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The contraceptive and reproductive history and planning goals of trans-masculine adults: a mixed-methods study ☆,☆☆,☆☆☆

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ABSTRACT

Objectives: This study aims to identify factors associated with the reproductive planning of trans-masculine adults.
Study design: Between 2015 and 2016, providers enrolled 150 trans-masculine adults in a sexual health study assessing sociodemographics, social support, gender affirmation, sexual partnering, and reproductive history and planning. A brief clinical interview assessed contraceptive use and concerns. Bivariate and multivariable logistic regression analyses examined associations between participant characteristics and three outcomes: current contraceptive use, lifetime pregnancy history and reproductive planning.
Results: Overall, 37.3% are currently using contraceptives; 5.3% have been pregnant; and 20.0% plan to have biological children (9.3% plan to become pregnant; 12.0% plan to use their oocytes with a surrogate). Participants are less likely to use contraceptives if they are students vs. not, have socially affirmed their gender vs. not and have a partner vs. are single. Greater number of sexual partners is associated with the increased odds of contraceptive use. Further, as social support increases, the odds of having been pregnant decreases. Participants with a nonbinary gender identity are more likely to want to become pregnant than those with a binary gender identity, whereas those who have socially affirmed their gender are less likely to want to become pregnant than those who had not. Finally, participants of color more commonly planned to use their oocytes with a surrogate than white participants.
Conclusion: Sociodemographic, gender affirmation, social support and sexual partner factors are associated with contraceptive use and reproductive history among trans-masculine patients.

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Implications: Healthcare providers must be aware of the diverse reproductive histories and pregnancy goals of trans-masculine individuals in order to provide comprehensive reproductive healthcare counseling and provision. More research is needed to better understand contraception and reproduction desires in trans-masculine individuals.

1. Introduction

"Trans-masculine" is a term used to describe an array of individuals who were assigned a female sex at birth and currently identify along the masculine gender spectrum. Trans-masculine individuals may choose to medically affirm their gender with testosterone or surgically affirm their gender through procedures such as chest reconstruction [1]. Many trans-masculine individuals retain their neonatal reproductive organs, and current research demonstrates that trans-masculine individuals who have not received a hysterectomy are able to conceive regardless of testosterone utilization [2,3]. However, little is known about the reproductive and contraception history and reproductive planning of trans-masculine individuals [1].

Growing research explores the contraceptive needs of trans-masculine individuals [4,5]. Most existing studies, however, do not investigate potential sociodemographic and behavioral factors associated with contraceptive use among trans-masculine adults. The present study aims to conduct mixed-methods research with a sample of sexually active trans-masculine adults to characterize their sexual and reproductive history and reproductive planning goals; examine whether sociodemographic, sexual health and reproductive history factors are associated with current use of contraceptives, lifetime pregnancy, plans to become pregnant and plans to use a surrogate; and explore trans-masculine adults' rationale for contraceptive use/nonuse and contraceptive-related concerns as discussed in clinical interviews with a healthcare provider.

2. Materials and methods

2.1. Recruitment

The Fenway Health data informatics team recruited participants by working with healthcare providers to identify patients coming in for routine care who were eligible for the study through the electronic medical record. Staff asked providers to share information about the study with patients identified as potential participants and to distribute cards containing contact information for the study. We used purposive sampling techniques to ensure a diverse study sample with regards to age, race and ethnicity.

Participants were eligible if they: were ages 21 to 64 years; were assigned a female sex at birth and currently identified on the masculine gender spectrum; had a cervix; were sexually active within the past 3 years [sexual partner(s)of any gender]; were able to speak and understand English; and were willing and able to provide informed consent. Participants received a $100 incentive upon study completion.

2.2. Procedures

Participants completed a self-administered survey via an electronic tablet, which included sociodemographics, history of gender affirmation, sexual partnering, and reproductive history and planning. Providers then conducted a brief clinical assessment and medical history related to contraception based on questions adapted from the Center for Disease Control and Prevention's A Guide to Taking a Sexual Health History [6] to be more specific to trans-masculine individuals. Providers transcribed participant responses in real time via an electronic tablet. Two clinicians that were experts in clinical assessments with trans-masculine patients trained all providers. The Institutional Review Board at Fenway Health approved all study activities. More information is available regarding study procedures in previously published literature [7].

