Improving the LGBTQ2S+ cultural competency of healthcare trainees: advancing health professional education
Améliorer la compétence culturelle des stagiaires en soins de santé auprès de personnes LGBTQ2S+ : un pas en avant pour la formation des professionnels de la santé

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Abstract

Background: Lesbian, Gay, Bisexual, Trans, Queer, and Two-spirit (LGBTQ2S+) populations experience worse health outcomes compared to age-matched heterosexual and cisgender peers. Health professionals' deficient knowledge and negative attitudes can contribute to these inequities. Healthcare trainees report insufficient LGBTQS2+ cultural competence training.

Methods: In this prospective, mixed-methods pre-post design, Atlantic Canadian health students were tested on knowledge, attitudes and self-reported behaviours towards LGBTQ2S+ populations in healthcare settings. Assessment included psychometric measurements and clinical cases involving normative and non-normative fictional patients. Participants were randomised to intervention or control groups. The intervention consisted of three training sessions lead by LGBTQ2S+ experts and elders from the community. The control group continued with usual training. Full assessment was repeated after training. We also held focus group discussions with students and faculty.

Results: The intervention group significantly improved attitudes toward and knowledge of LGBTQ2S+ populations and changed relevant aspects of their performance in the simulated clinical situations. Focus groups identified key gaps in current local training.

Conclusions: Integrating specific training related to LGBTQ2S+ health within health professions programs is an important step toward improving these populations' accessibility to a competent, exhaustive and nurturing healthcare. Additional research on innovative means to expand and broaden the scope of our training is warranted.

Résumé

Contexte : Les populations lesbiennes, gaies, bisexuelles, transgenres, queers et bispirituelles (LGBTQ2S+) présentent de moins bons résultats de santé que leurs homologues hétérosexuelles et cisgenres. Le manque de connaissances et les attitudes négatives des professionnels de la santé peuvent contribuer à ces inégalités. Les stagiaires en soins de santé estiment leur formation en matière de compétence culturelle insuffisante en ce qui a trait aux personnes LGBTQS2+.

Méthodes : Dans cette étude prospective pré-post, utilisant une méthodologie mixte, des étudiants en soins de santé du Canada atlantique ont été testés sur leurs connaissances, leurs attitudes et leurs comportements autodéclarés à l'égard des populations LGBTQ2S+ en contexte de soins de santé. L'évaluation comprenait des mesures psychométriques et des cas cliniques impliquant des patients fictifs normatifs et non normatifs. Les participants étaient répartis aléatoirement entre le groupe d'intervention et le groupe témoin. L'intervention consistait en trois séances de formation dirigées par des experts en LGBTQ2S+ et des patients formateurs de la communauté. Le groupe témoin a poursuivi la formation habituelle. L'évaluation complète a été répétée après la formation. Nous avons également organisé des discussions de groupe avec les étudiants et le corps professoral.

Résultats : Les stagiaires du groupe d'intervention ont considérablement amélioré leurs connaissances sur les populations LGBTQ2S+ et leurs attitudes envers elles, et ils ont modifié des aspects pertinents de leur performance dans les situations cliniques simulées. Les groupes de discussion ont permis d'identifier les principales lacunes de la formation locale actuelle.

Conclusions: L'intégration d'un volet portant spécifiquement sur la santé des personnes LGBTQ2S+ dans les programmes de formation en santé est un élément important de l'amélioration de l'accès de ces populations à des soins de santé appropriés, complets et bénéfiques. Des recherches plus poussées sur les moyens innovants d'élargir la portée de nos formations sont de mise.

Introduction

Lesbian, Gay, Bisexual, Trans, Queer, Two-spirit and other sexual and gender minority (LGBTQ2S+) populations experience worse health outcomes in many distinct health domains as compared to their heterosexual and cisgender peers.[1,2] Research indicates many poor health outcomes amongst LGBTQ2S+ Canadians, including higher rates of suicide, cigarette smoking, alcohol and other forms of drug abuse, depression, and HIV/AIDS,[3,4] and avoiding health services when needed.[5,6] These longstanding health disparities represent an important public health issue. From an intersectional perspective, it is important to note that populations with multiple axes of marginalisation (race, education, income, age, among others) within the broader LGBTQ2S+ population experience further risks to their health.[7]

Several theories are used to help explain these striking health disparities and are described in the health literature. Minority stress theory, for example, is a conceptual framework used to help illuminate health disparities in LGBTQ2S+ communities.[8] Social determinants of health, including social exclusion, housing, employment, income, and early childhood development, intersect and contribute to poor health outcomes among LGBTQ2S+ individuals.[9] Internalized homophobia is another mechanism contributing to poor health outcomes among LGBTQ2S+ populations.[10]

Inequalities in cancer screening and care amongst LGBTQ2S+ populations exist, and as such, overall cancer screening rates remain low.[11,12] The case of breast cancer among lesbians is perhaps one of the most researched, with clear evidence of homophobia (e.g. discriminating against the patient and/or her female partner because of their sexual orientation and heterosexism (e.g. assuming the existence of a male sexual and/or affective partner for the patient) shaping the experiences of lesbian women with the disease.[13,14] A number of patient factors by which screening may be different in LGBTQ2S+ populations include family structure, social isolation, and cultural myths. However, LGBTQ2S+ individuals also report lack of knowledge among healthcare providers as a key barrier to health care and describe receiving substandard care.[15]

