus, even though we like cover it in class, they still sort of have this underlying belief, that we're kind of past that.

Program priorities as a barrier to curricular implementation were described as situations where other PA curricular content was valued over SGM content. One participant shared,

I also think there's a perception... that there isn't time to add anything to the curriculum. But the curriculum is packed, there is so much in it, we can't possibly add another thing. And what a bunch of bullshit! Right? I mean, you have priorities. Your priorities have determined along with the standards and everything else, right, what we're building into our curriculum. If this is a priority, then damn it, put it in there.

Within program priorities, participants also described how lecturers for a topic such as diabetes might be offered payment while they had been invited to lecture on SGM topics for no payment. The limited time in the curriculum was also mentioned as a challenge to the inclusion of SGM content. A focus group participant stated,

Every program says they've got 10 pounds of stuff and a 5-pound bag, and what ...do we, what do you, ... we can't add. So, we have committees that say we can't add new content unless we choose to remove something else. That's literally like it's pie. And it's shrinking pie, right, as opposed to integrate a slide, cause it cause it's necessary. And I don't know if that happens in all programs, but it's happened in the ones that I've been involved in. Right. Here's we have a 2-hour slot, that's all you get. Either cram it all in 2 hours, or they're not gonna get it, or yeah, or what, what do you wanna remove?

The identification or availability of clinical sites focused on SGM health was another barrier described by participants.

I don't know if it's just being in a Midwest town or what it is, but it is very difficult to find preceptors that are specified to LGBTQ medicine. We do have a few family medicine doctors that are I guess, have them a higher proportion of ... their patient panel that ... consider themselves as part of the LGBTQ community. But outside of that, unfortunately,

we really just don't have enough... of that type of medicine near us to be able to have it. I do think it'd be great to be able to have our students integrated into clinics that are doing outpatient medicine in that way. But also I think it'd be great to have a surgical rotation having that, you know, doing top and bottom surgery. It's just difficult to find to those. But I think it's a very valuable lesson to have. I would love to require every one of my students to be able to do a rotation of some sort to have that consideration. But it's just it's not there, unfortunately.

The legislative and political climate was also discussed as a challenge related to SGM curricula. Participants reported concerns about the impacts of anti-DEI and anti-LGBTQ+ legislation on faculty, students, and patients.

Because we're not gonna be allowed to mention equity, diversity and inclusion, like in those terms. So we're gonna have to change like belonging and something else and wordsmithing all of that. But the anti-trans bathroom law has been really interesting because it's also affecting our students.... So even though the state law says they can use whatever bathroom they want as long as it's not a state building, or if it's attached to a locker room. However, that's not going to prevent people from taking pictures of my students and submitting them to this, you know, "hotline" or whatever. So I'm worried about them from that perspective.

Another focus group participant stated,

The last time I went to PAEA there was a pre-conference session on this topic, and one of the people from one of the faculty members in a Texas program had been asked by the Attorney General of the State to provide them with all of their objectives related to this question. So I think that that is kind of the, you know, overwhelming concern, is, you know, this idea that we now have medical refugees within the United States, related to gender affirming care. And so I think that's the biggest and scariest issue around, you know, having... this curriculum across the United States, as opposed to just blue States.

Safety and vulnerability was another topic that arose as a barrier to curricular inclusion and was described by participants with reference to their own identities and the delivery of SGM content.

An example shared in one focus group was,

When I first transitioned and changed my name and everything else, I had, I felt it was almost incumbent on me to explain to students that this is who I had been, but now this is who I... was in the process of transition. And I figure they know now, and so it always is a dilemma for me, do I out myself when I'm lecture? And it's a decision that I often have to make on the fly to determine, do I feel this is safe, you know, do... I feel comfortable with it?

Another focus group participant shared,

You know I am a female, gay, Jewish, divorced, single mother working on a Catholic campus. I'm surprised I don't burst into flames every time I step foot. But it's a vulnerable, you know, I don't share a lot of that with my students, I just share the material because that's not my job to expose myself. That's why I bring in guest speakers. I don't want to be the representative of any of those populations, because a lot of those populations right now are super vulnerable and so it is it's a careful, calculated dance.

Facilitators to Implementation

Focus group participants described 4 categories of facilitators to implementation of SGM content in PA education: the ARC-PA standards, existing resources, programmatic or mission-oriented support, and student interest. The ARC-PA standards were mentioned as a facilitator because they require coverage of SGM content. One participant stated, “*and this is a really big thing, so the ARC-PA says, there's gotta be, this contents gotta be covered.*” Existing resources such as the AAMC competencies, online modules, or the availability of knowledgeable alumni were also mentioned as facilitators. For example, a focus group participant shared “*I also am a full believer in work smarter, not harder, and don't recreate the wheel. There are so many absolutely amazing resources online, one of which is the Fenway Institute if you haven't used that one yet.*” Programmatic support was described as having the support of program leadership and/or alignment of inclusion of SGM content with the institutional mission. The impact of the institutional mission was described by a focus group participant as,

And, we have the University as a whole, as an administrative structure has made it a point to write anti-racism, inclusivity into the University's mission, into. We measure ourselves on that. Each ...college and each school within the college has to have a certain number of faculty activities towards this. And I think, having that environment on the administrative level where you're not worried, that something's gonna come down on you if you approach it from the wrong direction is, is freeing, right?

Participants also described student interest in SGM content as a reason to include additional content in the curriculum. An example of student interested shared by a focus group participant

was *“I will say I'm very thankful that we have had students who are interested and have pushed to say, you know, we want to know more about this.”*

Table 10: Recommended Best Practices for SGM Content in PA Education

Necessary SGM Content in PA Curricula					
Fundamentals & Vocabulary	History Taking & Physical Examination	Laboratory & Diagnostic Methods	Pharmacology	Clinical Medicine	PA Professionalism & Practice
Gender identity Gender neutral language Pronouns Sex versus gender Sexual orientation	Organ inventory Inclusive sexual history Trauma-informed physical examinations	Interpreting labs for patients on hormone therapy	Gender affirming medical treatment HIV PrEP	Behavioral medicine Endocrinology Gastroenterology Infectious diseases OGBYN Pediatrics Primary care Surgery Urology	Ethical & legal issues Implicit bias LGBTQ+ aging LGBTQ+ health disparities Professionalism
Ideal Teaching Approaches to Teaching SGM Content					
Clinical Experiences	Expert Speakers	Queering Curricular Content	Case & Problem Based Learning	Self-reflection	Standardized Patients
Clinical rotations Shadowing	Inclusion of people with lived experience Using subject matter experts	Regular incorporation of non-cis & non-heteronormative cases Threading content throughout the curriculum in relevant courses	Pairs or small groups working through cases including SGM patients	Recognition of bias Discomfort	Students practice sexual history & use of pronouns
Required PA Student SGM Competencies					
Knowledge				Skills	
Clinical knowledge of screenings, preventative, & routine health needs, prescribing	LGBTQIA+ health disparities & impact	Legal issues related to providing care to SGM patients & legal issues impacting LGBTQ+ patients	Resources & referrals that support care of SGM patients	Cultural competency: -Recognizing & addressing bias -Trauma-informed care Inclusive communication	
Evaluation of SGM Student Competencies					
Formative	Formative or Summative	Summative		Programmatic	
Student reflections Student self- assessment	Standardized patient evaluations	Preceptor evaluations	Written examinations	Exit surveys, Surveys on student comfort, knowledge, etc.	

Challenges to Implementation Best Practices								
Lack of clear benchmarks or guidelines	Bias -faculty or student	Lack of faculty knowledge on how to teach content	Legislative and/or political climate	Generational differences	Safety & Vulnerability	Program priorities	Time constraints	Lack of clinical sites
Facilitators to Implementation of Best Practices								
Explicit accreditation standards	Existing resources -online modules -AAMC competencies -available lecturers			Programmatic support -program mission -institutional climate -support of leadership				Student interest

AAMC: American Association of Medical Schools; LGBTQ+: lesbian, gay, bisexual, transgender, queer, plus; HIV: human immunodeficiency virus; PrEP: pre-exposure prophylaxis; SGM: sexual & gender minority

Qualitative Results Summary

Qualitative results were interpreted within the framework of the conceptual model to identify expert PA educator beliefs about best practices in the delivery of SGM content in PA education. Within the Problem Identification and Needs Assessment step, focus group participants shared why inclusion of SGM content in PA education is important. They discussed personal reasons, the increasing numbers of openly LGBTQ+ people, and the need to address bias and discrimination in healthcare. Results within the Educational Strategies step included both topics to include in the curriculum and ideal approaches to content delivery. Topics recommended to be included in PA curricula represented six major categories: fundamentals and vocabulary, history taking and physical examination, laboratory and diagnostic assessment, pharmacology, clinical medicine, and PA professionalism and practice. Ideal teaching approaches involved clinical experiences with LGBTQ+ patient populations, expert speakers, case and problem-based learning, self-reflection and self-assessment, and standardized patients with lived experience. Another ideal approach that was highly prominent among focus group participants was termed queering curricular content, which included the importance of integrating content throughout the curriculum and shifting away from heteronormative cis-normative teaching practices.