2.3. Data analysis

2.3.1. Quantitative analyses

We conducted statistical analyses of quantitative survey data in SAS 9.4. We calculated means and frequencies to describe participant characteristics. We fit bivariate and multivariable logistic regression models to examine the association between participant characteristics and four outcomes: current contraceptive use, lifetime pregnancy, plans to become pregnant and plans to use oocytes with surrogate. We estimated odds ratios (ORs) and corresponding 95% confidence intervals (95% CIs). We treated participants reporting "don't know" or "prefer not to answer" for the independent variables as missing and excluded them from the logistic regression analyses. There were less than 3% missing data for each of the final models with the analytical sample sizes ranging from n=146 for the lifetime pregnancy outcome to n=149 for the plans to use own oocytes with surrogate outcome. We included independent variables significant at p<.10 in bivariate analyses in the multivariable models. For the contraceptive outcome, the low prevalence (n=6) of participants who were currently using contraceptives and did not have a partner who was assigned a male sex at birth (MAB) in the past 12 months led to wide CIs in the bivariate analysis; thus, we excluded MAB partner as a variable from the multivariable model. Similarly, there were zero participants who had been pregnant and also had plans to use their oocytes; thus, we could not calculate for this bivariate comparison. We used backward selection for the multivariable models with significance determined at the p<.05 level.

2.3.2. Qualitative analyses

A mixed-methods data expert analyzed the open-ended provider clinical interview questions using a directed content analysis methodology [8]. We categorized participant responses according to three categories based on the clinical interview questions: current contraceptive use, rationale for contraceptive use and contraceptive-related questions or concerns. The analyst then open-coded participant responses to determine subcategories or codes within each domain (i.e., type of contraception; use of contraception for pregnancy prevention, STI prevention or other reason), and subsequently categorized each participant response according to these codes. The first author reviewed coded participant responses and subsequently resolved any coding inconsistencies with the analyst. The analyst and coauthors collaborated frequently to permit further revision of the coding schema and interpretation of data.

3. Results

3.1. Quantitative survey findings

In 2016, Fenway Health had approximately 950 known trans-masculine patients actively engaging in medical care. Between March 2015 and September 2016, providers recruited 150 (16%) of Fenway Health patients. The mean age of participants is 27.5 (SD=5.7). The majority have socially (87.3%) and medically (80.7%) affirmed their gender through the use of hormones, and more than half (55.4%) report that they were on hormones consistently for 12 months or longer. Of the 121 who report using hormones in their lifetime, 93.4% are currently on hormones. Additionally, 40.0% of the sample report having had some form of gender affirmation surgery. Participants also report moderate levels of social support with a mean of 73.9 (SD=19.5) on the abbreviated 100-point Medical Outcomes Study Social Support Survey. Table 1 describes further demographic information.

The majority of participants identify their sexual orientation identity as Queer (88.0%), and 63.3% are currently in a relationship/partnered. Nearly half the sample (47.3%) report they had a partner in the past 12 months who was assigned a male sex at birth (MAB; i.e.,cisgender man, transgender woman, MAB gender nonconforming partner). The majority of the sample have used contraceptives in their lifetime (85.3%), and more than a third (37.3%) are currently using some form of contraceptive. A total of 5.3% of participants have been pregnant in their lifetime and 3.3% have given birth. Table 2 details additional information regarding the sexual partnering and reproductive history.