In fact, previous research suggests that many healthcare providers themselves do not feel comfortable or knowledgeable enough to address the unique health needs of LGBTQ2S+ individuals and are frustrated by the lack of specific training they receive. This is observed in a variety of different health-related occupations and stages of training, signifying a need for providers to gain these crucial skills. For example, transgender patients struggle with finding healthcare providers with sufficient knowledge to address their health needs. Moreover, some healthcare providers argue that sexual orientation and gender identity do not matter in the health care context and by focusing on sexual orientation and gender identity, we may in fact contribute to worse healthcare provision and poor health outcomes in LGBTQ2S+ populations.[16]

Several published studies evaluate healthcare provider training programs for LGBTQ2S+-specific content. For example, a survey of undergraduate medical education programs in the US and Canada shows a median time in the total curriculum of five hours with high variability in content, quality, and instruction.[17] Trans health is a particular area of concern in this and other studies, as some studies have found that less than 10% of surveyed Canadian medical students feel knowledgeable about trans health issues and suggests a continued deficit in clinical competence within medical and nursing education.[18,19]

Other opportunities to improve access to healthcare involve structural, policy, and institutional changes. For example, the misgendering of patients by staff in electronic medical records and in legal documentation can heighten gender dysphoria among transgender and gender non-conforming individuals, while heteronormative assumptions can lead to discomfort among sexual minority patients. These negative experiences may contribute to patients abandoning health care seeking behaviours and thus dissuade future care.[5]

However, LGBTQ2S+ healthcare training interventions are implemented in many training and research settings across the globe.[20,21] At the Boston University School of Medicine, Park and Safer demonstrate that early clinical exposure to transgender patients improves comfort and knowledge regarding trans health issues,[22] while Taylor et al. integrate role-play scenarios into training for medicine, dentistry, and nursing students, although only focusing on a particular mental health issue (gender dysphoria).[23] Further, a review from Sekoni et al. encompassing 15 studies on methodologically diverse medical educational interventions seeking to improve knowledge, attitudes, and practice with LGBTQ2S+ patients report a significant increase in knowledge after specific training on LGBTQ2S+ populations regardless of the particular educational methodology used.[24] Notably, transgender content was absent from the studies in the review, and 12 of the 15

studies took place in the USA, with two from the UK and one from Kenya. As well, the studies represent a mix of both healthcare profession student trainees and practicing healthcare professionals.

Taken together, existing research findings clearly suggest a role for a case-based training in working toward addressing LGBTQ2S+ health disparities. In addition, there is also clear opportunity to improve patient-provider therapeutic relationships through the increased knowledge, skills, and attitudes—leading to greater competence—that LGBTQ2S+-specific training can offer.

On a local level, we found very little content regarding LGBTQ2S+ health within the required curriculum for health professional trainees at Dalhousie University (Halifax, NS), though LGBTQ2S+ patients in the local area arguably experience the same disparities reported in other jurisdictions.[25] The goal of our study was to test the effectiveness of a pilot intervention consisting of a short-term training session lead by LGBTQ2S+ experts and elders from our local community. We were particularly interested in finding out whether our intervention was capable of changing the attitudes, knowledge, and clinical decisions on case-based discussions of future healthcare professionals, in the understanding that answers given by students could arguably be in line with those eventually displayed in real-life clinical settings in the future.

Methods

Research ethics

The Health Sciences Research Ethics Board (REB) at Dalhousie University approved this study. We obtained informed consent from participants through an online acceptance process before completing our online survey. We used written consent forms for the in-person focus groups. Participation was entirely voluntary and obtained data could not be matched to specific participants. Participants did not receive any financial compensation for participation and were free to withdraw from the study at any time without penalty.

Study design and protocol

Our prospective, mixed-methods, randomised pre-post study design was comprised of an educational intervention and a series of focus groups which took place during November 2016 in Halifax, Nova Scotia, Canada. Since this project was designed as a pilot study, no determination was made prior to starting the study of the number of subjects needed to expect a given effect size in the data.

Directly after inclusion and before randomisation (pre-test), each participant completed an online survey delivered using free online survey software (Opinio). The survey consisted of two validated psychometric tools available in the existing literature and three fictional clinical cases involving gender normative and non-normative patients. (Please see the following subsection on *Materials* for further details). Participants also provided basic demographic data in order to check for potential effects of factors that could arguably be relevant in terms of power asymmetry, i.e. race, gender identity, or sexual orientation.

After completing the pre-test survey, participants were randomised to the intervention or control groups using internet-based randomisation software. After the intervention group had finished the training, we invited all participants to complete an identical online survey (post-test) and to provide feedback on the content and quality of the workshops.

In addition, after the training period concluded, we held a total of three focus groups to seek feedback about the pilot training program and discuss its perceived connection with broader conceptual frameworks related to LGBTQ2S+ cultural competence. The principal investigator conducted a facilitated discussion and audio recorded all three focus groups with permission from participants. Focus group sessions lasted approximately one hour each. The full text of the predetermined questions that we used to guide facilitated discussion can be provided by contacting the authors.

Participants

For the training portion of the study, we recruited 50 students using snowball convenience sampling from the School of Nursing and the Faculty of Medicine at Dalhousie University via e-mail and promotional posters.