Identification of necessary SGM competencies for PA students was discussed as part of the Goals & Objectives step of the conceptual model. The knowledge needed within SGM competencies included knowledge of: the clinical needs of LGBTQ+ patients, legal issues impacting and related to the care of LGBTQ+ people, the health disparities experienced by LGBTQ+ people, and how to identify and access appropriate resources for LGBTQ+ patients. The skills component of SGM competencies for PA students was cultural competence involving the ability to communicate effectively, to recognize and minimize the impact of bias, to deliver

trauma-informed care, and to apply knowledge of health disparities in the care of LGBTQ+ patients. Focus group participants recommended the evaluation of competencies through formative and summative assessments and program evaluation.

Barriers and facilitators to inclusion of SGM content were included within the Implementation step of the model. Challenges to incorporation of SGM content in the curriculum described by focus group participants included: lack of clear benchmarks, bias, lack of faculty knowledge, generational differences, program priorities, time constraints, lack of clinical sites, the political or legislative climate, and safety and vulnerability associated with teaching or being LGBTQ+. Facilitators that supported the implementation of SGM content into the curriculum included the ARC-PA standards, presence of existing resources, having programmatic or mission-orient support for inclusion of content, and student interest in this content area.

Mixed Methods Results

Qualitative and quantitative findings were integrated through a joint display. See Table 11: Joint Display of Quantitative and Qualitative Findings. The display contained rows for quantitative variables with corresponding qualitative findings. Interpretation of mixed methods results is found in Chapter 5: Summary, Implications, and Conclusions.

Table 11: Joint Display of Quantitative and Qualitative Findings

Variable	Quantitative		Qualitative
Content Integration	81% of programs report integrating SGM content throughout curricula - Association between reported student preparedness to care for LGBTQ+ patients and teaching >3 hours of SGM content ($p<.001$) - Increased odds of adequately/well-prepared students with teaching > hours (AOR=5.20; 95% CI 95% 1.60, 16.82) - Association between integration of content and reported student preparedness ($p=0.007$)		- Importance of threading content throughout curriculum prominent discussed in all 5 FGs - Shift from heteronormative/cis-normative teaching practices and need to regularly include non-heteronormative/non-cis-normative cases throughout the curriculum discussed in all 5 FGs
Courses	n (%) programs covering one or more LGBTQ+ identities		- FGs discussed need to teach fundamentals & vocabulary on SGM health - FGs described inclusion of content beyond courses surveyed quantitatively and included: history-taking & physical examination, laboratory/diagnostic methods, pharmacology, clinical medicine, and PA professionalism & practice courses - Clinical medicine courses discussed included behavioral medicine, endocrinology, gastroenterology, infectious diseases, OBGYN, pediatrics, primary care, surgery, & urology
	Medical Interviewing	156 (76.5%)	
	Endocrinology	60 (29.4%)	
	OBGYN	117 (57.4%)	
	Infectious Diseases	110 (53.9%)	
	Urology	80 (39.2%)	
Content Delivery & Evaluation	Problem-based learning	72 (35.3%)	- Multiple approaches to delivery of content emphasized including: lectures, clinical experiences, use of expert speakers, case & problem-based learning, student self-assessment, and use of standardized patients and/or OSCEs - Recommended competencies for PA students included knowledge and skills that should be assessed through formative, summative, and programmatic assessments
	Observed structured clinical examination	48 (23.5%)	
Faculty Knowledge	132 (64.7%) report having a LGBTQ+ knowledgeable faculty member - Association between student preparedness and having knowledgeable faculty ($p<.001$) - Increased odds of adequately/well-prepared students with knowledgeable faculty (AOR=6.16; 95% CI 2.97, 12.78)		- Lack of faculty knowledge noted as a barrier to inclusion of SGM content - Faculty bias also described as barrier to inclusion of content

LGBTQ+: lesbian, gay, bisexual, transgender, queer, plus; SGM: sexual and gender minority; FG: focus groups; OGBYN: obstetrics & gynecology, OSCE: observed structured clinical examination

CHAPTER 5: SUMMARY, IMPLICATIONS, AND CONCLUSIONS

This chapter presents a summary of the research findings and compares the quantitative and qualitative findings for convergence. Consensus best practices for the inclusion of SGM content in PA education are described. Strengths and limitations of the study are discussed and the implications of the research findings for PA education and public health are highlighted. Finally, a discussion of future work and research on the current and best practices for inclusion of SGM content in PA education follows.

Research Summary

This mixed methods study sought to answer three research primary questions. The first research question (What is the status of SGM content in PA education?) was primarily answered through quantitative methods. Important findings from the quantitative research included the amount of LGBTQ+ content reported by PA programs which was 1-3 hours for most programs. No prior studies have evaluated the number of hours for all LGBTQ+ content in PA education, however comparison on transgender specific content shows an increase from 55% of programs teaching 1-3 hours on transgender health in 2019²⁷ to 78% in 2021. Between 2019 and 2021, the PA accreditation standards specifically requiring content on gender identity were implemented are likely one important factor resulting in increased LGBTQ+ content. The trend is however, also consistent with increases in LGBTQ+ content in medical school curriculum that rose from a median of 5 hours in 2009-2010²¹ to 11 in 2022²⁵ that may also be explained by the call to action to address health disparities experienced by SGM people.

This study also found that most PA programs (81%) integrate content throughout the curriculum rather than delivering it in a discrete lecture or course. Integration of content throughout the curriculum is higher in PA education compared to medical schools with 52%

reporting integration throughout.²⁵ Given that the duration of PA school is much shorter than medical school may allow for greater flexibility in medical school curricula to have extensive but discrete LGBTQ+ units. Teaching more than 3 hours of any LGBTQ+ content area and having knowledgeable faculty members were positive predictors of reported student preparedness to care for LGBTQ+ populations identified in this study. Faculty knowledge has previously been shown to be associated with hours of LGBTQ+ content²⁷ and lack of faculty knowledge was shown to be a barrier to content delivery in this study. Ensuring faculty are adequately prepared to teach SGM content, therefore, is an important factor in ensuring students are well-prepared to care for SGM patients.

The second research question (What are PA educators' perceptions about best-practices in delivering SGM content?) was answered through qualitative methodology. PA educators with expertise in SGM content described ideal practices in the delivery of SGM content including topic areas and courses for content inclusion, approaches to content delivery, necessary student competencies, strategies for assessing student competencies, and barriers and facilitators to implementation of SGM content. Prominent conversations centered around queering the curriculum, or the importance of threading SGM content throughout all the relevant lectures and courses in PA education and the need to include shift away from heteronormative cis-normative teaching practices. Barriers identified in this study including lack of faculty knowledge and time constraints and facilitators such as existing resources and competencies (i.e. AAMC) are consistent with themes identified in prior research.⁵⁵ Additional content noted in all focus groups were issues around the safety and vulnerability of: teaching SGM content, having a LGBTQ+ identity as a faculty member or student, and the safety and vulnerability experienced by SGM

patients. Finally, the impact of legislative and political issues was identified in all focus groups as a barrier to implementation of SGM content and/or a safe learning environment.

The third research question (What is the current consensus on best practices in the delivery of SGM content in PA education?) was addressed through convergence and interpretation of the qualitative and quantitative data sets.

