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# *Sex and gender dimensions in nursing, physiotherapy and occupational therapy education: a scoping review*

*Work package 1 of the project*
*P7 – Sex and gender integration in the bachelor curricula of nursing, physiotherapy, and occupational therapy*


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# Introduction

This scoping review is intended to be the first step in a larger project: P7 – *Sex and gender integration in the bachelor curricula of nursing, physiotherapy, and occupational therapy*. The goal of this project is to increase awareness and competency in sex and gender health issues in these three curricula: physiotherapy, occupational therapy, and nursing. This main objective is justified in several ways, namely:

> *"Providing just and individualised care and treatment represents a moral mandate as part of the social contract for healthcare professionals, such as physiotherapists, occupational therapists, and nurses. The professional competencies profiles issued by the Conference of Rectors of the Swiss Universities of Applied Sciences (hereafter UAS) do not include sex and gender as a criterion which needs to be considered in professional practice (Ledergerber et al., 2009). However, it is emphasized that preventive, diagnostic, therapeutic, palliative, and rehabilitative measures must ground on scientific knowledge. It is beyond any doubt that sex and gender affect all these measures. While the dimensions of sex and gender are considered and made explicit within the curriculum of medicine (PROFILES) this is not the case for other healthcare professions."* (Project submitted to swissuniversities, p. 3)

The definitions of sex and gender used in this project are as follows:

> *"[…] sex refers to a set of biological attributes in humans and animals. It is primarily associated with physical and physiological features including chromosomes, gene expression, hormone levels and reproductive/sexual anatomy. Sex is usually categorized as female or male but there is variation in the biological attributes that comprise sex and how those attributes are expressed (CIHR Institute of Gender and Health, 2018). […] gender is defined as fluid characteristics determined by society, values and psychology and it determines a person sexual identity and his/her role within society (Glezerman, 2016; Oertelt-Prigione, 2012). Gender identity is not confined to a binary dimension (girl/woman, boy/man) nor is it static; it exists along a continuum and can change over time (CIHR Institute of Gender and Health, 2018). Definitions of sex and gender are evolving as science changes, and it remains challenging to easily separate the biological from the social. Sex and gender are often interrelated, interactive and potentially inseparable (Tannenbaum et al., 2016)."* (Project submitted to swissuniversities, pp. 3-4)

Work package 1 (WP1) of the project submitted to swissuniversities involved conducting a literature review on the latest research findings related to sex- and gender- healthcare in nursing, physiotherapy, and occupational therapy. The aim was to establish a consensus on the key knowledge that should be prioritized for integration into the curricula of these three professions. Given the breadth of the issue and the varying degrees of progress in gender-sensitive research across our professions, a scoping review seemed to be the most appropriate type of literature review. Munn and his co-authors (2022) give the following definition:

> *"Scoping reviews identify and map the breadth of evidence available on a particular topic, field, concept, or issue, often irrespective of source (ie, primary research, reviews, or non-empirical evidence) within or across particular contexts."* (p. 950)

Scoping reviews are typically designed for exploratory purposes: to identify the types of scientific knowledge in a given field, clarify key concepts or definitions in the literature, or examine how research is conducted on a specific topic or domain (Munn et al., 2018, p. 2). Additionally, reviewers often seek to identify and analyze gaps in research. While an exhaustive review of all available literature (both scientific and grey) is necessary to comprehensively examine what has not been studied or reported, our aim was to conduct a comprehensive, but not exhaustive, literature search. We chose to focus primarily on identifying existing knowledge and, where possible, deduce certain knowledge gaps (see discussion chapter).

When discussing the scope of the literature search and the most relevant keywords, the objective set for WP1 appeared very broad. Preliminary discussions within the research team highlighted both highly specific elements (such as toileting in nursing care) and multi-level issues. These initial observations were confirmed during our first attempts at literature searches and analysis of a small number of articles. Consequently, we struggled to construct a strategy that would be sufficiently encompassing to be relevant to our three professions, and that integrated biological and social dimensions in a balanced manner. The sex dimension proved particularly challenging to address.

In this regard, we could not confine our research solely to studies specific to our three professions, as the subject involves biological, physiological, and mechanical factors that span a wide range of conditions and pathologies[1]. Research from other professions or disciplines could also be highly relevant. Moreover, limiting our scope to studies within our fields might not have brought to light critical topics related to sex and gender dimensions that should be addressed in our curricula. Instead, it would likely have emphasized issues already prominent in current research. Given these considerations, conducting a broader literature search/review would have necessitated the formulation of multiple sub-questions and additional resources.

For these reasons, we chose to focus our review question on education. This decision seemed coherent, as our aim is to contribute to increasing awareness and competency in sex and gender health issues through education. We will address the limitations of this choice in the discussion chapter.

## Review aim

The aim of this scoping review is to identify how sex and gender dimensions are integrated into nursing, physiotherapy, and occupational therapy education.

Referring to the core elements of the PCC framework recommended by the JBI, we have filled in the 'C' for concept with the dimensions of sex and gender, and the 'C' for context with nursing, physiotherapy, and occupational therapy education. The 'P' for population is not explicitly stated in

[1] Note 12.10.2024: Since conducting this scoping review, the BAG/OFSP mandated the Interdisciplinary Centre for Gender Studies in Bern (IZFG) and the Berner Fachhochschule (BFH) to produce a scientific report in response to postulate 19.3910 from Laurence Fehlmann Rielle (Women's Health: For better consideration of their specificities). This report demonstrates that sex and gender dimensions influence and create inequalities between men and women across all areas considered (drug development and treatment; diagnostics; prevention; rehabilitation, aftercare and long-term care; healthcare working environment; education and training of healthcare professionals). For further information, please refer to Amacker et al. (2023).

our objective as we formulated it[2]. To avoid overly restricting our literature search, we preferred to link our professions with keywords and descriptors relating to education, and to specify certain population-related elements in the eligibility criteria (see below).

It should be noted that we consider secondary beneficiaries[3], i.e., people who come to consult representatives of our three professions, at the level of the literature search (cf. MeSH words and keywords such as LGBT, transgender, etc.) and at the level of the analysis.

[2] This is consistent with what the JBI proposes (Aromataris & Munn, 2020, p. 415). The important thing in this case is that the PCC, the MeSH words and keywords of the literature search, and the eligibility criteria are complementary and cover all dimensions together.

[3] This partition between primary concerned and secondary beneficiaries was inspired by the AACTT model that Presseau and colleagues (2019) developed for the implementation of scientific knowledge in practice. According to this model, the group we defined as the primary concerned are the actors (who will "change behaviour" and implement the best practices) and the secondary beneficiaries are the target (to whose attention the actors will act).

# Methods

This scoping review was conducted in accordance with the JBI methodology for scoping reviews. We began this work from March 2022.

## Eligibility criteria

We defined eligibility criteria based on the core elements of the PCC framework and the types of literature we wished to include. These criteria were further broken down into inclusion and exclusion criteria.

### *Inclusion criteria:*

- Any type of publication – scientific or non-scientific, published or unpublished – regardless of the country concerned by the studies or analyses. This approach aims to include the richest possible literature given the nature of a scoping review, which primarily aims to map existing knowledge in a given field.
- Population: a) Nursing, physiotherapy, or occupational therapy students: articles must include representatives of at least one of these professions. b) Faculty members or any academic or clinical professional involved in teaching in our three professions. This allows us to consider articles that report on the design of education in addition to those that assess knowledge before and after instruction– among other possibilities. These two categories of people are in some ways the primary concerned with educational interventions[3].
- Education level: Focus on professionalizing education (i.e., education that gives access to practice) for our three professions.
- Content: In order not to limit ourselves to curricula or modules, we included all types of teaching or learning that were in any way related to sex and/or gender. For this last point, it was sufficient for the teaching or learning to integrate at least 1 of the 2 dimensions in question. At this stage, we did not try to understand how sex and gender were defined (binary or non-binary conception in particular).

### *Exclusion criteria:*

- Studies that do not involve any reflection or educational intervention (of any kind). This criterion was chosen to exclude all studies that focused solely on clinical outcomes or therapeutic education.
- Studies and articles that only mention sex and/or gender as (a) socio-demographic variable(s) without taking it (them) into account in their data analysis.

### *Language and timeframe:*

- Studies published in any language could be included.
- The period considered was from 2011 to May 2022 (date of the searches). This timeframe was set to reflect the latest advances in educational modalities and to ensure that the data collected is still current in terms of awareness and understanding of sex and gender issues in care.

## Search strategy

The search strategy aimed to find both published and unpublished studies. A three-step search strategy was developed and conducted in conjunction with a librarian, Blanche Kiszio.

In the first step, we conducted a limited search on PubMed for our three professions and then analysed the keywords employed by the authors using the Yale MeSH Analyzer tool (https://mesh.med.yale.edu/). We completed this initial analysis by including articles that we had identified in previous work.

The second step involved constructing search equations adapted to each database, based on the identified keywords, followed by conducting the actual literature search. In line with the arguments presented in the introduction, we focused our research on two main concepts: the notion of training/education in our three professions, and the dimensions of sex and gender. For the latter concept, we chose to include all articles where one or both dimensions were present. To ensure inclusiveness in themes and persons concerned (i.e., secondary beneficiaries), and to avoid limiting ourselves to a binary differentiation between men and women, we also included MeSH terms and keywords like LGBT or queer. Additionally, we incorporated MeSH terms such as sexism or social determinants of health to consider the issue from a social perspective.

For the literature search, we tested and then used our search equations on the following databases: PubMed, CINAHL, Web of Science, ProQuest, and Google Scholar (the latter two to include unpublished studies). For Google Scholar, we sorted references by relevance and limited our review to the first three pages of results, as proposed by the JBI (JBI, 2021).

Full search strategies are provided in Appendix I. During the third step, we searched for additional studies amongst identified articles' reference lists.

## Study/Source of evidence selection

Following the search, all identified citations were collated and uploaded into Rayyan, a free web tool designed to assist researchers working on systematic reviews (https://www.rayyan.ai/). Duplicates were then removed. After a pilot test, Mathieu Turcotte and Véronique Hasler proceeded with the selection by dividing the work between them, rather than working independently on all references as is typically described. This choice was made to save time. The screening began with an examination of titles and abstracts, followed by available full texts. At this stage, Véronique Hasler, assisted by Sybille Juvalta and Ursula Meidert, finalized the selection of the 153 remaining references.

This final step was conducted using an extraction grid designed to operate in two stages. The first tab of the Excel extraction grid was used to collect study characteristics and elements related to eligibility criteria. This allowed us to track our decisions and provided an initial overview of the selected articles' content. This search was conducted by Véronique Hasler (for a general overview) and by Virginie Stucki (specifically for occupational therapy). It emerged that the physiotherapy and occupational therapy professions were minimally represented or absent. Consequently, additional articles not found through the initial literature search were submitted for screening.

In accordance with the adopted JBI methodology and the general typology of scoping reviews, we did not critically evaluate the literature (Arksey & O'Malley, 2005; Peters et al., 2020). The main purpose of scoping reviews is to map existing knowledge on a given topic without considering the level of evidence of the results.

## Data extraction

Data were extracted from papers included in the scoping review by Véronique Hasler, Sybille Juvalta, and Ursula Meidert. As with the screening, we divided the task among ourselves to save time. To perform the extraction as rigorously and systematically as possible, we used a grid constructed by Véronique Hasler in the form of an Excel table (see Appendix II).

As explained earlier, it was designed to be used in two steps. The first step was used to collect the main characteristics of the articles while completing the selection of included articles. The second stage was designed to focus on the data to be analysed.

The data extraction grid was refined as the extraction process progressed. We felt it was important to further refine the elements of the population, both primary concerned and secondary beneficiaries (according to our conception presented above[3]).

## Data analysis and presentation of results

We choose to present the synthesis in the form of tables and figures, as well as a narrative summary organized by theme. The results presented are descriptive, as is most often the case for scoping reviews (Peters et al., 2020). We did not conduct a content analysis, for example. Instead, we focused on themes that seemed most relevant after reading the included articles, as well as according to the objectives of WP1 to which we had to respond.

# Results

## Study inclusion

The search of five databases yielded 2405 records. After removing duplicates, the titles and abstracts of 1704 citations were screened. From this process, we excluded 1548 studies. Of the remaining 156 articles, 3 were not accessible, so we reviewed 153 full texts. Based on the eligibility criteria, 104 articles were again excluded. Because most of the selected texts were primarily nursing-related, Véronique Hasler and Virginie Stucki proposed 10 additional articles in the fields of physiotherapy and occupational therapy (identified through their own previous literature searches) for examination under the eligibility criteria. None of these additional articles could be retained. Finally, 1 additional article was retained after reviewing the reference lists of articles identified via the formal literature search. Thus, 50 articles were included in the scoping review and analysed. They are effectiveness studies, qualitative studies, systematic reviews, a scoping review, experience accounts and position papers. No theses identified on ProQuest were finally included. Figure 1 shows details of the selection process, reasons for exclusion, and study selection. The full reference list of included articles is provided in Appendix III.

A first analysis of the selected references shows that several of them refer to the same study (respectively (1) Luctkar-Flude et al., 2020, 2021; Tyerman et al., 2021; Ziegler et al., 2021; and (2) Díaz et al., 2017; Maruca et al., 2018) or are published by the same authors (Elertson & McNiel, 2021; McNiel & Elertson, 2018). Additionally, the systematic reviews and the scoping review include articles from our sample. This may have the disadvantage of overemphasizing certain results compared to others, which should be considered in the presentation of results.

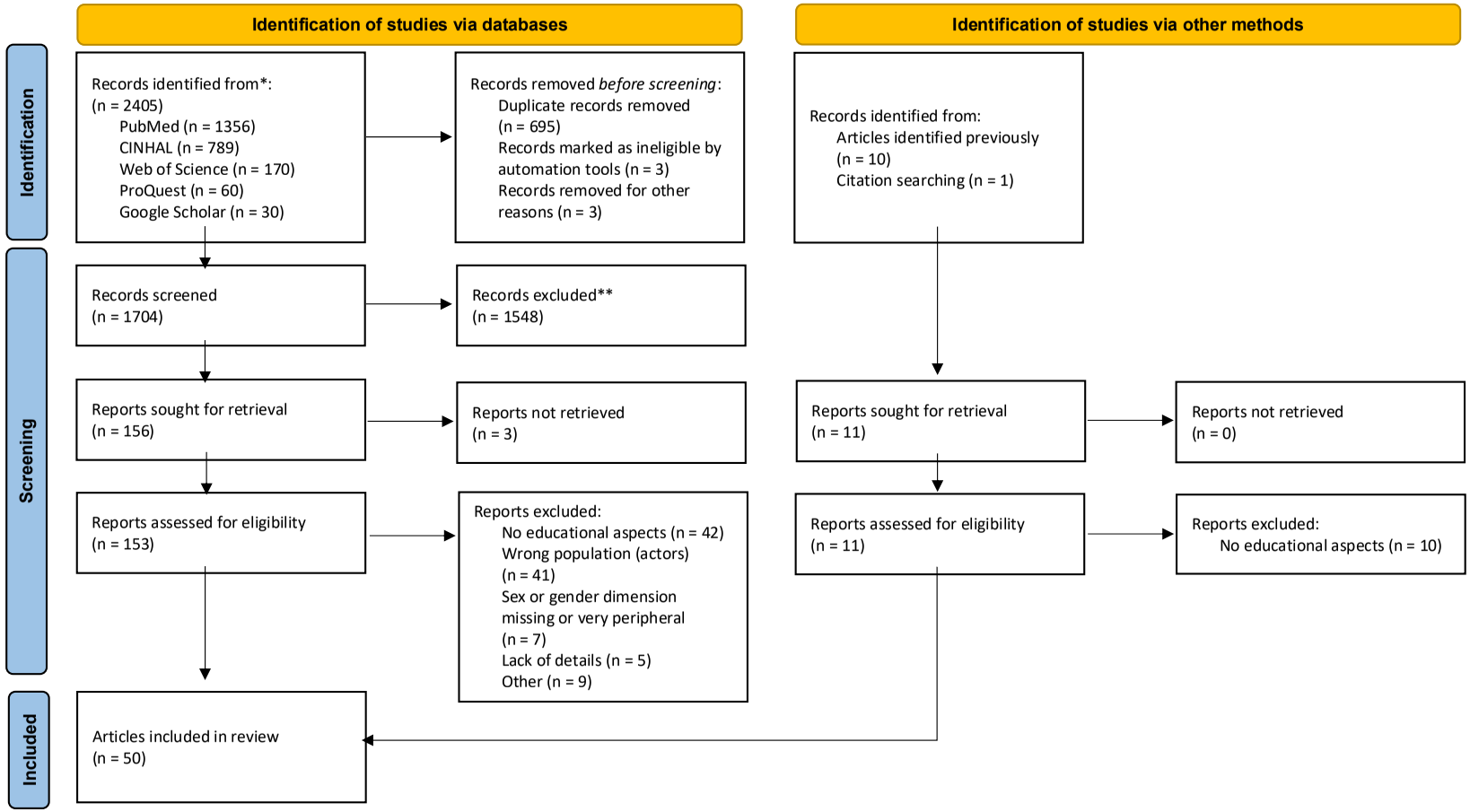


**Fig. 1. PRISMA 2020 flow diagram of studies selection and inclusion process**

*From:* Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ 2021;372:n71. doi: 10.1136/bmj.n71. For more information, visit: http://www.prisma-statement.org/

## Characteristics of the selected studies

Table 1 presents a summary of each included article's aims, as well as the country, type of paper or design, population (actor and target), and the level of the educational intervention conducted or recommended.

The population concerned by the educational interventions (see Figure 2), which we have previously referred to as the actors, primarily comprises healthcare students, particularly undergraduate nursing students. A few students from other professions are included in this first category. Next are healthcare educators, with a majority from the nursing profession. Finally, our sample also includes faculty members (including researchers or administrators) and more global entities such as educational institutions or programs themselves.

Among the secondary beneficiaries of the educational interventions (targets[3]) (see Figure 3), LGBTIQ+ people are the most represented (72%). Some articles consider subgroups such as LGBTIQ+ elders or LGBTQ2S+. Additionally, several articles (22%) focus on changing healthcare professionals' behaviour in caring for an unspecified population. Because the link to sex and gender dimensions may seem less obvious at first glance, I have added the perspective adopted by the authors for each of these articles. Thus:

- 4 focus on sexual health
- 3 on social determinants of health
- 2 on frameworks related to social determinants of health
- 1 on the concept of diversity
- 1 on sex and gender dimensions as defined in our project

Finally, there are individual articles on:

- Women and children exposed to violence (focusing on gender roles)
- Adolescents (focusing on their sexual health)
- Elderly men with advanced dementia (with the assumption of a gender bias)

The last column of Table 1 records the level of the educational intervention. We have listed the following types: curriculum, program, course, workshop, and online course/material. It should be noted that "program" sometimes refers to a separate and specific training program alongside the Bachelor's program, and is sometimes superimposed on the curriculum. "Course" can refer to a one-time course of a few hours, a series of several interventions/sessions of a few hours, or something similar to a module as we know it. For precision, the adjectives "extra" or "specific" are sometimes added to indicate an intervention that is not (yet) integrated into the curriculum and is conducted on an experimental basis. According to this classification, the interventions proposed and sometimes evaluated in the various articles are primarily situated at the course level, even if, overall, the authors see the interest or advocate for action at the curriculum level.

