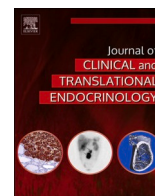


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Original research

Family planning preferences in transgender youth in an urban multi-disciplinary gender clinic

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ABSTRACT

Background: Known barriers to family planning in the transgender population include low utilization of cryopreservation and decisional regret. There is growing data on the risk of infertility with GAHT, and on to what degree transgender adolescents feel informed about fertility and family planning options.**Objective:** Assess preferences regarding options for family planning and fertility preservation in transgender adolescents treated with GAHT in a pediatric endocrinology gender clinic. The goal is to enhance patient education about potential effects of GAHT on fertility and options for family planning.**Methods:** Forty one adolescents aged 10 years and older treated with GAHT in an urban outpatient pediatric endocrinology clinic were surveyed over a 6-month period from January to June 2022. Survey questions were multiple choice, Likert scale, and open-ended. Participants were at least 10 years of age, actively followed in the clinic, and receiving GAHT at time of enrollment.**Results:** Forty one participants completed the survey. Four (10 %) expressed interest in discussing family planning with their provider. Eighteen (45 %) were open to discussion in the future; 16 (39 %) were not interested at all. 12 (30 %) participants were planning for future parenthood, and 16 (40 %) participants were undecided. Of those interested in parenthood 7 (53.8 %) planned to adopt or foster. Barriers to family planning expressed included financial concerns, potential need to pause GAHT, and social stigma of transgender parenthood. Twenty (50 %) participants recalled prior family planning discussion with their endocrinologist.**Conclusion:** Family planning discussions may not be optimally impactful given that 50 % of participants did not recall the conversations. Family planning is a lower priority in this population as most desired to postpone discussion with their provider despite choosing treatment that could influence fertility. It is essential to identify methods to engage transgender youth in discussions related to family planning during GAHT.

Introduction

Gender diversity occurs when an individual identifies with a gender identity different from the sex assigned at birth. Gender diverse, gender incongruent, gender expansive, and transgender are examples of terminology included under this umbrella. Many individuals who identify as transgender seek care in the form of gender affirming hormone therapy (GAHT) to ameliorate gender dysphoria by developing secondary sexual characteristics more in line with their gender identity. GAHT refers to the use of gonadotropin releasing hormone analogs

(GnRHa), testosterone, and estrogen. These treatments have been shown to support both the mental and physical well-being of gender diverse individuals, including decreasing the incidence of suicidal ideation and completed suicide, a significant cause of mortality in gender diverse individuals [1]. The World Professional Association for Transgender Health (WPATH) and the Endocrine Society recommend that healthcare providers discuss with patients and families the risk for decreased fertility and infertility both prior to and during medical and surgical therapies pursued for transition [2,3]. In the 2017 Clinical Practice Guidelines for the Treatment of Gender-Dysphoric/Gender-Incongruent

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Persons the Endocrine Society noted the dearth of validated decision aids to assist providers in this discussion, and in the decision-making process regarding the future fertility of individuals considering gender-affirming treatment [3]. This remains true today.

The long-term effects of GAHT on fertility are still sub-optimally understood, as research in this area is still growing. There have been multiple studies assessing the safety profile of GnRHa therapy in children with central precocious puberty (CPP). A consensus statement based on review of the current literature found no evidence of significant impairment in future gonadal function related to the use of GnRHa in females with CPP [4]. Studies in males with CPP do not suggest significant negative impact on future gonadal function, however paternity data has not been published [4]. The suppressive effect of long term clinical use of GnRHa on gonads of gender diverse individuals is reversible once treatment is discontinued; this has been demonstrated in both individuals with ovaries and those with testes, with more robust data in the former [3].