Consensus Best Practices

Amount of SGM Content

Results showed a statistically significant relationship between reporting that graduates were adequately or very well-prepared to care for LGBTQ+ patients and teaching more than 3 hours of LGBTQ+ content, however, only about 20% of US PA programs report teaching more than 3 hours in any LGBTQ+ content area. While focus group participants did not describe a specific number of hours to ensure adequate curricular inclusion, they repeatedly mentioned the need to ensure content is included in any relevant course or topic area. Convergence of this data suggests a consensus for the following best practice: **Ensure adequate inclusion of SGM content in all courses.**

Integration of SGM Content

Integration of content across the curriculum was associated with reporting graduates were adequately or well prepared and was repeatedly cited as important in all focus groups. Quantitative data supported this practice with 81% of PA programs reporting integration of SGM content. Based on convergence of the data, a second consensus best practice is: **Thread SGM content throughout the curriculum longitudinally.** Qualitative results further elaborated on the integration of SGM content with strong findings indicating a need to shift away from heteronormative cis-normative teaching practices. The clear consensus among expert PA

educators on this topic supports it as a best practice: **Regularly incorporate nonheteronormative noncisnormative teaching practices.**

Topics/Courses

The majority of PA programs reported teaching about at least one LGBTQ+ identity in their Medical Interviewing (76.5%, n=156) courses which aligned with the strong support in the qualitative data for inclusion of SGM content in history-taking and physical examination courses. These findings support a consensus best practice of: **Teach correct use of terminology and necessary skills for history-taking and physical examination of SGM patients.** The quantitative data also showed most PA programs reported teaching on at least one LGBTQ+ identity in OGBYN (57.4%, n=117) and Infectious Diseases (53.9%, n=110). The quantitative results support inclusion in multiple clinical courses and given the strong qualitative findings which indicated a need to include SGM content in numerous courses, another consensus best practice is: **Include relevant SGM content in clinical courses (i.e. gender affirming medical treatment in endocrinology).**

Delivery of SGM Content

Quantitative data in this area was limited to program reported use of problem-based learning and OSCEs for either delivery or evaluation of SGM content. Over 35% of programs reported incorporation of content into problem-based learning opportunities and 24% reported inclusion of SGM content in OSCEs. Qualitative findings described the use of multiple teaching strategies for SGM content which included lectures, clinical experiences such as shadowing or clinical rotations, the use of expert speakers and those with lived experience, case and problem-based learning experiences, student self-reflection and self-assessment, and use of standardized patients with lived experience or OSCEs. Comparison of these data indicates that while the majority of programs were not using PBL or OSCEs at the time of the survey, multiple

approaches to content delivery are strongly recommended. The resulting consensus best practice is: **Use multiple teaching strategies to deliver SGM content.** Competencies were not assessed through quantitative methodology, however based on expert PA educator consensus, additional best practices follow: **Establish student SGM competencies and evaluate student SGM competencies.** Multiple recommended competencies and methods for evaluation were described in the qualitative findings.

Table 12: Consensus Best Practices for SGM Content in PA Education

Consensus Best Practice	Approaches
1. Ensure adequate inclusion of SGM content in all courses	• Evaluate identities not adequately addressed in the curriculum and determine courses in which content should be included • Evaluate courses in which SGM content is not delivered and what content is missing
2. Thread SGM content throughout the curriculum longitudinally	• Ensure multiple touchpoints for SGM content across multiple courses • Integrate SGM content in both didactic and clinical phases
3. Regularly incorporate nonheteronormative noncisnormative teaching practices	• Include LGBTQ+ identities in non-stereotypical ways (i.e. include 2 gay parents in a case about a pediatric patient) • Include opportunities for students to practice taking a sexual history and organ inventory
4. Teach correct use of terminology and necessary skills for history-taking and physical examination of SGM patients	• Teach differences between sex, gender, sexual orientation, and gender identity • Teach how to use pronouns, take an inclusive sexual history and organ inventory • Teach trauma-informed physical examination techniques
5. Include relevant SGM content across clinically focused courses	• Include content in laboratory/diagnostic methods courses, pharmacology, clinical medicine, and PA professionalism/practice courses
6. Use multiple teaching strategies to deliver SGM content	• Use expert speakers and people with lived experience to deliver content • Offer clinical experiences in caring for LGBTQ+ patients • Teach via lectures, case or problem-based learning, student self-reflection and self-assessment, and through use of standardized patients with lived experience
7. Establish student SGM competencies	• Establish program required knowledge and skills and methods specific to caring for SGM people • Include instructional objectives and learning outcomes on course syllabi
8. Evaluate student SGM competencies	• Use formative, summative, and programmatic level assessments to ensure students are meeting established SGM competencies

Strengths and Limitations

Several important strengths in this study should be noted. The use of a mixed methods design combines the strengths of both methods.⁸⁶ In this research, the quantitative results provided important data about the amount and type of SGM content delivered and reported student preparedness to care for LGBTQ+ patients. The qualitative inquiry explored expert PA educator perceptions about best practices and provided deeper insight into topics, courses, and teaching strategies for inclusion of SGM content. An additional strength of the quantitative work is the high survey response rate (71.8%) which suggests the data is representative of US PA programs. The qualitative work included rigorous deductive and inductive analysis of the data with 2 independent coders reviewing, discussing, and agreeing upon codes for all data. One coder was a PA educator with subject matter expertise and the other a primary researcher, thus providing multiple perspectives on the data. The data analysis additionally involved member checking which increases the credibility of the findings. Finally, the research also used a conceptual model which included an established framework in medical education for evaluating and developing curriculum.

Several limitations of the research are also important to acknowledge. First, the quantitative survey was completed by PA program directors (PDs) who, in their administrative roles, may not know how much content is taught in each course. PDs reported their perceptions about student preparedness to care for LGBTQ+ populations, however student perceptions and student knowledge or skills were not evaluated. Secondly, PA PDs may also have been subject to social desirability bias in reporting their programs' SGM activities particularly given that inclusion of content is an accreditation requirement. Third, the survey design offered limited categories for content hours responses while a continuous response may have offered better detail on content hours. Fourth, the survey was limited to ten questions and the validity of the

survey was not established. Fifth, in the qualitative focus groups, no expert PA educators from rural PA programs participated. While representation is not required in purposive sampling, it is possible that expert educators in rural programs may have different perceptions or opinions to contribute. Sixth, reflexivity⁸⁷ or the relationship between the researcher and the focus group participants may have had some influence given many of the focus group participants already knew the researcher. Finally, the deidentification of the quantitative data which was provided to the author did not allow for direct linkage of PA program data and focus group participants.

Implications for Health Professions Education

This dissertation research addresses gaps in the PA education literature on the status of SGM content in curricula and more broadly in health professions education on best practices in SGM content delivery. Accredited PA programs are specifically required to teach students about caring for SGM patient populations and results from this research provide benchmarks in terms of content hours, topics, courses in which content is delivered, and best practices in teaching SGM content. Benchmarking is used in health professions education both to identify sound practices and to compare performance against standards.⁸⁸ PA educators can use these benchmarks to evaluate and improve their programs' delivery of SGM content across their curricula. PA programs may also use benchmarks and application of best practices to demonstrate how they are adequately meeting the required ARC-PA accreditation standards. While this study focused specifically on PA education, the best practices identified such as, integrating content longitudinally and inclusion of nonheteronormative and noncisnormative cases, are applicable to other health professions education programs. Should the accrediting bodies for nursing and medical schools implement more specific LGBTQ+ related accreditation standards in the future, results from this study may also inform how SGM content is delivered and evaluated in their respective curricula.

Research findings also suggest the need for faculty development on teaching SGM content and increased support for the educators delivering this content. A barrier to inclusion of SGM content was a lack of faculty knowledge about SGM health and many faculty may not have received training on caring for SGM populations during their own education. Additional faculty training focusing on SGM health issues could increase faculty comfort and knowledge in delivering SGM content thereby, resulting in better integration across clinical content. Programs cannot depend on faculty who have self-selected to learn to care for SGM patients to be the only faculty responsible for teaching the content. There is also a risk in relying on only one or two members to deliver content should the responsible faculty for delivering SGM content leave the program.

This study also found that a disproportionate number of PA program faculty responsible for delivering SGM content also identified as members of the LGBTQ+ community. Recent research in the context of recent anti-LGBTQ+ legislation has shown that undergraduate and graduate level faculty are concealing their LGBTQ+ identities and reporting concerns about harassment and physical safety.⁸⁹ Given the prominent themes of safety and vulnerability related to LGBTQ+ identity and SGM content delivery that also emerged in this research, PA programs need to ensure they provide adequate support to the faculty teaching this content, many of whom are members of the LGBTQ+ community. Research on vulnerability in teaching has shown that educators experience a mental toll from having to prove the academic value of sensitive topics and responding to negative feedback from colleagues and students.⁹⁰ Programs must prioritize SGM content by queering the curriculum, a strategy that will not only demonstrate the value of SGM content through routine incorporation across courses but will also potentially decrease the vulnerability experienced by those historically responsible for delivering the content.