**Table 1. Characteristics of the selected studies**

| Author and year of publication | Country | Design | Aim and purpose | Population | | Level of (educational) intervention |
|---|---|---|---|---|---|---|
| | | | | Actor | Target | |
| Bartlett et al., 2022 | Norway | discursive paper | To review short documentary films about older men with advanced dementia to use in teaching, and therein address the gender imbalance in the dementia care curricula and create opportunities to learn about masculine vulnerability. | nursing students | older men* with advanced dementia and their caregivers (*with gender bias assumption) | curriculum |
| Bell et al., 2019 | USA | discursive paper | To describe teaching strategies for teaching students/professionals to provide culturally humble care to sexual and gender minority patients | nursing students | LGBTIQ+ people | course |
| Bosse et al., 2015 | USA | discursive paper | To discuss of unique health risks to the LGBT population, benefits, and challenges of incorporating these issues into the classroom and recommendations for including the care of this population into a health assessment nursing course. | undergraduate nurses, nurse educators and faculty members | LGBTIQ+ people | course |
| Brown et al., 2021 | USA | pre- and post-test study | To explore how undergraduate health care students rated the impact various social determinants of health (SDOH) have on health and wellbeing before and after a SDOH course. | undergraduate allied health students | unspecified, focus on social determinants of health | course |
| Cantey et al., 2017 | USA | descriptive study | To describe a teaching strategy for increasing the cultural awareness of prelicensure nursing students using low-fidelity simulations developed by students. | undergraduate nursing students | unspecified, focus on social determinants of health | part of an extra program |
| Copti et al., 2016 | USA | discursive paper | To advocate for the integration of cultural considerations and the needs of LGBTQ patients into the physical therapy program and the creation of safe and welcoming learning environments for LGBTQ students. | profession of physical therapy and educational institutions that house physical therapist education programs | LGBTIQ+ people | program and curriculum |
| Davis et al., 2021 | USA | discursive paper | To describe the institutional changes made to enhance inclusive excellence through the integration of social determinants of health (SDOH) concepts into programs and curricula. | university staff, undergraduate, graduate and PhD nursing students | unspecified, focus on social determinants of health | curriculum |

**Table 1. (continued)**

| Author and year of publication | Country | Design | Aim and purpose | Population | | Level of (educational) intervention |
|---|---|---|---|---|---|---|
| | | | | Actor | Target | |
| Díaz et al., 2017 | USA | descriptive study | To explore the use of simulation as a mean to increase cognitive and reflective practice as well as to determine if simulation can alter perceptions and attitudes related to the lesbian, gay, bisexual and transgender (LGBT) community. | undergraduate nursing students | LGBTIQ+ people | course |
| Elertson & McNiel, 2021 | USA | descriptive study | To improve knowledge and attitudes of senior-level baccalaureate nursing students regarding LGBTQ health through a population-focused educational strategy. | undergraduate nursing students (senior 1 level baccalaureate) | LGBTIQ+ people | pilot: extra int. that conducts to a curricular change |
| Englund et al., 2019 | USA | pre- and post-test pilot study | To determine whether a low-fidelity simulation using role-playing and structured sexual history scenarios impacted students' self-confidence in taking sex histories and providing culturally competent care for LGBTQ patients. | undergraduate nursing students | LGBTIQ+ people | pilot: extra simulation + debriefing sessions |
| García-Acosta et al., 2019 | Spain | pre- and post-test study | To evaluate the increase in the level of knowledge of final year nursing students, applying methodological strategies such as problem-based learning (PBL) and film-forum. | undergraduate nursing students (3rd and 4th year) | transgender people | course |
| Glick et al., 2020 | USA | mixed methods study | To determine to what degree lesbian, gay, bisexual, transgender, and queer (LGBTQ) health education and training is integrated into physical therapy education curricula. | physiotherapy students | LGBTIQ+ people | programs |
| Haghiri-Vijeh et al., 2020 | Canada | mixed methods study | To examine the impact of positive space training on students' knowledge and comfort level with LGBTTQ+ communities. | undergraduate nursing students and first-semester students from a range of community and health program | LGBTQ2S+ people | course |
| Henriquez et al., 2019 | Canada | descriptive study | "This article articulates the teaching approach and methodology of an unfolding LGBTQ family case study for undergraduate nursing student". | undergraduate nursing students | LGBTIQ+ people | course |

**Table 1. (continued)**

| Author and year of publication | Country | Design | Aim and purpose | Population | | Level of (educational) intervention |
|---|---|---|---|---|---|---|
| | | | | Actor | Target | |
| Hickerson et al., 2018 | USA | mixed methods study | To describe a simulation program based on standardized patients to bridge the gap in the nursing education of LGBT issues. | senior-level undergraduate baccalaureate and accelerated nursing students | LGBTIQ+ people | course |
| Koch et al., 2021 | USA | descriptive study | To increase student knowledge and comfort with caring for a transgender individual and confronting colleagues when exhibiting poor cultural intelligence. | undergraduate nursing students | transgender people | course |
| Lee et al., 2021 | Canada | mixed methods study | 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. | nursing and medicine students for the quantitative part, more diverse in terms of profession and seniority for the focus group (level of study but also faculty members) | LGBTQ2S+ people | specific workshops |
| Luctkar-Flude et al., 2020 | Canada | descriptive study | To describe an online educational toolkit with resources and virtual simulation games about providing culturally humble care to LGBTQI2S individuals to reduce barriers faced by this population. | nursing students, nurses and other healthcare professionals | LGBTQ2S+ people | online education toolkit |
| Luctkar-Flude et al., 2021 | Canada | mixed methods usability study | To evaluate a bilingual online educational toolkit including curated instructional videos, personal bias quiz, and virtual simulation games about providing culturally humble care to LGBTQI2S individuals. | nursing students and nurse educators | LGBTQ2S+ people | online education toolkit |
| Maley & Gross, 2019 | USA | qualitative study | To provide associate degree nursing students with exposure to the health disparities in LGBT+ populations through a reflective writing assignment. | undergraduate nursing students | LGBTIQ+ people | part of a course |
| Maruca et al., 2018 | USA | pre- and post-test study | To evaluate the impact of a transgender simulation on nursing students' affirmative practice when caring for a transgender person. | undergraduate nursing students | LGBTIQ+ people | course |
| McCann & Brown, 2018 | n.a. | systematic review | To examine the education and training requirements of undergraduate students and health professionals regarding the inclusion of LGBT+ health. | undergraduate students, healthcare professionals and educators | LGBTIQ+ people | multiple |

**Table 1. (continued)**

| Author and year of publication | Country | Design | Aim and purpose | Population | | Level of (educational) intervention |
|---|---|---|---|---|---|---|
| | | | | Actor | Target | |
| McDowell & Bower, 2016 | USA | descriptive intervention | To describe transgender health content developed for students in a baccalaureate nursing program and a student–faculty partnership model used to integrate new content into the curriculum. | undergraduate nursing students | transgender people | program (integrated in 5 required courses over three semesters) |
| McEwing, 2020 | USA | pre- and post-test study | To describe and evaluate an educational program developed for BSN* students to improve competency in providing care for LGBT individuals.<br>*Bachelor of Science in Nursing | undergraduate nursing students (senior) | LGBTIQ+ people | 3 online modules |
| McNiel & Elertson, 2018 | USA | descriptive intervention | To describe and evaluate improvements to an established LGBTQ population-specific training. | undergraduate nursing students (senior) | LGBTIQ+ people | course |
| Morris et al., 2019 | n.a. | systematic review | To determine the effectiveness of programs to reduce health care student or provider bias towards these LGBTQ patients. | medical, nursing, or dental students or providers | LGBTIQ+ people | multiple |
| Orr & Unger, 2020 | Israel | discursive paper | To analyze a structural competency training model for nursing students that includes five components: Theory, Observations, Learning from patients, Engagement, and Research (the TOLERance model). | undergraduate and graduate nursing students | unspecified, focus on structural competency | curriculum |
| Ozkara San, 2020 | USA | pre- and post-test study | To improve students' knowledge, skills, and attitudes with regard to providing culturally congruent nursing care. | undergraduate nursing students (accelerated BSc) | transgender people | course |
| Pack & Brown, 2017 | New Zealand | discursive paper | To provide students working in the health sector with a consistent theoretical approach and practical tools when working with sexual and gender minorities. | healthcare students (nursing and social work more specifically) | LGBTIQ+ elders | teaching practice |
| Pearce, 2017 | UK | professional literature | n.a.: about making nurse education LGBT-friendly. | nurse education | LGBTIQ+ people | curriculum and program |
| Pittiglio & Lidtke, 2021 | USA | pre- and post-test pilot study | To examine if the use of simulation technologies increases cultural competence of nursing care for LGBTQ+, in particular transgender and gender nonconforming (TGNC) individuals. | undergraduate nursing students | LGBTIQ+ people | course |

**Table 1. (continued)**

| Author and year of publication | Country | Design | Aim and purpose | Population | | Level of (educational) intervention |
|---|---|---|---|---|---|---|
| | | | | Actor | Target | |
| Pratt-Chapman & Phillips, 2020 | USA | pre- and post-test study | To compare surveyed learner knowledge, attitudes, and clinical preparedness, as well as perceived value of interprofessional learning, before and after an eight-hour symposium. | healthcare students | LGBTIQ+ people | curriculum |
| Safdar et al., 2019 | USA | descriptive study | "For the 2018 SGHE, we organized an interdisciplinary and interprofessional workshop to achieve the following goals: (1) to analyze four common clinical scenarios to highlight the sex and gender nuances in presentation, diagnosis, or management of illness; (2) to utilize standard educational and assessment tools to deliver these sex- and gender-based medicine clinical pearls to a multiprofessional audience; and (3) to brainstorm two to three learning objectives using these discussions for each case that integrates multiprofessional clinical and educational tools. We also aimed to use the forum to describe challenges unique to different professions as well as share creative solutions to integrate sex and gender into their instructional methods within the classroom." | educators representing 137 schools of Medicine, Dentistry, Pharmacy, Public Health, Nursing, Physical, and Occupational Therapy | unspecified, focus on sex and gender | curriculum and program |
| Santa Maria et al., 2017 | USA | mixed methods study | To test the impact of preparing prelicensed nurses to implement a parent-based sexual health intervention, called Families Talking Together (FTT) on their preparation to assume the role of sexual health educators particularly for parents of adolescents. | undergraduate nursing students | adolescents, focus on sexual health | course |
| Sengupta & Sakellariou, 2009 | UK | discursive paper | To discuss if educators are training physical therapy professionals to address their clients' sexuality needs. | physiotherapy students, educators and professionals | unspecified, focus on sexual health | curriculum and program |
| Sherman, Cimino, et al., 2021 | USA | descriptive study | To describe a pragmatic interdisciplinary approach to nursing curriculum development focused on the integration of LGBTQI + health. | undergraduate nursing students and faculty members | LGBTIQ+ people | curriculum |

**Table 1. (continued)**

| Author and year of publication | Country | Design | Aim and purpose | Population | | Level of (educational) intervention |
|---|---|---|---|---|---|---|
| | | | | Actor | Target | |
| Sherman, McDowell, et al., 2021 | USA | pre- and post-test study | To assess the preliminary efficacy and feasibility (i.e., attrition, engagement, acceptability) of the Transgender Curriculum Integration Project in improving the transgender and gender diverse-related health knowledge and attitudes among a sample of pre-licensure nursing students. | undergraduate nursing students (accelerated BSc) | transgender and gender diverse people | curriculum |
| Siller H et al., 2020 | Austria | scoping review | To explore the use of sex and gender in diversity training for health professionals. | healthcare students and professionals | unspecified, focus on diversity | multiple |
| Smith et al., 2021 | USA | mixed methods study | To develop and evaluate a curriculum to improve cultural awareness and knowledge of LGBT older population's health and quality of life of social work and nursing students. | undergraduate nursing students und graduate social work students | LGBTIQ+ elders | course |
| Strong & Folse, 2015 | USA | pre- and post-test study | To address the educational needs suggested by the literature and determine whether undergraduate nursing majors' knowledge, attitudes, and cultural competence toward LGBT patients could be improved. | undergraduate nursing students | LGBTIQ+ people | course |
| Sung & Lin, 2013 | Taïwan | pre- and post-test study | To evaluate the effectiveness of the sexual healthcare education on nursing students' knowledge, attitude, and self-efficacy related to sexual healthcare. | undergraduate nursing students | unspecified, focus on sexual health | education program |
| Tartavoulle & Landry, 2021 | USA | pre- and post-test study | To evaluate the effects of a program designed to help students provide culturally competent care for lesbian, gay, bisexual, transgender, questioning/queer, intersex, plus (LGBTQI+) patients. | undergraduate nursing students (BSc and associate of science) | LGBTIQ+ people | extra course |

**Table 1. (continued)**

| Author and year of publication | Country | Design | Aim and purpose | Population | | Level of (educational) intervention |
|---|---|---|---|---|---|---|
| | | | | Actor | Target | |
| Tillman et al., 2016 | USA | qualitative study | To describe the educational experience designed to assist second-degree baccalaureate nursing students in meeting quality and safety education for nurses' competencies, providing them with opportunities to work with, and learn about the culture of, clients representing all aspects of human diversity—in this case, members of a lesbian, gay, bisexual, and transgender (LGBT) community—and to provide these students with a cultural-immersion experience as recommended by the American Association of Colleges of Nursing (AACN). | undergraduate nursing students (2nd year) | LGBTIQ+ people | course |
| Tugut & Golbasi, 2017 | Turkey | pre- and post-test study | To determine sexuality assessment knowledge, attitude, and skill of student nurses before and after sexuality training. | undergraduate nursing students | unspecified, focus on sexual health | program |
| Turan, 2022 | Turkey | pre- and post-test study | To evaluate the effects of a "women's–children's rights" online-educational program in a nursing curriculum. | undergraduate nursing students (4th year) | women and children exposed to violence, focus on gender roles | online course |
| Tyerman et al., 2021 | Canada | descriptive study | To describe an educational eLearning toolkit including virtual simulation games created to address a gap in nursing education regarding cultural humility and the health care needs of the LGBTQI2S. | nursing students, nurses and other healthcare professionals | LGBTQ2S+ people | online education toolkit |
| Ünal Toprak & Turan, 2021 | Turkey | pre- and post-test study | To determine the effect of sexual health courses on the level of nursing students' sexual health/reproductive health knowledge levels and sexual myth beliefs. | nursing students | unspecified, focus on sexual health | course |
| Waxman et al., 2020 | USA | descriptive study | To describe and evaluate the use of simulation to increase cultural sensitivity with staff and students in caring for transgender and gender nonconforming patients in a psychologically safe environment that ultimately improves patient care and health. | undergraduate nursing students and educators | transgender and gender diverse people | integrated in the curriculum |

**Table 1. (continued)**

| Author and year of publication | Country | Design | Aim and purpose | Population | | Level of (educational) intervention |
|---|---|---|---|---|---|---|
| | | | | Actor | Target | |
| Wu et al., 2019 | USA | pre- and post-test study | To evaluate a curriculum based on an anti-oppression framework which encourages health professionals to assess their biases and combat health care disparities through an active process of allyship. | medical and nursing students, residents, nurses, medical assistants, research and administrative staff, and faculty | unspecified, focus on antioppression framework | extra program |
| Ziegler et al., 2021 | Canada | descriptive study | To develop and implement an online education resource to address a gap in nursing education regarding the concept of cultural humility and its application to healthcare encounters with persons who identify as lesbian, gay, bisexual, transgender, queer, intersex (LGBTQI) or Two-Spirit. | nursing students, nurses and other healthcare professionals | LGBTQ2S+ people | online education toolkit |

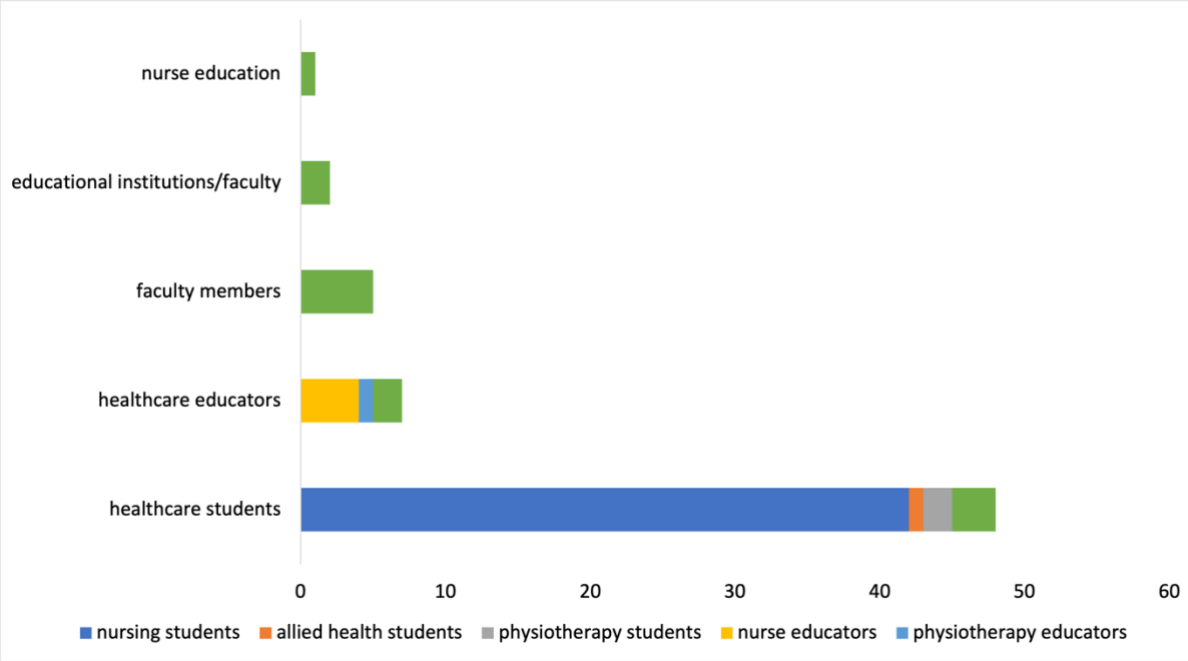


**Figure 2. Composition of the population addressed by the educational interventions (actors) and occurrence in the articles included.**

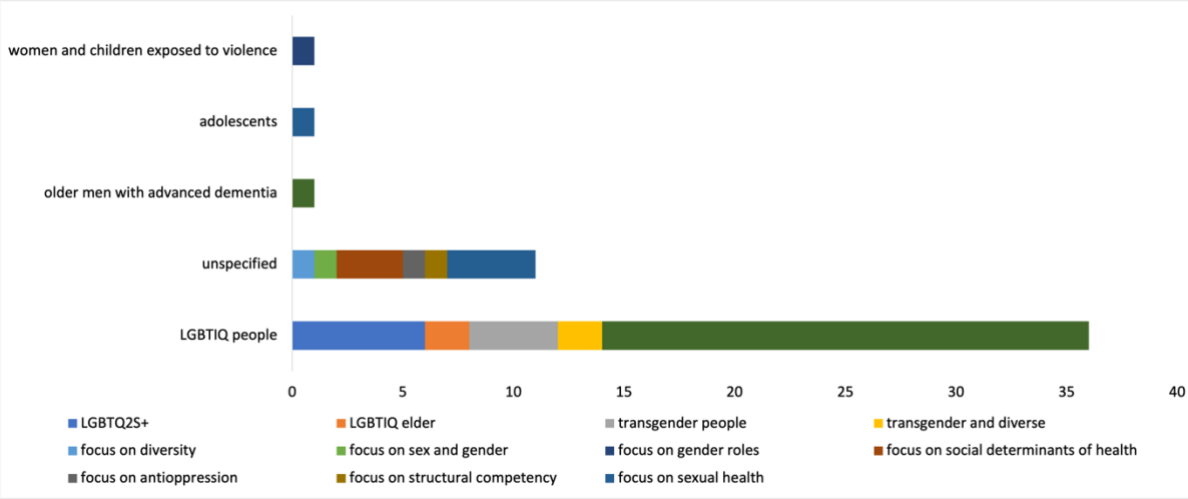


**Figure 3. Composition of the population secondary beneficiaries of educational interventions (targets) and occurrence in the articles included.**

## Summary of results of the scoping review

### *Relevance of integrating sex and gender in education*

Regarding the integration of sex and gender in education in a broad sense[4], our sample includes only the article by Safdar et al. (2019). This review of the 2018 *Sex and Gender Health Education Summit* highlights two promising elements:

1. "a rapidly growing body of literature has established the influence of sex and gender on the presentation, diagnosis, management, and prognosis of disease processes." (p. 1737)
2. a major milestone for the US context in 2016[5].

