


# BMJ Open Protocol for a scoping review on transition-related surgery procedures, outcome measures and access to care

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## ABSTRACT

**Introduction** Transgender and gender diverse (TGD) individuals often identify with a gender different to the one assigned at birth. Transition is a term used to describe the process TGD individuals take to live as their true gender. Surgery can be a very important aspect of care for members of TGD communities. Transition-related surgery (TRS) refers to many different types of surgeries completed to meet a TGD individual's gender-related goals. While various systematic reviews have attempted to synthesise the existing peer-reviewed literature around aspects of TRS, there are few scoping reviews in this area. Our scoping review aims to address this gap through providing an up-to-date overview of the TRS literature in order to provide an overarching view of the topic.

**Method and analysis** This review will follow the methods outlined by the Joanna Briggs Institute's methodology for scoping reviews and will be reported according to Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews. A search of nine scientific databases resulted in 20 062 potential articles. After removing duplicates, articles will be screened for inclusion using Covidence. Data extraction and synthesis will be carried out using NVivo and reviewed by team members.

**Ethics and dissemination** As this study is a scoping review of the existing literature, no ethics review is required. The findings from this review will be disseminated through multiple pathways including open access publication, submission to conferences, social media and Listservs. The findings of the study will also be readily available to clinicians, organizations, interest groups, and policy-makers.

## INTRODUCTION

Transgender and gender diverse (TGD) individuals often identify with a gender different to the one assigned at birth. Population data on TGD individuals are limited, nonetheless, a 2015 meta-analysis estimated that 0.4%–1.1% of adults identify as TGD.<sup>1</sup> Until 2016, the Canadian census only collected biological sex binaries with only male and female response options, therefore, Canadian population data on TGD individuals are limited

## Strengths and limitations of this study

- This scoping review provides the first broad overview of the transition-related surgery (TRS) landscape.
- The scoping review will adhere to the highly-rigorous methods outlined in Joanna Briggs Institute's methodology for scoping reviews.
- We have chosen to only review the literature published after 1990 because the TRS landscape has undergone substantial changes.

and come primarily from academic studies.<sup>2</sup> Although likely an underestimate, data from the 2019 census suggest 0.35% of the Canadian population identifies as either trans or non-binary.<sup>2</sup>

Some TGD individuals decide to 'transition', a term that is broadly used to refer to the processes undergone to live as one's true gender. Transition has been associated with positive outcomes, including a positive outlook towards life and better mental health and life satisfaction.<sup>3 4</sup> Transition is a highly individualised and variable process<sup>3 5</sup> and may or may not include social, medical or surgical aspects. Social transition includes aspects such as coming out to friends and family, changing one's clothing or hairstyle, changing one's name or changing one's sex designation on legal documents. Medical transition typically refers to hormone therapy, but may also include additional interventions such as speech therapy and hair removal.

Transition-related surgery (TRS) is an inclusive term used to refer to many different types of surgeries undergone by TGD individuals to meet their gender-related goals. A 2015 report found that, in Ontario, 24% of transmasculine and 30% of transfeminine individuals underwent TRS.<sup>6</sup> Masculinising TRS includes, but is not limited to, mastectomy with chest reconstruction, hysterectomy with or without oophorectomy, and/or



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masculinising bottom surgeries such as metoidioplasty or phalloplasty. Feminising TRS includes, but is not limited to, breast augmentation, facial feminisation, orchiectomy, scrotoectomy, and vaginoplasty.

<sup>7,8</sup>Global trends in TRS are not well studied; one study from the USA found a fourfold increase in TRS between 2000 and 2014.<sup>9</sup> Nonetheless, despite the increase in TRS surgery, the literature around TRS is still in its infancy and the existing literature is varied (eg, includes literature on policies, surgical outcomes, patient experience). Some attempts at synthesising the literature exist<sup>10–12</sup>; however, these systematic reviews focus on certain facets of TRS such as surgical outcomes,<sup>10</sup> outcomes of specific surgical techniques<sup>11,13,14</sup> or narrow demographic samples (eg, trans females).<sup>15</sup> As research about TRS is emergent, a systematic scoping review would help provide a comprehensive examination of the current landscape of TRS research.<sup>16</sup> Furthermore, a broad review of the TRS literature will allow for categorisation of the current literature and help understand the strengths of the TRS literature.<sup>17</sup> The current scoping review will map the existing peer-reviewed literature around TRS-related research.

