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# Transgender men's fertility preservation: experiences, social support, and the quest for genetic parenthood

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## ABSTRACT

Transgender people assigned female at birth may undergo fertility preservation by egg or embryo freezing, usually prior to gender affirming treatment. In this binational ethnographic study, four transgender men were included as part of a larger comparative project on fertility preservation. In-depth ethnographic interviews allowed informants to talk freely about their fertility preservation experiences, and the circumstances that had enabled them to pursue this option. Prominent in men's accounts were the importance of genetic parenthood and the role of social support from others in the fertility preservation process. Indeed, in all cases, social support—from parents, siblings, partners, peers, physicians and employers—was critical, effectively enabling young transgender men to embark on their fertility preservation journeys and undergo the physically taxing process. This study illustrates the power of thriving through relationships that were critical in young transgender men's experiences of fertility preservation.

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## Introduction

Fertility preservation is a relatively new branch of reproductive medicine, allowing people to cryopreserve eggs, embryos, ovarian tissue or sperm in order to expand their reproductive futures. Fertility preservation was initially offered to young cancer patients facing fertility-threatening treatments. However, the relevant technologies have proliferated and are now being used also for non-medical reasons (Inhorn, Birenbaum-Carmeli, and Patrizio 2017; Inhorn et al. 2018, 2019). Among the individuals seeking to preserve their gametes for future reproduction are transgender people assigned female at birth, who intend to commence gender-affirming treatment.

Fertility preservation (FP) as a reproductive option for transgender individuals has been examined from multiple perspectives. Clinicians treating female to male transitioning have studied – and debated – the influence of prolonged testosterone intake on fertility (Nahata et al. 2019; Greenman 2019), as well as on physical and psychological wellbeing (Armuañ et al. 2017). With accumulating experience, clinicians (e.g. Liu et al. 2019; Baram et al. 2019; Barnard et al. 2019), as well as professional bodies

like the World Professional Association for Transgender Health, the American Society of Reproductive Medicine, The Endocrine Society, and the UK National Health Service, have called upon practitioners to offer fertility preservation to transgender people (Colebunders, De Cuypere, and Monstrey 2015; ASRM 2015; Hembree et al. 2017; Doward 2019).

Ideally, fertility preservation should occur prior to gender-affirming interventions (Chen et al. 2018; Deutsch and Feldman 2013; Finlayson et al. 2016; Nahata, Quinn, and Tishelman 2016; Nahata et al. 2019; Wallace, Blough, and Kondapalli 2014). A recent systematic review reported that fertility preservation counselling was, indeed, being offered prior to gender-affirming interventions in three out of four research settings, but the authors stressed that counselling was still partial (Baram et al. 2019).

At the formal national level, some countries have recently instated more trans-friendly policies. In Sweden, some clinics offer fertility preservation as a routine, publicly funded component of gender affirmation (Armuaud et al. 2017). Portugal has allowed gender registration change irrespective of gender-affirming procedures (Hilário and Marques 2019). Malta and Denmark have introduced an X marker gender category (Holzer 2018, 16). However, some countries, including European countries such as Finland and the Czech Republic require, explicitly or tacitly, that transgender persons undergo sterilisation prior to gender affirmation ([https://tgeu.org/wp-content/uploads/2019/05/MapB\\_TGEU2019.pdf](https://tgeu.org/wp-content/uploads/2019/05/MapB_TGEU2019.pdf)).

In the USA, laws vary. Some states recognise non-binary people, while in others, gender-affirming surgery is a prerequisite for changing gender registration. Only 18 states cover gender-affirmation or fertility preservation treatments for transgender persons. Public opinion, however, seems supportive of fertility preservation for transgender individuals (Goldman et al. 2017).

In Israel, subject to approval of a multidisciplinary state committee, gender-affirming treatments are covered by national health insurance, but fertility preservation is not. More generally, transgender individuals face multiple challenges in Israel (Knesseth (Israeli Parliament) 2018), and over 40% report having attempted suicide, a figure that is fairly typical worldwide (Rosner 2019).

Even in more trans-friendly settings, fertility preservation is obstacle ridden, especially for persons assigned female at birth, whose fertility preservation procedures are more complex (Mitu 2016). FP is costly, amounting to US\$7,000–\$26,000 per cycle (Chen et al. 2017; Kyweluk, Sajwani, and Chen 2018; Nahata et al. 2019), along with annual storage fees (Inhorn et al. 2019). Beyond the expenditure, some of the clinical aspects are challenging. Hormonal ovarian stimulation may accentuate aspects of femaleness, thereby intensifying gender dysphoria (Armuaud et al. 2017; Tornello and Bos 2017). Transvaginal scans (Armuaud et al. 2017; Kyweluk, Sajwani, and Chen 2018; Chen et al. 2018, 2019; Von Doussa, Power, and Riggs 2015), exposure of one's genitals to clinicians (Armuaud et al. 2017), cisgenderism in official forms and restrooms (Bauer et al. 2009), and postponement of gender-affirming procedures (Chen et al. 2017) are additional burdens.

Encounters with practitioners may also be challenging. Some doctors lack proficiency regarding transgender people's reproductive health, or doubt patients' maturity to make fertility preservation decisions (Tishelman et al. 2019). Some may provide partial information, if at all (Bartholomaeus and Riggs 2019; Auer et al. 2018). Even in trans-friendly settings, cisgender presumptions may prevail (McGlynn et al. 2019).

The significance of fertility preservation for transgender individuals appears to vary. Some researchers reported respondents' lack of desire for biological children alongside plans or thoughts about adoption (Nahata et al. 2017; Chiniara et al. 2017; Strang et al. 2018; Chen et al. 2019; Von Doussa, Power, and Riggs 2015). Others found greater desire for genetic parenthood (De Sutter et al. 2002; Tornello and Bos 2017; Von Doussa, Power, and Riggs 2015; Wierckx et al. 2012), especially among younger childless individuals, who have family support (Wierckx et al. 2012; Riggs and Bartholomaeus 2018; Nahata et al. 2019). Notwithstanding these attitudes, many transgender people expressed interest in learning about fertility preservation (Strang et al. 2018; Moravek 2019), using patient decision-making aids, and being counselled on standardised fertility preservation protocols (Chen et al. 2019; Moravek et al. 2018).

