

Trans Peoples' Interest in Reproduction and Fertility Preservation: A Cross-Sectional, Descriptive Study Into Barriers to Reproductive Care

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ABSTRACT

Objective: This study aimed to ascertain trans peoples' interest in reproductive choices. Our secondary objective was to understand barriers to meeting their reproductive goals.

Methods: We conducted a descriptive cross-sectional study using a one-time anonymous survey. Analysis was conducted using descriptive statistics and a thematic analysis using inductive coding.

Results: Analysis of trans participants' responses revealed 82% (N = 169) of participants are interested in pursuing reproductive options (biologically related children, donor gametes, gestational carriers, or fertility preservation). Sixty-eight percent (N = 172) of participants are taking gender-affirming hormone therapy or plan to start. Forty-nine percent (N = 124) have had or plan to have gender-affirming surgery that affects fertility. Trans folks experience many barriers when accessing fertility care; cost and trans-specific barriers were the most common and insurmountable barriers.

Conclusions: Our study highlights that trans folks are interested in reproductive options. However, many trans people experience significant barriers to meeting their reproductive goals and this significantly impacts their quality of life. With most of our survey population identifying as trans at an age during the window of peak fertility, we highlight the importance of early assessment and treatment to achieve fertility goals.

comprendre les obstacles à l'atteinte de leurs objectifs de procréation.

Méthodes : Nous avons mené une étude descriptive transversale au moyen d'un sondage anonyme unique. Une analyse a été effectuée au moyen de statistiques descriptives et une analyse thématique a été réalisée par codage inductif.

Résultats : L'analyse des réponses des personnes trans a révélé que 82 % d'entre elles (N = 169) ont un intérêt à l'égard des options de procréation (enfants biologiques, don de gamètes, personne gestatrice ou préservation de la fertilité). Parmi les personnes participantes, 68 % (N = 172) suivent ou prévoient d'amorcer une hormonothérapie d'affirmation de genre, tandis que 29 % (N = 124) ont subi ou prévoient de subir une intervention chirurgicale d'affirmation de genre ayant un effet sur la fertilité. Les personnes trans font face à de nombreux obstacles dans l'accès aux traitements de l'infertilité, parmi lesquels le coût et les obstacles propres à ces personnes étaient les plus courants et les plus insurmontables.

Conclusion : Notre étude met en lumière l'intérêt des personnes trans pour les options de procréation. Toutefois, bon nombre de ces personnes sont confrontées à d'importants obstacles les empêchant d'atteindre leurs objectifs de procréation. Ces obstacles ont des conséquences majeures sur leur qualité de vie. Puisque la plupart des personnes ayant répondu au sondage s'identifient comme personne trans à un âge qui cadre avec le pic de fertilité, nous soulignons l'importance d'une évaluation et d'un traitement précoces en vue d'atteindre les objectifs de fertilité de ces personnes.

RÉSUMÉ

Objectif : Déterminer les intérêts des personnes trans en ce qui concerne les choix de procréation. L'objectif secondaire était de

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INTRODUCTION

Gender terminology is important, and although there are commonly accepted terms among gender diverse people, we respect that gender is ultimately defined at the individual level. For the purposes of our study, we use the term trans as “an umbrella term for people whose gender identity and/or expression is

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different from cultural expectations based on the sex they were assigned at birth”.¹ In doing so, we are grouping together people who have self-identified as trans, trans male, trans masculine, trans female, trans feminine, nonbinary, gender nonbinary, gender fluid, agender, gender queer, 2 spirit, bigender, pangender, indigiqueer, or any combination of the previously mentioned genders.

The trans community is growing; according to the 2021 Canadian census, 1 in 300 people aged 15 years and older identify as transgender or nonbinary; 62% of whom were under 35 years old.² The prevalence of transgender people was first assessed in Canadian census in 2021; however, in other countries, the prevalence has increased over time and is higher in younger generations, which has been attributed to better survey methods and greater visibility and acceptance of the trans community.^{3–5} The prevalence of trans people is anticipated to continue increasing as additional antidiscrimination legislature is passed,^{5–7} general community acceptance improves, and accessibility to trans-specific care improves. It is imperative that physicians attend to the unique health care needs of the marginalized and underserved trans population.