Munn *et al*<sup>16</sup> identified six purposes for conducting a scoping review. Drawing on several of these, the objectives of our scoping review are as follows: (1) to identify the types of available evidence in the field of TRS; (2) to examine how research is conducted in the field of TRS; (3) as a precursor with the findings of the scoping review informing future systematic reviews and meta-analysis; and (4) to identify and analyse knowledge gaps.<sup>16</sup>

### Overall objective and research questions

The overarching research gap we sought to address, guided by the elements of population, concept and context,<sup>18</sup> was developed with the aim of capturing the full breadth of the existing peer-reviewed literature around what is known about TRS in the current peer-reviewed literature. Using this broad research gap to guide the search strategy allowed us to capture the breadth of data allowing us to refine our research questions throughout subsequent stages.

The proposed scoping review will address three main research questions, and other research questions that may emerge and be further developed in an iterative manner.<sup>19</sup> The proposed research questions are: (RQ1) what TRS procedures have been studied; (RQ2) what surgical outcomes of TRS have been studied (eg, biomedical, mental health, social); and (RQ3) what policies and protocols regarding access to TRS have been evaluated.

## METHODS

The scoping review and the current protocol are informed by the Joanna Briggs Institute's manual for evidence synthesis<sup>20</sup> and adhere to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) Scoping Review Extension.<sup>18</sup>

### Search strategy and terms

An information specialist (ME) with extensive experience in knowledge syntheses conducted preliminary searches on Medline (Ovid) and Embase (Ovid) to determine the extent of the potential literature. This preliminary search was also used to develop an EndNote Library (Clarivate Analytics, V.20, 2020) from which potential preliminary search terms could be gathered.

Once determined that there was a sufficient body of literature from which to draw and that there was no similar scoping review, additional research was conducted on selected websites, texts and text analysis tools. Selected websites<sup>21–25</sup> and textbooks<sup>26–27</sup> were used to draw on potentially relevant terms or synonyms that could increase the sensitivity of our search strategy. The Yale MeSH Analyser<sup>28</sup> was used to review the Medline Medical Subject Heading and/or author-supplied keywords that were used to index 'target' citations provided by the team for use in testing the search strategy sensitivity. The Voyant Tool, Voyant Viewer,<sup>29</sup> was used to determine the depth of proximity searching between terms, that is, how close search terms had to appear to each other to be sensitive enough to be captured in the search strategy, without capturing too much 'noise' or irrelevant material. Using the findings of the additional research, the iterative process of gleaning, testing, adding, changing or removing search terms from preliminary search strategies was undertaken.

A provisional Medline (Ovid) search strategy was developed, and this strategy was used as the basis from which the search strategies of remaining databases were developed. Initial searches were carried out in March 2021. The databases selected for inclusion and searched from the date of inception are:

- ▶ Medline (Ovid).
- ▶ Medline ePubs & In-Process (Ovid).
- ▶ Embase (Ovid).
- ▶ Cochrane Central Register of Controlled Trials (Ovid).
- ▶ Cochrane Database of Systematic Reviews (Ovid).
- ▶ APA PsycINFO (Ovid).
- ▶ Scopus (Elsevier).
- ▶ Web of Science (Clarivate Analytics).
- ▶ CINAHL (EbscoHost).

The search terms consisted of controlled vocabulary terms as well as text words in conceptual component blocks; the blocks used were:

1. (Transgender or related terms) AND.
2. (Transition-Related Surgery or related terms).

Search terms were adapted for each database as appropriate and the results were not limited by publication date but limited to human subjects; publication type limited to academic/journal article, and conference abstracts as well as dissertations/theses removed where possible. Please see online supplemental appendix 1 for the complete search strategy.

**Table 1** Inclusion and exclusion criteria

|                           | Inclusion                                       | Exclusion  |
|---------------------------|---|--|
| Participants              | ▶ TGD population                                | ▶ Cisgender population<br>▶ Intersex population<br>▶ Animals   |
| Concept                   | ▶ Studies on TRS                                | ▶ Studies of TGD individuals not related to TRS (eg, non-surgical transitioning, general health outcomes, general surgeries)<br>▶ Studies on TRS (such as mastectomy) for different surgical goals (such as cancer prevention) |
| Context                   | ▶ Any geographical location                     | ▶ None   |
|                           | ▶ Any setting (eg, clinical setting, community) | ▶ None   |
|                           | ▶ Studies published after January 1, 1990       | ▶ Studies published prior to January 1, 1990   |
| Types of evidence sources | ▶ Primary research studies                      | ▶ Abstracts<br>▶ Grey literature (eg, dissertations/theses, conference papers and proceedings)<br>▶ Commentaries, editorials and opinion papers<br>▶ Reviews (systematic reviews, meta-analysis)                               |
|                           | ▶ Full-text articles available in English       | ▶ Non-English articles or articles with only English abstracts   |

TGD, transgender and gender diverse; TRS, transition-related surgery.