There is a growing body of evidence regarding fertility of transmasculine individuals undergoing treatment with testosterone therapy. A small prospective study found that testosterone use in transmasculine individuals led to anovulation [5]. A retrospective cohort study by Ghofranian demonstrated that transmasculine individuals with history of testosterone use discontinued prior to fertility treatment were able to successfully undergo oocyte procurement and cryopreservation. These individuals were subsequently able to become pregnant with resulting live births [6]. There are also several case reports demonstrating effective oocyte retrieval in individuals with ovaries treated with GnRHa therapy and long term testosterone [7,8] including a transgender individual assigned female at birth who was able to achieve pregnancy after a two month period of testosterone cessation [9].

It has been shown that treatment with both GnRHa and estrogen affects the morphology and quantity of sperm [10–13]. In a study published by Barnard, transgender individuals assigned male at birth underwent semen analysis. One participant who had discontinued GnRHa therapy demonstrated azoospermia for five months after treatment cessation. Another participant treated with spironolactone and estradiol demonstrated azoospermia four months after discontinuation of therapy, then subsequently elected to undergo orchiectomy [10]. In a study by Jiang histological evaluation was performed of post-orchiectomy gonads from 72 individuals assigned male at birth treated with estrogen for at least one year. One-hundred fourteen (81 %) of these were found to contain preserved germ cells, and 57 (40 %) demonstrated ongoing spermatogenesis, with no significant difference related to the duration of GAHT [11].

The most common method for individuals who opt to begin GAHT or undergo gonadectomy to safeguard the ability to have genetically related children is through gamete or embryo cryopreservation [2]. Existing research suggests that many transgender individuals either are unable or choose not to utilize this option. In a retrospective review of patients followed in a single-center pediatric endocrinology clinic only two of the 72 (3 %) patients who received counseling about family planning prior to GAHT chose to undergo cryopreservation [14]. Another retrospective chart review of 105 transgender adolescents found that of the 13 individuals (12 %) who had a formal consultation for fertility preservation prior to initiating GAHT, only five elected to pursue cryopreservation [15].

Fertility preservation in prepubertal children and those just beginning puberty is currently limited to the preservation of gonadal tissue [3]. At this time prospective data is limited regarding the use of this technique in this population for both ovarian and testicular tissues [3]. GnRHa therapy may limit successful procurement of viable gametes which may influence an early pubertal patient's choice on when to initiate GAHT.

Multiple studies have identified a variety of barriers that may preclude transgender and gender diverse individuals from choosing parenthood. Common themes include cost of treatment, hesitancy to

pause GAHT, social stigma related to being a transgender parent, general lack of knowledge, and gender dysphoria worsened by pregnancy in individuals assigned female at birth [16]. It is more common for adult transgender individuals to voice a desire to have genetically related children compared to adolescents [2].

Decisional regret related to lack of fertility preservation following GAHT or GAS is a worry for both providers and many parents of transgender individuals. A study utilizing the Decision Regret Scale to assess regret related to family planning found that transgender individuals who voiced indecision about family planning goals demonstrated moderate-to-severe regret. Additionally, 37 % of study participants reported inadequate counseling regarding family planning, a common theme across several studies [16].

The Pediatric and Adolescent Gender Education (PAGE) Program, a multi-disciplinary clinic in Louisville, Kentucky, was created to provide gender-affirming care for children and youth with gender diversity. Members of the team include board certified pediatric and adult endocrinologists, an adolescent medicine physician, endocrine registered nurses, behavioral and mental health specialists, and licensed clinical social workers. Services offered include both medical and mental healthcare.

Based on the current paucity of information regarding knowledge of options for fertility preservation and family planning in gender diverse adolescents, we sought to expand the existing literature in this area. The primary objective of this study was to determine knowledge of family planning options in the transgender adolescent population followed in the PAGE Program, with the goal of applying the results to provide more equitable and comprehensive care. Secondary objectives included identifying barriers that may limit gender diverse adolescents from achieving family planning goals and developing mechanisms to overcome these barriers.