Table 3 presents bivariate associations between participant sociodemographics, gender affirmation, social support, sexual partnering, and reproductive history and planning. In multivariable analysis, being a student (ref: not a student; OR=0.34; 95% CI=0.13–0.91; p=.03), having socially affirmed one's gender (ref: no social affirmation; OR=0.12; 95% CI=0.03–0.45; p=.002) and having a partner (ref: no partner OR=0.34; 95% CI=0.15–0.76; p=.01) are associated with the reduced odds of current contraceptive use. Greater number of sex partners in the past 12 months (continuous; OR=1.16; 95% CI=1.01–1.32; p=.002) is associated with the increased odds of current contraceptive use. Social support is associated with the decreased odds of lifetime pregnancy (continuous; OR=0.82; 95% CI=0.68–0.99; p=.048). Having socially affirmed one's gender is associated with the decreased odds of having plans to become pregnant (ref: did not socially affirm one's gender: OR=0.17; 95% CI=0.04–0.73; p=.02). Having a nonbinary gender is associated with the increased odds of having plans to become pregnant (ref: binary gender; OR=4.08; 95% CI=1.10–15.12; p=.04). Finally, being a person of color (ref: white; OR=2.81; 95% CI=1.02–7.78; p=.046) is associated with the increased odds of having plans to use their oocytes with a surrogate.

Table 1
Demographic characteristics of 150 trans-masculine individuals participating in a study assessing contraception use and reproductive history.

	n	%
Age, continuous		
Range: 21–50 years (mean, SD)	27.5	±5.7
Race/ethnicity		
White	112	74.7
Person of color	38	25.3
American Indian or Alaska Native	0	0.0
Asian	9	6.0
Native Hawaiian or Pacific Islander	1	0.7
Black or African American	4	2.7
More than one race	24	16.0
Hispanic/Latino		
Hispanic or Latino	14	9.3
Not Hispanic or Latino	133	88.7
Not reported	3	2.0
Gender identity		
Binary	115	76.7
Nonbinary	35	23.3
Education: highest level		
High school or equivalent	14	9.3
Some college or more	136	90.7
Student: current		
Yes	52	34.7
No	97	64.7
Prefer not to answer	1	0.7
Employment: current		
Unemployed	34	22.7
Employed full-time	44	29.3
Employed part-time	68	45.3
Prefer not to answer	4	2.7
Low income (annual household)		
$32,000 or less	74	49.3
>$32,000	60	40.0
Don't know	13	8.7
Prefer not to answer	3	2.0
Insurance		
No health insurance	4	2.7
Public insurance (Mass Health, Medicaid, Medicare)	45	30.0
Private, school or work insurance	68	45.3
Parent's insurance	31	20.7
Prefer not to answer	2	1.3
Social gender affirmation *		
No	16	10.7
Yes	131	87.3
Prefer not to answer	3	2.0
Cross-sex hormone use: lifetime †		
No	29	19.3
Yes	121	80.7
Cross-sex hormone use: current (*n*=121) †		
No	8	6.6
Yes	113	93.4
Time consistently on cross-sex hormones: lifetime †		
Never	29	19.3
Less than 12 months	38	25.3
12 months to less than 3 years	37	24.7
3 years to less than 5 years	46	30.7
Gender confirmation surgeries		
No	90	60.0
Yes	60	40.0
Social support score (*n*=149) ‡	Mean SD	
Range: 25–100	73.9	19.5

3.2. Qualitative findings from clinical interviews

Most of the participants use contraceptives for STI and/or pregnancy prevention. Some participants explicitly state that they use condoms for birth control, while others indicate that they primarily use condoms for STI prevention. For example, one participant states, "I use condoms. I was only recently experimenting with males for fun, and I don't know if it will be ongoing, so I don't think I need anything else for birth control," whereas another participant states that they use "condoms with cis male partners but mostly for STI protection." In nearly all cases, the use of condoms is explicitly tied to the perceived pregnancy risk of having sex with a "cis man," "trans female partner" or "someone with a penis." Those who report only using contraceptives for STI prevention also report that they are not at risk for pregnancy.