### Study selection

EndNote (Clarivate Analytics, V.20, 2020) will be used to remove duplicate articles before the articles are imported to Covidence for title and abstract screening. First author (MS) will independently review titles and abstracts guided by our eligibility criteria (see [table 1](#)) to determine which studies should be included for full-text review. When there is ambiguity input will be sought from research team. Following title and abstract screening, articles that meet the eligibility criteria will be retrieved for full-text screening. A random subset of full-text articles (10%) will be screened independently by first author and another team member, with inter-rater reliability assessed with Kappa statistics.<sup>30</sup> If Kappa score is <0.8 remaining citations will be independently screened by first author.<sup>30</sup> The number of articles included and excluded at each stage, and the reason for their exclusion, will be recorded and will be presented in a PRISMA flow diagram.

### Eligibility criteria

As the primary aim of this review is to explore the peer-reviewed literature focused on TRS, minimal restrictions were placed on eligibility criteria. Articles will be screened based on the four inclusion criteria (ie, participants, concept, context and type of evidence) outlined in [table 1](#). Given the limited number of studies published prior to 1990<sup>31</sup> and shift in contemporary research around TRS, studies published prior to 1990 were excluded.

### Data extraction

Following full-text review, all studies that meet eligibility criteria will be incorporated into NVivo (QSR International, V. 12, 2018) for data extraction. An initial standardised data extraction form will be developed on NVivo to extract the following information: bibliographic information, methodology, study population, results and discussion (see online supplemental appendix 2 for

initial data extraction table). Given the iterative nature of the data extraction process, additional data points may also be added if they become apparent.<sup>20</sup> The standardised extraction form will be piloted on 10% of the studies by MS and another member of the research team to ensure that all data points are appropriately captured. Following completion of the pilot process, MS will extract the remaining data which will subsequently verified by another team member.

### Data synthesis

We will present the data extraction results in both a quantitative and a qualitative manner. All analyses will be done using NVivo. Descriptive statistics will be used to summarise demographic and outcome variables (eg, frequency counts of samples, settings, study design, outcomes) and will be presented in tabular form with narrative descriptions. Qualitative data will be analysed using descriptive qualitative content analysis with basic coding and presented through narrative synthesis and tabular or diagrammatic manner.

### PATIENT AND PUBLIC INVOLVEMENT

The scoping review protocol was informed by the expertise of a Women's College Hospital patient who identifies as a TGD community member. They provided feedback on the scoping review protocol and will be involved in the data synthesis and dissemination phases of the scoping review.

### ETHICS AND DISSEMINATION

No formal ethics approval was requested from the authors' affiliated organizations as primary data will not be collected for this study. The findings from the scoping review will serve multiple purposes. The findings will serve as the initial step in understanding the research gaps in the area of TRS.



Furthermore, the findings will help develop a research agenda for the research team and help inform future primary studies for the research team as well as the community of researchers who focus on this area. Findings from the scoping review will be disseminated to researchers, healthcare practitioners, organizations, and policy-makers. Additionally, we will share the findings of the study through abstract submission to surgery and gender-related conferences and circulation to members of relevant groups through mailing lists and Listservs as well as social media platforms. The completed scoping review will be published in a peer-reviewed, open-access journal.

## CONCLUSION

Currently, available reviews lack key information summarising TRS procedures, outcomes measures, and access to care. A comprehensive scoping review will help address this knowledge gap. The findings from the scoping review will help contextualise research and inform future studies.

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**Contributors** DRU, JDM and MS conceptualised, designed and developed the scoping review with input from KA, YK, GL, EP, and AS. ME developed and refined the search strategy with input from DRU, JDM and MS. MS prepared the manuscript with substantive input from all other authors. All authors reviewed the manuscript prior to submission.