Crucially, it emphasizes that "these advancements will not change patients' lives unless they are translated into clinical knowledge for the providers directly delivering their care" (p. 1738), hence the interest in developing health professionals' training. The article also notes that "there is wide variation between professions in the methods of dissemination of sex- and gender-specific research findings relevant to that profession" (p. 1738).

Most of the articles included in our scoping review explicitly highlight the need and/or interest in reducing or eliminating health inequalities. We live in an unequal world on many levels. One isolated article in our sample addresses the issue of patriarchy and violence against women and children. The author emphasizes the importance of health professionals' role in reporting abuse to appropriate authorities. However, figures in her country show that they rarely do so. Therefore, education should be used to change healthcare providers' attitudes and behaviours and move towards a more egalitarian perspective among individuals (Turan, 2022).

[4] i.e., not focused on a specific population subgroup.

[5] "When the National Institutes of Health (NIH) mandated the inclusion of biological sex in every federally funded basic science research study." (Safdar et al., 2019, p. 1737)

Three articles address the issue of social determinants of health[6], including gender. The articles point out that social determinants of health "are complex factors that are, in part, connected to health disparities or disadvantages in patient outcomes such as mortality, morbidity, and life expectancy" (Brown et al., 2021a, p. e31). The emphasis is therefore on the need to improve awareness and understanding of these factors' impact for all healthcare actors to combat and ultimately eliminate health disparities. Education, especially initial education, plays a crucial role in this perspective.

Two other articles included in our scoping review are also related to the social determinants of health but claim to go further by adopting other concepts. The first mobilizes the concept of "structural competency". Orr & Unger (2020) use a restrictive definition of the social determinants of health to differentiate themselves and specify their contribution:

> *"While the social determinants of health model focus mainly on poverty and inequalities that cause health disparities, the concept of structural competency expands the perspective and includes the variety of structural factors that produce and maintain inequality and inequities, often along lines of race, ethnicity, religion, class, citizenship status, language, geography, gender, and age. Neff et al. (2019) called it "structural determinants of the social determinants of health"."* (p. 426)

It's important to note that this concept of "structural competency" refers to a "new paradigm for medical education" (Metzl & Hansen, 2014), extended in this case to other health professionals. The aim is to address health inequalities from a structural perspective. Metzl & Hansen (2014), who conceived it, argue that:

> *" […] clinicians require skills that help them treat persons that come to clinics as patients, and at the same time recognize how social and economic determinants, biases, inequities, and blind spots shape health and illness long before doctors or patients enter examination rooms."* (p. 127)

For Wu et al. (2019), the maintenance of health disparities plays out at least as much in patient access to care and the health care disparities[7] as in the social determinants of health. In this way, they argue for the integration of an anti-oppression framework in the curriculum of the actors who gravitate around the patient. This proposal is based on the notion of unconscious bias, also known as implicit bias, and its well-documented impact on health inequities. The authors state that health professionals must be able to recognize and address these biases to mitigate their effects on both patients and professionals themselves, whether they are students or working. Indeed, Wu and colleagues (2019) argue that caregivers are themselves affected by the same factors and subject to discrimination.

Several articles included in the scoping review that focus on LGBTIQ+ individuals point in the same direction. These include Maruca et al. (2018) or Copti and co-authors (2016). Both emphasize the need

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[6] The World Health Organization's definition of "social determinants of health" is as follows:
"The social determinants of health (SDH) are the non-medical factors that influence health outcomes. They are the conditions in which people are born, grow, work, live, and age, and the wider set of forces and systems shaping the conditions of daily life. These forces and systems include economic policies and systems, development agendas, social norms, social policies and political systems." (https://www.who.int/health-topics/social-determinants-of-health)

[7] Which "are differences in the delivery of health care". (Wu et al., 2019, p. 21)

to improve sensitivity and knowledge specific to this patient category. Without this, the unique experiences of LGBTIQ+ people would simply be ignored[8].

Copti et al. (2016) deconstruct the idea that physical therapists can treat these patients "just like everyone else" (p. 12). Many of the physiotherapists described in this case believe that the musculoskeletal system is the same for everyone and that no specific considerations are necessary. However, numerous studies show that LGBTIQ+ people are exposed to stigma and discrimination, often leading them to disengage from the healthcare system (Maley & Gross, 2019). Consequently, LGBTIQ+ individuals have a higher incidence of both physical and mental health disparities[9]. Glick et al. (2020) go further, pointing not only to social stigma and lack of provider education, but also to barriers to access and unequal access to health insurance as systemic factors perpetuating health disparities affecting these communities.

The lack or absence of teaching about LGBTIQ+ care is also seen as a sign of the need to incorporate knowledge, skills and attitudes about caring for those communities into healthcare curricula on competencies in patient-centred care, cultural competency and sensitivity (Maruca et al., 2018).

Another example is the article by Bartlett et al. (2022) which thematizes the use of fictional films as a pedagogical tool. Yet, the authors point out a biased approach to dementia in popular culture. They identify two main pitfalls:

> *"One is that by using content that lacks diversity, educators inadvertently deny the heterogeneity of the lived experience of dementia. Second, such films often promote stigma and reinforce negative stereotypes, inducing fear of dementia and further marginalising subgroups of people with this condition. Given that raising dementia awareness is a global priority, it is important that the nursing curricula reflect the diversity of people with dementia."* (p. 1818)

An additional argument for integrating sex and gender into education is therefore based on the need to reflect the diversity of people with dementia (for Bartlett et al., 2022), and more specifically, the "vulnerable" or invisibilised subgroups.

Articles focusing on sexual health highlight additional elements. Firstly, sexual health is often silenced by healthcare professionals. However, sexuality is often an important part of people's lives, contributing to their well-being and quality of life. As such, it should receive much more attention than it currently does. Sung & Lin (2013) therefore advocate for education to "improve the skills, knowledge and ability of nurses to offer patients holistic care that includes a focus on sexual health" (p. 498). They add: "It is important to begin as soon as possible and certainly before a student graduates as a nurse so that barriers can be broken down early on" (p. 502).

Secondly, there's a specific sub-group of the population that is often little investigated and therefore rarely addressed in education: adolescents. Discussing the sexual health of adolescents is an even more invisible area that requires great attention. Adolescents are often at greater risk of sexually transmitted infections and unwanted pregnancy (Santa Maria et al., 2017).

[8] Not intentionally or maliciously, but precisely because of a lack of sensitivity and knowledge.

[9] Can be found in other included articles such as Copti et al. (2016).

### *Prerequisites for sex- and gender-sensitive curricula*

Our sample barely address the prerequisites to be considered for sex- and gender-sensitive curricula. We quote McCann & Brown (2018):

> *" […] undertaking pre-baseline assessments of the knowledge, attitudes, values, confidence and perceived capabilities and learning needs is an important starting point when integrating LGBT+ issues and concerns within the health education curriculum. […] The use of self-assessments prior to delivery of the education can also act to raise and increase student self-awareness by facilitating individual reflection and of the impact of learning about LGBT+ health and enable the identification of future learning needs and areas requiring further development."* (pp. 210-211)

This study focused on LGBTIQ+ people's health recommends pre- and post-learning self-assessment, which allow both to facilitate a before-and-after comparison, but also to improve awareness of the issues considered.

For their part, Safdar et al. (2019) pursue an objective closely aligned with ours. They enumerate several obstacles to the integration of sex and gender into medical curricula. One of these obstacles, however, could be seen as a prerequisite for integrating these dimensions. The authors note that in many instances, knowledge of sex- and gender-based medicine is not widely disseminated among educators. In such cases, it is imperative to prioritize "educating the educator" (p. 1742).

### *Form of integration into curricula*

Several articles in our review observe that the way sex and gender, respectively LGBTIQ+ topics, are integrated into curricula varies considerably among educational institutions. At least three issues are raised. The first is to decide to what extent sex and gender/LGBTIQ+ topics should be integrated throughout the programme or be the subject of independent and clearly identified courses. For the second, which is linked to the first, it is a question of deciding whether the integration is done through existing or new courses. And finally, for the third, it is a question of deciding how many educators or faculty members are involved in these courses.

Regarding the first two issues, Glick et al. (2020) suggest that we weigh the pros and cons carefully, noting that:

> *" When cultural competence is infused across the coursework, faculty and students understand that it an essential, not an elective, knowledge, and skill. Cultural competence across all dimensions of diversity is an integral component of clinical competence and should be viewed as such by faculty."* (p. 195)

The authors of this mixed methods study therefore argue for a broad integration, but in a rather diffuse way. In other words, they propose not the creation of independent content or courses dedicated to LGBTIQ+ topics, but rather a curriculum that is LGBTIQ+-sensitive. It is noteworthy that a significant proportion of our articles address LGBTIQ+ care through the lens and the teaching of cultural competence. Metzl & Hansen (2014) assert that this approach prevalent in the United States for at least two decades. From this perspective:

> *"competency, in this formulation, implies the trained ability to identify cross-cultural expressions of illness and health, and to thus counteract the*

> *marginalization of patients by race, ethnicity, social class, religion, sexual orientation, or other markers of difference. Clinical professionals learn approaches to communication, diagnosis and treatment that take into account culturally specific sources of stigma, such as the stigma of mental health diagnoses among Asian immigrants"* (p. 126).

Glick and his co-authors (2020) confirm this by citing a 2014 document published by the American Physical Therapy Association (APTA), titled *Blueprint for Teaching Cultural Competence in Physical Therapy Education*. In this document, age, gender, nationality and mental/physical ability are explicitly added to the dimensions mentioned above.

Addressing the third issue mentioned above, Glick et al (2020) suggest that:

> *"If a single faculty member is designated or offers to teach all the LGBTQ+ population–specific content across courses and levels, it becomes quite time consuming. If the faculty member designated to teach the content leaves, the integration of content is often lost."* (p. 195)

A fourth issue arises when teaching involves the active participation of LGBTIQ+ individuals: how to recruit and retain these individuals for multiple iterations of the course. Tyerman et al. (2021) report on their experience with transgender people who often express reluctance to revisit earlier stages of their transition and therefore participate in the teachings. This raises questions about the most effective approach to these topics, whether through first-hand accounts or through resources such as videos and articles. The latter approach, however, precludes direct contact between students and the beneficiaries of their care, despite this being a recommendation in several articles within our corpus.

### *Learning objectives*

Within our sample, several articles present learning objectives with varying degrees of explicitness. While some overlap exists, these objectives are inherently tied to the specific content taught, resulting in considerable heterogeneity. Consequently, synthesizing these objectives proves challenging, as doing so risks decontextualizing them from their respective educational interventions. To address this, we present these objectives in two tables below.

Tables 2 and 3 illustrate the substantial variation in both content and scope of the learning objectives across the cases presented. The educational interventions themselves exhibit significant diversity in form and scope. Moreover, these interventions are frequently multi-component and are not limited to a single teaching method or medium, precisely in order to achieve their objectives as effectively as possible. For instance, the online educational toolkit developed by Luctkar-Flude and her team (2020) aims to both reinforce existing knowledge and introduce new concepts to students while facilitating interaction with LGBTIQ+ patients through virtual simulation games.

**Table 2. Learning objectives on LGBTIQ+ care and topics**

| | Bosse et al., 2015 | Luctkar-Flude et al., 2020, 2021 | Maruca et al., 2018 | McNiel & Elertson, 2018 | Smith et al., 2021 |
|---|---|---|---|---|---|
| Intervention types | Incorporating LGBT issues into the health assessment classroom (physical assessment and health history, patient education) | Online educational toolbox including virtual simulation games | Lecture and simulation | 4.5-hour educational session including information, simulation, and panel discussion strategies | Lecture/curriculum intervention consisting of lecture, film clips, discussion points, and question and answer exercises |
| Learning objectives | **2 main goals:**<br>- Conduct appropriate assessments related to development, health, and sexual history<br>- Perform physical assessment | **Overarching goal:**<br>- Advance nursing and other healthcare professionals' cultural humility in practice<br>**Specific objectives:**<br>- Describe nurses' knowledge and attitudes discussing topics pertaining to sexuality and gender diversity<br>- Explore personal values and biases<br>a) how they are systemic<br>b) how to address them in healthy practice<br>c) avoiding heteronormativity and cisgenderism<br>- Describe the unique health issues in the lesbian, gay, bisexual, transgender, questioning, intersex, and two-spirit population<br>a) gain some perspective of their unique needs<br>b) identify community supports<br>- Acquire knowledge and skills for working with sexual and gender diverse identified people<br>a) adapt assessment techniques appropriately<br>b) demonstrate effective, respectful and compassionate communication<br>**Revised and synthesized in the 2021 article:**<br>- Understanding personal assumptions about sexuality and gender<br>- Application of principles for cultural humility<br>- Creation of "safe spaces"<br>- Focused communication strategies to obtain relevant health information | - Establish and maintain therapeutic communication in a culturally sensitive manner with a transgender patient<br>- Identify signs and symptoms of anxiety<br>- Safely manage a client experiencing anxiety<br>**Some outcomes were:**<br>- Ability to establish honest and open therapeutic communication assessed by use of therapeutic communication techniques<br>- Ability to<br>a) accurately perform a mental status exam and physical exam<br>b) recognize early signs and symptoms of anxiety determine escalation of anxiety level and assess potential harm; and d) maintain a safe environment | - Sensitivity to various identities<br>- Understanding current challenges of the LGBTQ population<br>- Confronting fears through education<br>- Increasing self-awareness<br>- Learning ways to educate and advocate for the LGBTQ community members<br>**In addition, 3 health specific outcomes were added to:**<br>- Promote understanding regarding prevalence and effects of health disparities<br>- Provide effective health service support<br>- Engage in active partnerships for improved health promotion | **Faculty's focus and specific goal:**<br>- Enhance student understanding of the unique health needs, as well as political, social, legal, and economic issues specific to the LGBT older adult communities<br>**Other goals:**<br>- Enhance the cultural sensitivity and cultural humility of health care providers in supporting LGBT older adults<br>- Enhance the comfort with which health care providers interact with LGBT older adults, including asking questions that empowered clients to speak without fear of discrimination |

**Table 3. Learning objectives focused on other topics**

| | Sung & Lin, 2013 | Wu et al., 2019 |
|---|---|---|
| Intervention types | 12-week sexual healthcare education program | Workshop format that consists of three sections: (1) an overview of unconscious bias, (2) an introduction to allyship, and (3) vignettes, in which participants use cases to practice skills introduced in the previous sections |
| Learning objectives | - Illustrate and reinforce knowledge<br>- Increase tolerance to sexual differences<br>- Decrease judgmental attitudes, and further improve self-efficacy<br>- Build confidence to discuss sexual concerns with patients | - Emphasize self-reflection<br>- Understanding one's place in oppressive structures<br>- Actively working toward change |

We previously introduced the concept of "cultural competences". However, in the learning objectives cited, it is "cultural humility" that is referred to. This concept, developed by Tervalon & Murray-García (1998) should be distinguished from cultural competences in this sense:

> *"cultural humility incorporates a lifelong commitment to self-evaluation and critique, to redressing the power imbalances in the physician-patient dynamic, and to developing mutually beneficial and non-paternalistic partnerships with communities on behalf of individuals and defined populations"* (Tervalon & Murray-García, 1998; cited by Foronda et al., 2018, p. 43)

For their promoters, this more recent concept should replace 'cultural competencies'. Cultural humility is indeed presented as a step forward in inclusion. A definition had to be formulated, and Foronda et al. (2016) make the following proposition:

> *"In a multicultural world where power imbalances exist, cultural humility is a process of openness, self-awareness, being egoless, and incorporating self-reflection and critique after willingly interacting with diverse individuals. The results of achieving cultural humility are mutual empowerment, respect, partnerships, optimal care, and lifelong learning."* (p. 213)

This clarification facilitates a better understanding of the learning objectives related to this concept and enables potential connections, particularly with the proposal of Wu et al. (2019) who work on an anti-oppression curriculum. The latter concept/model is based on different references than cultural humility. Nevertheless, there is a possible and interesting comparison in terms of perspective.

Finally, Safdar et al. (2019) report on progress made at the 2018 *Sex and Gender Health Education Summit*. This included: brainstorming standardized learning objectives that integrate sex and gender into healthcare professions' curricula. To this end, participants were asked to "analyse common clinical scenarios highlighting the nuances of sex- and gender-based medicine" (p. 1737). Safdar et al. (2019) provide these scenarios with SMART objectives. For ease of reference, these are available in Appendix IV.

### *Teaching contents*

Regarding teaching contents, we also observe a multiplicity of propositions. Therefore, we opt for a presentation of the results using graphs and a table. Some illustrations are added to allow the understanding of some specific propositions in their integrity and complexity, and not only through small units of content taken out of their context.


**Figure 4. Transversal teaching contents, all perspectives and focuses.**

Figure 4 depicts content unanimously adopted by our included articles. The word cloud illustrates content we have classified as transversal, proposed/recommended regardless of perspectives and foci adopted. The frequency of content appearance in our sample is reflected in the font size and thickness.

A significant portion of the proposed teachings, across all perspectives and foci, begin by providing definitions of concepts and dimensions discussed with students. A glossary with precise and adequate terminology is often proposed. These are widely shared principles, particularly mentioned in relation to sex and gender dimensions, as well as the LGBTIQ+ acronym. The primary objective is to establish a common knowledge base among all students.

Unsurprisingly, given the arguments presented in our articles demonstrating the relevance of educational interventions, content addressing discrimination, stigma, bias in multiple domains, disparities, and inequalities is frequently recommended or presented as essential. A smaller number of articles address content on either gender roles or gender identities and expressions.

In the following section, we discuss content centered on more specific secondary beneficiaries (targets) or particular foci. Figure 5 illustrates different content addressing LGBTIQ+ people. We have identified six topics as the main content categories, further delineated according to the articles' findings. Professional role development should be interpreted broadly, encompassing both the development of professional roles and the cultivation of professional clinical skills at a more operational level.

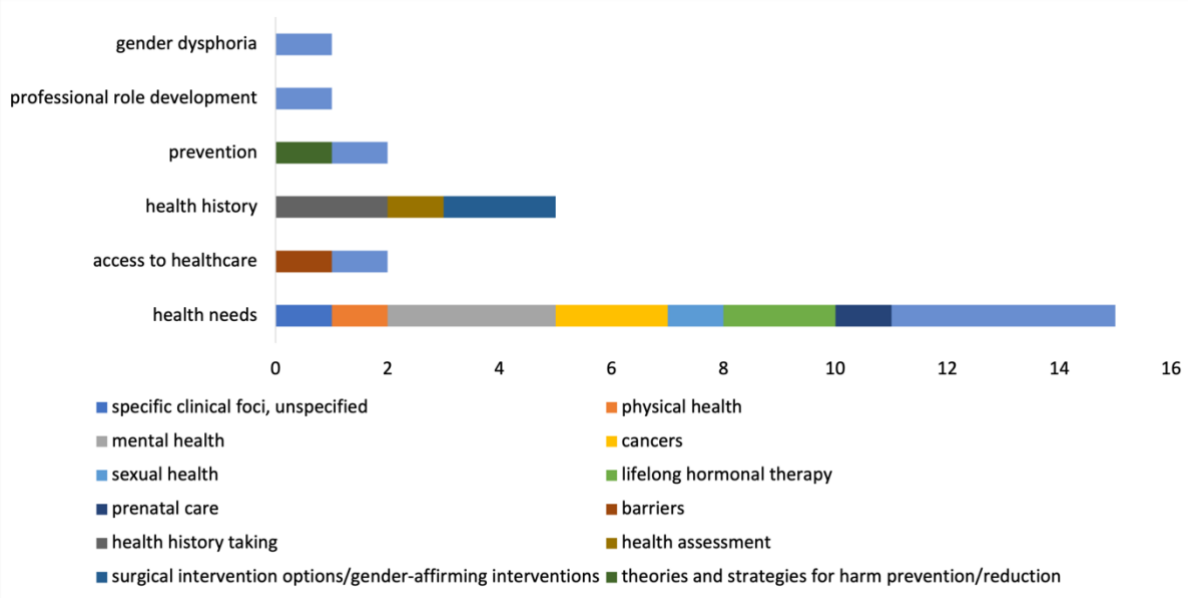


**Figure 5. LGBTIQ+ teaching contents.**

The graph depicting LGBTIQ+ teaching content provides a concise visualization of the main content categories. However, it does not fully capture the articulation between these contents, nor their integration into a course/module or the broader curriculum. McDowell & Bower (2016) partially addresses this limitation by providing a more comprehensive description of these different levels of teaching design, specifically focused on transgender health. Figure 6 reproduces one of their tables, illustrating this multi-layered approach.