Materials and methods

This cross-sectional pilot study assessed participants during their regularly scheduled appointments in the PAGE Program from January 2022 to June 2022. Surveys were completed on paper and lacked any identifiable patient information. Institutional Review Board approval was obtained prior to participant enrollment. The study goals and objectives were discussed with participants and guardians when applicable. Participant and/or guardian consent and participant assent as indicated was obtained prior to survey administration. Participants were offered the opportunity to withdraw or not participate during the process. Inclusion criteria included participant age of at least 10 years, an established patient in the PAGE Program, and on GAHT at time of enrollment. Exclusion criteria included non-English speaking participants and those with mental or physical limitations that would inhibit participation.

Surveys assessed demographic information including age, sex assigned at birth, gender identity, sexual attraction, and current level of satisfaction with their transition process. Question types varied and included multiple choice and open-ended. Multiple choice questions included an "other" option to be used when appropriate. Open-ended questions assessed participants' definitions of parenthood, reasons for or against desiring a future family, and whether and how their transgender identity affected their desire for parenthood. Surveys also assessed whether participants recalled discussing family planning with their providers, if so whether this was helpful, and in what ways providers could assist them with future family planning goals. The survey is available in Appendix A.

Standard descriptive statistics was used for data interpretation including the calculation of means where appropriate such as the age of the participants and Likert scale values. Descriptive phenomenology was used to extrapolate themes using an inductive analytic approach from the open answer responses of study participants utilizing key words or phrases. Representative quotes for the most common themes are

reported in the results. Power calculation was not performed due to the investigational and pilot nature of this initial study. Data regarding the total number of participants approached and the number who declined are not available.

Results

Forty-one participants completed the survey; one participant was later excluded from data analysis based on inclusion/exclusion criteria as this individual was not actively taking GAHT at the time of survey completion. Data related to specific pubertal timing of GAHT initiation was not available. The average age of participants was 17.8 years with a standard deviation of 1.8 years. The participant age ranged from 14 to 22 years. Twenty-one (52.5 %) participants identified as male and nine (22.5 %) identified as female. The remainder (25 %) self-identified as non-binary. Only 3 (7.5 %) participants reported treatment with a combination of testosterone and GnRH_a. Most masculine-identifying participants (60 %) reported treatment with testosterone alone. In contrast, nine of the twelve (75 %) transfeminine participants reported treatment with a combination of estrogen and GnRH_a. Only 3 (7.5 %) of participants reported treatment with estrogen alone. A single participant, a self-identified transmasculine individual, reported treatment with GnRH_a alone.

Regarding sexual attraction, 22 (55 %) participants reported attraction to both male and female genders or identified as pansexual. Our study population reported overall satisfaction with the transition process ranging from “very unsatisfied” (1) to “very satisfied” (5), with an average satisfaction rating of 3.8 and a standard deviation of 1. See Table 1 for demographic information.

Twelve (30 %) participants reported interest in creating a family. Of these, seven (58.3 %) mentioned the possibility of fostering or adopting. Only one participant reported a desire for biologically related children.

Twelve (30 %) participants did not desire future children, and 16 (40 %) were undecided.

Many distinct themes were identified regarding reasons for or against desire for parenthood. Several participants stated that regardless of their gender identity, they had already decided whether they desired a future family. See Table 2 for identified parenthood themes.

“I’ve never been particularly keen on having children, so being transgender has not affected me very much.”

“It [being a transgender person] hasn’t affected my parenthood goals as I have always wanted to foster/adopt.”

Another theme related to the lack of desire to have children. Responses varied from personal distaste for children, a desire for independence, disinterest in childcare responsibilities, and prioritization of professional goals. Some participants voiced a lack of emotional capacity to care for and raise a child effectively. This is demonstrated by a selected quote below:

“I’m not sure if I am emotionally mature enough for children.”

Three participants articulated concern for worsening dysphoria during pausing of GAHT as a factor in family planning goals. Themes related to finances were more related to the cost of childcare, rather than cryopreservation, implantation, or surrogacy. One participant raised the concern of social stigma related to being a transgender parent:

“I am somewhat afraid that if at some point trans people were targeted/persecuted that any child I have wouldn’t be safe.”