Actual fertility preservation uptake among transgender people, however, is consistently low (Chen et al. 2017; Nahata et al. 2017; Jones, Reiter, and Greenblatt 2016; Abern and Maguire 2018; Auer et al. 2018; Moravek et al. 2018; Moravek 2019; Wierckx et al. 2012), especially among persons assigned female at birth, including after clinical consultations (Chen et al. 2019; Nahata et al. 2017; Von Doussa, Power, and Riggs 2015). In one study, both transgender young people and their parents did not include fertility preservation in their list of top health concerns (Lawlis et al. 2017). Only one-third wanted their child to consider fertility preservation (Strang et al. 2018). The low uptake in Sweden, where fertility preservation is funded, suggests the centrality of non-monetary impediments (Armuaud et al. 2017). Individual traits, family expectations, counselling experiences, accessibility of fertility preservation (Kyweluk, Sajwani, and Chen 2018), readiness to postpone gender affirmation, and the importance attributed to genetic relatedness, including by significant others (Riggs and Bartholomaeus 2018), have all been found to affect eventual fertility preservation choices.

Researchers have consistently called for enriching the scarce knowledge base on transgender persons' "lived realities" (Hilário and Marques 2019; Psihopaidas 2017, which is the goal of the present article. Employing in-depth ethnographic interviewees, we analyse the fertility preservation experiences of four transgender individuals assigned female at birth, who reflect upon their worlds of adversity, ambiguity and opportunity, and particularly the enabling role of fertility preservation, in the quest for future genetic parenthood.

## Methods and interlocutors

The article derives from a large-scale, ethnographic study of individuals who have undergone fertility preservation in the USA and Israel, two of the earliest countries to provide oocyte cryopreservation for both medical and non-medical purposes. The study took place between 2014 and 2016 and was supported by the US National Science Foundation's Cultural Anthropology and Science, Technology, and Society programmes.

Participants were recruited from four In Vitro Fertilization clinics in the USA and three in Israel. Recruitment in the US was conducted primarily by flyers, emailed or handed out to people undergoing fertility preservation, and in Israel, via clinic staff phone calls. In total, 199 individuals who had undertaken at least one cycle of egg freezing were interviewed, 150 in the USA and 49 in Israel. Two of the participants

**Table 1.** The interlocutors: key features and fertility preservation outcomes.

| Pseudonyms                            | Oded             | Ron                           | Dan                          | Andrew                                |
|---------------------------------------|------------------|-------------------------------|------------------------------|---------------------------------------|
| <i>Nationality</i>                    | Israeli          | Israeli                       | Israeli                      | US                                    |
| <i>Age at Interview</i>               | 20               | 30                            | 30                           | 25                                    |
| <i>Age at Fertility Preservation</i>  | 19               | 29                            | 25                           | 25                                    |
| <i>Sexual Orientation</i>             | Heterosexual     | Gay                           | Heterosexual                 | Heterosexual                          |
| <i>Residence</i>                      | With parents     | With mother                   | With spouse                  | By himself                            |
| <i>Education</i>                      | High-school      | MA in gender studies          | Sport diplomas               | Culinary school                       |
| <i>Fertility Preservation Funding</i> | Parents          | Loan                          | Himself                      | Insurance                             |
| <i>Relationship status</i>            | Single           | Single                        | Married to a cisgender woman | Single                                |
| <i>Type of Fertility Preservation</i> | Embryo freezing  | Egg freezing                  | Embryo freezing              | Egg freezing                          |
| <i>Fertility Preservation Outcome</i> | 9 embryos frozen | 9 eggs frozen (from 2 cycles) | 12 embryos frozen            | 9 eggs (first of four planned cycles) |

were transgender persons (one US, one Israeli). In addition, two more Israeli transgender men, who had undergone egg retrieval, but had their eggs fertilised and frozen as embryos, were also interviewed. All four self-identified in the interviews as transgender men, and all had undergone fertility preservation prior to other gender-affirming interventions. The research protocol was approved by Institutional Review Boards at the authors' universities (Yale University, USA; University of Haifa, Israel) and by the ethics committee in every participating clinic.

The participants were interviewed by the first and second authors, who are medical anthropologists with ample experience studying social aspects of reproductive technologies. All participants signed informed consent forms and were interviewed in private settings of their own choice. Both anthropologists used an identical, semi-structured interview guide, which included questions regarding participants' socio-demographic status, reproductive histories and life circumstances at the time of fertility preservation, motivations to pursue fertility preservation, and experiences with the fertility preservation process. In Israel, the interview questions were translated into Hebrew by the second author and back-translated into English by a professional translator to ensure accuracy.

Interviews were open-ended and person-centred (Hollan 2001), allowing participants to elaborate their fertility preservation stories with minimal prompting and to share their thoughts and feelings freely. Participants were forthcoming, volunteering nuanced descriptions of their lives and their fertility preservation experiences. The interviews were recorded and transcribed verbatim. In Israel, the interviews were conducted in Hebrew with the Hebrew transcripts professionally translated into English. The translator was instructed and supervised by the second author, who read the Hebrew and English transcriptions and confirmed their similarity to the audio recordings.