Many trans people will seek medical care to transition through either gender-affirming hormone therapy (GAHT) or gender-affirming surgery. For many, gender-affirming transition is an important step to decrease mental distress and gender dysphoria and increase social and sexual function.⁸ The existing literature is limited but suggests GAHT likely negatively impacts gametes^{9,10} and surgical removal of ovaries or testicles permanently impacts reproductive options. As such, the World Professional Association for Transgender Health recommends that before starting transition-related care for their trans patients, physicians should discuss the effects that transition treatments have on fertility and the available options for fertility preservation.¹

Interest in Fertility

Existing studies suggest 40%–50% of trans people desire biologically related children, which, in this study, refers to carrying a pregnancy of a genetically related fetus and gestation of genetically related fetus via gestational carrier. These studies focus on the subset of the trans population actively wanting to start or those who have already commenced GAHT or surgery.^{8,10–12} Although existing studies suggest that there is interest in reproduction, less than 5% of trans youth within the study by Chen et al.⁹ pursued fertility preservation. Similarly, a study by Auer et al.¹³ found that within their sample of trans folks, there was significant interest in parenthood and gamete

preservation. To illustrate, 76.1% of trans females and 76.6% of trans males within their sample considered gamete preservation; however, only 9.6% of trans females and 3.1% of trans males undertook fertility preservation.¹³ Likewise, Ker et al.¹⁴ puts forth that current research indicates that between one-third and two-thirds of trans folks desire biological children. However, only 15.8% of their participants accessed fertility services before GAHT or surgery.¹⁴

Barriers to Care

Previous studies have identified numerous barriers for trans people accessing health care; a major barrier is a lack of knowledge and training regarding trans health care among practitioners.^{6–8} Grant et al.¹⁵ found that “50% (n = 3228) of the sample reported having to teach their medical providers about transgender care.” Other barriers to accessing care include discrimination, stigmatisation, denial of care, poor treatment, and neglect.^{6,7}

Regarding accessing reproductive-specific health care and fertility preservation for trans people, a barrier commonly identified is cost.^{9,10} The cost of fertility preservation varies by province; however, the cost for sperm cryopreservation, oocyte cryopreservation, oocyte harvesting, and required medications is in the range of around CAD \$500 for trans females and CAD \$12–20 000 for trans males, with annual storage fees due according to length of storage. Some provinces have funding for fertility preservation for trans folks, whereas others do not.

Additional trans-specific barriers highlighted in studies include invasiveness of procedures, a desire to adopt, emotional distress surrounding masturbation for obtaining gametes, fear of passing on “bad genes,” trauma leading to poor parent-child relationships, the inability of carrying the pregnancy themselves, lack of awareness of options, having to stop or delay transition for gamete preservation, dysphoria from hormone treatments, and lack of trans-appropriate care among others.^{5,9,10,16}

Paucity of Existing Data

There is a paucity of data determining the trans community at large’s interest in fertility options. Of existing studies, sample sizes are small, and populations are often limited to those actively seeking or maintaining current gender-affirming health care. Further research is needed encompassing a large sample size across diverse subsets, including wide-ranging geography, socioeconomic status, race, relationship status, and age, among others, to account for intersectionality.

Objective

This study's primary objective is to determine trans peoples' interest in reproduction. The secondary objective is to explore barriers to trans people meeting their reproductive goals.

METHODS

Study Design

Our study was a descriptive cross-sectional study, carried out using a one-time anonymous survey. This study was approved by the Hamilton Integrated Research Ethics Board #8109.

To begin the circulation of our survey, a database was created that identified lesbian, gay, bisexual, trans, queer, 2 spirit, and other sexualities and genders (LGBTQ2S+) groups in every province across Canada. The database was compiled using Google searches of ["Province" or "City"] AND ["Trans" or "Transgender" or "LGBTQ"]. The database included contact information and any social media platforms these groups used. We then contacted these groups via email and Facebook messenger using a template and asked that the groups disseminate an attached poster and/or social media post to their members, including a link to the online survey. Several reminder emails and Facebook messages were sent to boost completion rates. We also posted the social media template on public LGBTQ2S+ Facebook groups. Participants were recruited using volunteer sampling and asked to participate if they were aged over 16 years, were a Canadian citizen or permanent resident, and self-identified as trans or gender other than cis. Consent was obtained from all participants at the beginning of the survey. Participants could choose not to answer any question or terminate their participation at any point.