For the focus groups, we recruited 15 participants in total via e-mail. Focus groups were open to both students and faculty members in any Faculty of Health program or Medicine. Therefore, participants in the focus groups were not necessarily the same people as had participated in the training or been part of the control group, and they can be considered a more diverse group insofar they were not only nursing and medicine students. Participants were not asked to state their study program in focus groups, though they were required to provide information on whether they were undergraduate students, postgraduate students, or staff.

Materials

Lesbian, Gay, and Bisexual Knowledge and Attitudes Scale for Heterosexuals (LGB-KASH):[26] The LGB-KASH scores reflect attitudes toward and knowledge about LGB populations, and is scored in 5 domains named Hate, Knowledge, Civil Rights, Religious Conflict, and Affirmativeness. As suggested by its name, it was originally developed for heterosexual populations whereby participants are presented with 28 items and self-identify in a Likert scale (1-7) according to the degree upon which they identify with each of the statements. The scores given to the items corresponding to each of the five domains are then added up separately and divided by the number of items that integrate each domain in such a way as to allow for individual scores to be interpreted against the backdrop of a minimum-maximum score range for each domain that depends on the number of items that integrate it. (For complete notes on item content and scoring, please contact the authors.

The Riddle Scale: Attitudes towards Gay, Lesbian, Bisexual, and Trans (GLBT) people purvey:[27,28] The Riddle Scale scores participants along a dimensional spectrum ranging from Repulsion (category 1) to Nurturance (category 8) of GLBT populations. Though not explicitly stated in the instruments' denomination, its item formulation seems to imply that the scale is aimed to normative (heterosexual and cisgender) population. It presents participants with 16 statements on GLBT populations in order, from the most hateful (1) to the most nurturing (16) views. Subjects self-identify in a Likert scale (1-5) in each of the statements. A final score is obtained by combining scores in each statement, which is then converted into a categorical result (1-8). (For complete notes on item content and scoring, please refer to contact the authors.

Model clinical cases: We constructed three model clinical cases involving demographically and clinically identical patients presenting as LGBTQ2S+ or as cisgender/heterosexual. Cases consisted of three independent everyday-life clinical scenarios suitable for a standard general medical and nursing practitioner and included: 1) A person with no significant clinical records consulting with signs of Sexually Transmitted Infection (STI), 2) A person within breast cancer screening age range presenting asymptomatic to a medical routine visit with no records of previous screening breast exams available (clinical, analytic, nor radiological), and 3) A person with a family history of cervical cancer presenting with hypogastric pain as a single symptom. Case design was built for the specific purposes of this study on the basis of authors' previous work, which was in turn informed by existing literature.[29,30] We consecutively presented three clinical cases to participants, followed by a series of attitudinal and clinical reasoning questions. For the purpose of this study, we used a hypothetical scenario in which screening for all listed medical conditions was actually available (e.g. screening for all STIs or for ovarian cancer). We used a Likert scale (1-5) for attitudinal questions, and dichotomous answers for questions regarding self-reported clinical behaviour and performance (e.g. ordering specific medical testing or use of pronouns). For further details on the clinical cases used, along with the complete list of questions that followed each of them, please refer to Appendix A.

Intervention

Participants in the intervention group were invited to attend a three-session 90-minute training intervention lead by LGBTQ2S+ experts and elders from the community (instructors) over a period of one month. Instructors were contacted via LGBTQ2S+ communities in Nova Scotia. All sessions took place within university facilities outside of regular academic schedule (evenings), and were audio recorded with permission of all instructors and participants. Each session focused on a particular healthcare challenge identified by instructors and researchers: 1) Introduction of LGBTQ2S+ healthcare, 2) Lesbian and bisexual women and breast cancer, and 3) Medical care and access to treatment for transgender and gender non-conforming individuals. Sessions were organized with some information giving along with videos and stories of lived experiences followed by a facilitated discussion

Over the study period, the control group continued receiving the usual training provided by their healthcare educational program. For ethical reasons, at the end of the study period–after all participants had completed the post-test survey–participants in the control group were given online access to training materials, including presentations and audio recordings.

Data analysis

For analysis of data obtained from psychometric measurements and model clinical cases, we exported survey results from Opinio for each experimental group (training, control) for statistical analysis. We used IBM SPSS Statistics software version 25.0 for univariate and bivariate

analysis. We used paired Student *t*-test and Wilcoxon signed rank tests to analyse change between pre- and post-test quantitative and ordinal measurements. Cohen's *d* test for effect sizes were calculated for the purpose of identifying practically important findings deserving further study, a point that we considered particularly important since this is a pilot study. For relationships between categorical variables, we used *Chi*-square test, along with its Yates correction if necessary. Statistical significance was set at $p < 0.05$ for two-tailed *p* value. Non-parametric equivalents were considered when required by sample distribution.

For data obtained from the focus groups, two members of the research team independently analysed the transcriptions of the recordings to ensure agreement between themes, which we arranged into major and minor themes.

Results

Demographic data

We collected and compiled demographic data about our participants in Table 1 "Participant demographics." In total, 50 participants enrolled in the study. Of these, 13 were students in Dalhousie University Faculty of Nursing, and the remaining 37 were students in the Faculty of Medicine. It should be noted that a total of 13 participants (three from the intervention group and 10 from the control group) did not complete the second survey after the study period and were considered withdrawn.