The anthropologists wrote detailed ethnographic summaries of each interview and coded the completed English transcripts using the ethnographic data analysis software program Dedoose. The main data analysis strategy consisted of systematic reading and re-reading of each interview and case summary by both researchers, to identify and compare main themes and construe emergent patterns. Data analysis was inductive, using a grounded theory approach to agree upon and develop a coding scheme. The two anthropologists independently reviewed and coded one transcript and compared results to reach consensus on preliminary codes, as well as adding new

ones. Once a coding scheme had been developed, the first author then coded all transcripts and wrote a detailed analysis based on themes emerging from the data regarding the young men's fertility preservation decisions. Following this process, the two anthropologists interacted multiple times to explore the relationships among categories and themes emerging in the four interlocutors' accounts. The joint comparative analysis revealed the particular details of each person's story, while also highlighting common, cross-cutting themes.

In [Table 1](#), we summarise the key characteristics of each interlocutor and their fertility preservation outcomes. In what follows, we present the individual stories, showing how various forms of social support were vital in the participants' fertility preservation decisions and experiences.

## Findings

### *The role of social support*

#### *Oded: Peer and parental support*

Oded was an Israeli high school student, living with his family when he started seeking support with his gender self-definition. He told his parents about his gender qualms and shortly afterwards, started attending LGBTQ youth support group meetings. During these meetings, Oded articulated his gender identity, soon defining himself as transgender. At the age of 18, he heard from a transgender acquaintance that fertility might be damaged by prolonged testosterone use, which he was keen to start. An endocrinologist confirmed the risk and recommended fertility preservation. As required in Israel, Oded waited for about a year before starting his fertility preservation. At that point, he hesitated over whether to freeze eggs or embryos. Once again, he approached his transgender acquaintance, who helped him reach a decision. Oded talked with much gratitude about this interaction, admitting that "only then I understood the difference between egg freezing and embryo freezing."

Having graduated from high school, Oded was on a one-year volunteer service (prior to his compulsory military service), when he underwent fertility preservation at the age of 19. He disclosed his plans to his LGBTQ club mates and drew great support from their encouragement. He also shared this information with his volunteer-work friends. Unprompted, Oded emphasised how reassuring and sympathetic they, too, had been, expressing special gratitude to the military officer in charge of their group, who had been exceptionally supportive throughout the process.

Although Oded was the youngest participant in our study, his age at fertility preservation was not unusual, as many transgender individuals pursue the procedure in their late teenage years or early twenties (Chen et al. 2019; Kyweluk, Sajwani, and Chen 2018; Von Doussa, Power, and Riggs 2015). Still, Oded considered himself very young, saying it was "a bit crazy to think about [reproduction] at 19." He was so keen, however, to undergo fertility preservation that he would not have pursued any transitioning-related procedure earlier:

It was very important for me to preserve my genes... I don't rule out adoption or [raising] my future female partner's children, but it's extremely important for me to have at least one genetic child.

Because Oded self-identified as heterosexual, he decided to preserve embryos, which were more likely to lead to live-birth outcomes than frozen eggs. He also felt that having frozen embryos would make future use simpler, as the sperm issue would have already been resolved. His father accompanied him to the sperm bank and both parents accompanied him to the clinic on the day of the egg retrieval. After the procedure, Oded invited his younger brother to talk to him about his fertility preservation and revealed his gender transition plans.

Although in vitro fertilisation is publicly funded in Israel (Birenbaum-Carmeli 2016), fertility preservation for transgender people is not. Oded described himself as “extremely fortunate” that his parents were willing and able to fully cover the fertility preservation cost of roughly US\$6,500. He clarified that had they not paid, he would have waited until he could afford fertility preservation but would not have risked his fertility by testosterone intake. Oded cherished his parents’ support, noting that it “allowed me to go on with my life. Otherwise, I’d have to postpone everything until after the army,” i.e. for at least three years. In the light of Oded’s pressing desire to commence gender affirmation, this statement captures the value he attributed to fertility preservation and to his parents’ support.

### ***Ron: Maternal and peer support***

Ron, 30 years old at the time of the interview, had immigrated to Israel from Russia with his single mother when he was a child. His gender doubts started in adolescence, when he felt “stuck” in an unclear life condition. Gradually, while participating in an LGBTQ support group that became pivotal in his life, Ron decided to undergo gender affirmation. When he learned that testosterone might damage his fertility, he consulted with his mother and decided to pursue fertility preservation. However, neither Ron, who was studying throughout his twenties and was still working part-time, nor his single mother could afford the cost. Ron, therefore, took out a US\$6,500 loan to be repaid over 70 months.

Having resolved the economic issue, Ron faced fertility preservation’s clinical challenges. The hormonal stimulation brought about the discomfort of self-injection and exacerbated gender dysphoria by enhancing inborn female aspects. The general anaesthesia during the egg retrieval was his first ever and worried him: “I never lose control. I never drink to loss of control... I detest it. I need to be in control of my life.” Still harder for Ron were the transvaginal ultrasound scans:

See, I live my whole life in denial, as if there is no place there to insert anything... Eventually, the pain made it easier, turned it into an unpleasant medical procedure. If it weren’t painful, that would have been more troubling.

In the operating room, the staff addressed Ron as a woman. Describing this exchange, he joked: “Well, that time I was tolerant. After all, I was there for egg freezing.” While acknowledging the discomfort, as did participants in other studies (Armund et al. 2017; Baram et al. 2019), Ron minimised the hardship and expressed no doubt regarding the procedure. Rather, he framed fertility preservation as a biological milestone by taking “selfies” before and after the retrieval.



When the doctors retrieved just two eggs, Ron and his mother were greatly disappointed and decided to stop treatment. Eventually, the doctor convinced them to retry and preserved seven additional eggs. Ron explained his perseverance:

My mother wants grandchildren ... and I'm an only child, so there's not much choice ... It's more for her ... I don't even know if I want children at all ... [but] the minute I decided to undergo the change, and I know my mother really wants grandchildren ... I said: I'd freeze.