Reasons given for desiring parenthood involved providing an inclusive home, forming a family unit, and wishing to instill their values in children. Some participants reported that GAHT made them feel more inclined to form a family and voiced a desire to give back to children in the foster care system. Examples include:

“Increase in self-confidence and positive mood has me thinking about possibly adopting in my future.”

Table 1
Participant demographics (N = 41)*.

Factor	Avg (SD)
Participant Age	17.8 (1.8)
Range	14–22
Sex Assigned at Birth	N (%)
AMAB	12 (30)
AFAB	28 (70)
Self-Identified Gender	
Male	21 (52.5)
Female	9 (22.5)
Non-Binary	10 (25)
Sexual Attraction	
Male	5 (12.5)
Female	9 (22.5)
Both	16 (40)
Pansexual	6 (15)
Asexual	1 (2.5)
Unsure	3 (7.5)
GAHT Use	
Testosterone Only	24 (60)
Testosterone and GnRH _a	3 (7.5)
Estrogen Only	3 (7.5)
Estrogen and GnRH _a	9 (22.5)
GnRH _a alone	1 (2.5)

*1 participant was excluded for analysis as they were not on GAHT at time of survey.

AMAB (Assigned Male at Birth).

AFAB (Assigned Female at Birth).

GAHT (Gender Affirming Hormone Therapy).

GnRH_a (Gonadotropin Releasing Hormone Agonist).

Table 2
Parenthood Planning (N = 41)*.

Factor	N (%)
Yes	12 (30)
Biological	1 (8.3)
Adopt/Foster	7 (58.3)
Undecided how	4 (10)
No	12 (30)
Undecided	16 (40)
Reasons for Parenthood	
Creating a family unit	3 (7.5)
Partners’ desire for a family	1 (2.5)
Providing and inclusive home	3 (7.5)
Instilling their values	2 (5)
Reasons against Parenthood	
Financial	3 (7.5)
Worsening dysphoria	3 (7.5)
Concern about GAHT effects on a fetus	1 (2.5)
Concern for emotional stability as a parent	5 (12.5)
Social stigma	1 (2.5)
Other**	11 (27.5)
Transgender identity has not affected family planning goals	15 (37.5)
Underwent Cryopreservation***	1 (2.5)

*1 participant was excluded for analysis as they were not on GAHT at time of survey.

**Disinterest in children/Need for independence/Excessive responsibility.

***A single AMAB individual underwent sperm cryopreservation

AMAB (Assigned Male at Birth).

GAHT (Gender Affirming Hormone Therapy).

“I want to be a parent because I want to be able to carry my family forward another generation and to be a parent that my father never could be.”

“I want to have a family and raise children to be good people.”

“... I would like to foster LGBT + children in need.”

Half of participants recalled discussion related to family planning with their provider. Discussions when recalled were rated from “not helpful” (1) to “very helpful” (5). Scoring ranged from 2 to 5 with only one participant rating the discussion as “unhelpful” (2). The mean response was 3.96 with a standard deviation of 0.9. Four participants (10 %) reported interest in further discussion and 18 (45 %) stated they would be interested in the future. Sixteen participants (40 %) reported no interest at all. The most common feedback was that providers simply introduce the subject. Other themes included desire for general education and local resources:

“Just talk to me about it.”

“Guide me to the proper family counselors and/or adoption agencies.”

“Maybe offer a way to take parenting classes and learn how being a parent would affect me.”

Table 3 demonstrates perceived participant-physician family planning discussions.

Discussion

Our results reveal that many study participants were undecided about their plans for children in the future. This is concerning, as current evidence suggests that the individuals most at risk for decisional regret are those who were undecided prior to beginning GAHT [16]. This same study also found that participants who knew they either did or did not desire future children tended to be resolute, experiencing less regret than their undecided counterparts [16].