Component 1: Lesbian, Gay, and Bisexual Knowledge and Attitudes Scale for Heterosexuals (LGB-KASH). Results are shown in Table 2 "LGB-KASH pooled results." The most striking change within the intervention group is the mean increase in scoring within the Knowledge domain from 11.5 to 20.5 (score range 5-35; $p = 0.0004$; Cohen's $d = 1.38$), compared to the control group which only minimally changed from 12.0 to 13.6. Given the nature of the Knowledge domain items, this shows that participants in the intervention group significantly improved their perceived knowledge of LGB issues and history compared to the control group, though it is not possible to conclude that there was an actual improvement in measurable knowledge. There was also a statistically significant decrease in mean scoring in the intervention group along the Hate domain from 7.94 to 6.07 (score range 6-42; $p = 0.032$; Cohen's $d = 0.82$), demonstrating decreased

negative attitudes toward LGB populations. No other domains showed significant changes in the intervention group. The control group did not show any remarkable nor statistically significant changes in any domain. Of particular note, our sample (both control and intervention groups) showed baseline high scores in the domains of Internalized Affirmativeness (mean score=26.4 for the intervention group and mean score=24.8 for the control group; possible score range 5-35), and Support of LGB Civil Rights (mean score=34.1 for the intervention group and mean score=34.2 for the control group; possible score range 5-35). Similarly, they obtained relatively low baseline scores in domains such as Hate (mean score=7.9 for the intervention group and mean score=7.5 for the control group; possible score range 6-42) and Religious Conflict (mean score=15.9 for the intervention group and mean score=15.4 for the control group; possible score range 7-49). This arguably left little room for improvement, as we will discuss in the following section.

Table 1. Participant demographics: Descriptive statistics regarding study population collected with the initial survey. Participants self-identified.

Participant demographics			
	Intervention (*n* = 18)	Control (*n* = 32)	Total (*n* = 50)
Gender Identity			
Female	14	21	35
Male	4	11	15
Trans*	0	0	0
Other	0	0	0
Sexual Orientation			
Heterosexual	16	24	40
Gay	1	3	4
Lesbian	0	0	0
Bisexual	0	0	0
Asexual	0	5	5
Other	1	1	2
Race / Ethnicity			
White	16	26	42
Black	0	1	1
Indigenous	0	3	3
Asian	1	3	4
Hispanic	0	0	0
Arab	0	2	2
Other	1	1	2
Faculty			
Nursing	6	7	13
Medicine	12	25	37

Table 2. LGB-KASH pooled results. Pre- and post-training comparison of mean results between intervention and control groups

	Pre-Training	Post-Training	Δ (Mean)	Cohen's d	p
Intervention: Mean, (SD)	N = 18	N = 15			
Hate	7.94 (3.2)	6.07 (.3)	-1.87	0.82	0.0318
Knowledge	11.53 (5.4)	20.47 (7.4)	8.94	1.38	0.0004
Civil Rights	34.06 (1.7)	33.93 (2.3)	-0.13		NS
Religious Conflict	15.94 (8.0)	13.13 (7.1)	-2.81		NS
Affirmativeness	26.44 (5.5)	28.43 (4.2)	1.99		NS
Control: Mean, (SD)	n = 32	n = 22			
Hate	7.50 (2.8)	7.76 (5.3)	0.26		NS
Knowledge	12.03 (7.3)	13.59 (8)	1.56		NS
Civil Rights	34.16 (2.1)	33.95 (2.5)	-0.21		NS
Religious Conflict	15.43 (8.4)	16.79 (7.8)	1.36		NS
Affirmativeness	24.84 (6.6)	25.9 (5.3)	1.06		NS

Component 2: The Riddle Scale: Attitudes Towards GLBT People Survey. Results are fully detailed in Table 3 "Riddle Scale pooled results." The total percentage of participants scoring in the most positive category (Nurturance) increased in the intervention group from 83.3% (pre-test) to 93.3% (post-test). In contrast, those in our control group remained relatively static (71.9% and 68.2% in the pre- and post-test assessments, respectively). However, none of the changes were statistically significant. Overall, our participants had very positive pre-test scores on the scales Appreciation and Nurturance with 93.8% (n = 30/32) of the control group and 94.4% (n = 17/18) of the intervention group scoring in the most positive categories. Similar to what occurred with Component 1, this probably created a ceiling effect.

Table 3.Riddle Scale pooled results. Results showing number and percentage of participants scoring in each domain of the scale before and after the intervention.

Riddle Scale pooled results				
	Pre-Training	Post-Training	Δ (%)	p
Intervention: Count, (%)	n = 18	n = 15		
Repulsion	0	0	0	NS
Pity	0	0	0	
Tolerance	0	0	0	
Acceptance	0	0	0	
Support	1 (5.6)	0	-5.6	
Admiration	0	0	0	
Appreciation	2 (11.1)	1 (6.7)	-4.4	
Nurturance	15 (83.3)	14 (93.3)	10.0	
Control: Count, (%)	n = 32	n = 22		
Repulsion	0	0	0	NS
Pity	0	0	0	
Tolerance	0	0	0	
Acceptance	0	0	0	
Support	1 (3.1)	0	-3.1	
Admiration	1 (3.1)	2 (9.1)	6.0	
Appreciation	7 (21.9)	5 (22.7)	0.8	
Nurturance	23 (71.9)	15 (68.2)	-3.7	

Component 3: Model clinical cases. Selected results are shown in "Model Clinical Cases" (Appendix B). There were no significant differences between pre- and post-test scores in the control group. Conversely, we observed a few significant differences within the intervention group.