Most participants report taking hormonal birth control [i.e.,pill or intrauterine device (IUD)] for pregnancy prevention, although some participants report taking the birth control pill for other reasons. For example, one participant notes, "Yes, [I am taking the] pill, but not for pregnancy prevention, but for menstrual management." Some participants indicate that they use testosterone to prevent pregnancy. For example, one participant notes, "[I'm] just

Table 2
Sexual orientation, sexual partnering and contraception use of 150 trans-masculine individuals participating in a study assessing contraception and reproductive history.

	n	%
Sexual orientation identity		
Straight/heterosexual	18	12.0
Queer	132	88.0
Partnered		
No	55	36.7
Yes	95	63.3
Number of partners: past 12 months		
Range: 0–40 (mean, SD)	3.2	±4.2
Gender of sexual partners: past 12 months[*]		
Cisgender woman	91	60.7
Female assigned sex at birth: gender nonconforming	30	20.0
Transgender man	23	15.3
Cisgender man	61	40.7
Male assigned sex at birth: gender nonconforming	8	5.3
Transgender woman	18	12.0
MAB partner: past 12 months[†]		
No	79	52.7
Yes	71	47.3
Contraceptive use: lifetime		
No	22	14.7
Yes	128	85.3
Condom[‡]	117	78.0
Oral contraceptives	75	50.0
IUD	15	10.0
Other[§]	109	72.7
Contraceptive use: current		
No	94	62.7
Yes	56	37.3
Condoms	36	24.0
IUD	12	8.0
Birth control pill	4	2.7
Other[‖]	6	4.0
Used emergency contraceptive: lifetime		
No	125	83.3
Yes	25	16.7
Pregnant: lifetime		
No	142	94.7
Yes	8	5.3
Number of times pregnant (*n*=8)		
1	5	3.3
2	1	0.7
3	2	1.3
Number of times given birth (*n*=8)		
0	3	2.0
1	4	2.7
2	1	0.7
Type of delivery (*n*=5)		
Frontal	4	2.7
Cesarean	1	0.7
Biological children		
No	145	96.7
Yes	5	3.3
Foster or step children		
No	147	98.0
Yes	3	2.0
Plans to become pregnant in future		
Don't know	29	19.3
No	107	71.3
Yes	14	9.3
Plans to use own oocytes with surrogate		
Don't know	48	32.0
No	84	56.0
Yes	18	12.0

Note. Data in far right columns are n and % unless otherwise specified. SD = standard deviation.

[*] When reporting gender identity of partners, participants could check all responses that applied; thus response options are not mutually exclusive

[†] MAB Partner = Partner who was assigned a male sex at birth including a cisgender man, transgender woman, or gender non-conforming individual assigned a male sex at birth.

[‡] Condoms = external or "male" condoms

[§] Other" forms of lifetime contraception included: internal condom, hormonal implant, injectable/shot, contraceptive ring, diaphragm, rhythm method, and withdrawal method.

[‖] "Other" forms of current contraception included: hormonal implant, withdrawal method, and use of testosterone (participant wrote in).

using testosterone. But [I] understand that testosterone is not reliable contraception."

Those who are not using contraceptives report that they are not at risk for pregnancy because they are "abstinent" or "avoiding penetrative sex" or because they are "not having sex with cismen" or "someone with a penis."

When given the opportunity to ask questions, the two most common concerns that emerge are questions about whether or not hormonal "birth control would interact with testosterone therapy" and "the risk of getting pregnant" for trans-masculine individuals who are not on birth control and who have sex with "cisgender men" and/or "someone with a penis."

4. Discussion

Consistent with prior quantitative research conducted with trans-masculine people, this study finds a heavy reliance on current condom use for the purpose of pregnancy and STI prevention [2,4,5]. Additionally, the prevalence of IUD use among the sample is similar to that of trans-masculine populations in other studies [5], which is close to the approximately 12% prevalence of IUD use reported among U.S. cisgender women [9]. Further, in multivariable models, number of sexual partners is positively associated with the increased odds of current use of contraceptives, suggesting that some trans-masculine participants in this study may be aware of their risk for pregnancy and STIs and use contraceptives in accordance with that perceived risk. Clinical interview data from participants support these findings.

Trans-masculine participants in our sample have questions regarding the role of testosterone in pregnancy prevention, which has been similarly described in other studies [5]. For example, some participants wonder what their risk of pregnancy would be if they were to have condomless receptive vaginal sex while taking testosterone, while others worry that their testosterone might interact with hormonal birth control and make one or both drugs ineffective. While the rationale for testosterone use as a form of contraceptive over other methods is not assessed in clinical interviews, it is possible that trans-masculine adults on testosterone who no longer menstruate believe they cannot conceive. Findings highlight the necessity for providers to be aware of these questions and misconceptions related to contraceptives and hormone use so that proper contraception counseling can be provided to trans-masculine patients.