Our study demonstrates that many participants prioritize adoption and fostering over having a biological child. Only one of the 12 participants (8.3 %) who endorsed a desire to have a family wished to have a genetically related child. Only one participant who was assigned male at birth chose to undergo fertility preservation prior to beginning GAHT with sperm cryopreservation. Existing data shows overall low rates of cryopreservation in this population. A systematic review of 10 studies by Baram found the preservation uptake rates of transgender youth were quite variable, ranging from 9.6 to 81.8 % in individuals with testes and

0–16.7 % in those with ovaries [17]. It should be noted that the higher reported rates of preservation appear to be outliers given low study power. This review also observed low uptake rates in transgender adults, similar to those seen in transgender youth [17]. As the process of oocyte procurement, preservation, fertilization, and implantation is more involved and more financially prohibitive than sperm cryopreservation, this can be a significant barrier for fertility preservation for individuals with ovaries.

Interestingly, most of our participants did not report gender dysphoria or social stigma as major contributors to their family planning goals. Some participants with ovaries did voice hesitation over halting therapy to become pregnant, citing their concerns for worsening dysphoria and potential side effects of testosterone on a fetus. One articulated preference for their cis-female partner to carry the pregnancy. Both a participant with ovaries and one with testes reported fearing for the safety of both themselves and their future children due to being a transgender parent. Additional reasons given for a lack of desire for parenthood included disinterest in children, desire for independence, and weight of the responsibility of having a child.

Reasons for desiring a future family included a desire to instill their own personal values and create a core family unit. Six participants (15 %) emphasized the importance of establishing an inclusive and accepting home. Many of those who voiced a desire to foster or adopt other LGBTQ + children mentioned their own personal experience as a reason, wishing to give their own children a better childhood than they themselves had experienced.

While data are sparse there is some evidence that transgender individuals are less likely to have children than their cisgender counterparts [18]. Transgender individuals choose to have children in a variety of ways including adoption and fostering. A literature review performed in 2014 by Stotzer investigating the prevalence and characteristics of transgender parenting found that 64 % of cisgender individuals reported parenthood compared to 38 % of transgender respondents [19]. This review also found that transfeminine individuals were less likely to have children compared to those identifying as transmasculine (34 % and 50 % respectively) [19]. Higher parenting rates correlated with older age at time of transition; this was partially due to prior heterosexual relationships which resulted in biological children prior to transition [19]. There is little data on the relative breakdown of rates for adoption, fostering, and having biological children [19].

Adoption was the most common method in our study participants who voiced interest in parenthood, with seven participants (58.3 %) preferring this option. Legal protection against discrimination because of sexual orientation/gender identity minorities regarding adoption and fostering varies state-by-state, both in degree and scope. Legislation has been introduced on a national level with the potential to reduce or restrict the ability of transgender individuals to adopt or foster [20]. These legal implications highlight the importance of advocacy, both locally and nationally to support the right of transgender individuals to become parents.

Of note, fifteen (37.5 %) of our study participants reported that their gender identity did not affect their family planning goals. This is contrary to several previous studies that found gender dysphoria, financial barriers, and social stigma were obstacles to parenthood. One common reason given was personal disinterest in forming a family. The destigmatization of transgender individuals and the increase in medical treatment availability and acceptance may be changing how this population views parenthood.

Surprisingly only 50 % of our study population recalled having had a family planning discussion with their healthcare provider. In the era of electronic medical records (EMR), our clinic templates include documentation of family planning discussion as a data point. Despite documented discussions about the potential effects of GAHT on future fertility, many study participants did not recall these conversations. It is known that medical information recall is widely variable. Research on this topic shows that patients recall 20–40 % of information provided

Table 3

Family planning discussions (N = 41*).

Recalled Family Planning Discussions	N (%)
Yes	20
No	20
Helpfulness of discussion**	3.96 (0.8)
Desire to discuss Family Planning	
Interested in discussion	4 (10)
Not interested in discussion	16 (40)
Will be interested in the future	18 (45)
Undecided	2 (5)
How a provider can be more helpful	
Provider to mention family planning	10 (40)
Education about GAHT effects on fertility	2 (5)
Education on available options	4 (10)
Local resources***	5 (12.5)

*1 participant was excluded for analysis as they were not on GAHT at time of survey.