Indeed, for Ron, fertility preservation was an act of filial commitment to his mother, an other-directed, self-transcending gesture of honouring his mother, who had been his sole caretaker and main source of support throughout his troubled adolescence and gender qualms. Thus, Ron viewed the procedure as embodying his gratitude for her life-long support. Although Ron expressed reluctance regarding biological parenthood, was open to adoption and did not want to raise children without "some sort of family," Ron was pleased that he had undertaken fertility preservation. Self-identifying as gay, Ron also explained that he was willing to conceive with his frozen eggs in the future, if he could not afford gestational surrogacy.

#### ***Dan: Sibling, parental and partner support***

When Dan was an adolescent, he would play football every afternoon in a distant neighbourhood in his Israeli hometown, presenting himself as a boy. He even learned a *bar mitzvah* prayer from a rabbi who taught the poor neighbourhood boys for free. One day, when a friend's mother came to fetch him, Dan saw that she was his school teacher. Although she pretended not to know him and was very kind, Dan never returned to the neighbourhood. Fearing rejection, he did not say anything to his family. Instead, he developed "a perfect theory against parenthood," depicting children as demanding and ungrateful.

Dan completed his compulsory military service, went to college, and worked odd "manly" jobs. But, ultimately, he decided that life was not worth living:

Around 25, I had many friends, work, money. I wasn't terribly sad, but everyone was talking about women and dating ... My life wasn't going anywhere, there was no future ... I couldn't bear my body. It was obvious that no one would ever want me, that being a couple was out of the question. I thought: What does the future hold for me, being the old single aunt who's invited to Sabbath dinner because she's never married and has no children? I decided it was pointless to go any further.

In interview, five years after the events, Dan described plainly how he decided to commit suicide and travelled to say his final goodbye to his close sister, who was holidaying abroad. Her startled response—"What, are you nuts?! You are just a boy!!"—surprised him. She started talking to Dan in masculine language and convinced him to try gender affirmation. Dan then learned the term transgender. "All of a sudden, I had light in my eyes." To his relief, his working-class parents received the news with understanding. Dan was especially moved by their request to select his male name for him, with his mother explaining: "You are our son. We want to name you."

FP was central in Dan's transitioning: "From the first day [I decided to transition], I knew I'll do [fertility preservation]." When asked about his earlier opposition to parenthood, he answered instantly:



Being a father was my life's dream! It's being a mother that I couldn't stand. Growing something inside my body, the mere thought was disgusting!... But once I decided to transition, I knew that I'm making biological children, that I must see my own genes, and then I thought of this brilliant idea!

When the doctor told Dan that embryo freezing was more efficient than egg freezing, Dan was encouraged to undertake embryo freezing by his female partner, who supported him throughout the process and who he later married.

Undergoing fertility preservation and gender affirmation thus overturned Dan's outlook on life and parenthood. Once fatherhood, rather than motherhood, became feasible, he immediately used fertility preservation in order to become a genetic father and fulfil his "life's dream." At the time of the interview, Dan and his wife had applied to have Dan's embryos implanted in his wife's uterus. Thus, for Dan, family and partner support enabled gender transitioning and fertility preservation, which paved his way to a full family life and aligned his fatherhood dream with his new gender identity.

### ***Andrew: Family, physician and employer support***

Andrew, aged 25 at the time of the interview, was the only US transgender man in the study. A recent graduate from a culinary school, he was working as an assistant chef in a university's dining hall. Andrew described how his father had raised him as a tomboy, "so I've always felt like his son." Caitlyn Jenner's well-publicised gender affirmation (Toomey and Machado, 2015) was a turning point in Andrew's biography and transition decision—the moment "when everything ... started making sense."

Andrew traced his wish for children back to adolescence. But by age 25, he felt the need to be pressing: "If I had the spouse, I would be a parent ... young. The younger the better." Andrew envisioned various reproductive options, like his future female partner carrying her own child and then carrying his or having his own embryo and hers implanted in her womb simultaneously. Nonetheless, if pregnancy was his only route to genetic parenthood, Andrew was willing to conceive. He explained that without fertility preservation, he would have to:

Do this another way, getting pregnant and putting my life kind of back to where I started. Put myself last, you know ... [but I] definitely wouldn't have a hysterectomy unless I have kids already.

However, with an annual income of only US\$32,000, neither Andrew nor his retired mechanic father and stay-at-home mother could afford fertility preservation. Luckily, living in a relatively trans-friendly state, Andrew's employer decided to fund up to four fertility preservation cycles for him—an unprecedented move designed to extend the company's health insurance benefits to the transgender community. The decision was life-altering for Andrew. He viewed fertility preservation as "my one shot to have children ... It's something that is very important to me."

Andrew worried about the transvaginal scans but found the doctors gentle and soon developed trusting relationships, "feeling I have great support by them." With his older sister beside him at most of his clinic visits, Andrew undertook his first cycle, preserving nine eggs. He decided that in return for the exceptional funding and his

fertility preservation “smooth ride,” he would contribute to society by performing additional cycles for egg donation:

I will finish those four cycles and seeing how I feel, [I’m] considering ... doing two cycles just for somebody who needs eggs ... I’m very grateful for all the help I have and financial aid, just, you know, been a blessing. I want to give back as well.

Andrew summarised his experience in a highly positive vein:

I really can’t be any happier ... This is the perfect moment to be a transgender and have children ... I told [the doctor] ... I’m definitely willing to do any kind of research ... I just feel like very powerful. I feel like my eggs will be powerful. I feel like I will have numerous amounts of them.

Andrew also framed fertility preservation within a broader cosmology. Born and raised a Catholic, he had undergone all major Catholic sacraments and continued to attend mass weekly. This religious-spiritual dimension underlay his articulation of his bodily transformation and his turn to fertility preservation:

I definitely was made who I am for a reason ... I just feel like I’m going so far away from like a normal woman’s body, you know, with taking testosterone, all that – like, I just don’t want to harm anything that God naturally gave me.