To further elucidate the content, figures 7 and 8 present tables extracted from two articles, focusing on women and children's violence abuse reports and unconscious bias with strategies for allyship, respectively. These figures are particularly valuable as they not only delineate the content but also specify the teaching methods employed for each component.

Finally, we would like to point out that several articles list and even make available resources of various kinds. One example is the online educational toolkit developed and evaluated by the team of Luctkar-Flude et al. (2020), which is accessible to all users upon provision of an email address. I was able to test the tool and found it extremely interesting insofar as the virtual simulation games allow the student/learner to be immersed in evolving situations that progress based on their choices in the interaction. The scenarios presented are both elaborate and rich in content. A comprehensive list of resources identified in our sample is provided in Appendix V.

**TABLE 1**

Transgender Health Content Integrated into Five Baccalaureate Courses

| Course | Topic | Key Points | | Method of Content Integration |
|---|---|---|---|---|
| Professional Role Development in Nursing | Health inequities<br>Gender-affirming language and best practices<br>Gender-affirming interventions | • | Rates of discrimination in health care settings | Topics were incorporated into a 20-minute introductory webinar. The webinar was included in an online learning module on social determinants of health. |
| | | • | Introductory terminology | |
| | | • | Asking about name and pronoun preferences | |
| | | • | Physical assessment best practices | |
| | | • | Overview of gender-affirming hormones | |
| Health Assessment | Gender-affirming language and best practices<br>Preventive health | • | Taking a sexual history in a gender-affirming manner | Topics were incorporated into in-class lectures on taking a sexual history and cancer screening. |
| | | • | Cancer screening recommendations for transgender patients | |
| Pharmacology | Hormone use | • | Goals of hormone therapy | Topics were addressed on three slides, which were incorporated into an online lecture on drugs affecting sexuality. |
| | | • | Hormone administration methods | |
| | | • | Hormone monitoring | |
| Psychiatric-Mental Health Nursing | Mental health | • | Stigma | Topics were addressed on four slides, which were posted to the online course site to accompany materials on suicide. |
| | | • | Suicide | |
| | | • | Gender dysphoria and the *Diagnostic and Statistical Manual of Mental Disorders*, fifth edition (American Psychiatric Association, 2013) | |
| Nursing in the Childbearing Family | Prenatal care | • | Gender-affirming language and best practices | Topics were incorporated into existing slides and discussed during an in-class lecture on antepartum nursing assessment. |
| | | • | Gender-affirming antepartum care | |

**Figure 6. Excerpt from McDowell & Bower (2016).**

**Table 1**
Content of the WCR-OEP (total duration of the WCR-OEP).

| Procedure (14 weeks) | Chapter | Curriculum | Duration/ session | Activities | Methods | Materials |
|---|---|---|---|---|---|---|
| Week 1 | Children's Rights | Content and Basic Principles of the "Convention on the Rights of the Child" | 30 min | – Question and answer<br>– Group discussion | – Online education | – Online slides<br>– Brochures |
| Week 2 | | Child and Family Welfare—UNICEF | 30 min | – Brainstorming | | –International conventions |
| Week 3 | | Child Abuse and Neglect | 30 min | – Recommendations on the topic | | |
| Week 4 | | Child Abuse and Neglect II | 30 min | | | |
| Week 5 | | Preventative Measures Against Child Abuse and Neglect | 30 min | | | |
| Week 6 | | Preventative Measures Against Child Abuse and Neglect II | 30 min | | | |
| Week 7 | | Repetition of Children's Rights Issues | 30 min | – Abstract of section about "Children's Rights" | – Online education | – Online slides<br>– Brochures<br>– International conventions |
| Week 8 | Women's Rights | Definition of Woman-Gender and Gender Concepts | 30 min | | | |
| Week 9 | | Violence Against Women and Violence Based on Social Gender Roles | 30 min | – Question and answer<br>– Group discussion | – Online education | – Online slides<br>– Brochures |
| Week 10 | | What is violence against women? What causes it? | 30 min | – Brainstorming | | – International conventions |
| Week 11 | | What are the rights of women in the human rights declaration? | 30 min | – Recommendations on the topic | | |
| Week 12 | | What are the results of national and international studies on violence against women? | 30 min | | | |
| Week 13 | | What can be performed to prevent violence against women and protect women from violence? | 30 min | | | |
| Week 14 | | Review of all topics | 30 min | – Abstract of section about "Women's Rights" | – Online education | – Online slides<br>– Brochures<br>– International conventions |

**Figure 7. Excerpt from Turan (2022).**

**Table 1: Unconscious Bias and Allyship Workshop**

| Section | Themes | Topics and Examples | Teaching Style |
|---|---|---|---|
| Unconscious bias (0.5-1 hr) | Definition | Mindbugs, Stroop Test, misinformation effect | Guided discussion, didactic, group activity, storytelling |
| | Bias in multiple fields | Gender bias, labor market discrimination | Didactic |
| | Implicit association test and effects on healthcare | Patient experience, medical decision-making, dissociation, multidimensional consciousness | Didactic, quotes, group discussion, reflection |
| | Hidden discrimination | In group vs out group | Storytelling |
| | Combating bias | Bias literacy, emotional regulation, hiring/evaluating practices, culture change | Didactic |
| Allyship (0.5-1 hr) | Definition | Lessons from 1968 Summer Olympics demonstration | Guided discussion, reflection on historical event, storytelling |
| | Power and privilege | Cultural appropriation, cultural exchange, cultural assimilation, invisibility of Native Americans, intersectionality, privilege distress | Guided discussion, quotes |
| | How to be an ally | Best practices and common mistakes, lessons from #BlackLivesMatter demonstration | Guided discussion, didactic, reflection on recent event |
| | Step Up/Step Back model | Strategies for empowerment | Didactic |
| Vignettes (2-3 hrs) | Religious bias<br>• Islamophobia<br>Racial bias<br>• Minority tax<br>• Model minority myth<br>• Overuse of force<br>• Bias in pain control<br>Gender and sexuality bias<br>• Misgendering<br>• Transphobia | Reproductive justice<br>• Forced sterilization<br>• Stratified reproduction<br>• Use of "Utox" in pregnancy<br>• Sex-selective abortion bans<br>• Contraceptive coercion<br>Disability bias<br>Language discordance<br>Medical education/training<br>• Microaggressions<br>• Imposter syndrome<br>• Medical hierarchy | Small group discussion, large group guided discussion/reflection, group activity (Power Mapping), skill building |

**Figure 8. Excerpt from Wu et al. (2019).**

*Teaching methods*

The teaching methods employed are, unsurprisingly, numerous and combined in various configurations across different educational interventions. While a small subset of articles in our sample focus on a singular teaching method, such as simulation or discussion, the vast majority integrate multiple methods to achieve their learning objectives. Figures 9 and 10 present graphs that individually account for each teaching method, allowing us to identify the most prevalent approaches. Simulation emerges unequivocally as the most frequently utilized method.

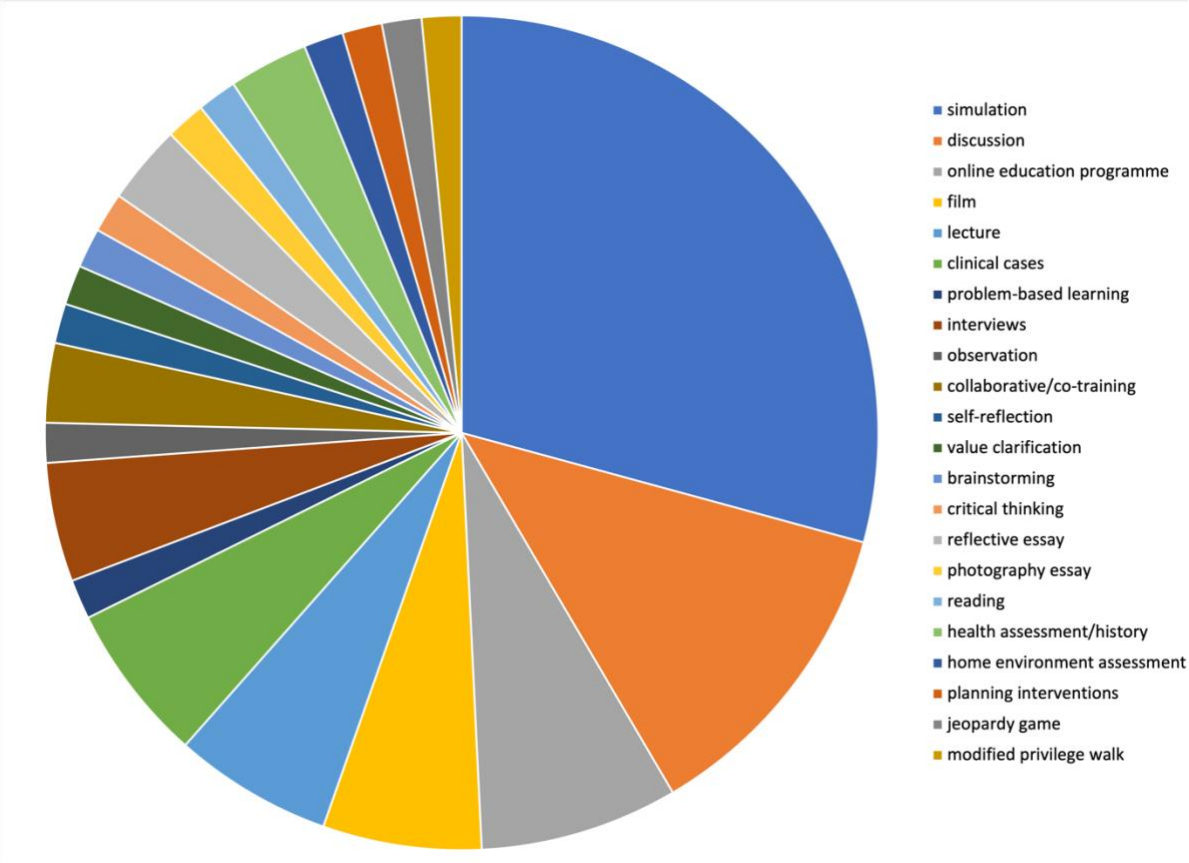


**Figure 9. Isolated teaching methods.**

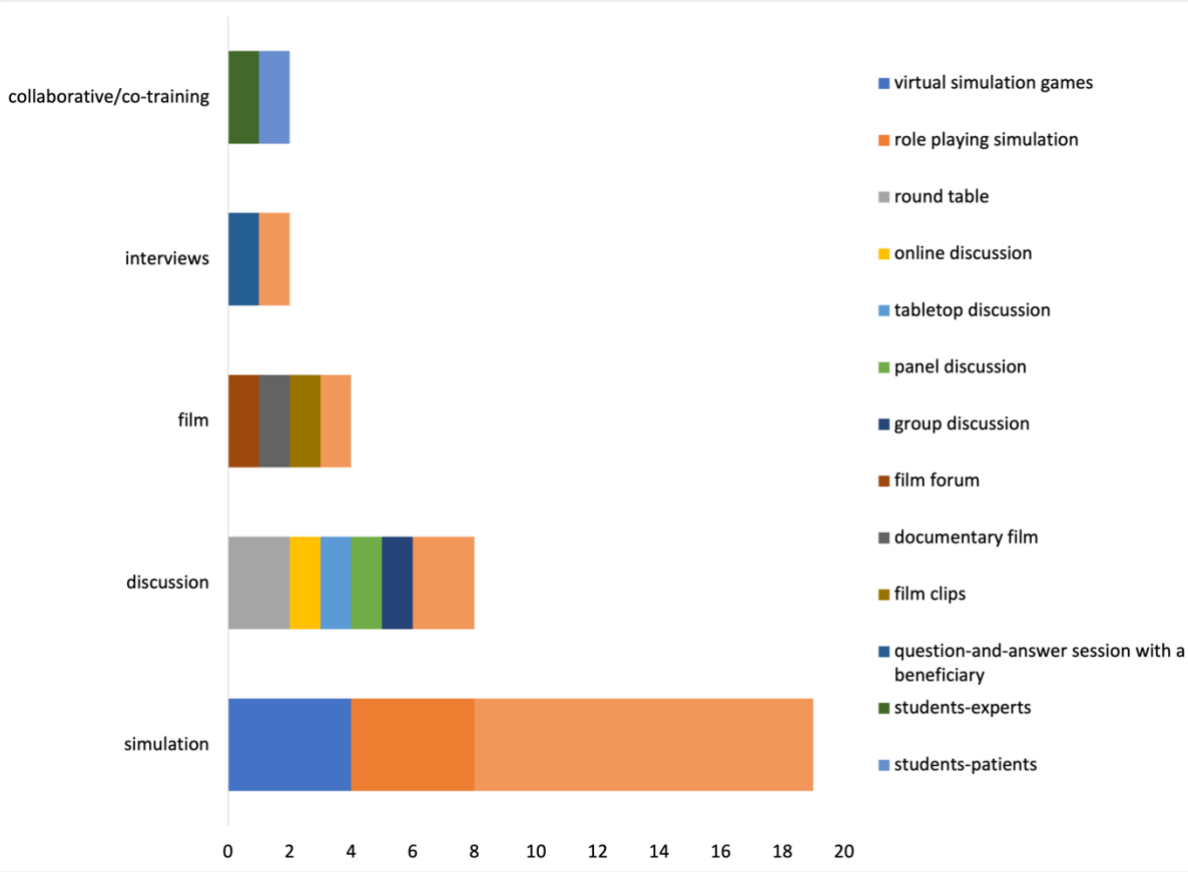


**Figure 10. Details of some isolated teaching methods.**

To better elucidate how these diverse teaching methods are articulated within different educational interventions, Table 4 presents examples of teaching projects.

**Table 4. Examples of teaching projects**

| | (Díaz et al., 2017; Maruca et al., 2018) | (Luctkar-Flude et al., 2020, 2021) | (Tillman et al., 2016) |
|---|---|---|---|
| Teaching project | Simulation with:<br>• transgender scenario (because exposure limited in clinical practice and more vulnerable)<br>• high-fidelity manikin<br>preceded by LGBT content via lecture | eLearning toolkit including:<br>• two voice-over PowerPoint presentations as presimulation preparation activities<br>• four innovative bilingual virtual simulation games that depict clinical encounters between nurses and LGBTIQ+ people | group-project assignment in a community-health nursing course including:<br>• LGBT health literature search<br>• interviews of members of the LGBT community<br>• observational activities<br>• planning health- promotion and disease-prevention interventions*<br>*These interventions were implemented during an LGBT Pride Day celebration in order to provide an immersive experience for the students, with diverse representation of persons and families from within the LGBT community. |

There appear to be no strict guidelines governing the articulation of these teaching methods, beyond considerations of lesson integration and allocated time. It should also be noted that our corpus does not always describe in detail their educational interventions, which can cause difficulties when it comes to reproducing them or implementing them in a different context.

Lastly, one teaching method described in our included articles stood out as particularly radical and provocative. McNiel & Elertson (2018) detail a role-playing exercise designed to simulate the "coming-out process" (p. 313). While this may appear anecdotal within the broader context of our data, and acknowledging the underlying pedagogical intent, it raises important considerations. Given that simulation exercises are already stress-inducing for many students, subjecting them to such a potentially traumatic experience may be disproportionate to the educational benefits. This approach warrants careful ethical consideration and further investigation into its efficacy and potential psychological impact on participants.

# Discussion

The following discussion does not exhaustively revisit all results but focuses on select findings. It adheres to the structure established in the *Summary of results of the scoping review* chapter.

### *Relevance of integrating sex and gender in education*

This subsection revisits the proposition of addressing sex and gender dimensions through the lens of social determinants of health. This approach appears promising, as it contextualizes various sex and gender-related issues within a social universe that may vary across cultures or time. This allows for nuance and specificity, particularly in proposing solutions to modify healthcare professionals' practices. This approach also has the advantage of more readily engaging individuals—colleagues, faculty members, or students—who might feel targeted when the focus is solely on sex and gender. Through the social determinants of health framework, they understand that this is far more than an individual responsibility.

However, research has demonstrated that the manner in which these social determinants of health are mobilised and integrated into education and research often omits the gender dimension, despite its significance (Haute Autorité de Santé, 2020; Schwarz et al., 2019). "This same approach too often fails to take into account the biological characteristics linked to sex, which are nonetheless important, even if a focus on biology or gender alone is not sufficient" (Haute Autorité de Santé, 2020, p. 4, freely translated from French). The Haute Autorité de Santé in France suggests three axes of reflection, primarily for researchers, but potentially applicable to our project. Firstly, to develop research in the field of epigenetics[10], secondly, to adopt a bio-social approach that combines biological considerations with individuals' social roles, and thirdly, to adopt an intersectional approach to identify the intersections of social determinants and their impact on health status (Haute Autorité de Santé, 2020).

We then briefly return to Copti et al. (2016) contribution regarding physiotherapists who believe they treat all patients equally: "just like everyone else" (p. 12). This perspective is commented on or echoed by other researchers investigating physiotherapy (Bruyneel & Pichonnaz, 2022; Martin & Perrin, 2012; Stenberg et al., 2022). They highlight this egalitarian discourse, or even egalitarian convictions of physiotherapists, which render invisible the structural asymmetry in which they practice their profession (Martin & Perrin, 2012). The lack of knowledge or awareness regarding the impact of sex and gender on people's health appears to be widely shared among physiotherapists. It is worth considering whether this is unique to this health profession or could be extended to other health professionals. The report's author's expertise in physiotherapy may give too much weight to the fact that this is profession-dependent, but it may also warrant future investigation.

Finally, we return to the broader relevance of integrating sex and gender dimensions into education. Some documents from organizations such as the Swiss Association of Medical Sciences (SAMS) recommend consistently integrating issues of inclusiveness, diversity and discrimination into health professional education in a consistent way (Académie Suisse des Sciences Médicales, 2019). Sex and gender are not specifically named, and it may be that, as with the social determinants of health, these two dimensions are side-lined. While sex and gender are not specifically named, and may be sidelined as with the social determinants of health, this brings legitimacy to their more formalised integration into the curricula of our three professions. However, political commitment is necessary, as the WHO

[10] "Epigenetics [...] shows that the biological expression of sex combines with life and environmental conditions, including social conditions, to explain how life conditions in childhood or adolescence 'get under the skin' and explain adult pathologies in many areas". (Haute Autorité de Santé, 2020, p. 4, freely translated from French)

and the UN have been advocating for decades to eliminate "gender discrimination in global health, with only modest success" (Heise et al., 2019, p. 2440).

### *Prerequisites for sex and gender curricula*

Here we provide some additional insights from the scientific literature. For instance, Clever et al. (2020), focusing on doctors, rightly points out that research results must precede teaching:

> *"sex and gender-sensitive medicine should be increasingly considered in research in order to guarantee broader empirical data. Research findings should then be transferred into teaching, and current literature and guidelines should be critically reflected."* (Clever et al., 2020, p. 5)

Other articles align closely with this perspective (for example McGregor et al., 2013). We discuss this further in the following sub-section.