The legislative and political climate is another important topic warranting discussion related to the inclusion of LGBTQ+ content in PA education. Record numbers of anti-LGBTQ and anti-DEI policies have been introduced and passed in states across the US in the last several years.⁹¹⁻⁹³ PA programs function within the context of state laws and the impact of legislative issues was a prominent finding in the qualitative research. This is particularly interesting given that the majority of participants (66.6%, n=10) represented programs in states that are blue leaning.⁹⁴ While the ability to teach SGM health content was not affected, concern about its prioritization and creating an inclusive learning environment were areas of discussion. It is possible that the impact of the political and legislative climate is even more pronounced in more politically conservative states than those represented in this study.

Implications for Public Health Practice

People who are SGM frequently experience discrimination in healthcare or have difficulty finding a provider who is knowledgeable about their healthcare needs.^{5,7} This can result in delay or avoidance of care and is one contributor to the many health disparities experienced by people who are SGM.^{3,5} As the populations of people who openly identify as LGBTQ+ continues to grow, the shortage of providers prepared to care for SGM patients will worsen. Preparing future clinicians to care appropriately for SGM people is an important strategy in decreasing the health disparities experienced in these populations. This mixed methods research identified key benchmarks and teaching methods for curricular inclusion to promote increased preparedness of PA graduates. PA educators and other health professions educators may utilize the best practices to support increased preparedness of the healthcare workforce to care for SGM patients and decrease the health disparities experienced by these groups.

The public health implications of the current research cannot be discussed without mentioning the impact of political and legislative decisions on LGBTQ+ people and their

healthcare. In 2023, over 510 anti-LGBTQ bills were introduced in states across the US and 84 of those bills passed. So far in 2024, 527 anti-LGBTQ bills have been passed and 44 have become law.⁹⁵ Of these, a significant portion are healthcare related and include age restrictions on seeking gender-affirming care, limit LGBTQ+ health funding, and limit access to gender-affirming care in prisons.⁹² Knowledge of health disparities and legal issues experienced by LGBTQ+ people were key topic areas identified in the research. These are evolving areas that healthcare and public health educators will need to stay informed on as they will impact the healthcare workforce. There is also potential for workforce migration based on state level legislation with students and/or clinicians interested in SGM health moving away from states with more restrictive legislation.

Future Works and Research

The quantitative portion of this study was conducted in 2021 two years after the implementation of accreditation standards that specifically mentioned providing teaching with regards to gender identity and sexual orientation. It would be of benefit to re-examine the amount of SGM content, courses in which it is taught, methods of delivery, program variables and reported student preparedness over time. Programs may continue to shift the amount of content and courses in which it is delivered as they become more accustomed to meeting the accreditation standards. State political or legislative issues could also affect curricular implementation. Future research comparing changes in SGM curricula longitudinally could provide valuable insights into trends in the delivery of SGM content in health professions education. Research directly surveying students or PA program graduates nationally instead of PDs (i.e. via the AAPA end-of-of curriculum survey) about their knowledge, skills, and preparedness to care for SGM patients would be also highly valuable. Comparisons of program

and student reported preparedness, content delivery, and outcomes would provide additional valuable information about how to best prepare PA students to care for SGM populations.

The PAEA SGM SIG is actively working on cross walking the AAMC competencies to PA graduate competencies. This author is a collaborator and will share key findings on best practices in SGM content delivery. Consensus best practices from this research will provide a helpful framework for PA programs in integrating, assessing, or delivery SGM content. Further clarification of expert PA educator recommendations could be accomplished through use of a Delphi process.⁹⁶ For example, through multiple iterative rounds in a Delphi process, expert panelists could specifically identify the minimum necessary SGM competencies that should be achieved by all PA students. The national committee of experts may further elaborate on and/or revise the consensus best practices identified in this study.

Conclusions

Through a mixed methods approach, this study described the current approaches to delivery of SGM content at PA programs nationally, identified expert PA educator recommendations for best practices in the delivery of SGM content, and established eight consensus best practices. Findings from this research provide useful benchmarks for PA educators to ensure delivery of SGM content is adequately included in the appropriate courses and that approaches to teaching are aligned with best practices. Programs may additionally use benchmarks and best practices to demonstrate meeting the required accreditation standards that specifically require SGM content. As the first study in health professions education to describe best practices in SGM content delivery, they may be adapted and applied to other health professions educational programs. Application of best practices in the delivery of SGM content in health professions is a strategy which aims to ensure the future healthcare workforce is

prepared to care for growing SGM populations and address the health disparities experienced by them.

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APPENDIX A: DUHS IRB APPROVAL LETTER



DUHS INSTITUTIONAL REVIEW BOARD NOTIFICATION OF STUDY APPROVAL

Protocol ID: Pro00113446

Reference ID: Pro00113446-INIT-1.0

Principal Investigator: Quinnette Jones

Protocol Title: Factors Associated with the Delivery of Sexual and Gender Minority Content in PA Education **Sponsor/Funding Source(s):** Duke University(440) **Federal Funding Agency ID:**

The Duke University Health System Institutional Review Board for Clinical Investigations has conducted the following activity on the study cited above: **Activity:** New Study

Review Type: Expedited

Review Date: 08/02/2023

Issue Date: 08/04/2023

Expiration Date: 08/02/2025

DUHS IRB approval encompasses the following specific components of the study:

Protocol version/date:

DUHS IRB Application version: 1.3

Consent form reference date: 08/04/2023 (e-consent)

Investigator Brochure, version/date:

Pediatric Risk Category:

Other: Contact Email, Recruitment Script, Eligibility Screener, Semi structured focus group questions for AAPAPAEA Research Fellowship Proposal (1)

The DUHS IRB has determined the specific components above to be in compliance with all applicable Health Insurance Portability and Accountability Act ("HIPAA") regulations.

DUHS IRB approval does not constitute Institutional approval to begin study activities. Notification of Institutional approval will be sent from the OnCore clinical research management system.

This study qualifies for the revised Common Rule effective January 21, 2019 and the elimination of annual review by the IRB. Please note that this study will only require completion of an abbreviated report on the study's progress over the last 2 years beginning on the 2-year required check-in date cited above.

You must complete a 2-year check-in form in iRIS, or close the study before the 2-year required check-in date. The 2-year check-in submissions must be received by the DUHS IRB office 60 to 45 days prior to the 2-year required check-in date above.

No change to the protocol, consent form or other approved document may be implemented without first obtaining IRB approval for the change. Any proposed change must be submitted as an amendment. Safety reports must continue to be submitted according to IRB policy

The Duke University Health System Institutional Review Board for Clinical Investigations (DUHS IRB), is duly constituted, fulfilling all requirements for diversity, and has written procedures for initial and continuing review of human research protocols. The DUHS IRB complies with all U.S. regulatory requirements related to the protection of human research participants. Specifically, the DUHS IRB complies with 45CFR46, 21CFR50, 21CFR56, 21CFR312, 21CFR812, and 45CFR164.508-514. In addition, the DUHS IRB complies with the Guidelines of the International Conference on Harmonization to the extent required by the U. S. Food and Drug Administration.



DUHS Institutional Review Board

Suite 900 Erwin Square | 2200 West Main St | Durham, NC | 27705 | 919.668.5111

Federalwide Assurance No: FWA 00009025

APPENDIX B: UMC-IRB EXTERNAL IRB RELIANCE

External IRB Confirmed

This activity is executed by IRB staff to assign the study to external IRB

Apr
16
2024

Author: Susan Barakat (UMCIRB Office)
Logged For (Study): Delivery of SGM Content in PA Education
Activity Date: 4/16/2024 11:20 AM

Activity Form	Property Changes	Documents	Notifications
Property	Old Value	New Value	
owner		Susan Barakat	
name		External IRB Confirmed	
Study.status	IRB Staff Review	External IRB	
Study.dateEnteredState	4/16/2024 11:17 AM	4/16/2024 11:20 AM	
Document: (0.01) (dateActivated)		12/31/1799	
Document: (0.01) (dateExpired)		12/31/2499	
Set of Person	Added elements: - Ruth Little - Qiang Wu - Quinnette Jones		

APPENDIX C: QUANTITATIVE SURVEY

1. How many total hours are devoted to teaching healthcare for each of the following LGBTQ groups during the preclinical phase?