In the first clinical scenario–describing a man presenting to a clinic with symptoms of STI–participants indicated that they felt it more necessary after training to perform a physical exam of the heterosexual-identified man (4.67

versus 5.00, *p* = 0.04) compared to one with a same-gender partner.

Similarly, in the second clinical scenario – describing an asymptomatic woman with criteria for primary prevention (screening) of breast cancer, participants were more likely after training to take a sexual history of the woman with a male partner compared to the one with a female partner (3.67 *versus* 4.53, *p* = 0.012), in addition to feeling more motivated toward providing help to the LGBTQ2S+ woman (3.90 *versus* 4.53, *p* = 0.013) and perceiving that she had increased need for a hypothetical ovarian cancer screening (55.6% would order such screening *versus* 93.3% after training, *p* = 0.015).

In the third clinical scenario–the one comparing a cisgender woman and a transgender man with no surgical history presenting with hypogastric pain–participants in the intervention group compared to the control group were significantly more likely after training to order breast cancer screening for the transgender man (22.2% *versus* 73.3%, *p* = 0.033 and 46.9% *versus* 40.9% respectively). Participants in the intervention group compared to the control group also elected to screen the transgender man at higher rates after training for cervical cancer (77.8% *versus* 93.3% compared to 68.8% *versus* 54.5% respectively); and were more likely to order a hypothetical ovarian cancer screening (72.2% *versus* 93.3% compared to 62.5% *versus* 45.5, though these observed changes may have been due to chance. In the cisgender paired clinical case, rates of screening for breast cancer increased significantly in the intervention group (38.9% *versus* 80%, *p* = 0.017) compared to the control group (50% *versus* 63.6%). All of the participants (100%) in both groups elected to screen for cervical cancer at pre-test. Regarding pronoun use, we detected an increase in the use of masculine pronouns to refer to the transgender man in the intervention group after the training (50% *versus* 66.7%), control group (50% *versus* 59.1%). However, this did not reach statistical significance.

LGBTQ2S+ health training: qualitative data analysis

We conducted thematic analysis from the focus group discussion data which yielded four major emergent themes as well as 17 minor themes or subthemes. Each major theme is briefly described in the following subsections.

Theme 1: Current curriculum is lacking in LGBTQ2S+ health information. As indicated by our participants, a number of key gaps in training programs were identified. In particular, transgender health, mental health and sexual health of LGBTQ2S+ individuals, and the needs of aging LGBTQ2S+ individuals were key aspects commonly perceived as lacking. Participants also stated that they felt a need for additional training in core counselling topics including, but not limited to, coming out, parenting, relationships, and interpersonal violence. The inclusion of these concepts as core or mandatory curriculum, rather than as an elective extracurricular option, was regarded as crucial. Nonetheless, participants' discourse emphasised a preference towards encouraging self-directed learning related to LGBTQ2S+ health rather than arbitrarily incorporating such contents as part of the formal curricula. This apparent contradiction between two perceived needs–a need for mainstreaming and standardisation along with a need to emphasize the intrinsic motivational part of self-directed and enthusiastic learning–might be feasible by engaging in active learning in regular classrooms while at the same time providing valid and authoritative resources for students to use in their self-directed learning. Moreover, participants stressed the importance of materials being clinically relevant in order to prevent poor levels of student engagement. Despite the stress that the majority of the participants put on the importance of the training encouraging self-directed learning, some people reckoned that specific LGBTQ2S+ health contents should be formally incorporated to their curricula:

> *I wish this was something that we learned in the classroom and not just something that I can seek out on my own because the people who seek it out, are the people who are either part of the community or who are allied and who already have an open mind and open heart to these issues. – Faculty of Health Undergraduate Student*

Theme 2: Multiple barriers must be addressed while integrating LGBTQ2S+ content into health training programs. Participants saw the level of comfort of students, facilitators, and instructors as critical in advancing LGBTQ2S+ health. There is a wide breadth of background knowledge amongst health professions students, which may contribute to difficulties in engaging in healthy discussion, especially with cultural differences between students. Faculty members who are not members of the LGBTQ2S+ community may feel they are not experts or even comfortable with this content; and may fear repercussions from student evaluations if it is perceived to be poorly taught, leading some to forgo teaching it altogether. Compounding this problem, the changes in best

practices and related information creates challenges in keeping content up-to-date and relevant. One solution offered was to build community responsiveness by harnessing community-based LGBTQ2S+ organizations to help offer input into LGBTQ2S+ curricular content. Another was to use pre-designed modules for non-expert instructors. Perceived lack of time or access to content in already busy programs was flagged as yet another barrier. Since opportunities for enriching already existing courses with more content are limited, such content could end up included in non-credit activities or occur outside regular program hours, thus making high levels of attendance less likely. Conversely, integration within existing lectures or learning experiences instead of addition of new contents was regarded as a particularly interesting option:

> *Normalize it more within the curriculum. So, when I approach my teaching which is around teaching and learning, I don't necessarily give case studies specifically on LGBTQ issues, [but] I will integrate them into case studies on other topics. So that it's not a case study about this issue, it's a case study about something else, but this is who we're focusing on, these are the characters in it. And I think it gets [students] to do two things. Think about that topic but also think about it from a different perspective. It makes it more normal for them to think about this population, these issues, integrate into their own teaching and learning. –Faculty of Health Faculty Member*