The survey was composed of 66 questions in total, including multiple-choice, Likert scale questions, and free-text questions. The survey collected demographic information as well as information about interest in biologic children, perceived barriers to having biologic children and/or accessing fertility services and plans for transition, surgery in a way that affects fertility, and accessing fertility services. Responses were collected via RedCap software from May 1, 2021 to May 31, 2022.

According to the 2021 Canadian census, 100 815 Canadians aged 15 years and older identified as transgender or nonbinary.² Using a 95% CI and 5% margin of error, the sample size of our study was set at 383 participants.

Data Analysis

Data were cleaned to remove participants who did not complete any of the survey; participants who fully or partially completed the survey were left in the sample. Prevalence rates for interest in having biological children and accessing fertility services, and barriers to biological reproduction and accessing fertility services were analyzed using Stata software.

Qualitative data derived from the free-text questions were coded by authors L.D. and B.Z. using an inductive, data-driven approach. Manual coding was conducted by each author using the framework put forth by Neuman,¹⁷ which includes open coding and axial coding. Open coding occurred first with each author reading open text answers line by line to create codes derived from the responses. The codes from the open coding stage were then examined and grouped together into overarching themes during axial coding. Coding was conducted using a Critical Friends approach,¹⁸ whereby authors L.D. and B.Z. met to offer their interpretations, codes, and themes, followed by collective reflection and challenging of biases to create the final codebook.

RESULTS

Descriptive Statistics

There were 308 participants who started survey responses, of whom 8 did not answer the consent question, and 1 did not consent. As such, there were 299 surveys in the final sample; however, the number of responses varied question by question. A total of 197 participants completed every question, and the highest number of responses for a single question was recorded as 266.

We have identified that 79.0% (N = 198) of trans folks in our study were first aware their identity as something other than their sex assigned at birth at an age of less than or equal to 20 years. People assigned female at birth started GAHT (N = 88) at an average age of 23 years and those assigned male at birth (N = 51) at age 33 years. People assigned female at birth (N = 12) had surgery in a way that impacts fertility at the average age of 24 years and those assigned male at birth (N = 15) at age 38 years.

Barriers to Care

Qualitative analysis revealed 13 themes, derived from free-text response, that participants identified as barriers to accessing fertility care. The most prevalent themes (Table 1) were cost, access to trans appropriate care, and lack of desire for genetically related children (carrying a pregnancy with a genetically related fetus, a partner

carrying a pregnancy with a genetically related fetus, or gestational carrier carrying a pregnancy with a genetically related fetus) children. Trans specific barriers were also frequently cited (Figure). Less prevalent themes included lack of support, age, and basic needs. In addition, fertility was not a topic that was discussed with 35% (N = 49) of participants before initiating transition-related care (Table 2). The 3 most cited themes are discussed in the subsequent sections.

Cost

Cost was the most frequently cited barrier to accessing fertility services, appearing 37 times in qualitative responses (33.3%). Participants identified costs associated with gamete cryopreservation were prohibitive, especially when the decision to undertake this financial burden often occurred when numerous additional decisions had to be made related to transition.

Most participants in the survey (62.6%) had a household income between CAD \$10 000 to CAD \$80 000 at the time of the survey. For participants in this study with average income being below CAD \$80 000, the fees associated with fertility preservation are often large barriers to gamete preservation.

Access

Access was cited by 23 participants (21%) as a barrier to fertility services. Within the theme of access, participants cited access to reproductive endocrinologist care, access to donor sperm/eggs information, and trans-sensitive

care, as well as wait times, fear of mistreatment, racism, and ableism in health care, as barriers.

Lack of desire

Thirty-eight participants (13.4%) stated they were not interested in future fertility. Future fertility encompassed genetically related children, use of donor gametes, use of gestational carrier, or fertility preservation. The reasons included not desiring children or not wanting genetically related children, lack of interest in gestating, and self-identifying their lifestyle as not being congruent with parenting.

Multifactorial

Participants commonly cited more than one theme in their free-text answers because they reported that barriers to accessing and using fertility services are often multifaceted.