	0 hours	1-2 hours	2-3 hours	3+ hours
Lesbians				
Gay men				
Bisexual persons				
Transgender persons				
Genderqueer persons/other gender people				

2. In which lectures or courses in the preclinical phase is the information about each LGBTQ subgroup delivered? Check all that apply for each

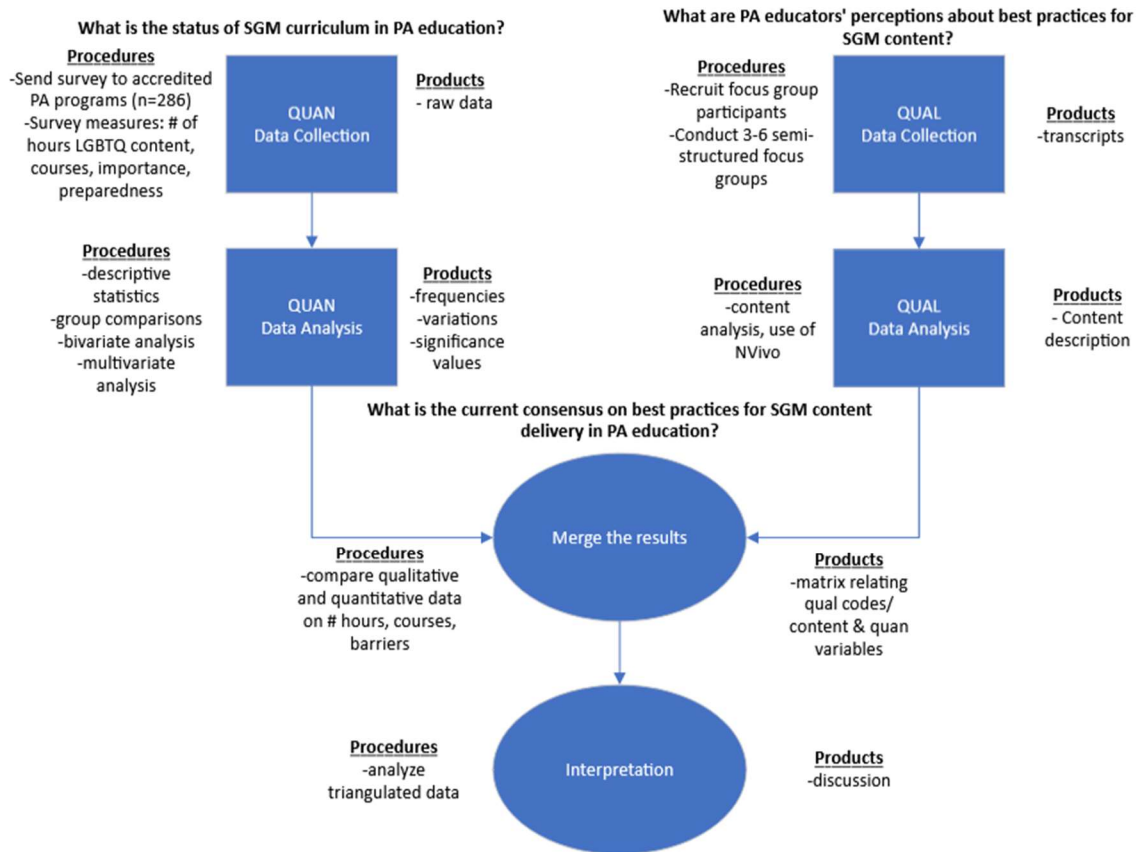
	Lesbians	Gay men	Bisexual persons	Transgender persons	Genderqueer persons /other gender people
Medical Interview					
Endocrinology					
Women's Health/OBGYN					
Urology					
Infectious Disease					
Within problem-based learning cases					
Via OSCEs or simulation					
Other, please specify: _____					

3. During the preclinical phase, where in the curriculum is LGBTQ content delivered? Select all that apply.
- Integrated throughout the preclinical/didactic curriculum
 - Taught as a discrete LGBTQ unit
 - Taught within a single course
 - Unsure
4. How many total instructional hours are devoted to teaching LGBTQ content during the clinical phase (i.e. required instruction for all clinical year students such as at call back days, required modules, etc.)?
- Text entry response _____ hour(s)
5. Does your program have a clinical rotation with learning outcomes focused specifically on the care of LGBTQ patients?
- Yes, as part of a required rotation
 - Which rotation(s) _____ (text box)
 - Yes, as an elective rotation
 - Which rotation(s) _____

- c. No
 - d. Unsure
6. To what extent are graduates of your program prepared to care for patients from the LGBTQ population?
- a. Very well prepared
 - b. Adequately prepared
 - c. Minimally prepared
 - d. Not at all prepared
7. How important is including LGBTQ content in PA program curriculum?
- a. Very important
 - b. Somewhat important
 - c. Neutral
 - d. Somewhat unimportant
 - e. Very unimportant
8. Describe factors at your program which either support and/or restrict the inclusion of LGBTQ content in your curricula.
- a. Open ended response
9. Please indicate which of the following statements are true for your program. **Check all that apply.**
- Our program includes:
- a. Faculty member(s) knowledgeable in caring from patients who identify as LGBTQ
 - b. Faculty member(s) who identifies as LGBTQ
 - c. Staff member(s) who identifies as LGBTQ
 - d. Faculty member(s) clinically practicing in LGBTQ health
 - e. Faculty member(s) conducting research in LGBTQ care/health
 - f. Gender neutral restroom for use by PA program students, faculty, staff, and visitors.
 - g. Mechanisms to include pronouns in any official identification/name badge/learning management system
 - h. Public facing materials or information about LGBTQ inclusion (i.e. safe space or affinity group information on website)
 - i. Other, please specify: _____
10. Does teaching LGBTQ curricula align with the values and mission of your institution?
- a. Yes
 - b. No
 - c. Unsure

APPENDIX D: MIXED METHODS OVERVIEW

Figure 2: Mixed Methods Convergent Design of SGM Content & Best Practices in PA Education



APPENDIX E: FOCUS GROUP DISCUSSION GUIDE

Welcome and thank you for agreeing to participate in this discussion group. My name is Quincy Jones and I am with the Duke PA Program. I am very interested in hearing your perspectives on the inclusion of sexual and gender minority (SGM) content in PA education and best practices in this area. You were invited because of your expertise in this area of PA education and your role in either delivering or overseeing the delivery of this content.

A few housekeeping items to cover:

- I understand how important it is that this information is kept private and confidential. I ask everyone to respect each other's confidentiality and not discuss what you hear outside of this group.
- I will be recording the Zoom discussion so that I can accurately capture all the information I hear from the group. These recordings will be kept completely secure and confidential and destroyed at the end of the study period as required by federal regulations.
- I will be keeping a written list of topics and ideas discussed we will use later in our session today.
- Participation is completely voluntary. You may refuse to answer any question or withdraw from the study at any time. By remaining in the discussion group, you indicate your consent to participate in this study.
- If you have any questions now or after our discussion today, you can always contact me at quinnette.jones@duke.edu (put in chat)

Ground Rules

- Focus group will take about 90 minutes.
- Everyone is encouraged to participate. Each person's unique perspective is important.
- Information provided in the focus group must be kept confidential
- Stay with the group and please don't have side conversations
- Turn off cell phones if possible

My role is moderate the discussion, I will ask questions, at times I may interrupt to move the conversation along to ensure we finish on time.

Does anyone have any questions before we begin?

1. Briefly introduce yourself and describe why you think SGM curriculum is important for PA students.
2. From your perspective, what are the topics should be included in the curriculum and what courses should they be included in?

PROBE: Should the curriculum include gender affirming hormone treatment? Surgical treatments? Health disparities? Screenings/preventative healthcare for SGM?

3. What are the ideal teaching approaches to delivering this content to the students? (i.e. lectures, case-based discussions, standardized patients, patient panels, etc.)

PROBE: Should SGM content be included in multiple methods of instruction? Should it be included in the clinical phase of PA education?

4. Thinking about competencies as the knowledge, skills, attitudes, or behaviors of students, what student competencies specific to SGM health should be required?

PROBE: What SGM related knowledge, skills, attitudes, or behaviors should all PA students be able to demonstrate? (i.e. taking a sensitive sexual history, conducting a sensitive physical exam in a gender diverse patient)

5. How should competencies be evaluated or measured?

PROBE: Should evaluation be via written exams, standardized patients, discussion-based, etc?

Zoom Whiteboard

We discussed a lot of topics so far and I'm going to share my screen so that you can see a visual of what has been shared. The sticky notes are color-coded according to topic area and I'll be asking you to put an emoji on some of them in just a moment. First, let's review how to put an emoji on the sticky note. Click on the sticky note you wish to place your emoji on then click on the smiley face which is the "add emoji" button.

- a. The first grouping includes the topics you identified that should be included in the curriculum. Place an emoji on the topics that you think are an absolute must to be included in the curriculum.
- b. The second grouping includes the courses in which content should be taught
- c. The third grouping includes the approaches to delivering content that were discussed. Please place an emoji on the best instructional methods to deliver SGM content.
- d. Finally, the last grouping includes the necessary student competencies or knowledge, skills, and attitudes all PA students should have. Place an emoji on the competencies you think are most important.