Theme 3: Teaching environment and teaching style is variable and impacts delivery of LGBTQ2S+ content. As stated before, the participants in the focus groups were enrolled in several health professions programs including medicine, social work, occupational therapy, and nursing. These programs all presented LGBTQ2S+ content differently, including dedicated, standalone courses, simulated patient encounters, and extracurricular interprofessional experiences. In most cases, these learning experiences were optional and not part of mandatory curriculum, leading only interested students to seek them out. Content delivery was a key component of discussion, as participants pointed out that effective learning requires a safe classroom climate where questions can be openly shared and healthy discussion is promoted. Faculty participants felt that an identified faculty member or "LGBTQ2S+ health champion" equipped with teaching resources would be helpful in further integrating content and increasing comfort with material:

> *I agree that there should definitely be some mandatory [content] for everyone, just to open people's eyes because sometimes people don't even realize that this is something they need to learn about. And I also think it's really important that they incorporate that in a way that doesn't shame people who don't know things. You know often times people when they feel maybe a little under-educated on a certain topic, kind of shy away from it altogether because they don't want to ask the wrong questions. –Faculty of Health Graduate Student*

Theme 4: There are multiple benefits to improving LGBTQ2S+ cultural competency. Both student and faculty member participants identified many benefits to improving LGBTQ2S+ health content in training programs. Patient care was seen as paramount, with participants offering that it would improve quality of care, increase provider confidence and comfort, and reduce barriers to access the healthcare system. Building connections with community organizations could improve student exposure and learning opportunities, as well as accessing community-sourced knowledge to ensure congruence with evolving LGBTQ2S+ healthcare information and healthcare practices:

> *I have a number of friends who won't go, who identify as LGBTQ+, they avoid going to the doctor at all cost just because it's uncomfortable. Not because they don't want to get their issues addressed but because they fundamentally find it so harmful for their well-being overall, just to even walk into that office. So that's very disheartening for me as someone who's going into this field. So, I think that we definitely want [to learn]; that would benefit the population as a whole from students being enriched. –Health Professions Undergraduate Student*

Discussion

This study supports the existing research literature in the field of medical education in that students in health and medical professions currently perceive a lack of LGBTQ2S+ health content in their curricula, and consequently do not always feel comfortable nor knowledgeable enough to ensure delivery of quality healthcare to patients identifying as LGBTQ2S+.

Our results also support the existing literature on the idea that particular populations such as LGBTQ2S+ populations have unique healthcare needs and require specific research attention. In our study, as in most of the current literature

available, this was particularly the case for transgender health. Our study designed training content and included evaluation measures specific to transgender health, in accordance with the gaps identified in the literature.

Further, our study demonstrates the efficacy of a brief LGBTQ2S+ health training program for medicine and nursing trainees with measurable changes in knowledge and attitudes towards the LGBTQ2S+ population. Moreover, our intervention demonstrated the ability to change clinical decisions in paper-based clinical scenarios involving patients identifying as LGBTQ2S+ and transgender. After receiving the training, our participants made different decisions regarding approach to patients (e.g. pronoun use) and their bodies (e.g. performing complete physical examinations, ordering specific medical testing).

The use of simulated written clinical scenarios involving LGBTQ2S+ patients and matched normative comparators offer an innovative approach and allowed our study to draw particular conclusions that connect more directly to the reality of everyday clinical practice. In fact, our findings revealed some surprising results regarding changes in perceived need to perform particular clinical actions, such as a physical exam or cancer screening tests, that we feel require further discussion.

Our participants were presented with a fictional clinical scenario describing a young man without remarkable medical records presenting with signs of STI (penile rash). After completing the training, those in the intervention group perceived an increased need for physical exam in the case of the heterosexual-identified man, but not in the case of the gay-identified one. The reasons for this change remain unclear. We speculate that this may be that the result of the stereotypical belief that gay men are more promiscuous or use less protection for risky sex and therefore more likely to contract STIs.

Another of the simulated clinical situations provided described a woman without a history of breast cancer but falling within screening age range for this pathology presenting to a routine visit, where the clinician was to note that she had never undergone screening. Participants who had taken our training stated an increased likelihood of taking a complete sexual history of the woman with a male partner compared to the one with a female partner. We observed elevated motivation to address this clinical situation properly when the woman was presented having a lesbian relationship, and also an increased perception of

her hypothetical need for ovarian cancer screening. A variety of factors might help explain these results. First, the greater extent to which STIs are linked to heterosexual sex than to female homosexual sex may have contributed to this response. The deeper understanding of sexual orientation as something complex, dynamic and evolving through time rather than as a fixed characteristic of an individual could also account for the increased interest of participants in taking a complete sexual history of the patient, both in terms of learning whether a past history of male sexual partners existed and in terms of characterising her current sexual situation (e.g. whether she was in a monogamous relationship with the female partner that walked into the medical office with her or in a polyamorous union involving sex with other people of different genders, or other arrangement). We believe the change in motivation towards the LGBTQ2S+ clinical case can be seen as a direct result of attitudinal change achieved by the training.