Andrew thus embedded the preservation of his inborn fertility within a cosmological scheme, respecting and upholding his God-given reproductive potential.

## Discussion

In their accounts, all four transgender men in this study mentioned fertility preservation’s importance to them, but also the significant barriers encountered along the way. In each case, fertility preservation was a positive turning point, a “brilliant idea,” in which future biological parenthood began “to make sense.” As Ron summed up: “I’m very happy that I did [fertility preservation]. It gives me space to know that [the embryos are frozen]. I have peace of mind.”

Overall, we identify four major themes that ran through interlocutors’ interviews: the youthfulness of fertility preservation, the emphasis on genetic parenthood, the role of family, and other forms of social support.

### *The youthfulness of transgender people seeking fertility preservation*

All four interviewees underwent fertility preservation in their teenage years and twenties, reflecting these men’s expectations to commence gender affirmation as soon as possible. Indeed, some transgender men begin fertility preservation counselling in paediatric clinics, in their early teenage years (Chen et al. 2017; Chen et al. 2019; Kyweluk, Sajwani, and Chen 2018; Von Doussa, Power, and Riggs 2015).

Among our interlocutors, Oded, who had completed fertility preservation by 19, described this early engagement with reproduction as “a bit crazy.” Nonetheless, he saw fertility preservation as vital to his ability “to go on with my life.” Initiating a life-changing move at such an early age merits attention in terms of contemporary life-cycle construction, given that childhood and adolescence are being extended, with

the transition to economic, professional, and family responsibilities (OECD 2015; Stritof 2019) being delayed into the late 20s and beyond (Waters et al. 2011, 1-27).

In this respect, transgender men stand out in facing existential dilemmas much earlier than many of their peers. Partly related to this youthfulness, some of the men in this study worried about experiencing their first anaesthesia or being virgins and thus sustaining great discomfort during vaginal ultrasound scans throughout the procedure. Indeed, having to consider genetic parenthood so early required transgender men to make life-formative decisions earlier than most of their cisgender peers.

### ***The quest for genetic parenthood***

The importance of genetic parenthood was ubiquitous in the men's accounts. Every interlocutor addressed "genetics" at some point, unprompted, usually emphasising how important it was for them to "reproduce their genes." For Oded, the youngest, it was so "extremely important... to have at least one genetic child" that he would have delayed his transitioning had he not been able to undergo fertility preservation first. Dan stated straightforwardly: "I must see my own genes." And Andrew reflected: "I always wanted my own [kids]... and I didn't want to harm [my fertility] in any way." Ron, self-identifying as gay, ruled out having his eggs fertilised with donor sperm, because it was imperative for him that the sperm would carry the genetics of his future male partner.

Participants' emphasis on genetics is to be expected, given that the desire for genetic relatedness is the foundational script of fertility preservation. Preserving one's own eggs or embryos implies prioritisation of genetic relatedness over alternative forms of kinship. As such, fertility preservation may contribute not only to expanding but also to restricting what is considered "legitimate" kinship. Although both Oded and Ron mentioned their readiness to adopt, they chose to shoulder fertility preservation hardships – from anaesthesia to transvaginal scans and delayed transitioning – in their quest for future genetic parenthood.

### ***The role of family***

In each case, men's relatives — mothers, fathers, siblings, and partners – were involved in the fertility preservation process. Every interlocutor underscored the help of, and even reliance on, parents and siblings. Oded praised his parents for funding fertility preservation and accompanying him to the clinic. Ron hailed his mother as his sole caretaker and confidante throughout the transitioning and fertility preservation process. Dan described his sister as his saviour from suicide and the one who raised the option of transitioning. Later on, it was Dan's accepting parents and his wife, who supported his fatherhood pursuit. Andrew thanked his father for treating him as his son, and eventually relied on his sister's scientific literacy and support in his clinic visits.

The men, on their part, enacted commitment to their families throughout the fertility preservation process. Oded expressed deepest thanks to his parents for their practical, emotional and financial support. Ron assumed the financial and clinical toll of

two fertility preservation cycles to enable his mother have grandchildren. Dan accepted his parents' preferred name, although he planned to select a different male name in the future. Andrew delayed his name change out of respect to his father, who had named him after his sister. When Andrew did choose a male name, it was close to the original.

Prominent in all four stories was the portrayal of close family relations, with no participant mentioning family rejection. Although Ron's mother "wasn't terribly crazy on me starting massive medical treatments," her continued support throughout the fertility preservation process was unquestioned. Dan's mother told his father about the transitioning while immediately clarifying that "he's our child and we love him dearly as ever." Two of the men depended on their families financially, and Ron still lived in his mother's home before and after the fertility preservation process. The men's deep involvement with their families suggest that fertility preservation may be a moment of intense family bonding, opening dialogues between the transitioning person and their close kin. Fertility preservation also potentiates their families' genetic ties to the next generation, a finding that is not inconsequential, as seen in Ron's case. Indeed, these four accounts all suggest the role that family support plays in individuals' decisions and abilities to pursue the challenging fertility preservation process.

### ***Other forms of social support***

As shown in these stories, families were not the only source of fertility preservation social support. LGBTQ friends, acquaintances, and support groups were vital for Oded and Ron, especially in their early days of identity searching and transitioning. Oded also relied on a local transgender man, who posted a detailed Facebook description of fertility preservation and said he had learned a great deal from his guidance.

Reflecting on the medical setting, fertility preservation was an encounter with institutionalised binary cisgenderism, or the omission of bodies and identities that transcend this dichotomy (Bauer et al. 2009). In both countries, no medical documents, clinics or bathrooms/toilets acknowledged transgender persons. And yet, all four interviewees recounted their fertility preservation medical encounters positively. Oded thanked the doctor who encouraged him to undergo fertility preservation early on. Ron, too, learned about fertility preservation from a trans-friendly ob/gyn and was propelled to act by his GP. Andrew described his "trusting relationships" with his medical personnel. No participant mentioned difficulty in obtaining fertility preservation information (as reported by Bauer et al. 2009) or finding a doctor who was willing to perform the procedure (James-Abra et al. 2015). Thus, clinicians in this study were described as supportive, professional, and encouraging of these transgender men's desires for fertility preservation.