6. What are the challenges to implementing these best practices?

PROBE: What are the barriers? Cost? Expertise? Legislation?

7. What facilitators support implementation of best practices?

PROBE: Have the accreditation standards served as a facilitator?

8. What else is important to consider that we haven't talked about today?

Summarize briefly

Purpose of today's discussion was to learn about your perspectives on best practices for the delivery of SGM content in PA education.

That's all the questions I have. Do you have questions for me?

Thank you for your time.

APPENDIX F: COREQ (COnsolidated criteria for REporting Qualitative research) Checklist

Topic	Item No.	Guide Questions/Description	Reported on Page No.
Domain 1: Research team and reflexivity			
<i>Personal characteristics</i>			
Interviewer/facilitator	1	Which author/s conducted the interview or focus group?	Ch 3
Credentials	2	What were the researcher's credentials? E.g. PhD, MD	Ch 3
Occupation	3	What was their occupation at the time of the study?	Ch 3
Gender	4	Was the researcher male or female?	N/A
Experience and training	5	What experience or training did the researcher have?	N/A
<i>Relationship with participants</i>			
Relationship established	6	Was a relationship established prior to study commencement?	Ch 3
Participant knowledge of the interviewer	7	What did the participants know about the researcher? e.g. personal goals, reasons for doing the research	Ch 3
Interviewer characteristics	8	What characteristics were reported about the inter viewer/facilitator? e.g. Bias, assumptions, reasons and interests in the research topic	Ch 3
Domain 2: Study design			
<i>Theoretical framework</i>			
Methodological orientation and Theory	9	What methodological orientation was stated to underpin the study? e.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis	Ch 2
<i>Participant selection</i>			
Sampling	10	How were participants selected? e.g. purposive, convenience, consecutive, snowball	Ch 3
Method of approach	11	How were participants approached? e.g. face-to-face, telephone, mail, email	Ch 3
Sample size	12	How many participants were in the study?	Ch 3
Non-participation	13	How many people refused to participate or dropped out? Reasons?	Ch 3
<i>Setting</i>			
Setting of data collection	14	Where was the data collected? e.g. home, clinic, workplace	Ch 3
Presence of non-participants	15	Was anyone else present besides the participants and researchers?	N/A
Description of sample	16	What are the important characteristics of the sample? e.g. demographic data, date	Ch 4
<i>Data collection</i>			
Interview guide	17	Were questions, prompts, guides provided by the authors? Was it pilot tested?	Appendix
Repeat interviews	18	Were repeat inter views carried out? If yes, how many?	Ch 3
Audio/visual recording	19	Did the research use audio or visual recording to collect the data?	Ch 3
Field notes	20	Were field notes made during and/or after the inter view or focus group?	Ch 3
Duration	21	What was the duration of the inter views or focus group?	Ch 3
Data saturation	22	Was data saturation discussed?	Ch 3
Transcripts returned	23	Were transcripts returned to participants for comment and/or	N/A

Topic	Item No.	Guide Questions/Description	Reported on Page No.
		correction?	
Domain 3: analysis and findings			
<i>Data analysis</i>			
Number of data coders	24	How many data coders coded the data?	Ch 3
Description of the coding tree	25	Did authors provide a description of the coding tree?	Appendix
Derivation of themes	26	Were themes identified in advance or derived from the data?	Ch 3
Software	27	What software, if applicable, was used to manage the data?	Ch 3
Participant checking	28	Did participants provide feedback on the findings?	Ch 3
<i>Reporting</i>			
Quotations presented	29	Were participant quotations presented to illustrate the themes/findings? Was each quotation identified? e.g. participant number	Ch 4
Data and findings consistent	30	Was there consistency between the data presented and the findings?	Ch 4
Clarity of major themes	31	Were major themes clearly presented in the findings?	Ch 4
Clarity of minor themes	32	Is there a description of diverse cases or discussion of minor themes?	Ch 4

Developed from: Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. International Journal for Quality in Health Care. 2007. Volume 19, Number 6: pp. 349-357

Once you have completed this checklist, please save a copy and upload it as part of your submission. DO NOT include this checklist as part of the main manuscript document. It must be uploaded as a separate file.

APPENDIX G: CODEBOOK

Code	Subcodes	Type	Description	Notes
Importance of SGM Content for PA		Pre-determined (interview guide)	Briefly introduce yourself and describe why you think SGM curriculum is important for PA students	When people list out reasons why it's important including personal reasons, increasing population of SGM people, etc.
	Personal Reason	Added during coding	Use when participants cite how, the reason its important to them is due to a loved one or someone they're close to coming out as trans or LGBTQIA	
	SGM population	Added during coding	Use when a participant references how SGM population is everywhere or when they specifically describe their local area as having a larger portion of SGM.	
	To improve education and reduce bias	Added during coding		
Topics for SGM Curriculum	Where and how SGM is currently incorporated	Added during coding	code not used	
		Pre-determined (interview guide)	From your perspective, what are the topics should be included in the curriculum and what courses should they be included in? PROBE: Should the curriculum include gender affirming hormone treatment? Surgical treatments? Health disparities? Screenings/preventative healthcare for SGM?	
	Cultural, SE, & Racial Diversity	Added during coding	6/17/24- combined with health disparities	
	Fundamentals & Vocabulary	Added during coding	Can includes the basics, vocabulary, pronouns, as well has how to navigate making mistakes gracefully.	
	Safe Zone Training	Added during coding	6/20/24- include in fundamentals & vocabulary	
	Health Disparities	Added during coding	Use when participants describe health disparities, social determinants of health, barriers to care information for SGM pops	

Ideal Teaching Approaches	History Taking & Screening	Added during coding	Use when participants reference that students should be taught how to gather history and then apply screenings based on the history screening, not based on just what their assumed gender identity is. Example is prostate screening - don't assume that someone has or doesn't have a prostate based on their appearance or assumed GI
	Clinical Medicine	Added during coding	Use when participants describe clinical medicine courses (endocrinology, pediatrics, OB/GYN, pulmonology, etc.)
	PA Professionalism/Practice	Added during coding	Use when participants describe courses focused on PA professional practice, ethics,
	Communication	Added during coding	not used (only coded once and upon review was recoded under fundamentals & vocabulary)
	Interviewing Skills	Added during coding	Combined with history taking and screening
	Organ Inventory		Part of interviewing/history taking
	Implicit Bias		Included with PA professionalism 8/9/24
	Legal & Ethical Issues in SGM Care		**combined with PA Professionalism courses**8/6/24
		Pre-determined (interview guide)	What are the ideal teaching approaches to delivering this content to the students? (i.e. lectures, case-based discussions, standardized patients, patient panels, etc.) PROBE: Should SGM content be included in multiple methods of instruction? Should it be included in the clinical phase of PA education?
	Non-hetero/cisnormativity	Added during coding	Use when participants describe using LGBTQ people in routine cases to normalize sexual orientation/gender identity
	Threaded throughout	Added during coding	Use when people describe integrating content in multiple courses, longitudinally, or across the curriculum
	Clinical Experiences	Added during coding	Clinical rotations, shadowing opportunities, volunteer with patient populations
	Including panel with people with lived experiences	Added during coding	Use when participants cite having LGBTQ+ people share stories with students
	Problem & case-based learning	Added during coding	Use when participants describe case-based learning or team-based learning to study a condition, topic, etc. Also referred to as PBL (some overlap with IBL)
	Self-reflection	Added during coding	Use when participants describe asking students to reflect on their own discomfort, biases, values, etc.
	Shadowing in special populations		6/20/24- combined with Clinical experiences