**Mean based on Likert Scale from 1 to 5 with 1 being “Not Helpful and 5 being “Very Helpful”.

***Adoption agencies, support groups, parenting classes. GAHT (Gender Affirming Hormone Therapy).

during a medical encounter [21,22]. This raises the questions of whether current methods of discussion are unmemorable, or whether patients lack recall because they do not value the information discussed at the time of presentation. Regardless of whether they recalled the discussions many participants (45 %) stated a desire to postpone discussion of family planning until a later time, with a similar number preferring to forgo discussion entirely (40 %).

Fertility preservation is also an area of research interest for pediatric oncologists and reproductive endocrinologists. There has been significant advancement in the study of fertility preservation in children undergoing treatment for cancer. It is well known that both chemotherapy and radiation, particularly when targeted to the pelvic area and gonads, can result in impaired fertility [23]. At this time pre-pubertal gonadal preservation is experimental. Many interventions are based around gonadal shielding during radiation therapy. Most fertility preservation is performed after puberty onset using similar methods to those described above [23]. The American Society of Clinical Oncology has published guidelines recommending that all providers discuss treatment risks of infertility, options for fertility preservation, and referral to fertility experts as soon as possible [24].

Similar to providers caring for the transgender population, oncologists are not always able to refer patients to fertility specialists. Barriers to care include but are not limited to lack of knowledge of fertility preservation options, personal discomfort discussing fertility, and assuming families cannot afford preservation techniques [23]. This population also falls victim to inadequate or complete lack of insurance coverage for fertility preservation [23]. Interestingly, current data suggests that only about 50 % of parents recalled fertility discussions with their child's oncologist, and when they did approximately a third of them expected normal fertility [25]. Efforts are underway to improve the efficacy of fertility conversations and overcome barriers in this population. Suggested methods include delaying initiation of therapy when appropriate and facilitating andrology laboratory visits for patients with sperm [23]. The formation of multi-disciplinary cancer survivorship clinics in pediatric tertiary care centers is another way in which providers are combatting the barriers faced by these patients [26,27]. This technique could be adapted for multi-disciplinary gender clinics.

We did not include parental perception in this study; this would be a beneficial area of interest for future research. Existing research suggests that parents may have more concerns related to the ramifications of GAHT on fertility and parenthood priority compared to adolescents [28,29]. Strang developed the Transgender Youth Fertility Attitudes Questionnaire (TYFAQ) which surveys parents as well as patients [28]. Similarly to our study population, very few participants voiced interest in having genetically related children. Future investigation could include evaluation of the patient-parent relationship and may potentially yield additional information on how to best meet the needs of transgender youth.

There are some limitations to our study. Our survey was not designed to differentiate between desire for biological or non-biological children; the responses from the open-ended questions provided additional information about this difference. Our study was designed to assess patient preferences related to family planning, rather than document discussions from the medical record. As such we did not include data from EMR chart review to verify documented family planning discussions. Future studies could include comparison of patient recall of fertility discussions with medical record documentation. If a discrepancy is found, subsequent research could include development of novel methods to emphasize the importance of family planning discussions.

Our study did not collect data on the timing of GAHT related to pubertal or Tanner stage. This limits our study's ability to assess a difference in family planning preferences of our population related to GAHT initiation and pubertal timing. Family planning options related to gamete viability vary based on timing of GAHT initiation [3]. There are also surgical considerations for the timing of GnRHa therapy that may

also play a role in fertility planning preferences. For example, GnRHa therapy in individuals with testes early in puberty can impact the phallic length, which may pose potential surgical challenges if vaginoplasty is desired in the future [30].