Workplaces were also depicted favourably. Oded described empathic pre-army mates and an encouraging military officer, and Andrew cherished his employer's decision to fund four fertility preservation cycles. Andrew was so appreciative of this support that he planned to undertake two additional treatment cycles and donate the resulting eggs. Indeed, workplace and institutional supports were pivotal in these men's cases, showing how social environments may be fertility preservation enabling.

## Conclusion

Study findings illustrate how for some people assigned female at birth, fertility preservation is a crucial component of gender affirmation. Although fertility preservation requires heavy financial, logistic and psychological investment, the procedure appears to be facilitated by social support, particularly from family members, but also partners, friends, physicians, and community members. These various forms of support demonstrate how individuals may “thrive through relationships” (Brooke, Feeney and Collins 2015), using social support to grapple with life’s adversities, while also capturing opportunities for growth and development when pursued in a supportive environment. Participants’ grateful accounts — which placed social support centre stage — illustrate how family and social supporters facilitated the gender affirmation of these young persons, who craved to preserve their fertility potential for the future. In short, social support emerged from these depictions as pivotal in enabling fertility preservation, possibly rendering it a positive experience overall. As such, the present study highlights potentially facilitating factors that may render fertility preservation salutary to the well-being of transgender men, partly by reaffirming the importance of genetic ties and family relations.

The participants’ emphasis on supportive ties differs somewhat from depictions in the existing literature, which describe abusive and rejecting encounters, including sometimes from family members (Pyne, Bauer, and Bradley 2015; Hendricks and Testa 2012). In contrast, the men in our study did not mention significant negative social experiences. One explanation may be the small number of interviewees, all of whom might have been especially fortunate in not encountering hostile reactions. Another reason might be that all were somewhat protected by belonging in the majority racial/ethnic group, and most (with the exception of Ron) came from normative nuclear families. Although our study is limited by its small sample size — an issue addressed by other qualitative researchers dealing with small numbers (Guest, Bunce, and Johnson 2006) — it nonetheless affirms that proactive, supportive networks, especially of close relatives, may be critical in enabling people assigned female at birth to undergo fertility preservation.

Ultimately, fertility preservation emerges in this study as a new reproductive “hope technology” (Franklin 1997) for young transgender men, who wish to retain an option of future genetic parenthood. Young people like Oded, Ron, Dan, and Andrew are using fertility preservation, thereby relieving their gender dysphoria, enabling future genetic parenthood, strengthening their family and conjugal bonds, and contributing to science and society as gender pioneers. Perhaps most importantly, fertility preservation enables young transgender people to potentially achieve a form of parenthood that was once simply out of reach.

The current study also opens up a variety of questions about the significance of these new reproductive options for transgender people in their later years, as well as about the resulting families. Against the multiple hardships that transgender people face in various spheres of social life (e.g. Gaspar et al. 2019; Iantaffi and Bockting 2011), further studies should explore transgender people’s experiences of fertility preservation and family formation, suggesting ways to generate, enhance, and embrace more trans-friendly environments.

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## References

- Abern, L., and K. Maguire, 2018. "Fertility Preservation among Transgender Individuals." *Fertility and Sterility* 110 (4): e281. doi:[10.1016/j.fertnstert.2018.07.794](https://doi.org/10.1016/j.fertnstert.2018.07.794)
- Armund, G. M., C. Dhejne, I. I. Olofsson, and K. A. Rodriguez-Wallberg, 2017. "Transgender Men's Experiences of Fertility Preservation: A Qualitative Study." *Human Reproduction* (Oxford, England) 32 (2): 383–390. doi:[10.1093/humrep/dew323](https://doi.org/10.1093/humrep/dew323)
- ASRM. 2015. "Access to Fertility Services by Transgender Persons: An Ethics Committee Opinion." *Fertility and Sterility* 104 (5): 1111–1115. doi:[10.1016/j.fertnstert.2015.08.021](https://doi.org/10.1016/j.fertnstert.2015.08.021)
- Auer, M. K., J. Fuss, T. O. Nieder, P. Briken, S. V. Biedermann, G. K. Stalla, M. W. Beckmann, and T. Hildebrandt, 2018. "Desire to Have Children among Transgender People in Germany: A Cross-Sectional Multi-Center Study." *The Journal of Sexual Medicine* 15 (5): 757–767. doi:[10.1016/j.jsxm.2018.03.083](https://doi.org/10.1016/j.jsxm.2018.03.083)
- Baram, S., S. A. Myers, S. Yee, and C. L. Librach, 2019. "Fertility Preservation for Transgender Adolescents and Young Adults: A Systematic Review." *Human Reproduction Update* 25 (6): 694–716. doi:[10.1093/humupd/dmz026](https://doi.org/10.1093/humupd/dmz026)
- Barnard, E. P., C. P. Dhar, S. S. Rothenberg, M. N. Menke, S. F. Witchel, G. T. Montano, K. E. Orwig, and H. Valli-Pulaski, 2019. "Fertility Preservation Outcomes in Adolescent and Young Adult Feminizing Transgender Patients." *Pediatrics* 144 (3): e20183943. doi:[10.1542/peds.2018-3943](https://doi.org/10.1542/peds.2018-3943)
- Bartholomaeus, C., and D. W. Riggs, 2019. "Transgender and non-Binary Australians' Experiences with Healthcare Professionals in Relation to Fertility Preservation." *Culture, Health & Sexuality* 22(2): 129–145. doi:[10.1080/13691058.2019.1580388](https://doi.org/10.1080/13691058.2019.1580388)
- Bauer, G. R., R. Hammond, R. Travers, M. Kaay, K. M. Hohenadel, and M. Boyce, 2009. "I Don't Think This is Theoretical; This is Our Lives: How Erasure Impacts Health Care For Transgender People." *The Journal of the Association of Nurses in AIDS Care* 20 (5): 348–361. doi:[10.1016/j.jana.2009.07.0042](https://doi.org/10.1016/j.jana.2009.07.0042)
- Birenbaum-Carmeli, D. 2016. "Thirty-Five Years of Assisted Reproductive Technologies in Israel." *Reproductive BioMedicine and Society Online* 2: 16–23. doi:[10.1016/j.rbms.2016.05.004](https://doi.org/10.1016/j.rbms.2016.05.004)
- Chen, D., M. A. Kyweluk, A. Sajwani, E. J. Gordon, E. K. Johnson, C. A. Finlayson, and T. K. Woodruff, 2019. "Factors Affecting Fertility Decision-Making among Transgender Adolescents and Young Adults." *LGBT Health* 6 (3): 107–115. doi:[10.1089/lgbt.2018.0250](https://doi.org/10.1089/lgbt.2018.0250)
- Chen, D., M. Matson, K. Macapagal, E. K. Johnson, I. Rosoklija, C. Finlayson, C. B. Fisher, and B. Mustanski, 2018. "Attitudes toward Fertility and Reproductive Health among Transgender and Gender-Nonconforming Adolescents." *Journal of Adolescent Health* 63 (1): 62–68. doi:[10.1016/j.jadohealth.2017.11.306](https://doi.org/10.1016/j.jadohealth.2017.11.306)