	Subject Matter Expert	Added during coding	Use when participant discusses use of external experts to teach content	
	Faculty Competence		use when participants cite that faculty have to also be informed on content	
	Small groups		combined with problem-based 8/6/24	code not used
	Standardized Patients	Added during coding	when participants mention SPs, OSCEs	
	Virtual opportunities		code not used	
Required SGM Health Competencies		Pre-determined (interview guide)	Thinking about competencies as the knowledge, skills, attitudes, or behaviours of students, what student competencies specific to SGM health should be required? PROBE: What SGM related knowledge, skills, attitudes, or behaviours should all PA students be able to demonstrate? (i.e. taking a sensitive sexual history, conducting a sensitive physical exam in a gender diverse patient)	
Skills	Cultural competency & Inclusive communication	Added during coding	Use for describing inclusive history taking, cultural humility, appropriate use of terminology/pronouns, and having appropriate communication skills	
Knowledge	How to Identify Referral Resources	Added during coding	Use when participants describe knowing where/how to appropriately refer SGM patients for additional care	
	How to self correct or recover from mistakes	Added during coding	combined with cultural competence and inclusive communication 8/6/24	
Knowledge	knowledge of specific LGBTQIA disparities	Added during coding	knowledge of disparities experienced by SGM patients, mental health and stressors to being a minoritized group	
	Gender affirming hormone therapy	Added during coding	Use when participants describe need for students to be able to understand hormone therapy, interpret labs, or prescribe hormones, combined with clinical knowledge	
Knowledge	Legal	Added during coding	7/11/24, use when participants describe knowledge of legal issues faced by SGM populations	
Knowledge	Clinical Care	Added during coding	8/6/24- combined PrEP and gender affirming HRT	
	PrEP	Added during coding	Use when participants describe PrEP (pre-exposure prophylaxis)-- combined with clinical care	
Evaluate Competencies		Pre-determined (interview guide)	How should competencies be evaluated or measured? PROBE: Should evaluation be via written exams, standardized patients, discussion-based, etc?	

formative or summative	Standardized Patients assess students	Added during coding	Apply when participants discuss feedback from standardized patients (SP) or OSCE's as ways to evaluate competencies	
programmatic	Pre and post survey on comfort	Added during coding	described survey on knowledge, competence, awareness pre and post SGM course	
	Surveys on Patient Demographics to Understand Use of Neutral Language	Added during coding	Code not used	
summative	Written examination	added during coding	Traditional written exams	
summative	Preceptor evaluation	Added during coding	Use when participants cite using preceptors to evaluate competency in SGM care	
formative	Reflections	Added during coding	faculty/preceptor provides feedback or evaluates students	
Challenges to Implementing Best Practices		Pre-determined (interview guide)	What are the challenges to implementing these best practices? PROBE: What are the barriers? Cost? Expertise? Legislation?	
	Lack of clear benchmarks/guidelines	Added during coding	Use this code when participants describe not knowing how much or where to incorporate SGM content	
	Clinical Site Shortages	Added during coding	Use when participants describe limited opportunities for clinical site placements to learn SGM health	
	Faculty Knowledge	Added during coding	Use when lack of faculty knowledge or expertise is cited as a reason for not including content	
	Bias	Added during coding	Used when participants describe faculty, students, etc. who are not supportive of content	Was faculty not supportive; recoded as bias on 8/6/24
	Generational Differences	Added during coding	Use when participants describe differences in perspectives/understanding of SGM experiences	
	Limited funding to support SGM content		combined with program priorities	

Facilitators to Implementation	ARC-PA Standards	Added during coding	Use when accreditation standards, ARC, or ARC-PA are mentioned	
	Program biases or Assumptions	Added during coding	combined with program priorities	
	Program not a safe space or beliefs systems that hinder learning about SGM	Added during coding	combine with program priorities	
	Program priorities & values	Added during coding	use when citing how the program does not prioritize SGM content or how it prioritizes other content more than SGM which becomes a barrier to increasing content for SGM	expanded to include values 6/22/24
	Legislative & political barriers	Added during coding	use when participants describe impact of political climate or state laws on teaching/including content and the learning environment	
	Stigma regarding conditions or diseases SGM community experiences			
	Time	Added during coding	Use when participants mentioned limited time in PA education to fit in all content	
	Safety-Vulnerability	Added during coding	Use when participants mention SGM identity as a reason for concerns about safety, being discriminated against, treated differently, etc.	
		Pre-determined (interview guide)	What facilitators support implementation of best practices? PROBE: Have the accreditation standards served as a facilitator?	
	Accreditation & other standards	Added during coding	Use when ARC-PA or certification testing (PANCE) mentioned as a reason for inclusion of SGM content	
	Existing resources	Added during coding	Use when participants describe resources such as AAMC, online trainings available to students	
	Programmatic or Mission oriented support	Added during coding	Use when the program or mission of the university supports SGM content	
	Student Interest	Added during coding	When student interest/request is described as a driver of curricular inclusion	

**Other
Important
Considerations**

Pre-
determined
(interview
guide)

What else is important to consider that we haven't talked about today?

APPENDIX H: CONCEPTUAL MODEL CATEGORY, CODES, EXEMPLARS, & REFERENCES

Content Category	Code	Example Participant Quote	References	Focus Groups
Importance of SGM Content	Personal reasons	I am part of the LGBTQ community, and I find it very interesting the fact that when I went through PA school and graduated I did not have, I did not feel like I had very much content directed towards the LGBT community and really would like to see that increase quite a bit more.	4	4
	SGM populations	Considering based on the most recent updates from the Gallup polls, you know, Gen Z, about 22% identify as part of the queer community, so we're gonna be seeing more patients and we need more access to good holistic care.	3	4
	To improve education & bias	I think it's really important for PA students to have a good foundational understanding of sexual and gender minority medicine, because we have too many health disparities that those folks are experiencing in healthcare setting. The stories we hear are quite sad, being refused treatment, or, you know, inappropriate treatment based on, you know, factors that really honestly shouldn't impact folks care.	6	4
Topics to Include in the Curriculum	Clinical medicine	In clinical medicine, we do this thing where we're, we're systems based. So when we go to pulmonary, they get a 10 min lecture on binding, and I throw in some external videos where they can hear from young folks who don't have access to top surgery to talk about their binding experiences. There we do the same thing, we... have stuff in geriatrics and psych, you know, literally musculoskeletal, we talk about the bone impacts of puberal suppression.	24	5
	Fundamentals & vocabulary	It talks about gender versus sex, and talks about pronouns, and it talks about inclusive questions, and just from a not from a non-medical perspective, but just how do we interact with sexual and gender minorities	12	5
	Health disparities	we do talk about it in our medical humanities course in terms of a history of abuse or discrimination with previous ICD classifications of LGBTQI populations, and the impacts that that has had over the decades on individuals feeling like they're able to seek care due to a history of harm.	16	5
	History taking & screening	We also see this carried through into our patient care, which is mostly our physical examination course. So this would be	15	5

			obtaining a sexual history and performing inclusive physical exam mechanics again, based on an organ inventory.		
		Lab & diagnostic medicine	In clinical lab medicine, there needs to be, you need to talk about the impact of gender affirming hormone care on certain lab values, and when those lab values shift from, you know the assigned sex of birth	3	2
		PA professionalism & practice	It's sort of our professional practice course but it also is our course where we address cognitive decision-making problems, where we address legal issues, history of the PA profession, but also how do we address bias in healthcare.	16	5
		Pharmacology	In pharmacology, where I did an introduction to gender affirming hormone therapy	2	4
Ideal Teaching Approaches		Clinical Experiences	We do have electives in LGBTQ medicine. At least one and one possible like surgery related elective where there's a, like a transgender care center at one of the major hospitals.	10	4
	Experts	Including a panel with lived experiences	We have a, we have a lecture specifically on trans care that we give that's followed by a panel of trans people who talk about what their experience has been accessing healthcare, to give an idea.	4	3
	Queering	Non-hetero-cis normativity	And that's kind of what, and then the last thing is just when we're referring to patients in vignettes you know, not making the assumptions that always get made, that they're cis and straight, and instead, including information about that, so that we're teaching people not to make these assumptions which are so common.	15	4
		Case & problem-based learning	Thinking through a case somebody's coming to you interested in, you know, primary care, and they identify as part of the queer community, you know, do we have to think about what vaccine you know, all the you know the... basic things like that.	7	4
		Self-reflection	Something else that I do, and it actually takes it, it's it, it's the most time-consuming assignment that I give to my students, and I do it for a variety of topics, but I give them a reflection assignment.	5	3
	Experts	Standardized Patients	As we move into the adult medicine, which is like our clinical medicine, a big, you know, the meat and potatoes of PA school, we... make sure that there are simulated patients. We have someone who is representative again of the LGBTQIA+ community.	9	5