### *Knowledge gaps*

As explained in the methods chapter, identifying knowledge gaps based on our scoping review is challenging. Nevertheless, the literature frequently mentions that more effort is needed to implement sex and gender into health professionals' education (among others Lindsay & Kolne, 2020; Stickley et al., 2016). However, there is no review or document presenting a comprehensive analysis of the situation, what areas need to be addressed, how to address them, and where and when to address them. In the narrower context of LGBTIQ+ care education in physiotherapy, Glick et al. (2020) suggest that guidelines should be developed for incorporating LGBTIQ+ health information into existing curricula. They further add:

> *"Further research is also needed to determine the most effective pedagogy and evaluation for LGBTQ+ topics and to identify physical therapy students' self-evaluation of their ability to provide care to LGBTQ+ patients."* (p. 196)

Stickley et al. (2016) explain the difficulty in identifying which key topics should be covered in general curricula (and secondarily in specialised postgraduate curricula) by the lack of competencies in women's health among health professions. The report to which the authors refer is again focused on a narrower perimeter than the dimensions of sex and gender as we understand them. Nevertheless, the existence of awareness and pre-existing competences among the teaching staff appear to be a driving force for the integration of sex and gender in our curricula.

The few following elements are more closely circumscribed to the research process. Let us begin with some numbers. Tannenbaum et al. (2017) investigated the extent to which Canadian clinical guidelines integrate evidence on sex and gender considerations. Their results show that:

> *"Of the 118 clinical practice guidelines that met the inclusion criteria, 79 (66.9%) were text-positive for sex and/or gender keywords; 8 (10%) of the 79 used the keywords only in relation to pregnancy. Of the remaining 71 guidelines, 25 (35%) contained sex-related diagnostic or management recommendations. An additional 5 (7%) contained recommendations for sex-specific laboratory reference values, 29 (41%) referred to differences in epidemiologic features or risk factors only, and 12 (17%) contained nonrelevant mentions of search keywords. Twenty-five (35%) of the text-positive guidelines used the terms "sex" and/or "gender" correctly."* (p. E68)

There are several important points to be made here. Firstly, while a significant proportion of the included guidelines employed the terms sex and gender, the majority of these were confined to issues surrounding pregnancy or sexual health. This suggests that currently, certain research areas necessitate close attention to sex and gender dimensions, while others remain "indifferent to them. This situation presents a clear risk of gender bias in disease understanding and treatment. Three examples illustrate this potential bias. Firstly, Stenberg et al. (2022) tell us that: " certain illnesses and diagnoses that primarily affect women, such as nonspecific long-term pain, are ranked low in terms of social status and resource allocation" (pp. 2321-2322). This perspective has been historically influenced by the long-standing perception of women's bodies as inherently weaker and more fragile (Fussinger, 2010). Secondly, the unspoken assumptions underpinning research work make it invisible how the social norms in which researchers are embedded impact their findings (Heise et al., 2019). Thirdly, Hallam et al. (2022) explain that women authors are demonstrably more likely to account for sex and gender in their work. Given that fewer women occupy positions allowing them to develop their own research topics, this disproportionately impacts the production of knowledge incorporating sex and gender.

Returning to the study by Tannenbaum et al. (2017), only 35% of Canadian clinical guidelines correctly use the terms sex and gender. This finding is widely shared (Adisso et al., 2020; Chalmers & Elkins, 2021 among others). As conceptual clarity is a prerequisite for rigorous research, this observation alone explains knowledge gaps. But beyond clarification, the status accorded to these terms can also have significant effects. Chalmers & Elkins (2021)note that the sex and gender dimensions are not always used as real variables, but sometimes merely as simple descriptors (see Hallam et al., 2022 for a similar observation).

Regarding clinical study population samples, Chalmers & Elkins (2021) identify a problem with recruitment, which is not always inclusive in terms of gender representation. While physiotherapy researchers tend to draw samples with equal representation of men and women, they often exclude gender-diverse people (i.e. LGBTIQ+ people). Hallam et al. (2022) frame the issue rather as one of sample size:

> *"Where feasible, studies should be designed with adequate power to detect sex or gender differences, whether it be with sex/gender as the main exposure of interest or as a potential effect modifier, and this should be specified a priori. For the latter, this will typically require a larger sample size than if sex or gender were simply treated as a confounder (as is typically done)."* (p. 4)

A final reason for knowledge gaps is that null or negative results are often unpublished or ignored. Hallam et al. (2022) assert that "the absence of a difference should not be considered a null finding, with findings of similarities between women and men having the potential to counteract biased or stereotyped beliefs about sex and gender" (p. 4).

### *Form of integration into curricula*

Regarding the form of integration of sex and gender in training, we quote McGregor et al. (2013), which in our opinion, shows how transversal they are and should appear as a central axis of the curricula:

> *"Sex and gender can be integrated into medical education in many different ways – from student electives, to a longitudinal sex and gender 'thread' that incorporates sex and gender into every area of student learning. Since sex and gender are two human variables that everyone possesses without exception, the longitudinal*

> *approach, while more ambitious, is optimal. In order to design sex and gender sensitive medical curricula, it is imperative that specific content areas are identified, and educational resources are readily available to both educators and students."* (p. 13)

The emphasis on the relevance of sex and gender to all individuals, not just women or LGBTIQ+ people, provides a compelling argument for their integration into curricula, and for targeting integration across the entire program and subsequently the curriculum. This is also advocated by Stenberg et al. (2022):

> *"Our first suggestion for future development is the integration of gender in physiotherapy education: from basic training at graduate level to postgraduate level and doctoral education."* (p. 2323)

An article following the 2018 Sex and Gender Health Education Summit (outside the articles included in our scoping review) enumerates elements that guarantee good integration (McGregor et al., 2019). These elements, while not strictly about the form of integration, represent crucial starting points:

- *"Interprofessional collaboration is key. Interprofessional discussions during workshops and small-group activities fostered a greater understanding of the relevance of sex and gender across multiple knowledge domains and practice areas. […]*
- *Work within existing frameworks. There is no doubt that implementing broad curriculum change can be challenging, but integrating sex and gender into existing curricula does not have to be difficult. […]*
- *Use available resources. Many resources are available to facilitate curricular integration, so that reinventing the wheel is not necessary.*
- *Align with professional competencies and entrustable professional activity (EPA): [variations, specificities, but also common themes]*
- *Students are allies in SGHE. Students have been allies and effective grass roots advocates in highlighting the importance of sex and gender within their institutions."* (excerpts, pp. 1732-1734)

We now turn to an observation by Tyerman et al. (2021) reported in the results chapter (concerning the number of educators involved). This observation inspires us to think about how to integrate content[11], but also how to sustain it, just as one would do when implementing new practices in the clinic (for example Graham et al., 2006). A single individual, however specialised and competent, does not guarantee long-term teaching sustainability, due to potentially variable time resources over a career or job changes.

We consider a more specific case through an example. Davis et al. (2021) present strategies and resources to support the integration of diversity, equity, and inclusion (DEI) (see fig. 11). While sex and gender are not explicitly mentioned, they are implicitly included, at least within the social determinants of health framework.

[11] Among other things, in terms of acceptability and achievement.

**Strategies to Support DEI Integration**

College-wide strategies to support the integration of SDOH included a systemic approach to the values of DEI. During the yearlong process, the transformation included:

- Adopting holistic admissions in the undergraduate and graduate programs
- Enhancing implicit bias and microaggression training and resources for faculty, staff, and students
- Incorporating a strengths-based training for faculty and staff
- Improving ethnic/minority faculty recruitment initiatives.
- Incorporating DEI activities, including "Walking Circles" and "Small CONversations"

**Resources to Support Curricula Goals and Integration**

A key focus area in the newly structured CON strategic plan aimed to provide college-wide support and resources to faculty and staff. This support specifically targeted faculty development and included:

- A structured mentoring plan for teaching and scholarship for each new faculty in the CON
- Implementation of team teaching in significant courses.
- College-wide innovative teaching grants (i.e., three $5,000 to $7,000 awards per year)
- Sponsoring faculty to attend formal simulation training with an emphasis on debriefing
- Mentoring and consultation for external education grants.
- Travel funds for professional development and attendance at national conferences

**Figure 11. Excerpt from (Davis et al., 2021)**

One interesting aspect of the Davis et al. (2021) propositions is to be more inclusive in student admissions at all levels of study. This supports the notion that to provide optimal care for our patients/beneficiaries, we need a professional group characterized by diversity, not just young, white, affluent, healthy men/women.

As mentioned earlier, integration in practice and implementation are closely related. Therefore, the discussion of barriers and facilitators is highly instructive.

### *Barriers and enablers to integration*

We choose to quote here extracts from three articles to initiate some considerations.

> *"Identified barriers included student and staff negative attitudes including preconceptions and biases about LGBT+ people, stereotypical beliefs, gendered values and an acceptance of the prevailing heteronormative practices and policies. Some commentators have argued that nursing and allied health practices and procedures remain predominately 'heterosexist'. […]*
>
> *Ways in which health practitioners may be helped and supported in their work among LGBT+ populations is through the provision of adequate education and training initiatives. Nurses and others need to be able to explore their own attitudes, beliefs and preconceptions; explore LGBT+ specific physical and psychosocial needs and develop the confidence and skills to respond competently and confidently with the necessary supports and requirements of LGBT+ people, their friends and families. Furthermore, a robust LGBT+ curriculum within undergraduate health programmes would have widespread appeal by offering a specific focus on interpersonal and communication skills, health knowledge and appropriate terminology, and cultural competency; essential components in student and practitioner professional development. The most effective way to promote equitable access to services for all is to provide education and training for both undergraduate students and healthcare practitioners that equips them with competent knowledge and skills for the delivery of affirming, respectful and socially inclusive care."* (McCann & Brown, 2018, p. 210)

The following excerpt concerns the medical profession but is still interesting from our point of view.

> *"Barriers on the part of the educator, whether real (lack of allotted instructional time) or perceived (lack of content relevance), remain a limiting factor. An additional barrier to improving LGBTQ+ health education, albeit less frequently considered, may occur at the level of the learner. The documented decline in medical students' empathy during the course of their time is likely multifactorial, with the potential consequence of eroding the capacity for compassion and for a patient-centered mentality."* (Altneu et al., 2020, p. 971)

Safdar et al (2019) address several previously mentioned points, such as the need to "educate the educator" (p. 1742) (transforming a barrier into a solution), and develops others. Creating new curricula, educational materials and assessment methods necessitates a significant investment of time and human resources, potentially acting as a barrier. Institutional support is part of the solution; one could argue that such investment is integral to faculty development. Another component is the sharing of educational materials, such as clinical vignettes, which could be deposited in a shared database.

### *Learning objectives*

Data from our included articles reveal that learning objectives are often not profession-specific. Indeed, the vast majority of learning primarily aims at awareness, understanding, and knowledge acquisition. It is the application of these elements in specific situations that builds competence and creates specificity. However, this aspect is often minimally described, if at all. Educational interventions that focus on or utilize health assessment are certainly effective in developing these specific aspects, but the articles lack detail on this subject. Consequently, the reproducibility of these educational interventions is often impossible, necessitating inspiration and adaptation.

It should also be noted that an article from 2022 reporting on the 2020 *Sex and Gender Health Education Summit* proposes tenets/learning objectives for sex and gender specific education of health professionals (see fig. 12).

TABLE 1. KNOWLEDGE AND SKILLS FOR SEX AND GENDER SPECIFIC HEALTH EDUCATION

| |
|---|
| What all health professionals should know how to do |
| Define accepted SGSH terminology |
| Differentiate male and female anatomy/physiology |
| Identify relevant SGSH epidemiology |
| Identify sex or gender differences in pathophysiology/clinical presentation |
| Identify sex or gender differences in therapeutic response |
| Recognize sex or gender based disparities in access to care in health policy |
| What all health professionals should be able to do |
| Search and evaluate SGSH Information |
| Apply SGSH considerations in clinical decision making and patient care |
| Incorporate SGSH in scientific inquiry and research design |
| Teach SGSH information to others (peer health professionals or patients) |

SGSH, sex and gender specific health.

TABLE 2. TENETS FOR SEX AND GENDER SPECIFIC EDUCATION OF HEALTH PROFESSIONALS

1. **Demonstrate knowledge of sex and gender health:**
   Understand and be able to describe terminology, definitions, concepts, and sex and gender differences in anatomy, physiology, and pathophysiology, as well as psycho-socio-cultural factors, behaviors, health systems, and social determinants of health
2. **Evaluate literature and the conduct of research for incorporation of sex and gender:**
   Critically evaluate literature, including guidelines, to identify sex and/or gender disaggregation and analysis of data, appropriateness of conclusions, and identification of gaps in knowledge. When conducting research, include both males/men and females/women and disaggregate, analyze, and report data by sex and/or gender as appropriate
3. **Incorporate sex and gender considerations into decision making:**
   Apply sex and gender health specific epidemiology, pathophysiology, clinical presentation, therapeutic responses, and health care-seeking behavior to clinical decision making, and care
4. **Demonstrate patient advocacy with respect to sex and gender:**
   Promote respect for all persons by ensuring that individual sex and gender variables are incorporated into interpersonal interactions and the approach to care, recognizing the intersectionality of these variables with race, sexual orientation, socioeconomic demographics, employment, and other social determinants of health. Working collaboratively with all health professions to deliver individualized sex and gender specific care through a shared interprofessional model is ideal

**Figure 12. Excerpt from (Kling et al., 2022).**

## Limitations and perspectives

Our initial objective for the WP1 was to conduct a literature review on the latest results on sex and gender healthcare in nursing, physiotherapy and occupational therapy, aiming to build a consensus about the knowledge that should be prioritized for integration into the respective curricula in these three professions. These goals are only partially met. We do not definitively answer what we need in our curriculum, but rather what is already being done, by whom, and how. Moreover, the question of "how" is not always answered in sufficient detail to proceed to implementation. Nevertheless, at the conclusion of this review, we have some ideas and resources at our disposal, as well as main lines of thought and points of attention for moving forward.

The methodological choices made in constructing our literature search strategy undoubtedly influenced the results obtained. Our initial intention was to focus on identifying competencies and learning objectives desirable for students to acquire and develop. However, the answer to this question is only partially satisfactory. The utilisation of MeSH terms and keywords such as LGBT, transgender, etc., to ensure the inclusion of articles with a non-binary understanding of sex and gender, resulted in the collection of data heavily focused on gender. Consequently, the sex perspective appears underrepresented, if not entirely absent.

Nonetheless, the scoping review demonstrates that including content and learning objectives focused on the specific needs and issues of the LGBTIQ+ population in healthcare professional education serves as an interesting and relevant entry point. This approach addresses some of our objectives, particularly in terms of raising awareness.

It should also be noted that the focus on education led to the identification of a very limited number of articles concerning physiotherapy and occupational therapy. This is undoubtedly a shortcoming, even though the focus of our articles on the aspects of awareness, understanding and knowledge acquisition/reinforcement implies a transversal implementation strategy for the health professions. It can therefore be said that the composition of our corpus has led to this result.

## Conclusion

To conclude, several key points warrant consideration:

The scoping review emphasizes that integrating sex and gender into curricula necessitates:

- comprehensive training for educators
- further research, particularly in the fields of physiotherapy and occupational therapy

Furthermore:

- Sex and gender-related topics should be integrated across curricula in a transversal manner, reflecting their relevance to all individuals (men, women, or non-binary) in all situations and spheres of life.
- Learning sessions should provide clear, unambiguous definitions of key concepts and dimensions. A glossary containing precise and appropriate terminology helps establish a common foundation for building knowledge and developing skills.

- These sessions should also incorporate content addressing discrimination, biases, disparities, and inequalities across various fields, providing a holistic understanding of the complex interplay between sex, gender, and health outcomes.

Finally, the scoping review revealed the recurring application of cultural competence frameworks in pedagogical approaches to the concerned thematic areas. This conceptual framework merits further consideration and exploration in our context.

# References


Académie Suisse des Sciences Médicales. (2019). *Enseignement de l'éthique aux professions de la santé : Recommandations*. ASSM.

Adisso, É. L., Zomahoun, H. T. V., Gogovor, A., & Légaré, F. (2020). Sex and gender considerations in implementation interventions to promote shared decision making: A secondary analysis of a Cochrane systematic review. *PLOS ONE*, *15*(10), e0240371. https://doi.org/10.1371/journal.pone.0240371

Altneu, E., Grieco, C. A., Verbeck, N., Davis, J. A., & Clinchot, D. M. (2020). LGBTQ+ Health—A Novel Course for Undergraduate Students. *Medical Science Educator*, *30*(2), 971-976. https://doi.org/10.1007/s40670-020-00958-5

Amacker, M., Büchler, T., Bigler Luhm, C., Nydegger, K. B., Soom Ammann, E., Renggli, F., & Helfer, T. (2023). *Gesundheit der Frauen. Bessere Berücksichtigung ihrer Eigenheiten. Schlussbericht*. Interdisziplinäres Zentrum für Geschlechterforschung (IZFG) der Universität Bern; Berner Fachhochschule (BFH), Departement Gesundheit, F&E Pflege. https://doi.org/10.48350/196885

Arksey, H., & O'Malley, L. (2005). Scoping studies: Towards a methodological framework. *International Journal of Social Research Methodology*, *8*(1), 19-32. https://doi.org/10.1080/1364557032000119616

Aromataris, E., & Munn, Z. (Éds.). (2020). *JBI Manual for Evidence Synthesis*. JBI. https://doi.org/10.46658/JBIMES-20-01

Bartlett, R., Jøranson, N., & Breievne, G. (2022). Using documentary films to teach nurses about gender and the vulnerabilities facing older men with advanced dementia. *Journal of Clinical Nursing*, *31*(13-14), 1817-1825. https://doi.org/10.1111/jocn.15600

Bosse, J. D., Nesteby, J. A., & Randall, C. E. (2015). Integrating Sexual Minority Health Issues into a Health Assessment Class. *Journal of Professional Nursing*, *31*(6), 498-507. https://doi.org/10.1016/j.profnurs.2015.04.007

Brown, E. A., White, B. M., & Gregory, A. (2021a). Approaches to Teaching Social Determinants of Health to Undergraduate Health Care Students. *Journal of Allied Health*, *50*(1), e31-e36.

Brown, E. A., White, B. M., & Gregory, A. (2021b). Approaches to Teaching Social Determinants of Health to Undergraduate Health Care Students. *Journal of Allied Health*, *50*(1), 31E-36E.

Bruyneel, A.-V., & Pichonnaz, C. (2022). Prise en compte des spécificités de genre en physiothérapie en 2022 : D'où venons-nous, où en sommes-nous, et où allons-nous ? *Mains Libres*, *2*, 62-64. https://doi.org/10.55498/MAINSLIBRES.2022.10.2.62

Chalmers, K. J., & Elkins, M. R. (2021). Sex and gender in physiotherapy research. *Journal of Physiotherapy*, *67*(4), 238-239. https://doi.org/10.1016/j.jphys.2021.08.015

CIHR Institute of Gender and Health. (2018). *Science is better with sex and gender: Strategic Plan 2018–2023*. Canadian Institutes of Health Research. https://cihr-irsc.gc.ca/e/51310.html

Clever, K., Richter, C., & Meyer, G. (2020). Current approaches to the integration of sex- and gender-specific medicine in teaching: A qualitative expert survey. *GMS Journal for Medical Education*, *37*(2), 1-16. https://doi.org/10.3205/zma001319

Copti, N., Shahriari, R., Wanek, L., & Fitzsimmons, A. (2016). Lesbian, Gay, Bisexual, and Transgender Inclusion in Physical Therapy: Advocating for Cultural Competency in Physical Therapist Education Across the United States. *Journal of Physical Therapy Education*, *30*(4), 11. https://doi.org/10.1097/00001416-201630040-00003

Davis, V. H., Murillo, C., Chappell, K. K., Jenerette, C., Ribar, A. K., Worthy, K., & Andrews, J. O. (2021). Tipping Point: Integrating Social Determinants of Health Concepts in a College of Nursing. *Journal of Nursing Education*, *60*(12), 703-706. https://doi.org/10.3928/01484834-20211004-05

Díaz, D. A., Maruca, A., Gonzalez, L., Stockmann, C., & Hoyt, E. (2017). Using simulation to address care of the transgender patient in nursing curricula. *BMJ Simulation and Technology Enhanced Learning*, *3*(2), 65-69. https://doi.org/10.1136/bmjstel-2016-000147

Elertson, K., & McNiel, P. L. (2021). Answering the Call: Educating Future Nurses on LGBTQ HealthCare. *Journal of Homosexuality*, *68*(13), 2234-2245. https://doi.org/10.1080/00918369.2020.1734376

Foronda, C. L., Baptiste, D.-L., Pfaff, T., Velez, R., Reinholdt, M., Sanchez, M., & Hudson, K. W. (2018). Cultural Competency and Cultural Humility in Simulation-Based Education: An Integrative Review. *Clinical Simulation in Nursing*, *15*, 42-60. https://doi.org/10.1016/j.ecns.2017.09.006

Foronda, C. L., Baptiste, D.-L., Reinholdt, M. M., & Ousman, K. (2016). Cultural Humility: A Concept Analysis. *Journal of Transcultural Nursing*, *27*(3), 210-217. https://doi.org/10.1177/1043659615592677

Fussinger, C. (2010). Genre, médecine et santé : Quelques repères. *Revue Médicale Suisse*, *6*(257), 1429-1432.