This study also explores the sociodemographic, gender affirmation, social support and sexual partner factors associated with contraceptive use among trans-masculine patients. This study finds that trans-masculine individuals with more social support have decreased odds of pregnancy. Similar findings have been shown in cisgender females with regard to unplanned pregnancy [10]. Additionally, findings suggest that a lower proportion of trans-masculine students use contraceptives relative to non-students. These differences may be due to students having less access to contraceptives, less perceived risk of pregnancy, as well as a lower self-efficacy to negotiate condoms or take contraceptive medications relative to nonstudents, [11] though qualitative research is needed to further explore this finding.

Additionally, trans-masculine individuals who have socially affirmed their gender may be more hesitant to access forms of contraceptives routinely prescribed to cisgender women relative to those who have not affirmed their gender as they may see this use of contraceptives as incongruent with their gender — a known barrier to preventative sexual healthcare in trans-masculine populations [12]. Further, partnered trans-masculine adults may feel that they are at decreased risk for STIs relative to single trans-masculine adults, leading to a decreased use of condoms or

Table 3
Factors associated with use of birth control, pregnancy and future reproductive plans in a sample of 150 trans-masculine individuals participating in a study assessing contraceptive use and reproductive history.

	Outcome 1: contraceptive use: current		Outcome 2: pregnant: lifetime		Outcome 3: plans to become pregnant		Outcome 4: plans to use own oocytes with surrogate	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Age								
Continuous	0.98	0.93–1.04	1.08	0.98–1.19	1.06	0.97–1.16	1.01	0.92–1.10
Race/ethnicity								
White (*n*=112)	Ref	-	Ref	-			Ref	-
Person of color (*n*=38)	0.87	0.40–1.89	1.21	0.23–6.53	1.24	0.36–4.21	2.81	1.02–7.78
Educational attainment								
High school or less (*n*=14)	1.04	0.53–2.06	5.14	1.00–26.38	0.89	0.28–2.79	1.69	0.63–4.56
Some college or more (*n*=136)	Ref	-	Ref	-			Ref	-
Low income (household)								
$32,000 or less (*n*=74)	1.70	0.83–3.45	3.33	0.62–17.84	0.25	0.05–1.20	1.69	0.59–4.84
>$32,000 (*n*=60)	Ref	-	Ref	-			Ref	-
Student								
No (*n*=97)	Ref	-	Ref	-	Ref	-	Ref	-
Yes (*n*=52)	0.48	0.23–1.00	1.13	0.26–4.91	0.48	0.13–1.80	0.54	0.17–1.74
Employment								
Unemployed (*n*=34)	Ref	-	Ref	-	Ref	-	Ref	-
Employed full-time (*n*=44)	0.90	0.36–2.24	0.17	0.02–1.64	2.05	0.37–11.29	0.96	0.24–3.89
Employed part-time (*n*=68)	0.78	0.34–1.81	0.23	0.04–1.31	1.84	0.36–9.36	1.14	0.33–4.02
Gender identity								
Binary (*n*=115)	Ref	–	Ref	–	Ref	–	Ref	–
Nonbinary (*n*=35)	1.58	0.73–3.40	0.47	0.06–3.94	3.82	1.24–11.80	0.63	0.17–2.30
Social gender affirmation								
No (*n*=16)	Ref	-	Ref	-			Ref	-
Yes (*n*=131)	0.17	0.05–0.55	0.73	0.08–6.45	0.16	0.05–0.57	0.56	0.14–2.20
Time consistently on cross-sex hormones: lifetime								
Never (*n*=29)	Ref	-	-	-			Ref	-
Less than 12 months (*n*=38)	0.29	0.10–0.81	-	-	0.21	0.04–1.15	0.45	0.11–1.78
12 months to less than 3 years (*n*=37)	0.44	0.16–1.19	-	-	0.22	0.04–1.18	0.47	0.12–1.83
3 years or more (*n*=46)	0.48	0.19–1.23	-	-	0.37	0.10–1.46	0.37	0.09–1.43
Gender confirmation surgeries: lifetime								
No (*n*=90)	Ref		Ref	-	Ref	-	Ref	
Yes (*n*=60)	0.59	0.29–1.17	0.2	0.02–1.66	0.37	0.10–1.40	1.59	0.59–4.27
Social support score								
Continuous	0.96	0.88–1.05	0.83	0.68–0.99	1.00	0.87–1.15	0.96	0.85–1.09
Partnered								
No (*n*=55)	Ref	-	Ref	-	Ref	-	Ref	-
Yes (*n*=95)	0.52	0.26–1.02	0.33	0.08–1.42	0.75	0.25–2.29	0.90	0.33–2.47
Number of partners: past 12 months								
Continuous	1.13	1.01–1.26	0.97	0.77–1.21	0.98	0.85–1.14	0.96	0.82–1.13
MAB partner: past 12 months								
No (*n*=79)	Ref	-	-	-	Ref	-	Ref	-
Yes (*n*=71)	17.78	6.89–46.03	-	-	1.17	0.38–3.54	0.67	0.25–1.80
Contraceptive use: current								
No (*n*=94)	-	-	-	-	Ref	-	Ref	-
Yes (*n*=56)	-	-	0.54	0.11–2.79	1.78	0.59–5.36	0.61	0.21–1.82
Pregnant: lifetime								
No (*n*=142)	Ref	-	-	-	Ref	-	-	-
Yes (*n*=8)	0.54	0.11–2.79	-	-	1.42	0.16–12.44	-	-
Plans to become pregnant								
No (*n*=107)	Ref		Ref	-	-	-	Ref	
Yes (*n*=14)	1.78	0.59–5.36	1.42	0.16–12.44	-	-	1.25	0.26–6.10
Plans to use own oocytes with surrogate								
No (*n*=84)	Ref	-	-	-	Ref	-	-	-
Yes (*n*=18)	0.61	0.21–1.82	-	-	1.25	0.26-6.10	-	-