Another potential limitation is lack of data about anti-androgen use in our population. This could potentially be related to self-reported responses to the question assessing the type of hormone therapies prescribed. Study participants may have considered only estradiol, testosterone, and GnRHa therapy, rather than spironolactone in their responses. Currently there is insufficient data regarding whether or how anti-androgen treatment plays a role in family planning discussions.

Our study has several strengths. The use of multiple choice, Likert scale, and open-ended questions allowed space for our participants to explain their answers and extrapolate their thoughts. Similarly, allowing for open-ended responses and feedback on specific ways to better conduct family planning discussions provides pragmatic guidance for quality improvement. Assessing the resources our participants believed would be helpful provides future direction for improving the effectiveness of fertility discussions.

One novel feature of our questionnaire was the inclusion of several qualitative inquiries about what respondents felt parenthood meant to them. Assessing reasons for choosing parenthood may inform future research and ongoing discussions between patients and providers. Documentation of demographic information, transition satisfaction, and percentage of recalled family planning conversations may allow our center to track and monitor success of future interventions.

Our findings emphasize the importance of prioritizing conversations about future fertility with patients who begin their GAHT journey undecided about parenthood goals. We recognize this may be a burden for transgender individuals, particularly adolescents who must consider these decisions at such an early stage of life. These conversations carry more weight in the transgender community, as cisgender adolescents are overall less likely to receive medical treatments with potential to affect fertility. Partnership between providers, patients, and their families is of utmost importance when discussing how treatments may affect their human experience.

Conclusion

Transgender and gender diverse youth require a multi-disciplinary approach to family planning that is not yet routinely available in the United States. Novel techniques to address inequality in this population are needed, as this population faces unique barriers not experienced by their cisgender peers. Only 50 % of our participants recalled having had family planning discussions with their providers prior to initiating GAHT. Our study highlights the necessity of focused provider attention to patient education regarding family planning options, as often family planning is not a priority for this population.

As many transgender individuals who do desire children voice a preference for adoption and fostering, providers can assist patients with parenthood planning by providing local resources, including information about adoption and foster agencies. Advocacy for safe and cost-effective fertility preservation options is necessary to level the playing field, providing truly equitable opportunities for this population to create biological families when desired. Advocacy to protect the rights of transgender individuals seeking parenthood, both locally and on a national level, should be a priority for all those who care for this population.

CRediT authorship contribution statement

Ryan Conard: Writing – review & editing, Writing – original draft, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Lisal Folsom:** Writing – review & editing, Writing – original draft, Supervision, Data curation, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A

PAGE Family Planning Questionnaire.

1. **How old are you?**
2. **What sex were you assigned at birth?**
A. Male B. Female
3. **What is your gender identity? (Circle your answer. Please feel free to elaborate)**
A. Male B. Female C. Unsure C. Other: _____
4. **Multiple Choice: I am attracted to... (Circle your answer. Please feel free to elaborate)**
A. Males B Females C. Both D. Neither E. Unsure F. Other: _____
5. **Do your plans for your transition include any type of hormone therapy? If so, which hormone(s)?**
A. Testosterone B. Estrogen C. Puberty Blockers D. None E. Undecided
6. **Do you plan to have gender affirming surgery? (Circle your answer)**
A. Yes B. No C. Undecided
7. **As of today how satisfied are you with your transition progress?**
1 (*Very Unsatisfied*) 2 3 4 5 (*Very satisfied*)
8. **Do your plans for your future family include having children in any way?**
A. Yes B. No C. Undecided
9. **Explain what it means to you to be a parent.**
10. **What are some reasons your future does or does not include parenthood?**
11. **Describe how being transgender has affected your parenthood goals.**
12. **Have any medical providers ever discussed family planning with you?**
A. Yes B. No
13. **If so, was this helpful?**
1 (*Very Helpful*) 2 3 4 5 (*Very Helpful*)
14. **What can your medical providers do to help you make decisions about family planning?**
15. **Are you interested in learning more about ways in which you can start a family?**
A. Yes B. Yes, but I am not ready for that at this time C. No D. Unsure

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