Glezerman, M. (2016). *Gender medicine: The groundbreaking new science of gender-and sex-related diagnosis and treatment* (1st ed.). Overlook Duckworth.

Glick, J. C., Leamy, C., Hewlett Molsberry, A., & Kerfeld, C. I. (2020). Moving Toward Equitable Health Care for Lesbian, Gay, Bisexual, Transgender, and Queer Patients: Education and Training in Physical Therapy Education. *Journal of Physical Therapy Education*, *34*(3), 192-197. https://doi.org/10.1097/JTE.0000000000000140

Graham, I. D., Logan, J., Harrison, M. B., Straus, S. E., Tetroe, J., Caswell, W., & Robinson, N. (2006). Lost in knowledge translation: Time for a map? *Journal of Continuing Education in the Health Professions*, *26*(1), 13-24. https://doi.org/10.1002/chp.47

Hallam, L., McKenzie, B. L., Gong, J., Carcel, C., & Hockham, C. (2022). Contextualising sex and gender research to improve women's health: An early- and mid-career researcher perspective. *Frontiers in Global Women's Health*, *3*, 1-7.

Haute Autorité de Santé, H. A. S. (2020). *Sexe, genre et santé—Rapport d'analyse prospective 2020* [Etudes et rapports]. https://www.has-sante.fr/jcms/p_3223570/fr/sexe-genre-et-sante-rapport-d-analyse-prospective-2020

Heise, L., Greene, M. E., Opper, N., Stavropoulou, M., Harper, C., Nascimento, M., Zewdie, D., Darmstadt, G. L., Greene, M. E., Hawkes, S., Heise, L., Henry, S., Heymann, J., Klugman, J., Levine, R., Raj, A., & Gupta, G. R. (2019). Gender inequality and restrictive gender norms: Framing the challenges to health. *The Lancet*, *393*(10189), 2440-2454. https://doi.org/10.1016/S0140-6736(19)30652-X

Khamisy-Farah, R., & Bragazzi, N. L. (2022). How to Integrate Sex and Gender Medicine into Medical and Allied Health Profession Undergraduate, Graduate, and Post-Graduate Education: Insights from a Rapid Systematic Literature Review and a Thematic Meta-Synthesis. *Journal of Personalized Medicine*, *12*(4), Article 4. https://doi.org/10.3390/jpm12040612

Kling, J. M., Sleeper, R., Chin, E. L., Rojek, M. K., McGregor, A. J., Richards, L., Mitchell, A. B., Stasiuk, C., Templeton, K., Prasad, J., Pfister, S., Newman, C. B., & on behalf of the SGHE 2020 Summit Working Group. (2022). Sex and Gender Health Educational Tenets: A Report from the 2020 Sex and Gender Health Education Summit. *Journal of Women's Health*, *31*(7), 905-910. https://doi.org/10.1089/jwh.2022.0222

Ledergerber, C., Mondoux, J., & Sottas, B. (2009). *Projet Compétences finales pour les professions de la santé HES. Rapport final*. Conférence des Recteurs des Hautes Ecoles Spécialisées Suisses (KFH). https://www.sbfi.admin.ch/dam/sbfi/fr/dokumente/kfh_projekt_abschlusskompetenzenfh-gesundheitsberufeabschlussber.pdf.download.pdf/kfh_projet_competencesfinalespourlesprofessionsdelasantehesrappo.pdf

Lim, F. A., Brown, D. V. J., & Justin Kim, S. M. (2014). Addressing Health Care Disparities in the Lesbian, Gay, Bisexual, and Transgender Population: A Review of Best Practices. *AJN The American Journal of Nursing*, *114*(6), 24. https://doi.org/10.1097/01.NAJ.0000450423.89759.36

Lindsay, S., & Kolne, K. (2020). The training needs for gender-sensitive care in a pediatric rehabilitation hospital: A qualitative study. *BMC Medical Education*, *20*(1), 468. https://doi.org/10.1186/s12909-020-02384-y

Luctkar-Flude, M., Tyerman, J., Ziegler, E., Carroll, B., Shortall, C., Chumbley, L., & Tregunno, D. (2020). Developing a Sexual Orientation and Gender Identity Nursing Education Toolkit. *The Journal of Continuing Education in Nursing*, *51*(9), 412-419. https://doi.org/10.3928/00220124-20200812-06

Luctkar-Flude, M., Tyerman, J., Ziegler, E., Walker, S., & Carroll, B. (2021). Usability testing of the sexual orientation and gender identity nursing education eLearning toolkit and virtual simulation games. *Teaching and Learning in Nursing*, *16*(4), 321-325. https://doi.org/10.1016/j.teln.2021.06.015

Maley, B., & Gross, R. (2019). A writing assignment to address gaps in the nursing curriculum regarding health issues of LGBT+ populations. *Nursing Forum*, *54*(2), 198-204. https://doi.org/10.1111/nuf.12315

Martin, H., & Perrin, C. (2012). L'agencement hiérarchique de l'égalité. Discours de physiothérapeutes face à des situations thérapeutiques potentiellement sexualisées. *Nouvelles questions féministes : revue internationale francophone*, *31*(2), 14-31.

Maruca, A. T., Diaz, D. A., Stockmann, C., & Gonzalez, L. (2018). Using Simulation With Nursing Students to Promote Affirmative Practice Toward the Lesbian, Gay, Bisexual, and Transgender Population: A Multisite Study. *Nursing Education Perspectives*, *39*(4), 225-229. https://doi.org/10.1097/01.NEP.0000000000000302

McCann, E., & Brown, M. (2018). The inclusion of LGBT+ health issues within undergraduate healthcare education and professional training programmes: A systematic review. *Nurse Education Today*, *64*, 204-214. https://doi.org/10.1016/j.nedt.2018.02.028

McDowell, A., & Bower, K. M. (2016). Transgender Health Care for Nurses: An Innovative Approach to Diversifying Nursing Curricula to Address Health Inequities. *Journal of Nursing Education*, *55*(8), 476-479. https://doi.org/10.3928/01484834-20160715-11

McEwing, E. (2020). Delivering culturally competent care to the lesbian, gay, bisexual, and transgender (LGBT) population: Education for nursing students. *Nurse Education Today*, *94*, 104573. https://doi.org/10.1016/j.nedt.2020.104573

McGregor, A. J., Chin, E. L., Rojek, M. K., Digre, K. B., Lopez, A. M., Jenkins, K., Johnston, L., & Jenkins, M. (2019). Sex and Gender Health Education Summit: Advancing Curricula Through a Multidisciplinary Lens. *Journal of Women's Health*, *28*(12), 1728-1736. https://doi.org/10.1089/jwh.2018.7301

McGregor, A. J., Templeton, K., Rojek, M., & Jenkins, M. (2013). Advancing sex and gender competency in medicine: Sex and gender women's health collaborative. *Biology of sex differences*, *4*, 11-16. https://doi.org/10.1186/2042-6410-4-11

McNiel, P. L., & Elertson, K. M. (2018). Advocacy and Awareness: Integrating LGBTQ Health Education Into the Prelicensure Curriculum. *Journal of Nursing Education*, *57*(5), 312-314. https://doi.org/10.3928/01484834-20180420-12

Metzl, J. M., & Hansen, H. (2014). Structural competency: Theorizing a new medical engagement with stigma and inequality. *Social Science & Medicine*, *103*, 126-133. https://doi.org/10.1016/j.socscimed.2013.06.032

Munn, Z., Peters, M. D. J., Stern, C., Tufanaru, C., McArthur, A., & Aromataris, E. (2018). Systematic review or scoping review? Guidance for authors when choosing between a systematic or scoping review approach. *BMC Medical Research Methodology*, *18*(143), 1-7. https://doi.org/10.1186/s12874-018-0611-x

Munn, Z., Pollock, D., Khalil, H., Alexander, L., Mclnerney, P., Godfrey, C. M., Peters, M. D. J., & Tricco, A. C. (2022). What are scoping reviews? Providing a formal definition of scoping reviews as a type of evidence synthesis. *JBI Evidence Synthesis*, *20*(4), 950-952. https://doi.org/10.11124/JBIES-21-00483

Oertelt-Prigione, S. (2012). Sex and Gender in Medical Literature. In S. Oertelt-Prigione & V. Regitz-Zagrosek (Éds.), *Sex and gender aspects in clinical medicine* (p. 9-15). Springer.

Orr, Z., & Unger, S. (2020). The TOLERance Model for Promoting Structural Competency in Nursing. *Journal of Nursing Education*, *59*(8), 425-432. https://doi.org/10.3928/01484834-20200723-02

Peters, M. D. J., Marnie, C., Tricco, A. C., Pollock, D., Munn, Z., Alexander, L., Mclnerney, P., Godfrey, C. M., & Khalil, H. (2020). Updated methodological guidance for the conduct of scoping reviews. *JBI Evidence Synthesis*, *18*(10), 2119-2126. https://doi.org/10.11124/JBIES-20-00167

Presseau, J., McCleary, N., Lorencatto, F., Patey, A. M., Grimshaw, J. M., & Francis, J. J. (2019). Action, actor, context, target, time (AACTT): A framework for specifying behaviour. *Implementation Science*, *14*(1), 102. https://doi.org/10.1186/s13012-019-0951-x

Safdar, B., Jarman, A. F., Barron, R., Gouger, D. H., Wiskel, T., & McGregor, A. J. (2019). Integrating Sex and Gender into an Interprofessional Curriculum: Workshop Proceedings from the 2018 Sex and Gender Health Education Summit. *Journal of Women's Health*, *28*(12), 1737-1742. https://doi.org/10.1089/jwh.2018.7339

Santa Maria, D., Markham, C., Crandall, S., & Guilamo-Ramos, V. (2017). Preparing Student Nurses as Parent-based Adolescent Sexual Health Educators: Results of a Pilot Study. *Public Health Nursing*, *34*(2), 130-137. https://doi.org/10.1111/phn.12262

Schwarz, J., Arminjon, M., Zemp Stutz, E., Merten, S., Bodenmann, P., & Clair, C. (Éds.). (2019). Déterminants sociaux de la santé en Suisse : Comment le genre s'est perdu en chemin. *Revue médicale suisse*, *15*(640), 485-489.

Smith, S., Rowan, N., Arms, T., Hohn, K., & Galbraith, C. (2021). An interdisciplinary approach to enhancing health knowledge and cultural awareness with LGBT older adults. *Educational Gerontology*, *47*(2), 79-85. https://doi.org/10.1080/03601277.2021.1876584

Stenberg, G., Fjellman-Wiklund, A., Strömbäck, M., Eskilsson, T., From, C., Enberg, B., & Wiklund, M. (2022). Gender matters in physiotherapy. *Physiotherapy Theory and Practice*, *38*(13), 2316-2329. https://doi.org/10.1080/09593985.2021.1970867

Stickley, L., Sechrist, D., & Taylor, L. (2016). Analysis of Sex and Gender Content in Allied Health Professions' Curricula. *Journal of Allied Health*, *45*(3), 168-175.

Strong, K., & Folse, V. (2015). Assessing Undergraduate Nursing Students' Knowledge, Attitudes, and Cultural Competence in Caring for Lesbian, Gay, Bisexual, and Transgender Patients. *Journal of Nursing Education*, *54*(1), 45-49. https://doi.org/10.3928/01484834-20141224-07

Sung, S., & Lin, Y. (2013). Effectiveness of the sexual healthcare education in nursing students' knowledge, attitude, and self-efficacy on sexual healthcare. *Nurse Education Today*, *33*(5), 498-503. https://doi.org/10.1016/j.nedt.2012.06.019

Tannenbaum, C., Clow, B., Haworth-Brockman, M., & Voss, P. (2017). Sex and gender considerations in Canadian clinical practice guidelines: A systematic review. *Canadian Medical Association Open Access Journal*, *5*(1), E66-E73. https://doi.org/10.9778/cmajo.20160051

Tannenbaum, C., Greaves, L., & Graham, I. D. (2016). Why sex and gender matter in implementation research. *BMC Medical Research Methodology*, *16*, 145. https://doi.org/10.1186/s12874-016-0247-7

Tartavoulle, T., & Landry, J. (2021). Educating Nursing Students About Delivering Culturally Sensitive Care to Lesbian, Gay, Bisexual, Transgender, Questioning/Queer, Intersex, Plus Patients: The Impact of an Advocacy Program on Knowledge and Attitudes. *Nursing Education Perspectives*, *42*(4), E15. https://doi.org/10.1097/01.NEP.0000000000000819

Tervalon, M., & Murray-García, J. (1998). Cultural Humility Versus Cultural Competence: A Critical Distinction in Defining Physician Training Outcomes in Multicultural Education. *Journal of Health Care for the Poor and Underserved*, *9*(2), 117-125. https://doi.org/10.1353/hpu.2010.0233

Tillman, K., Creel, E., & Pryor, S. (2016). The Lived Experience of Second-Degree Baccalaureate Nursing Students Providing Care to Members of an LGBT Community. *International Journal for Human Caring*, *20*(4), 176-181. https://doi.org/10.20467/1091-5710.20.4.176

Turan, F. D. (2022). Effects of a structured online educational program course on nursing students' attitudes toward gender roles and women and children's violence abuse reports: A quasi-experimental evaluation. *Nurse Education Today*, *108*, 105191. https://doi.org/10.1016/j.nedt.2021.105191

Tyerman, J., Ziegler, E., Carroll, B., & Luctkar-Flude, M. (2021). LGBTQI2S Virtual Simulation: Lessons Learned Using Actors With Lived Experience. *Clinical Simulation in Nursing*, *54*, 40-44. https://doi.org/10.1016/j.ecns.2021.01.016

Wu, D., Saint-Hilaire, L., Pineda, A., Hessler, D., Saba, G., Salazar, R., & Olayiwola, N. (2019). The Efficacy of an Antioppression Curriculum for Health Professionals. *Family Medicine*, *51*(1), 22-30. https://doi.org/10.22454/FamMed.2018.227415

Ziegler, E., Luctkar-Flude, M., Carroll, B., Tyerman, J., Chumbley, L., & Shortall, C. (2021). Development of an online educational toolkit for sexual orientation and gender identity minority nursing care. *Revista Latino-Americana de Enfermagem*, *29*, e3470. https://doi.org/10.1590/1518-8345.4712.3470

Ziegler E, Tyerman J, & Luctkar-Flude M. (2022). Wolfgang's Story: A Virtual Simulation Supporting Effective and Supportive Communication With an Older Gay Adult. *Creative Nursing*, *28*(2), 82-87.

# Appendices

## Appendix I: Search strategy

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|---|
| **PubMed**<br>**1356 references from 2011 to May 2022**<br><br>("Education, Nursing"[Mesh] OR "nursing education" [TIAB] OR "healthcare education" [TIAB] OR (("physical therapist" [TIAB] OR "physiotherapist" [TIAB] OR "Occupational Therapist" [TIAB] OR "nurse" [TIAB] OR "health professional" [TIAB]) AND ("training" [TIAB] OR "curriculum" [TIAB] OR "education" [TIAB])) OR "Students, Health Occupations"[Mesh] OR "Students, Nursing"[Mesh Terms] OR "Health Occupations/education"[Mesh] OR "Occupational Therapy/education"[Mesh] OR "Physical Therapists/education"[Mesh] OR "Occupational Science" [TIAB] AND ("Gender Identity"[Mesh] OR "gender identity" [TIAB] OR "sexism"[Mesh] OR "Gender Bias" [TIAB] OR "Sexual and Gender Minorities"[Mesh] OR "Sexual Health"[Mesh] OR "sexual health" [TIAB] OR "Sex Characteristics"[Mesh] OR "sex characteristics"[TIAB] OR "Social Determinants of Health"[Mesh] OR "bisexual*"[Mesh] OR "bisexual*"[TIAB] OR "homosexual*"[Mesh] OR "gay"[TIAB] OR "lesbian"[TIAB] OR "transgender persons"[Mesh] OR "transgender"[TIAB] OR transsexual*[TIAB] OR "Intersex Persons"[Mesh] OR "intersex"[TIAB] OR "LGBT"[TIAB] OR "queer"[TIAB])) |
| **CINAHL Full text EBSCO**<br>**789 references from 2011 to May 2022**<br><br>((MH "Education, Nursing+") OR (MH "Education, Occupational Therapy") OR (MH "Education, Physical Therapy") OR (MH "Students, Health Occupations+")) AND ((MH "Gender Identity+") OR (MH "Sexual and Gender Minorities+") OR (MH "Population Characteristics") OR (MH "LGBTQ+ Persons") OR "Queer" OR "Intersex Persons" OR (MH "Sexual Health") OR (MH "Sex Determination") OR (MH "Sexual and Gender Disorders") OR (MH "Social Determinants of Health") OR (MH "Gender Bias") OR "sex and gender") |
| **Web of Science**<br>**170 references from 2011 to May 2022**<br><br>((TS=(Nurs* OR Physical Therapy OR Occupational Therapy)) AND TS=(education OR curriculum OR training)) AND TS=("sex and gender" OR LGBT OR Queer) |
| **ProQuest Dissertations and Theses**<br>**60 references from 2011 to May 2022**<br><br>("physiotherapist" OR "Occupational Therapist" OR "nurse" OR "health professional") AND ("healthcare curriculum" OR "nursing education" OR "Health Occupations/education" OR "Physical Therapists/education") AND ("Gender Identity" OR "sexism" OR "Gender Bias" OR "Sex Characteristics" OR "LGBT" OR "queer") |
| **Google Scholar**<br>**3 first pages retained, i.e. 30 references**<br><br>((Nurs* OR Physical Therapy OR Occupational Therapy) AND (Education OR Curriculum OR Training) AND (Gender Identity OR Sex Characteristic OR Sex Determinants OR LGBT OR Queer)) |

## Appendix II: Data extraction instrument

**ALL PRESELECTED INTEGRAL TEXTS** — **EXTRACTION GRID**

| definitively selected Y (for yes) or N (for no) | article number (assigned when filling in the grid) | Authors | Year of publication | Country (where the study was conducted) | Research aim(s) (if relevant) | Type of publication and methodology | | | | | | Population | | | | Pedagogical / formative dimension | Results | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | type of publication | what: project / research (if so, mention of design) | theoretical approach (if relevant) | data collected (if relevant) | outcomes (if relevant) | method of analysis (if relevant) | who: profession(s) studied | who: students, teachers, others involved in teaching | other characteristics (if relevant. For example, sample restricted to a particular community) | sample size (if relevant) | for whom: patients | at what level: curriculum, module, isolated course, etc. | authors' conclusions | |
| | | | | | | | | | | | | | | | | | | | |

**ONLY DEFINITIVELY SELECTED INTEGRAL TEXTS**

| article number (assigned when filling in the grid) | Authors | Year of publication | Results | | | Comments |
|---|---|---|---|---|---|---|
| | | | that concern teaching methods or modalities | that concern the content covered | that concern the way in which the dimensions of sex and gender are used (especially binary or non-binary) | others |
| | | | | | | |