- Chen, D., L. Simons, E. K. Johnson, B. A. Lockart, and C. Finlayson, 2017. "Fertility Preservation for Transgender Adolescents." *Journal of Adolescent Health* 61 (1): 120–123. doi:[10.1016/j.jadohealth.2017.01.022](https://doi.org/10.1016/j.jadohealth.2017.01.022)
- Chiniara, L. N., C. Viner, H. J. Bonifacio, and M. R. Palmert, 2017. "What Are the Perspectives among Transgender Youth and Their Parents regarding Future Fertility? Insights from the Fertility and Reproductive Health Survey of Transgender Youth (FROST) Study." *Hormone Research in Paediatrics* 88: 1–2.
- Colebunders, B., G. De Cuypere, and S. Monstrey, 2015. "New Criteria for Sex Reassignment Surgery: WPATH Standards of Care." *International Journal of Transgenderism* 16 (4): 222–233. doi:[10.1080/15532739.2015.1081086](https://doi.org/10.1080/15532739.2015.1081086)
- De Sutter, P., A. Verschoor, A. Hotimsky, and K. Kira, 2002. "The Desire to Have Children and the Preservation of Fertility in Transsexual Women: A Survey." *International Journal of Transgenderism* 6 (3): 215–221. doi:[10.1016/j.jsxm.2018.03.083](https://doi.org/10.1016/j.jsxm.2018.03.083)
- Deutsch, M. B., and J. L. Feldman, 2013. "Updated Recommendations from the World Professional Association for Transgender Health Standards of Care." *American Family Physician* 87 (2): 89–93. <https://www.aafp.org/afp/2013/0115/p89.html>
- Doward, J. 2019. "Transgender Fertility Rules Updated by NHS." *The Guardian*, March 31. Retrieved on April 22, 2019. <https://www.theguardian.com/society/2019/mar/31/transgender-fertility-row-ends-with-a-draw>
- Feeney, B. C., and N. L. Collins, 2015. "New Look at Social Support: A Theoretical Perspective on Thriving through Relationships." *Personality and Social Psychology Review* 19 (2): 113–147. doi:[10.1177/1088868314544222](https://doi.org/10.1177/1088868314544222)
- Finlayson, C., E. K. Johnson, D. Chen, E. Dabrowski, Y. Gosiengfiao, L. Campo-Engelstein, I. Rosoklija, et al. 2016. "Proceedings of the Working Group Session on Fertility Preservation for Individuals with Gender and Sex Diversity." *Transgender Health* 1 (1): 99–107. doi:[10.1089/trgh.2016.0008](https://doi.org/10.1089/trgh.2016.0008)
- Franklin, S. 1997. *Embodied Progress: A Cultural account of Assisted Conception*. London and New York: Routledge.
- Gaspar, M., Z. Marshall, R. Rodrigues, B. D. Adam, D. J. Brennan, T. A. Hart, and D. Grace, 2019. "Mental Health and Structural Harm: A Qualitative Study of Sexual Minority Men's Experiences of Mental Healthcare in Toronto, Canada." *Culture, Health & Sexuality* 22(3): 1–17. doi:[10.1080/13691058.2019.1692074](https://doi.org/10.1080/13691058.2019.1692074)
- Goldman, R. H., Kaser, D. J. S. A. Missmer, L. V. Farland, Scout, R. K. Ashby, and E. S. Ginsburg, 2017. "Fertility Treatment for the Transgender Community: A Public Opinion Study." *Journal of Assisted Reproduction and Genetics* 34 (11): 1457–1467. doi:[10.1007/s10815-017-1035-y](https://doi.org/10.1007/s10815-017-1035-y)
- Greenman, Y. 2019. "Ovary Function is Preserved in Transgender Men at One Year of Testosterone Therapy." *Paper Presented at the Annual Meeting for the Endocrine Society of 2019, Reported by the Endocrine Society*, March 23. Retrieved on 22 April, 2019. <https://www.endocrine.org/newsroom/2019/endo-2019—ovary-function-is-preserved-in-transgender-men-at-one-year-of-testosterone-therapy>
- Guest, G., A. Bunce, and L. Johnson, 2006. "How Many Interviews Are Enough? an Experiment with Data Saturation and Variability." *Field Methods* 18 (1): 59–82. doi:[10.1177/1525822X05279903](https://doi.org/10.1177/1525822X05279903)
- Hembree, W. C., P. T. Cohen-Kettenis, L. Gooren, S. E. Hannema, W. J. Meyer, M. H. Murad, S. M. Rosenthal, et al. 2017. "Endocrine Treatment of Gender-Dysphoric/Gender-Incongruent Persons: An Endocrine Society Clinical Practice Guideline." *The Journal of Clinical Endocrinology and Metabolism* 102 (11): 3869–3903. doi:[10.1210/jc.2017-01658](https://doi.org/10.1210/jc.2017-01658)
- Hendricks, M. L., and R. J. Testa, 2012. "A Conceptual Framework for Clinical Work with Transgender and Gender Nonconforming Clients: An Adaptation of the Minority Stress Model." *Professional Psychology: Research and Practice* 43 (5): 460–467. doi:[10.1037/a0029597](https://doi.org/10.1037/a0029597)
- Hilário, A. P., and A. C. Marques, 2019. "Trans Youth in Portugal: Gendered Embodiments." *Culture, Health & Sexuality* 23: 1–16. doi:[10.1080/13691058.2019.16](https://doi.org/10.1080/13691058.2019.16)