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## REFERENCES

- 1 Arcelus J, Bouman WP, Van Den Noortgate W, *et al.* Systematic review and meta-analysis of prevalence studies in transsexualism. *Eur Psychiatry* 2015;30:807–15.
- 2 Statistics Canada. *Sex at birth and gender: technical report on changes for the 2021 census*, 2020. <http://journals.lww.com/0000539-201808000-00012>
- 3 Drydakis N. Trans people, transitioning, mental health, life and job satisfaction, 2020. Available: <http://ftp.iza.org/dp12695.pdf>
- 4 Almazan AN, Keuroghlian AS. Association between Gender-Affirming surgeries and mental health outcomes. *JAMA Surg* 2021;156:611.
- 5 Tollinche LE, Walters CB, Radix A, *et al.* The perioperative care of the transgender patient. *Anesth Analg* 2018;127:359–66.
- 6 Scheim AI, Bauer GR. Sex and gender diversity among transgender persons in Ontario, Canada: results from a respondent-driven sampling survey. *J Sex Res* 2015;52:1–14.
- 7 De Cuyper G, TSjoen G, Beerten R, *et al.* Sexual and physical health after sex reassignment surgery. *Arch Sex Behav* 2005;34:679–90.
- 8 de Vries ALC, McGuire JK, Steensma TD, *et al.* Young adult psychological outcome after puberty suppression and gender reassignment. *Pediatrics* 2014;134:696–704.
- 9 Canner JK, Harfouch O, Kodadek LM, *et al.* Temporal trends in gender-affirming surgery among transgender patients in the United States. *JAMA Surg* 2018;153:609–16.
- 10 Oles N, Darrach H, Landford W, *et al.* Gender Affirming surgery: a comprehensive, systematic review of all peer-reviewed literature and methods of assessing patient-centered outcomes (Part 1: Breast/Chest, face, and voice). *Ann Surg* 2022;275:e52–66.
- 11 Aires MM, Marinho CB, Souza CdeSC. Effect of endoscopic Glottoplasty on acoustic measures and quality of voice: a systematic review and meta-analysis. *J Voice* : 2020. doi:10.1016/j.jvoice.2020.11.005. [Epub ahead of print: 01 Dec 2020].
- 12 Jolly D, Wu CA, Boskey ER, *et al.* Is clitoral release another term for Metoidioplasty? A systematic review and meta-analysis of Metoidioplasty surgical technique and outcomes. *Sex Med* 2021;9:100294.
- 13 Abu-Ghname A, Banuelos J, Davis MJ, *et al.* Augmentation phalloplasty for acquired penile shortening: a systematic review of techniques, outcomes, patient satisfaction, and limitations. *J Sex Med* 2020;17:331–41.
- 14 Bouman M-B, van Zeijl MCT, Buncamper ME, *et al.* Intestinal vaginoplasty revisited: a review of surgical techniques, complications, and sexual function. *J Sex Med* 2014;11:1835–47.
- 15 Cocco A, Frediani D, Cacciamani GE, *et al.* Systematic review of studies reporting perioperative and functional outcomes following male-to-female gender assignment surgery (MtoF gas): a call for standardization in data reporting. *Minerva Urol Nefrol* 2019;71:479–86.
- 16 Munn Z, Peters MDJ, Stern C, *et al.* Systematic review or scoping review? guidance for authors when choosing between a systematic or scoping review approach. *BMC Med Res Methodol* 2018;18:1–7.
- 17 Marshall Z, Welch V, Minichiello A, *et al.* Documenting research with transgender, Nonbinary, and other gender diverse (trans) individuals and communities: introducing the global trans research evidence MAP. *Transgend Health* 2019;4:68–80.
- 18 Tricco AC, Lillie E, Zarin W, *et al.* PRISMA extension for scoping reviews (PRISMA-ScR): checklist and explanation. *Ann Intern Med* 2018;169:467–73.
- 19 O'Brien KK, Colquhoun H, Levac D. Advancing scoping study methodology: a web-based survey and consultation of perceptions on terminology, definition and methodological steps. *BMC Health Serv Res* 2016;16:1–12.
- 20 Peters M, Godfrey C, Mclnerney P. Chapter 11: Scoping Reviews. In: *JBI manual for evidence synthesis*, 2020.
- 21 World Professional Association for Transgender Health. Available: <https://www.wpath.org/> [Accessed 26 Jan 2021].
- 22 Canadian Professional Association for Transgender Health. Available: <https://cpath.ca/en/> [Accessed 26 Jan 2021].
- 23 Gender and population studies (gaps) in health: TRANS-forming primary care guide to transgender health care. Available: <https://www.gapsinhealth.ca/transgender-health-care/> [Accessed 26 Jan 2021].
- 24 National Center for Transgender Equality. Available: <https://transequality.org/> [Accessed 26 Jan 2021].
- 25 Mathematica: transgender inclusive communication: Mathematica. Available: <https://mathematica.org/features/transgender-inclusive-communication2021> [Accessed 26 Jan 2021].

- 26 Eyler AE. *Principles of transgender medicine and surgery*. Second Ed. Routledge, 2013.
- 27 Ferrando CA. *Comprehensive care of the transgender patient*. First Ed. Philadelphia: Elsevier, 2019.
- 28 Grossetta NH, Wang L. Yale mesh analyzer. Available: <https://mesh.med.yale.edu/> [Accessed 13 Apr 2021].
- 29 Sinclair S, Rockwell G. Voyant tools, 2016. Available: <https://voyant-tools.org/> [Accessed 15 Jan 2021].
- 30 McCaffrey N, Al-Janabi H, Currow D, *et al.* Protocol for a systematic review of preference-based instruments for measuring care-related outcomes and their suitability for the palliative care setting. *BMJ Open* 2016;6:12181.
- 31 Sweileh WM. Bibliometric analysis of peer-reviewed literature in transgender health (1900 – 2017). *BMC Int Health Hum Rights* 2018;18:1–11.