Regarding ovarian cancer screening, medical and nursing students were likely aware that obstetric history significantly affects the incidence of this type of neoplasia. A clinical scenario with a woman presenting with a female sexual partner might have encouraged particular assumptions about her obstetric history, for example that she had not been pregnant or given birth. Though this reasoning is not actually correct in the absence of further information on the woman's full history, it is a possible consequence of the intersection between participants' conventional curricular training and the new-understandings from our pilot intervention on LGBTQ2S+ experiences.

The last clinical situation presented a patient identified as female at birth with hypogastric pain in the presence of family history of cervical cancer and no other remarkable medical records. After the training, participants in the intervention group were more prone to order breast cancer screening for both the transgender man and the cisgender woman. Though not statistically significant, they also showed an increase in the likelihood of ordering screening tests for cervical cancer and a hypothetical ovarian cancer for the transgender man. Participants' clinical decisions made before the training are in line with conventional medical training and popular beliefs about these kinds of gynecological neoplasia, and as such not surprising. However, changes observed after training may reflect increased understanding of how knowledge of cisgender and transgender anatomy are important in

determining proper healthcare screening for transgender patients. In our opinion, the content of our module on breast cancer in lesbian-identifying women could also have played a role in responses given to this clinical case, since it was mostly focused on cisgender women. There is arguably an interaction between the content of two of the training modules, a problem that should be taken into account when designing future similar training. In addition to clinical decisions, as previously stated, we observed a remarkable change in pronoun use after the training with increased likelihood of changing female to male pronouns in the case of a transgender man when participants were not provided with information on the pronoun preferred by the particular trans man in the clinical scenario.

Conclusion

Result outlines

Our study demonstrates measurable and relevant changes in health care students' perceived knowledge, attitudes, and clinical behaviour regarding LGBTQ2S+ populations as a result of our short training intervention. Overall, students rated the training highly and reported in their feedback that it was valuable and relevant. Our model using a clinical case approach was also positively rated, as participants reported that they felt more motivated when presented with a LGBTQ2S+ simulated patient than when presented with abstract contents alone.

Study limitations

There are a number of limitations to this pilot study which should be noted and addressed before scaling up this intervention more broadly. Given the relatively small sample size of 50 participants, we were not powered for robust statistical analysis of our educational intervention, which limits the generalizability of our findings. This was further compounded by participants being lost to follow-up, particularly those in the intervention group, who sometimes had scheduling conflicts between their usual academic routines and our training dates and times. There was potential for self-selection bias in that those who participated likely had an existing interest in LGBTQ2S+ health, and therefore our sample may not be representative of the general population of health professions students. It is remarkable, then, that so much change was noted in the intervention group in the regards to knowledge, attitudes and clinical behaviour with our training. As well, our participants scored very highly on our pretest survey toward LGBTQ2S+ nurturance on the Riddle Scale, indicating very positive attitudes toward LGBTQ2S+

populations at baseline, which arguably decreased our study's capacity to effect change over time and between intervention and control groups, and as our data was not paired, it limits our ability to analyze changes with ANOVA. Our qualitative data also reflects this, where participants voiced that learning experiences were often sought by students that already identified as LGBTQ2S+ or allies, especially when opportunities were extra-curricular.

Future directions

Although we gathered both quantitative and qualitative data, more research is needed to fully evaluate the impacts of our pilot LGBTQ2S+ health training program on real-life clinical practice following graduation. Follow-up studies are also warranted in an effort to investigate the potential long-term impacts of our training. Inclusion of other health professional programs such as pharmacy, dentistry, psychology or social work is also encouraged. Offering the training as a part of the required curricular activities would help align this program with existing institutional aims, reduce schedule conflicts and further incentivize participation.

On a local level, our research project adds more context to Atlantic Canadian background on healthcare needs of LGBTQ2S+ populations and provides a detailed analysis of barriers to inclusion of LGBTQ2S+ health content in current training programs. This is relevant since it provides useful guidance regarding eventual curricular improvements towards inclusive healthcare education on a local and provincial level. Participants in our study actually provided some useful insights on concrete actions to be taken in order to improve the training of future healthcare professionals in our area. According to our results, further understanding of LGBTQ2S+ health inequities through current frameworks or innovative strengths-based approaches are warranted to inform best practices. Longitudinal studies may contribute to moving Canadian health care education towards a more competent, accessible and nurturing system.

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Appendix A: Model clinical cases and full question list

Model clinical case 1 summary: 18-year-old gay (version A) / heterosexual (version B) man presenting with an acute-onset penis rash.

Model clinical case 2 summary: Asymptomatic 55-year-old woman with a female (version A) / male (version B) partner who does not undergo regular medical check-ups.

Model clinical case 3 summary: 45-year-old transgender man (version A) / cisgender woman (version B) presenting with hypogastric pain as leading symptom, with a family history of gynaecological cancer and no other remarkable findings in the anamnesis.

Full question list about clinical cases

For each of the cases (1A, 1B, 2A, 2B, 3A, 3B) participants were presented with the following questions:

1. How do you feel about this patient?

2. How competent do you feel to deal with this situation?

3. How necessary do you think it would be to take a sexual history of this patient?

4. If available, do you think this patient would need screening for:

    a. Metabolic diseases

    b. Breast cancer

    c. Cervical cancer

    d. Ovarian cancer

    e. STI

    f. Other

5. Which pronoun would you use to refer to this patient?

    a. She/her

    b. He/him

    c. They/them

    d. Unsure

    e. Other

6. How necessary do you consider it to be to perform a physical examination of the patient?*

7. How likely are you to take a sexual history of this patient?*

8. How likely are you to refer this patient to another medical specialist?*

9. As part of an interprofessional health team, how likely are you to refer this patient to a physician?**

10. As part of an interprofessional health team, how urgently would you refer this patient to a physician?**

* = Question was only for respondents in the Faculty of Medicine** = Question was only for respondents in the Faculty of Nursing

Appendix B. Select results of responses to three clinical cases.