## Appendix III: Reference lists of included articles in the scoping review

| | Article included in the review: references in alphabetical order of the first author surname |
|---|---|
| 1 | Bartlett, R., Jøranson, N., & Breievne, G. (2022). Using documentary films to teach nurses about gender and the vulnerabilities facing older men with advanced dementia. *Journal of Clinical Nursing*, *31*(13-14), 1817-1825. https://doi.org/10.1111/jocn.15600 |
| 2 | Bell, L. M., Brennan-Cook, J., Sisson, J., Steigerwald, M., Cook, C., Cicero, E. C., & Cary, M. P. (2019). Learning about culturally humble care of sexual and gender minority patients. *Teaching and learning in nursing: official journal of the National Organization for Associate Degree Nursing*, *14*(3), 216-218. https://doi.org/10.1016/j.teln.2019.04.006 |
| 3 | Bosse, J. D., Nesteby, J. A., & Randall, C. E. (2015). Integrating Sexual Minority Health Issues into a Health Assessment Class. *Journal of Professional Nursing*, *31*(6), 498-507. https://doi.org/10.1016/j.profnurs.2015.04.007 |
| 4 | Brown, E. A., White, B. M., & Gregory, A. (2021). Approaches to Teaching Social Determinants of Health to Undergraduate Health Care Students. *Journal of Allied Health*, *50*(1), e31-e36. |
| 5 | Cantey, D. S., Randolph, S. D., Molloy, M. A., Carter, B., & Cary, M. P. (2017). Student-Developed Simulations: Enhancing Cultural Awareness and Understanding Social Determinants of Health. *Journal of Nursing Education*, *56*(4), 243-246. https://doi.org/10.3928/01484834-20170323-11 |
| 6 | Copti, N., Shahriari, R., Wanek, L., & Fitzsimmons, A. (2016). Lesbian, Gay, Bisexual, and Transgender Inclusion in Physical Therapy: Advocating for Cultural Competency in Physical Therapist Education Across the United States. *Journal of Physical Therapy Education*, 30(4), 11. https://doi.org/10.1097/00001416-201630040-00003 |
| 7 | Davis, V. H., Murillo, C., Chappell, K. K., Jenerette, C., Ribar, A. K., Worthy, K., & Andrews, J. O. (2021). Tipping Point: Integrating Social Determinants of Health Concepts in a College of Nursing. *Journal of Nursing Education*, *60*(12), 703-706. https://doi.org/10.3928/01484834-20211004-05 |
| 8 | Díaz, D. A., Maruca, A., Gonzalez, L., Stockmann, C., & Hoyt, E. (2017). Using simulation to address care of the transgender patient in nursing curricula. *BMJ Simulation and Technology Enhanced Learning*, *3*(2), 65-69. https://doi.org/10.1136/bmjstel-2016-000147 |
| 9 | Elertson, K., & McNiel, P. L. (2021). Answering the Call: Educating Future Nurses on LGBTQ HealthCare. *Journal of Homosexuality*, *68*(13), 2234-2245. https://doi.org/10.1080/00918369.2020.1734376 |
| 10 | Englund, H., Basler, J., & Meine, K. (2019). Using Simulation to Improve Students' Proficiency in Taking the Sexual History of Patients Identifying as LGBTQ: A Pilot Study. *Clinical Simulation in Nursing*, *37*, 1-4. https://doi.org/10.1016/j.ecns.2019.07.007 |
| 11 | García-Acosta, J. M., Castro-Peraza, M. E., Arias Rodriguez, Á., Perez-Cánovas, M. L., Sosa-Alvarez, M. I., Llabrés-Solé, R., Perdomo-Hernández, A. M., & Lorenzo-Rocha, N. D. (2019). Impact of a Formative Program on Transgender Healthcare for Nursing Students and Health Professionals. Quasi-Experimental Intervention Study. *International Journal of Environmental Research and Public Health*, *16*(17), 3205. https://doi.org/10.3390/ijerph16173205 |
| 12 | Glick, J. C., Leamy, C., Hewlett Molsberry, A., & Kerfeld, C. I. (2020). Moving Toward Equitable Health Care for Lesbian, Gay, Bisexual, Transgender, and Queer Patients: Education and Training in Physical Therapy Education. *Journal of Physical Therapy Education*, *34*(3), 192-197. https://doi.org/10.1097/JTE.0000000000000140 |
| 13 | Haghiri-Vijeh, R., McCulloch, T., Atack, L., & Bedard, G. (2020). The Impact of Positive Space Training on Students' Communication With LGBTTQ+ Communities. *Nursing Education Perspectives*, *41*(2), 115-116. https://doi.org/10.1097/01.NEP.0000000000000474 |
| 14 | Henriquez, N., Hyndman, K., & Chachula, K. (2019). It's Complicated: Improving Undergraduate Nursing Students' Understanding Family and Care of LGBTQ Older Adults. *Journal of Family Nursing*, *25*(4), 506-532. https://doi.org/10.1177/1074840719864099 |
| 15 | Hickerson, K., Hawkins, L. A., & Hoyt-Brennan, A. M. (2018). Sexual Orientation/Gender Identity Cultural Competence: A Simulation Pilot Study. *Clinical Simulation in Nursing*, *16*, 2-5. https://doi.org/10.1016/j.ecns.2017.10.011 |

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|---|---|
| 16 | Koch, A., Ritz, M., Morrow, A., Grier, K., & McMillian-Bohler, J. M. (2021). Role-play simulation to teach nursing students how to provide culturally sensitive care to transgender patients. *Nurse Education in Practice*, *54*, 103123. https://doi.org/10.1016/j.nepr.2021.103123 |
| 17 | Lee, M., Tasa-Vinyals, E., & Gahagan, J. (2021). Improving the LGBTQ2S+ cultural competency of healthcare trainees: Advancing health professional education. *Canadian Medical Education Journal*, *12*(1), e7-e20. https://doi.org/10.36834/cmej.67870 |
| 18 | Luctkar-Flude, M., Tyerman, J., Ziegler, E., Carroll, B., Shortall, C., Chumbley, L., & Tregunno, D. (2020). Developing a Sexual Orientation and Gender Identity Nursing Education Toolkit. *The Journal of Continuing Education in Nursing*, *51*(9), 412-419. https://doi.org/10.3928/00220124-20200812-06 |
| 19 | Luctkar-Flude, M., Tyerman, J., Ziegler, E., Walker, S., & Carroll, B. (2021). Usability testing of the sexual orientation and gender identity nursing education eLearning toolkit and virtual simulation games. *Teaching and Learning in Nursing*, *16*(4), 321-325. https://doi.org/10.1016/j.teln.2021.06.015 |
| 20 | Maley, B., & Gross, R. (2019). A writing assignment to address gaps in the nursing curriculum regarding health issues of LGBT+ populations. *Nursing Forum*, *54*(2), 198-204. https://doi.org/10.1111/nuf.12315 |
| 21 | Maruca, A. T., Diaz, D. A., Stockmann, C., & Gonzalez, L. (2018). Using Simulation With Nursing Students to Promote Affirmative Practice Toward the Lesbian, Gay, Bisexual, and Transgender Population: A Multisite Study. *Nursing Education Perspectives*, *39*(4), 225-229. https://doi.org/10.1097/01.NEP.0000000000000302 |
| 22 | McCann, E., & Brown, M. (2018). The inclusion of LGBT+ health issues within undergraduate healthcare education and professional training programmes: A systematic review. *Nurse Education Today*, *64*, 204-214. https://doi.org/10.1016/j.nedt.2018.02.028 |
| 23 | McDowell, A., & Bower, K. M. (2016). Transgender Health Care for Nurses: An Innovative Approach to Diversifying Nursing Curricula to Address Health Inequities. *Journal of Nursing Education*, *55*(8), 476-479. https://doi.org/10.3928/01484834-20160715-11 |
| 24 | McEwing, E. (2020). Delivering culturally competent care to the lesbian, gay, bisexual, and transgender (LGBT) population: Education for nursing students. *Nurse Education Today*, *94*, 104573. https://doi.org/10.1016/j.nedt.2020.104573 |
| 25 | McNiel, P. L., & Elertson, K. M. (2018). Advocacy and Awareness: Integrating LGBTQ Health Education Into the Prelicensure Curriculum. *Journal of Nursing Education*, *57*(5), 312-314. https://doi.org/10.3928/01484834-20180420-12 |
| 26 | Morris, M., Cooper, R. L., Ramesh, A., Tabatabai, M., Arcury, T. A., Shinn, M., Im, W., Juarez, P., & Matthews-Juarez, P. (2019). Training to reduce LGBTQ-related bias among medical, nursing, and dental students and providers: A systematic review. *BMC Medical Education*, *19*(1), 325. https://doi.org/10.1186/s12909-019-1727-3 |
| 27 | Orr, Z., & Unger, S. (2020). The TOLERance Model for Promoting Structural Competency in Nursing. *Journal of Nursing Education*, *59*(8), 425-432. https://doi.org/10.3928/01484834-20200723-02 |
| 28 | Ozkara San, E. (2020). The influence of the oncology-focused transgender-simulated patient simulation on nursing students' cultural competence development. *Nursing Forum*, *55*(4), 621-630. https://doi.org/10.1111/nuf.12478 |
| 29 | Pack, M., & Brown, P. (2017). Educating on anti-oppressive practice with gender and sexual minority elders: Nursing and social work perspectives. *Aotearoa New Zealand Social Work*, *29*(2), Art. 2. https://doi.org/10.11157/anzswj-vol29iss2id279 |
| 30 | Pearce, L. (2017). Making nurse education LGBT-Friendly: A joint initiative between Stonewall and Cardiff University is helping to make awareness of LGBT issues a part of undergraduate nurse training. *Nursing Standard: Official Newspaper of the Royal College of Nursing*, *31*(23), 22-24. https://doi.org/10.7748/ns.31.23.22.s23 |
| 31 | Pittiglio, L., & Lidtke, J. (2021). The Use of Simulation to Enhance LGBTQ plus Care Competencies of Nursing Students. *Clinical Simulation in Nursing*, *56*, 133-136. https://doi.org/10.1016/j.ecns.2021.04.010 |
| 32 | Pratt-Chapman, M. L., & Phillips, S. (2020). Health professional student preparedness to care for sexual and gender minorities: Efficacy of an elective interprofessional educational intervention. *Journal of Interprofessional Care*, *34*(3), 418-421. https://doi.org/10.1080/13561820.2019.1665502 |
| 33 | Safdar, B., Jarman, A. F., Barron, R., Gouger, D. H., Wiskel, T., & McGregor, A. J. (2019). Integrating Sex and Gender into an Interprofessional Curriculum: Workshop Proceedings from the 2018 Sex and |

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|---|---|
| | Gender Health Education Summit. *Journal of Women's Health*, *28*(12), 1737-1742. https://doi.org/10.1089/jwh.2018.7339 |
| 34 | Santa Maria D, Markham C, Crandall S, & Guilamo-Ramos V. (2017). Preparing Student Nurses as Parent-based Adolescent Sexual Health Educators: Results of a Pilot Study. *Public Health Nursing*, *34*(2), 130-137. https://doi.org/10.1111/phn.12262 |
| 35 | Sengupta, S., & Sakellariou, D. (2009). Sexuality and Health Care: Are We Training Physical Therapy Professionals to Address Their Clients' Sexuality Needs? *Physical Therapy*, *89*(1), 101-102. https://doi.org/10.2522/ptj.2009.89.1.101 |
| 36 | Sherman, A. D. F., Cimino, A. N., Clark, K. D., Smith, K., Klepper, M., & Bower, K. M. (2021). LGBTQ+ health education for nurses: An innovative approach to improving nursing curricula. *Nurse Education Today*, *97*, 104698. https://doi.org/10.1016/j.nedt.2020.104698 |
| 37 | Sherman, A. D. F., McDowell, A., Clark, K. D., Balthazar, M., Klepper, M., & Bower, K. (2021). Transgender and gender diverse health education for future nurses: Students' knowledge and attitudes. *Nurse Education Today*, *97*, 104690. https://doi.org/10.1016/j.nedt.2020.104690 |
| 38 | Siller H, Tauber G, & Hochleitner M. (2020). Does diversity go beyond sex and gender? Gender as social category of diversity training in health profession education—A scoping review. *GMS Journal for Medical Education*, *37*(2), Doc25. https://doi.org/10.3205/zma001318 |
| 39 | Smith, S., Rowan, N., Arms, T., Hohn, K., & Galbraith, C. (2021). An interdisciplinary approach to enhancing health knowledge and cultural awareness with LGBT older adults. *Educational Gerontology*, *47*(2), 79-85. https://doi.org/10.1080/03601277.2021.1876584 |
| 40 | Strong, K., & Folse, V. (2015). Assessing Undergraduate Nursing Students' Knowledge, Attitudes, and Cultural Competence in Caring for Lesbian, Gay, Bisexual, and Transgender Patients. *Journal of Nursing Education*, *54*(1), 45-49. https://doi.org/10.3928/01484834-20141224-07 |
| 41 | Sung SC & Lin YC. (2013). Effectiveness of the sexual healthcare education in nursing students' knowledge, attitude, and self-efficacy on sexual healthcare. *Nurse Education Today*, *33*(5), 498-503. https://doi.org/10.1016/j.nedt.2012.06.019 |
| 42 | Tartavoulle, T., & Landry, J. (2021). Educating Nursing Students About Delivering Culturally Sensitive Care to Lesbian, Gay, Bisexual, Transgender, Questioning/Queer, Intersex, Plus Patients: The Impact of an Advocacy Program on Knowledge and Attitudes. *Nursing Education Perspectives*, *42*(4), E15. https://doi.org/10.1097/01.NEP.0000000000000819 |
| 43 | Tillman, K., Creel, E., & Pryor, S. (2016). The Lived Experience of Second-Degree Baccalaureate Nursing Students Providing Care to Members of an LGBT Community. *International Journal for Human Caring*, *20*(4), 176-181. https://doi.org/10.20467/1091-5710.20.4.176 |
| 44 | Tugut N & Golbasi Z. (2017). Sexuality Assessment Knowledge, Attitude, and Skill of Nursing Students: An Experimental Study with Control Group. *International Journal of Nursing Knowledge*, *28*(3), 123-130. https://doi.org/10.1111/2047-3095.12127 |
| 45 | Turan, F. D. (2022). Effects of a structured online educational program course on nursing students' attitudes toward gender roles and women and children's violence abuse reports: A quasi-experimental evaluation. *Nurse Education Today*, *108*, 105191. https://doi.org/10.1016/j.nedt.2021.105191 |
| 46 | Tyerman, J., Ziegler, E., Carroll, B., & Luctkar-Flude, M. (2021). LGBTQI2S Virtual Simulation: Lessons Learned Using Actors With Lived Experience. *Clinical Simulation in Nursing*, *54*, 40-44. https://doi.org/10.1016/j.ecns.2021.01.016 |
| 47 | Ünal Toprak F & Turan Z. (2021). The effect of sexual health courses on the level of nursing students' sexual/reproductive health knowledge and sexual myths beliefs in Turkey: A pretest-posttest control group design. *Perspectives in Psychiatric Care*, *57*(2), 667-674. https://doi.org/10.1111/ppc.12593 |
| 48 | Waxman, K., Rowniak, S., Donovan, J. B. L., & Selix, N. (2020). Using Simulation to Provide Culturally Competent Care to Transgender and Gender Nonconforming Patients. *Clinical Simulation in Nursing*, *47*, 48-51. https://doi.org/10.1016/j.ecns.2020.06.015 |
| 49 | Wu, D., Saint-Hilaire, L., Pineda, A., Hessler, D., Saba, G., Salazar, R., & Olayiwola, N. (2019). The Efficacy of an Antioppression Curriculum for Health Professionals. *Family Medicine*, *51*(1), 22-30. https://doi.org/10.22454/FamMed.2018.227415 |
| 50 | Ziegler, E., Luctkar-Flude, M., Carroll, B., Tyerman, J., Chumbley, L., & Shortall, C. (2021). Development of an online educational toolkit for sexual orientation and gender identity minority nursing care. *Revista Latino-Americana de Enfermagem*, *29*, e3470. https://doi.org/10.1590/1518-8345.4712.3470 |

## Appendix IV: Four clinical scenarios from Safdar et al. (2019)


**Case 1: Metabolic**

27 year old presenting with increased urination
PMH: none, no meds, no allergies
FH: diabetes type 2, congestive heart failure, hypertension, coronary artery disease
SH: Smoker (1/2ppd), occasional marijuana
VS: 107 BP 143/79 T 36.6 RR 15 O2 92%, BMI: 42

**Presentation:** This patient presents to the clinic complaining of increased urination for several days. On review of systems, also endorses increased thirst and light-headedness. The patient states that they do not have any prior medical history and does not have a primary care provider. On exam, the patient has central obesity and you note acanthosis and numerous skin tags on the trunk.

**Diagnosis:** new onset diabetes mellitus, type II (T2DM)

**Discussion Points**

1. Epidemiology- metabolic syndrome affects 20-30% of population
    a. In <50 years old, higher rates of metabolic syndrome in men, while after 50 years it is higher in women
    b. No clear sex differences in DM prevalence
2. Presentation & Diagnosis
    a. T2DM diagnosed at lower age and BMI in men than women
    b. Women more likely to be diagnosed by oral glucose tolerance test vs fasting glucose measurements
3. Risk factors
    a. Psychosocial risks greater in women for T2DM as well as stigmatization
    b. Women with higher rates of obesity and greater impact of reproductive factors on diabetes
    c. Family history of diabetes confers higher risk for women than men
    d. T2DM has greater increases in CV, MI and CVA risk in women
4. Management
    a. Lifestyle changes (exercise & weight loss): men may be better responders
    b. Women with lower success of glucose lowering therapy and dual therapy and higher rates of hypoglycemia on insulin

c. Women with impaired fasting glucose may respond to lifestyle and pharmacologic management, with attention to psychosocial problems
d. DM is an important risk factor for cardiovascular disease, though the association is much stronger for women; risk of fatal CAD associated with DM2 is 50% higher in women
e. Women with DM receive less aggressive treatment compared to men, e.g. less likely to be prescribed ASA, beta blockers, statins

5. Pregnancy Considerations
    a. Increasing rates of gestational diabetes (GDM) in same populations as T2DM: obesity, increasing age, ethnic minorities
    b. GDM leads to higher rates of pre-eclampsia, cesarean as well as DM later in life- estimates of 15- 70% of women with GDM later develop DM
    c. GDM also an independent risk factor for CV disease later in life
    d. Offspring of women with GDM also more likely to develop complications including macrosomia, neonatal hypoglycemia, hyperbilirubinemia and birth trauma
    e. Intrauterine hyperglycemia linked to maternal transmission of DM

**References:**


ACOG Practice Bulletin No. 190: Gestational Diabetes Mellitus. Committee on Practice Bulletins—Obstetrics. Obstet Gynecol. 2018 Feb;131(2):e49-e64. doi: 10.1097/AOG.0000000000002501.

Barrett-Connor et al. Why is diabetes mellitus a stronger risk factor for fatal ischemic heart disease in women than in men? The Rancho Bernardo Study. JAMA. 1991 Feb 6;265(5):627-31.

DECODE Study Group: Age- and sex-specific prevalence of diabetes and impaired glucose regulation in 13 European cohorts. Diabetes Care 2003; 26: 61-69

Ding EL et al. Sex differences of endogenous sex hormones and risk of type 2 diabetes: a systematic review and meta-analysis. JAMA 2006; 295; 1288-1299.

Huxley, R et al Excess risk of fatal coronary heart disease associated with diabetes in men and women: meta-analysis of 37 prospective cohort studies. BMJ 2006: 332:73-78

Huxley et al. Cigarette smoking as a risk factor for coronary heart disease in women compared with men: a systematic review and meta-analysis of prospective cohort studies. Lancet. 2011 Oct 8;378(9799):1297-305

Kautzky-Willer et al. Sex and gender differences in therapy of type 2 diabetes. Diabetes Res Clin Pract. 2017 Sep;131:230-241.