other STI prevention methods — a finding that had been documented among cisgender individuals in relationships [13]. Providers should discuss contraceptive needs with their trans-masculine patients and help to facilitate uptake for trans-masculine patients who seek contraceptives.

The overall prevalence of lifetime pregnancy among trans-masculine adults in the study is low relative to other studies, whereas the prevalence of future fertility desires was consistent with previous qualitative research [14]. Additionally, in multivariable models having socially affirmed one's gender was inversely

associated with plans to become pregnant in the future, whereas having a non-binary gender was positively associated with plans to become pregnant. It is possible that more masculine participants (i.e., binary trans-masculine adults and those who have affirmed their gender) may be less interested in becoming pregnant than nonbinary individuals or those who haven't affirmed their gender because being pregnant may feel incongruent with their masculine gender identity or expression and could potentially increase feelings of gender dysphoria. Prior studies with trans-masculine adults show an increase in gender dysphoria in some trans-masculine adults during pregnancy [2,3] and suggest that gender dysphoria is an important mental health issue to address in relation to trans-masculine individuals' reproductive health both during pregnancy and in the context of pregnancy prevention.

The study has several limitations including the cross-sectional design. While all measures are based on self-report, the use of the self-administered quantitative survey likely lessens social desirability bias concerns, and the use of both lifetime and past-12 month measures may reduce concerns regarding recall bias. Further, the small sample size restricts the power to determine the relationship between all sociodemographic and behavioral factors and the study outcomes (e.g.,lifetime pregnancy and educational attainment). Finally, while the sample was more diverse than previous studies with respect to age and race/ethnicity, there is limited socioeconomic, racial and geographic diversity among respondents, reducing the generalizability of findings.

This study provides insights regarding the reproductive health of trans-masculine adults. Specifically, this study highlights the unique reproductive desires of nonbinary individuals and the importance of increasing provider understanding and awareness of this particular population. Further research is needed to explore the relationship between race and willingness to use a surrogate. Providers must be aware that trans-masculine people are capable of conceiving and that proper counseling should be provided to meet the unique needs of this underserved patient population.

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