Select results of responses to three clinical cases. Only question sets with statistically significant results included for space. * = Question was only for respondents in the Faculty of Medicine

Clinical Case 1										
	18-year-old gay man					18-year-old heterosexual man				
How necessary do you consider it to be to perform a physical examination of the patient?*	Pre-Training	Post-Training	Δ	p		Pre-Training	Post-Training	Δ	d	p
Intervention; mean (SD)	4.92 (0.3)	4.91 (0.3)	-0.01	NS		4.67 (0.5)	5.00 (0.0)	0.33	1.38	0.04
Control; mean (SD)	4.83 (0.5)	4.65 (0.6)	-0.18	NS		4.76 (0.5)	4.65 (0.6)	-0.11		NS

d = effect size calculated by Cohen's

Clinical Case 2										
	55-year-old woman with female partner					55-year-old woman with male partner				
How [motivated] do you feel about this patient?	Pre-Training	Post-Training	Δ	d	p	Pre-Training	Post-Training	Δ		p
Intervention; mean (SD)	3.90 (0.8)	4.53 (0.5)	0.63	0.94	0.013	4.44 (0.6)	4.40 (0.7)	-0.04		NS
Control; mean (SD)	4.32 (0.7)	4.24 (0.7)	-0.08		NS	4.13 (0.9)	4.19 (0.8)	0.06		NS
How necessary do you think it would be to take a sexual history of this patient?*	Pre-Training	Post-Training	Δ	p		Pre-Training	Post-Training	Δ	d	p
Intervention; mean (SD)	3.89 (1.0)	4.27 (0.9)	0.38	NS		3.67 (1.0)	4.53 (0.8)	0.86	0.95	0.012
Control; mean (SD)	4.06 (1.0)	4.14 (0.9)	0.08	NS		3.63 (0.8)	4.05 (1.0)	0.42		NS
If available, you think this patient would need screening (Y/N) for:	Pre-Training	Post-Training	Δ (%)	p	OR	Pre-Training	Post-Training	Δ (%)		p
Ovarian cancer										
Intervention; count = Y, (%)	10 (55.6)	14 (93.3)	37.7	0.015	10.0	10 (55.6)	12 (80)	24.4		NS
Control; count = Y, (%)	22 (68.8)	15 (68.2)	-0.6	NS		20 (62.5)	15 (68.2)	5.7		NS

OR = Odds ratio calculated by McNemar's

Clinical Case 3										
	45-year-old transgender man					45-year-old cisgender woman				
Do you think this patient needs screening (Y/N) for:	Pre-Training	Post-Training	Δ (%)	p	OR	Pre-Training	Post-Training	Δ (%)	p	OR
Breast cancer										
Intervention; count = Y, (%)	4 (22.2)	11 (73.3)	51.1	0.033	1	7 (38.9)	12 (80)	41.1	0.017	2.33
Control; count = Y, (%)	15 (46.9)	9 (40.9)	-6	NS		16 (50)	14 (63.6)	13.6	NS	
Do you think this patient needs screening (Y/N) for:	Pre-Training	Post-Training	Δ (%)	p		Pre-Training	Post-Training	Δ (%)	p	
Cervical cancer										
Intervention; count = Y, (%)	14 (77.8)	14 (93.3)	15.5	NS		18 (100)	15 (100)	0	NS	
Control; count = Y, (%)	22 (68.8)	12 (54.5)	-14.3	NS		31 (96.9)	20 (90.0)	-6.9	NS	
If available, you think this patient would need screening (Y/N) for:	Pre-Training	Post-Training	Δ (%)	p		Pre-Training	Post-Training	Δ (%)	p	
Ovarian cancer										
Intervention; count = Y, (%)	13 (72.2)	14 (93.3)	21.1	NS		17 (94.4)	15 (100)	5.6	NS	
Control; count = Y, (%)	20 (62.5)	10 (45.5)	-17	NS		31 (96.9)	19 (86.4)	-10.5	NS	
Which pronoun would you use to refer to this patient?	Pre-Training	Post-Training	Δ (%)	p						
She/Her										
Intervention; count, (%)	3 (16.7)	2 (13.3)	-3.4	NS						
Control; count, (%)	8 (25)	5 (22.7)	-2.3	NS						
He/Him										
Intervention; count, (%)	9 (50)	10 (66.7)	16.7	NS						
Control; count, (%)	16 (50)	13 (59.1)	9.1	NS						
They/Them										
Intervention; count, (%)	5 (27.8)	3 (20.0)	-7.8	NS						
Control; count, (%)	9 (28.1)	6 (27.3)	-0.8	NS						
Unsure										
Intervention; count, (%)	5 (27.8)	3 (20.0)	-7.8	NS						
Control; count, (%)	9 (28.1)	4 (18.2)	-9.9	NS						
Other										
Intervention; count, (%)	2 (11.1)	1 (6.7)	-4.4	NS						
Control; count, (%)	0 (0.0)	0 (0.0)	0	NS						