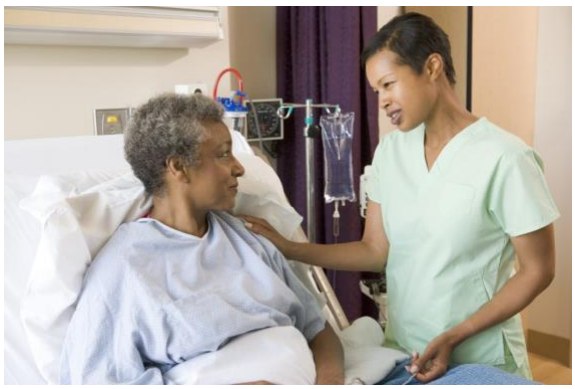
Kautzky-Willer et al. Sex and Gender Differences in Risk, Pathophysiology and Complications of Type 2 Diabetes Mellitus. Endocr Rev. 2016 Jun;37(3):278-316.

Metzger BE, et al: International association of diabetes and pregnancy study groups recommendations on the diagnosis and classification of hyperglycemia in pregnancy. Diabetes Care 2010; 33; 676-682.

Mogelvang R, Scharling H, Jensen JS. A simple linear model for the effect of changes in metabolic risk factors on incident of coronary heart disease. J Int Med 2006; 259:561-8.

Pucci et al. Sex- and gender-related prevalence, cardiovascular risk and therapeutic approach in metabolic syndrome: A review of the literature. Pharmacological Research 2017: 120:34-42.

Yusuf S et al: Effect of potentially modifiable risk factors associated with myocardial infarction in 52 countries (the INTERHEART study); case-control study. Lancet 2004; 364; 937-952




**Case 2: Neurologic**
74 year old with sudden word finding difficulty
PMH: HTN, HLD, PVD on clopidrogel and aspirin
SH: prior smoker (40 pack year)
FH: Mom with stroke in 50s, brother with cardiac stents
VS: HR 89 BP 178/73 T 36.9 RR 22 O2 94%

**Presentation:** This patient was with a family member at lunch when they began having difficulty speaking and finding words. Since that time the patient has been unintelligible to family. The patient's last known normal was 2.5 hours prior to arrival. On exam, you find R arm weakness in addition to marked dysarthria and fluctuating expressive aphasia.

**Diagnosis**: Evolving left middle cerebral artery CVA

1. Epidemiology: Women have higher lifetime risk of stroke but tend to have them later in life

2. Presentation: Women tend to have more "atypical" symptoms
    a. May present as pain, change in level of consciousness, and non neurologic symptoms
    b. Women also tend to present later and tend to live alone given longer life expectancy

3. Risk Factors:
    a. Women more likely to have hypertension, atrial fibrillation (also less likely to be anticoagulated for it); diabetes and metabolic syndrome increase stroke risk disproportionately in women
    b. Men more likely to have atherosclerotic disease, diabetes, CAD
    c. ASA effective in primary prevention in women, not in men

4. Diagnosis
    a. Women are less likely to receive timely CT scan and physician evaluation. Women less likely to receive echocardiography and carotid ultrasonography during their workup

5. Pregnancy Considerations:
    a. Preeclampsia, eclampsia, htn of pregnancy, and gestational dm all increase stroke risk for years after pregnancy

6. Pathophysiology: Estrogen as a neuroprotectant

a. In animal models, estrogen down regulates inflammation, reduces cell death, causes vasodilation in cerebral vessels

7. **Management**:
    a. Women up to 30% less likely to receive IV thrombolytics, even when controlled for delays to presentation and CT scan
    b. Women are found to have a more favorable response to treatment: 10% more likely to be able to perform activities of daily living at 90 days compared to men

8. Prognosis: No differences in case fatality by sex
    a. Women do worse functionally than men after stroke
    b. Women more likely to be disabled and have lower health related quality of life

**References:**


Bushnell CD et al, Advancing the study of stroke in women: Summary and recommendations for future research from an NINDS-Sponsored Multidisciplinary Working Group. *Stroke: Journal of Cerebral Circulation* 2006; 37(9);2387-2399

Di Carlo A et al, Sex Differences in the clinical presentation, resource use, and 3-month outcome of acute stroke in Europe: Data from a multicenter multinational hospital-based registry. *Stroke*: *A Journal of Cerebral Circulation* 2003; 34(5);1114-1119

Gray LJ et al, Sex differences in quality of life in stroke survivors: Data from the Tinzaparin in Acute Ischaemic Stroke Trial (TAIST). *Stroke: Journal of Cerebral Circulation* 2007; 38(11):2960-2964

Kelly AG et al, Predictors of rapid brain imaging in acute stroke: Analysis of the Get with the Guidelines-Stroke Program. *Stroke: Journal of Cerebral Circulation* 2012; 43 (5):1279-1284

Kent DM et al, Sex-based differences in response to recombinant tissue plasminogen activator in acute ischemic stroke- A pooled analysis of randomized clinical trials. *Stroke: Journal of Cerebral Circulation* 2005; 36(1):62-65

Labiche LA, Chan W, Saldin KR et al, Sex and acute stroke presentation. *Annals of Emergency Medicine* 2002; 40 (5):453-460

Reeves MJ et al, Sex Differences in stroke: Epidemiology, clinical presentation, medical care, and outcomes. *The Lancet Neurology* 2008; 7 (10); 915-926

Reeves MJ et al, Quality of care in women with ischemic stroke in the GWTG program. *Stroke: Journal of Cerebral Circulation* 2009; 40(4):1127-1133

Roquer J et al, Sex Differences in first-ever acute stroke. *Stroke: Journal of Cerebral Circulation* 2003; 34(7):1581-1585

Tanaka Y et al, Factors influencing pre-hospital delay after ischemic stroke and transient ischemic attack. *Internal Medicine* 2009; 48(19):1739-1744


**Case 3: Pain/Dental**
37 year old patient with dental pain
PMH: Irritable Bowel Syndrome, Anxiety, Depression
SH: Rare social alcohol, no recreational drugs, non-smoker
FH: Asthma, T2DM
VS: 122 BP 163/94 T 36.8 RR 25 O2 100%

**Presentation:** This patient was eating an apricot yesterday and bit into the pit. The patient was seen by your colleague yesterday and diagnose with an Ellis class II fracture of tooth #31. Yesterday it was sealed and he/she received an inferior alveolar nerve block with good result. Your exam is consistent with this diagnosis and no new complications are evident. The patient has been taking 800mg Ibuprofen and 1g Tylenol with minimal relief. Today is Saturday and there are no dental clinics open until Monday. He/she is tearful and rocking in a recliner in your sick clinic.

**Diagnosis:** Dental Fracture, Acute Pain

**Discussion Points:**

1. Epidemiology: Women suffer proportionally more chronic pain conditions than men (testosterone thought to be protective)
    a. Pain is a complex interplay of biopsychosocial effects (post puberty)

2. Presentation: Acute Pain/Pain Sensitivity
    a. Women generally with greater pain sensitivity and willingness to report pain
    b. Gender and cultural factors also play a role in expression of pain.

3. Risk Factors:
    a. Chronic Pain: Linked with inadequately treated acute pain
    b. Women suffer more painful autoimmune conditions
    c. Women may progress to dependence more quickly

4. Diagnosis
    a. Sex differences in severity of pain difficult to determine due to subjectivity
    b. Women's pain more likely to be dismissed as psychosomatic

5. **Management**
    a. Pharmacology: Women and men metabolize drugs differently due to hormonal influences, different proportional body fat percentages (larger Vd)
    b. Women tend to have greater anesthesia at same dose of opioid
    c. Women less likely to receive pain meds and wait longer to receive them

d. Women at greater risk of adverse effects (physiologic & emotional)

**References:**

J. Bartley and R. B. Fillingim. Sex differences in pain: a brief review of clinical and experimental findings. E. British Journal of Anesthesia 111 (1): 52–8 (2013)

Todd, KH et al. Pain in the Emergency Department: Results of the Pain and Emergency Medicine (PEMI) multicenter study. Journal of Pain, 2007. 8 (6): 460-6

Robinson, ME et al. Gender role expectations of pain: Relationship to sex differences in pain. Journal of Pain, 2001. 2 (5): 251-7

Bodnar, RJ and B Kest. Sex differences in opioid analgesia, hyperalgesia, tolerance and withdrawal: Central mechanisms of action and roles of gonadal hormones. Hormones and Behavior, 2010. 58 (1): 72-81.

Robinson, ME et al. Altering gender role expectations: Effects on pain tolerance, pain threshold, and pain ratings. Journal of Pain, 2003. 4(5): 284-8.

**Case 4: Cardiovascular**

58 year old presenting with dyspnea
PMH: HTN on ace-I, HLD on statin, T2DM on metformin (recent A1C 7.2)
SH: Lifelong nonsmoker, social ETOH user
FH: 2 of 2 brothers with coronary stents (<55 years), mom with CHF on "water pill"
VS: HR 67 BP 128/76 T 37.0 RR 17 O2 97%

**Presentation:** This patient presents to an emergency department at the urging of a family member, due to progressive exertional dyspnea. The patient notes this has been ongoing for approximately a week but today developed chest discomfort at rest after a stressful day at work. The patient has never experienced this before but does complain on ROS of generalized fatigue. There are no notable exam findings, and in reviewing the patient's triage ECG, you note non-specific diffuse T wave flattening.

**Diagnosis:** NSTEMI with mildly elevated troponin, nonobstructive on cath (MINOCA – coronary artery vasospasm, embolization or microvascular dysfunction)

**Discussion Points:**

1. Epidemiology- CAD most common cause of death in women and men in the US
    a. NHANES study showing an increase in mortality in women in midlife from CAD, while declining in men

2. Presentation
    a. Chest pain is the most common presenting complaint for MI in both men and women.
    b. However, women present with more prodromal and atypical symptoms including SOB, weakness and fatigue i.e. with a cluster of symptoms than men.
    c. Women often delay in seeking care for chest symptoms compared to men.
    d. Coronary artery obstruction most common cause of ischemic chest pain in men and women

3. Risk factors
    a. Significance of DM as risk factor- increasing in both men and women
    b. Both DM and smoking increase CV risks in women more than men, and potentially also metabolic syndrome
    c. HTN and HLD increase CAD risk in men more than
    d. Nontraditional risk factors more important in women including depression and autoimmune conditions
    e. Recent decline in vascular risk factors in men (smoking, HTN, HLD) but not in women

4. Diagnosis

a. ST changes are similar in men and women though women have more T-wave inversions and a potential lower troponin threshold
b. Risk stratification scores: Reynolds risk score incorporating CRP and metabolic syndrome can be more sex specific than more traditional scores
c. Cut off for positive values of high sensitivity troponin varies by sex with lower threshold in women than in men to diagnose ischemia.
d. Differential considerations: Takatsubo's Cardiomyopathy, Spontaneous coronary artery dissection.
e. Vasoreactive disease or syndrome X occurs more commonly in women and involves both large arteries (coronary artery vasospasm) or small arteries (coronary artery embolization or coronary microvascular dysfunction); can also occur with nonobstructive CAD explaining lower rates of obstruction on angiography in women than men (Women's Ischemia Syndrome Evaluation)

5. Pathophysiology
    a. Higher rates of vasoreactive dysfunction with microvascular disease and endothelial dysfunction in women than men relative to typical obstructive lesions

**6. Management**
    a. PCI as indicated for obstructive CAD, though women were found to have higher risk of adverse events if they undergo early invasive treatment in presence of negative biomarkers
    b. Dosing of anticoagulant in women needs to be adjusted lower based on ideal body weight – otherwise associated with higher risk of bleeding
    c. Treatment of ischemia in presence of nonobstructive CAD is geared towards symptom management and vascular function improvement and identification and treatment based on the underlying cause (vasospasm, coronary artery embolization, coronary artery dissection or microvascular dysfunction).

7. Prognosis
    a. Women have higher morbidity and mortality after an MI than men, more so with STEMI and women < 50 years
    b. Women with non-obstructive CAD have higher adverse event rates than those with normal coronaries unlike men

**References:**


Benn et al. Extreme concentrations of endogenous sex hormones, ischemic heart disease, and death in women. Arterioscler Thromb Vasc Biol 2015;35(2): 471-477.

Daughtery et al. Age-dependent gender differences in hypertension management. J Hypertension. 2011 May;29(5):1005-11.

Hak et al. Systemic lupus erythematosus and the risk of cardiovascular disease: results from the nurses' health study. Arthritis Rheum. 2009 Oct 15;61(10):1396-402.

Huxley et al. Cigarette smoking as a risk factor for coronary heart disease in women compared with men: a systematic review and meta-analysis of prospective cohort studies. Lancet. 2011 Oct 8;378(9799):1297-305

Khan et al. Sex differences in acute coronary syndrome symptom presentation in young patients. JAMA Int Med 2103; 173(20):1863-71.

McSweeney et al. Women's early warning symptoms of acute myocardial infarction. Circulation. 2003 Nov 25;108(21):2619-23

Marroquin et al. Metabolic syndrome modifies the cardiovascular risk associated with angiographic coronary artery disease in women: a report from the Women's Ischemia Syndrome Evaluation. Circulation. 2004 Feb 17;109(6):714-21.

Rutledge et al. Depression symptom severity and reported treatment history in the prediction of cardiac risk in women with suspected myocardial ischemia: The NHLBI-sponsored WISE study. Arch Gen Psych. 2006 Aug;63(8):874-80.

Shaw et al. Women and ischemic heart disease: evolving knowledge. J Am Coll Cardiology 2009; 54(17):1561-75.

Soffler et al. It's not all chest pain: sex and gender in acute care cardiology. Sex and Gender in Acute Care Medicine. Cambridge University Press. 2016

Ting et al. Delay from symptom onset to hospital presentation for patients with non-ST-segment elevation myocardial infarction. Arch Intern Med. 2010 Nov 8;170(20):1834-41.

Towfighi et al. Sex-specific trends in midlife coronary heart disease risk and prevalence.

Arch Intern Med. 2009 Oct 26;169(19):1762-6

Vaccarino et al. Sex-based differences in early mortality after myocardial infarction. National Registry of Myocardial Infarction 2 Participants. NEJM 1999 Jul 22;341(4):217-25.

Vaccarino. Ischemic Heart Disease in Women: Many Questions, Few Facts. Circ Cardiovasc Qual Outcomes. 2010 Mar; 3(2): 111–115.

## Appendix V: Teaching materials and resources

- Evaluation instrument for simulation based lessons: Gay Affirmative Practice (GAP) scale (Díaz et al., 2017; Maruca et al., 2018).
- WHO SDOH Framework (Brown et al., 2021b)
- AdvocacyTM Program Content (Tartavoulle & Landry, 2021)
- See (Lim et al., 2014) cited by (Maley & Gross, 2019) : content about health disparities in the LGBT+ populations and their needs
- Evaluation criteria for the reflective essay (Maley & Gross, 2019)
- Pre- and post-test : The sexual orientation counselor competency scale (SOCCS) (McEwing, 2020, p. 3)
- The National Resource Center (NRC) on LGBT Aging, https://www.lgbtagingcenter.org/ (Smith et al., 2021)
- Evaluation instruments: Attitudes Toward Lesbians and Gay Men (ATLG) Scale, Lesbian, Gay, Bisexual, and Transgender Healthcare (LGBT Healthcare) Scale, Lesbian, Gay, Bisexual, and Transgender Knowledge (LGBT Knowledge) Questionnaire (Strong & Folse, 2015)
- Several scales on sexual healthcare (Sung & Lin, 2013)
- SOGI Nursing website: https://soginursing.ca/ (Luctkar-Flude et al., 2020, 2021; Tyerman et al., 2021; Ziegler E et al., 2022)

See also:

**Table 2.** Available tools/platforms/online courses for sharing and disseminating knowledge related to sex- and gender-based medicine.

| Tool/Platform/Online Course | Website URL |
|---|---|
| EGender | http://egender.charite.de, accessed on 2 February 2022 |
| GenderMed-Wiki | www.gendermed-wiki.de, accessed on 2 February 2022 |
| GenderMed | http://gendermeddb.charite.de, accessed on 2 February 2022 |
| The Online Continuing Medical Education and Certificate Program in Sex- and Gender-Specific Health | http://www.laurabushinstitute.org/cme/default.aspx, accessed on 2 February 2022 |
| Sex and Gender Women's Health Collaborative | http://www.sgwhc.org, accessed on 2 February 2022 |
| The Texas Tech University Health Sciences Center PubMed Search Tool and Slide Library | https://ttuhsc.libguides.com/pubmed1, accessed on 2 February 2022 |
| The Stanford University Center for Gendered Innovation, the European Union Research and Innovation, and the National Science Foundation | www.genderedinnovations.eu, accessed on 2 February 2022 |
| The Science of Sex and Gender in Human Health offered by the Office of Women's Health, National Institutes of Health, Office of Women's Health, and the US Food and Drug Administration | http://sexandgendercourse.od.nih.gov, accessed on 2 February 2022 |
| The Gender and Health Collaborative Curriculum Project with six collaborating medical schools of the Council of Ontario Faculties of Medicine, Canada | http://www.genderandhealth.ca/, accessed on 2 February 2022 |

**Extract from Khamisy-Farah & Bragazzi (2022)**

**Table 2.** LGBT Health Information Resources for Nurse Educators

| General resources | |
|---|---|
| **Author(s)/Organization** | **Material available** |
| Fenway Health Institute (2015) | Webinars (on-demand or live), in-person education, technical assistance, LGBT-specific publications, research reports, and patient education handouts |
| Gay and Lesbian Medical Association (2012) | Cultural competence webinars, current research, continuing health care education, annual conference focused on LGBT health, and a newly formed nursing section for LGBT-identified nurses |
| Lavender Health (2012) | Educational materials for nurse educators including a syllabus, media references, and learning activities |
| National Coalition for LGBT Health | General health information, fact sheets, and they hold an annual meeting focused on LGBT health |
| Special reports | |
| Institute of Medicine (2003) | Lesbian health: Current assessment and directions for the future |
| Metlife (2010) | Still out, still aging: The MetLife study of LGBT baby boomers. |
| Institute of Medicine (2011) | The health of LGBT people: Building a foundation for better understanding. |
| The Joint Commission (2011) | Advancing effective communication, cultural competence, and patient- and family-centered care for the LGBT community: A field guide |
| Grant et al. (2011) | Injustice at every turn: A report of the national transgender discrimination survey. A collaboration between the National Center for Transgender Equality and the National Gay and Lesbian Task Force |
| Substance Abuse and Mental Health Services Administration (2012) | Top health issues for LGBT populations information and resource kit. |
| National Coalition of Anti-Violence Programs (2014) | 2012 report on LGBT, queer, and HIV-affected hate violence |
| LGBT elder focus | |
| National Resource Center on LGBT Aging | Information about the needs of LGBT and developing appropriate resources; has a search feature that allows user to search for LGBT elder related services and resources in their geographic location |
| Lim and Bernstein (2012) | Guidance on incorporating care of the LGBT older adult into undergraduate nursing education |
| Textbooks | |
| Eliason, Dibble, DeJoseph, and Chinn (2009) | LGBTQ Cultures: What Healthcare Professionals Need to Know about Sexual and Gender Diversity [only available in electronic version] |
| Green and Maurer (2015) | The Teaching Transgender Toolkit: A Facilitator's Guide to Increasing Knowledge, Reducing Prejudice and Building Skills [currently on pre-order] |
| Makadon, Mayer, Potter, and Goldhammer (2015) | The Fenway Guide to Lesbian, Gay, Bisexual, and Transgender Health, 2nd Ed. [currently on preorder] |
| Northeastern Ohio Medical University (In press) | The Equal Curriculum: Student and Educator Guide to LGBT Health [electronic-only textbook to be available late 2015] |

**Extract from Bosse et al. (2015)**