		Subject Matter Experts	In my public health course, I actually bring in some heavy hitters... and they come in and talk to our students.	3	2
	Queering	Threaded throughout	I would believe that starting from day one all the way through graduation, this being a thread that's pulled all the way through.	25	5
SGM Competencies	Knowledge	Clinical Knowledge	Everybody should know the basics of what trans hormone therapy is, even if they're not prescribing it, they should understand what folks are on.	2	1
		Legal	Oh, maybe legal and insurance issues. People should probably understand, because, like you had mentioned with you know, partnerships and kind of ethics, access. And and I do think another one another great competency is around LGBT elders and understanding kind of unique considerations for geriatric patients. Oh, and then adolescent considerations, especially like legal and ethical. So you know, what do you do like with disclosures, or what do you do with documentation.	1	1
		Health Disparities	You know, there are specific health disparities and specific health needs that are associated with each different population. And I think one competency is being able to identify those, like as a specific knowledge piece in addition to a communication piece of being able to navigate those conversations carefully, I think even knowing about those health disparities is a comp competency for sure.	4	4
		How to identify referrals & resources	Having the competency to know where in your community to send these people, right? Like as a primary care provider say, I don't know how to do transgender pregnancy, I don't know how to do gender affirming care, I don't know how to do your testosterone, so you can still have sex, I don't know these things, so I know who can do it for you, though	2	2
	Skills	Cultural competency	I think we should know how to, like Participant 1 had mentioned earlier be aware of biases and recognize biases. We should be able to ask a comprehensive and inclusive social and sexual history. We should be able to differentiate between sex and gender. We should be able to differentiate between identity and then behavioral risk and we should be able to talk about you know, specific sort of general screening and then screening for specific populations that again, based on like risk or exposure, and that	14	5

			could be on age, sexual orientation, gender identity and behavior.		
Evaluation of competencies	Formative	Reflections	Sometimes I think reflections are helpful. I do a big reflection, but it's so it's with, it's around the social history, and it's asking people just like to reflect on what they're comfortable or uncomfortable within asking in the social history.	4	2
	Formative or Summative	Standardized Patients	And I guess, like my, you know, my, what would be my like best-case scenario for assessment might be an OSCE with someone who has, with someone that represents sexual and gender minority.	8	5
	Summative	Preceptor evaluation	I have a bit of a leg up when students rotate with me and granted endo, but we, you know, I'm able to see those interactions from the students. And I just wish there was kind of more we could do there. We have a question on every single eval about caring for diverse patient populations but you know that's a very broad, you know question.	2	2
		Written examination	I think I think there is a role for like multiple choice questions, especially around medication screening, lab tests, lab parameters, like that kind of stuff.	6	4
	Programmatic	Survey	We have exit survey interviews with our, our students on their way out and we are very mission focus program, so we attach everything to the mission and then the mission is really underserved populations and we include, you know it, sexual gender minority under that cause, I mean, that's where it belongs.	2	2
Challenges to Implementation		Lack of clear benchmarks/standards	When you look at the ARC-PA standards, you know you have to teach about it, but it doesn't say how you know or what	4	3
		Bias	Not having a faculty who is all in and all on board with updating our curriculum to be, you know, to normalize, to normalize these things within the curriculum is our own biggest barrier	4	3
		Faculty knowledge	I have seen instructors, you know, say, oh, well, you know, be be be kind of voluntold that they have the subject matter, and they're uncomfortable at the front of the room, and that doesn't help anybody at all. And so I think it starts with faculty competence, and and being comfortable with the subject matter.	12	5

	Generational differences	And what has been interesting to me is learning that this younger generation has a view that, like people in SGM populations are accepted now and there, there isn't really like lasting discrimination. They, you know, they can get married, they can love whoever they want, they can. And so they don't understand the continued focus, even though we like cover it in class, they still sort of have this underlying belief. That we're kind of past that.	2	2
	Lack of clinical sites	But also I think it'd be great to have a surgical rotation having that, you know, doing top and bottom surgery. It's just difficult to find to those. But I think it's a very valuable lesson to have. I would love to require every one of my students to be able to do a rotation of some sort to have that consideration. But it's just it's not there. Unfortunately.	3	2
	Legislative & political climate	The last time I went to PAEA there was a pre-conference session on this topic, and one of the people from one of the faculty members in a Texas program had been asked by the Attorney General of the State to provide them with all of their objectives related to this question. So I think that that is kind of the, you know, overwhelming concern, is, you know, this idea that we now have medical refugees within the United States, related to gender affirming care. And so I think that's the biggest and scariest issue around, you know, having... this curriculum across the United States, as opposed to just blue States."	21	5
	Program Priorities	I was just agreeing with Participant 1, that funding is so important, and you know it's so common to ask people who are all you know to ask somebody to come in and talk about their gender or sexuality in front of a group of people, and be asked to volunteer their time to do that is appalling. And so, you know, funding is it's so much easier to come in and talk about diabetes than talk right than talk about that.	13	5
	Safety-Vulnerability	I think that you know I relate to what you said Participant 1, and I think that for me what you're, my interpretation of that, is that one of the barriers is our own vulnerability, right? It...can be very vulnerable, especially if we, our own identity, is congruent with one of the things, the populations that we're talking about, as is mine and so that's one.	29	5

	Time	The every program says they've got 10 pounds of stuff and a 5 pound bag, and what what do we, what do you, what, we can't add. So ,we have committees that say we can't add new content unless we choose to remove something else. That's literally like it's pie. And it's shrinking pie, right, as opposed to integrate a slide, cause it cause it's necessary	12	5
Facilitators	ARC-PA Standards	And this is a really big thing, so the ARC-PA says, there's gotta be, this, content's gotta be covered.	16	4
	Existing Resources	The AAMC, so the yeah has, like SGM competencies already. They did all the work for us.	7	4
	Programmatic or mission-oriented support	And, we have the University as a whole, as an administrative structure has made it a point to write anti-racism, inclusivity into the University's mission, into. We measure ourselves on that. Each each college and each school within the college has to have a certain number of faculty activities towards this. And I think, having that environment on the administrative level where you're not worried, that something's gonna come down on you if you approach it from the wrong direction is, is freeing right? I mean, we. We have a culture of everyone is mission driven. The next great need equivalence for everybody.	5	4
	Student Interest	I will say I'm very thankful that we have had students who are interested and have pushed to say, you know, we want to know more about this. We haven't had many students challenge bringing in these conversations.	3	2

APPENDIX I : CEPH COMPTENCIES ADDRESSED

Name: Quinnette Joness Student ID: B00150234 Major: HPAL

Course of Enrollment: PUBH 9000 Dissertation Research Completed Final Product: Dissertation

To be completed by DrPH student:

The DrPH dissertation must demonstrate synthesis of foundational and major competencies where the student produces a high-quality written professional product(s) that is an appropriate contribution to the field of public health, and their educational and professional goals. The DrPH competencies should be addressed in the spaces below and included as part of the dissertation product. This can be as a separate page of the dissertation.

List the 4 DrPH Foundational Competencies addressed in the dissertation.

1. Design a qualitative, quantitative, mixed methods, policy analysis or evaluation project to address a public health issue (Data & Analysis #2)
2. Integrate knowledge, approaches, methods, values and potential contributions from multiple professions and systems in addressing public health problems (Leadership, Management, & Governance #6)
3. Explain qualitative, quantitative, mixed methods and policy analysis research and evaluation methods to address health issues at multiple (individual, group, organization, community, and population) levels (Data & Analysis #1)
4. Use best practice modalities in pedagogical practices (Education & Workforce #20)

List at least 2 HPAL, concentration competencies addressed in the dissertation.

1. Assess and enhance leadership skills (such as negotiation, mediation, and collaboration) that empower organizations/communities to address challenging issues (HPAL #4)
2. Create and assess programs that facilitate improvements in rural health and to reduce health disparities (HPAL #5)

To be completed by the DrPH student

Describe in 2 paragraphs (200 to 400 words) how the proposed dissertation synthesized the selected competencies above

The proposed dissertation is a mixed methods research study which broadly targets the public health problem of increased health disparities among people who are sexual and gender minorities (SGM). Through quantitative and qualitative inquiry, the research will describe current practices and attempt to identify best practices for teaching PA students to care for people who are SGM. Improved student knowledge and skills in caring for SGM people is a strategy to address barriers and improve access to care for SGM individuals. The dissertation will describe findings from the mixed methods approach which may be applied to multiple levels such as individual faculty and PA programs in addition to national PA educational and accreditation organizations. Further, methods of inquiry and findings may be applicable to other health professions educational programs. The proposed research will integrate knowledge, values, and methods of multiple professions including education, nursing, medicine, and the social sciences. Best practices are a potential outcome of the research but will also be applied in the methodology through use of a curriculum development model to explore educational needs and practices.

Achievement of the HPAL concentration competencies will also be demonstrated through completion of the dissertation. The primary focus of the research is centered around educational strategies that aim to reduce health disparities among people who are SGM, 40% of whom live in rural areas. Identification of benchmarks and best practices may also empower organizations such as PA programs to improve their curricula, a potentially challenging issue, in the context of increasingly anti-LGBTQ political and legislative climates. The proposed dissertation will also create opportunities for me to negotiate and collaborate with other educators and research and to demonstrate leadership skills through presentation of this content at national conferences.