DISCUSSION

Trans Folks Often Have an Early Age of Gender Understanding and Many Have Interest in Having Children

Our sample was largely composed of participants who did not have children. A total of 79.5% (N = 209) did not have children, 12.9% (N = 34) had biologically related children already, and 3.8% (N = 10) had children who they were not biologically related to. Within our sample, participants expressed a desire for future fertility (biologically related children, use of donor gametes, use of gestational carrier, or fertility preservation), with 81.6% (N = 169) of our sample desiring fertility or being unsure of their desire. Similarly, studies by Light et al.¹⁹ and Wierckx et al.²⁰ found that approximately half of participants desire future children and expressed an interest in biologically related children. The finding of a desire for parenthood and biologically related children in the trans population is reinforced by the findings of our study, further emphasizing the importance of discussing fertility with all patients before undergoing potentially fertility reducing treatments, including GAHT and surgical transition. The average age at which our participants have started medical or surgical transition presents an opportunity to explore reproductive options during years of peak reproductive potential.

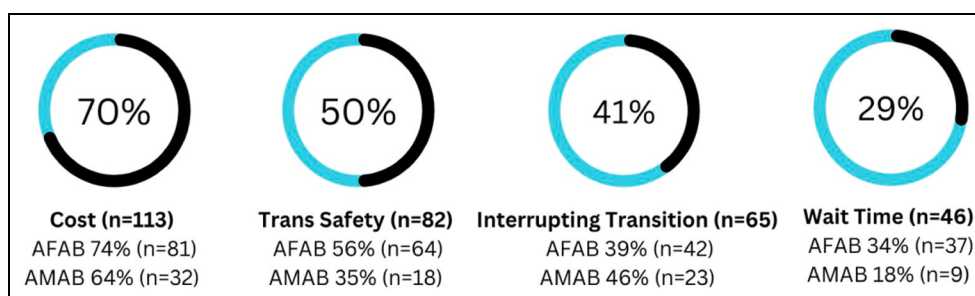
Barriers

Seventy-eight percent (N = 100) of trans folks who desire or are uncertain whether they desire future fertility have identified substantial barriers to achieving their reproductive goals. Barriers identified most in our study

Table 1. Qualitative themes	
Theme	Prevalence (N)
Cost	37
Access	23
Lack of desire	25
Mental health	21
Medical reasons	19
Interrupting transition	16
Dysphoria	17
Unable to create gametes/gestate	14
Relationship circumstances	13
GAHT-related	10
Low support	8
Age	7
Basic needs	2

Qualitative barriers to fertility care.

Abbreviation: GAHT: gender-affirming hormone therapy.

Figure. Most frequently mentioned significant barriers to reproductive care.

AFAB: assigned female at birth; AMAB: assigned male at birth.

included cost of fertility services and access to services including wait times, lack of access which included a lack of trans sensitive information and providers, and long wait times. Lack of desire to gestate or use third-party gametes and preferring adoption was also commonly cited. Although cost is a commonly cited barrier for any person who is seeking fertility care, within the trans population, it is even more pronounced. Specifically, as indicated by our participants, at the time of transition when fertility decisions are made, there are often time-sensitive competing priorities which take precedent. There may be a life-threatening need to start GAHT to treat dysphoria via transition. In addition, these decisions regarding fertility are made at a younger age than cis population fertility patients and, as a result, are earlier in education and career building pursuits when patients have fewer financial resources.

In addition to barrier of cost, which is heightened in the trans population, trans-specific barriers were also cited. Commonly cited barriers included interrupting transition by stopping GAHT and delaying surgery, which affects fertility, gender dysphoria from fertility procedures and/or gestating, and GAHT-related barriers, such as GAHT's impact on fertility, were cited moderately often. Before undertaking this survey, we anticipated that lack of social support, such as family support, age, and relationship circumstances, would be amongst the most highly mentioned barriers; however, we were surprised to find that they were among the least cited.

Existing literature cited some similar barriers to our study. These included cost of fertility services^{7,8,10,20}; distress associated with hormone treatments needed for fertility care and procedures, such as transvaginal ultrasounds and masturbation^{8,10}; trans-specific barriers including discrimination, stigma, and lack of trans-sensitive providers^{7,10,19,21}; preferring adoption,²¹ having to stop GAHT,¹⁰ and age.¹⁰ Notably,

the weight assigned to these barriers varied between previous literature and our study. For instance, in the study by Nahata et al.,²¹ 45.2% (N = 33) of participants cited a preference for adoption, only 8.2% (N = 6) cited cost, and only 2.8% (N = 2) cited trans-related barriers as prohibitive from seeking fertility care. In comparison, cost was the most cited barrier in our study, and trans-related barriers were cited as part of access, dysphoria, and interrupting transition, all of which were among the most mentioned barriers.

Strengths and Limitations

With a total of 299 completed surveys, to the best of our knowledge, our study is the largest of its kind worldwide. In addition, it is the first to be conducted across Canada to try to capture the experience of trans people in different settings and whose health care varies provincially. Previously conducted studies are significantly flawed due to being conducted at single institutions or only including a subset of the population currently seeking or maintaining medical or surgical transition care.

There are numerous strengths to our study. Under-coverage bias was attempted to be addressed in our recruitment strategy of reaching out online to small and large LGBTQ2S+ community groups across Canada. In addition, response bias was minimized with the use of open text bias, and social desirability bias was reduced by the online and anonymous nature of the survey. Finally, the mixed-methodology design allowed participants to further explain their experience.

This study has a few limitations to discuss. Our survey was voluntary in nature; as a result, the people who may have chosen to participate may be more affected by this issue and may feel more strongly about it. The self-selecting nature of the survey may have been further compounded by using social media platforms for recruitment because social media users tend to be

Table 2. Descriptive statistics

Variable	Category	Prevalence
Fertility discussion before GAHT (N = 140)	Discussed fertility	65% (N = 91)
	Did not discuss fertility	35% (N = 49)
Household income (N = 254)	\$ <10 000	6.7% (N = 17)
	\$10 000–40 000	37.8% (N = 96)
	\$40 000–80 000	24.8% (N = 63)
	\$80 000 and above	19.7% (N = 50)
	Prefer not to say	11.0% (N = 28)
Sex assigned at birth (N = 254)	Female	79% (N = 180)
	Male	28% (N = 71)
	Intersex	1% (N = 3)
Age first aware gender different than sex assigned at birth (N = 254)	<13	34% (N = 85)
	13–16	30% (N = 75)
	17–20	15% (N = 38)
	21–25	15% (N = 36)
	26–30	2% (N = 6)
	31–35	2% (N = 5)
	>36	1% (N = 3)
Transition related treatment already undergone (N = 229)	GAHT – AFAB	49.7% (N = 88)
	GAHT – AMAB	73.8% (N = 48)
GAHT (N = 253)	Surgery impacting fertility – AFAB	6.8% (N = 12)
	Surgery impacting fertility – AMAB	24.6% (N = 16)
	Started or planning	68% (N = 172)
Surgery (N = 253)	Not started/not planning	32% (N = 81)
	Not had or nor planning surgery	51% (N = 129)
	Had or planning surgery	49% (N = 124)
Current children (N = 263)	Biologically related	12.9% (N = 34)
	Conceived with donor gametes	3.4% (N = 9)
	Conceived with surrogate	0.4% (N = 1)
	Not biologically related	3.8% (N = 10)
	I don't have children	79.5% (N = 209)
Desire for future fertility (genetically related children; use of donor gametes; use of gestational carrier; fertility preservation) (N = 207)	Yes to at least one category	40.1% (N = 83)
	Unsure to at least one category	41.5% (N = 86)
	No to all categories	18.4% (N = 38)

AFAB: assigned female at birth; AMAB: assigned male at birth; GAHT: gender-affirming hormone therapy.

younger and may not be representative of the entire trans population. In addition, not all members of the trans community may have access to social media platforms, limiting the participation of those without social media or internet access. Furthermore, using social media as a recruitment method for an anonymous survey led to the

authors having limited control over verifying that participants met the inclusion criteria. Lastly, our sample was asymmetrical and consisted of mainly of people assigned female at birth and did not meet the sample size set out to be representative of the Canadian gender diverse population.

CONCLUSIONS

Previously, transitioning was synonymous with a loss of fertility; however, trans health care and the impact of gender-affirming care on fertility options has evolved. Our study highlights that trans folks are interested in reproductive options. Furthermore, it demonstrates that many trans folks experience significant barriers to meeting their fertility goals, including the cost of reproductive care and trans-specific barriers, such as accessing trans sensitive care and wait times. These barriers significantly impact trans folks' quality of life. Our study points to the importance of discussing fertility goals with trans folks and intervening early to help address fertility and transition goals. Gaps within this area of research exist and further research should be conducted regarding how best to intervene and meet these goals.

ETHICS

This study was approved by Hamilton Integrated Research Ethics Board, under project #8109.

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