- Hollan, D. 2001. "Developments in Person-Centered Ethnography." In *The Psychology of Cultural Experience*, edited by C. C. Moore and H. F. Mathews, 48–67. Cambridge: Cambridge University Press.
- Holzer, L. 2018. *Non-Binary Gender Registration Models in Europe*. Report on Third Gender Marker or No Gender Marker Options, For ILGA-Europe. [https://www.ilgaeurope.org/sites/default/files/nonbinary\\_gender\\_registration\\_models\\_in\\_europe\\_0.pdf](https://www.ilgaeurope.org/sites/default/files/nonbinary_gender_registration_models_in_europe_0.pdf)
- Iantaffi, A., and W. O. Bockting, 2011. "Views from Both Sides of the Bridge? Gender, Sexual Legitimacy and Transgender people's experiences of relationships." *Culture, Health & Sexuality* 13 (3): 355–370. doi:10.1080/13691058.2010.537770
- Inhorn, M. C., D. Birenbaum-Carmeli, J. Birger, L. M. Westphal, J. Doyle, N. Gleicher, D. Meirow, et al. 2018. "Ten Pathways to Elective Egg Freezing: A Binational Analysis." *Journal of Assisted Reproduction and Genetics* 35(11): 2003–2011. doi:10.1007/s10815-018-1277-3
- Inhorn, M. C., D. Birenbaum-Carmeli, J. Birger, L. M. Westphal, J. Doyle, N. Gleicher, D. Meirow, et al. 2019. "Patient-Centered Elective Egg Freezing: A Binational Qualitative Study of Best Practices for women's quality of care." *Journal of Assisted Reproduction and Genetics* 36 (6): 1081–1090. doi: 10.1007/s10815-019-01481-2
- Inhorn, M. C., D. Birenbaum-Carmeli, and P. Patrizio, 2017. "Medical Egg Freezing and Cancer patients' hopes: Fertility preservation at the intersection of life and death." *Social Science & Medicine* 195: 25–33. doi:10.1016/j.socscimed.2017.10.031
- James-Abra, S., L. A. Tarasoff, D. Green, R. Epstein, S. Anderson, S. Marvel, L. S. Steele, and L. E. Ross, 2015. "Trans people's experiences with assisted reproduction services: a qualitative study." *Human Reproduction* 30 (6): 1365–1374. doi:10.1093/humrep/dev087
- Jones, C. A., L. Reiter, and E. Greenblatt, 2016. "Fertility Preservation in Transgender Patients." *International Journal of Transgenderism* 17 (2): 76–77. doi:10.1080/15532739.2016.1153992
- Knesseth (Israeli Parliament). 2018. *Transgender Persons in Israel Still Struggle for their Basic Rights*. Retrieved on 1 December, 2019. <https://main.knesset.gov.il/News/PressReleases/Pages/press20.02.18hv.aspx>
- Kyweluk, M. A., A. Sajwani, and D. Chen, 2018. "Freezing for the Future: Transgender Youth Respond to Medical Fertility Preservation." *International Journal of Transgenderism* 19 (4): 401–416. doi:10.1080/15532739.2018.1505575
- Lawlis, S. M., H. R. Donkin, J. R. Bates, M. T. Britto, and L. E. Conard, 2017. "Health Concerns of Transgender and Gender Nonconforming Youth and Their Parents upon Presentation to a Transgender Clinic." *Journal of Adolescent Health* 61 (5): 642–648. doi:10.1016/j.jadohealth.2017.05.025
- Liu, W., M. L. Schulster, J. P. Alukal, and B.B. Najari, 2019. "Fertility Preservation in Male to Female Transgender Patients." *Urologic Clinics of North America* 46 (4): 487–493. doi:10.1016/j.ucl.2019.07.003
- McGlynn, N., K. Browne, N. Sherriff, L. Zeeman, M. Mirandola, L. Gios, R. Davis, et al. 2019. "Healthcare Professionals' Assumptions as Barriers to LGBTI Healthcare." *Culture, Health & Sexuality* 20:1–17. doi:10.1080/13691058.2019.1643499
- Mitu, K. 2016. "Transgender Reproductive Choice and Fertility Preservation." *AMA Journal of Ethics* 18 (11): 1119–1125. doi:10.1001/journalofethics.2016.18.11.pfor2-1611
- Moravek, M. B. 2019. "Fertility Preservation Options for Transgender and Gender-Nonconforming Individuals." *Current Opinion in Obstetrics & Gynecology* 31 (3): 170–176. doi:10.1097/GCO.0000000000000537
- Moravek, M. B., A. K. Lawson, H. P. Crissman, E. B. Mahany, J. F. Randolph, and M. B. Berger, 2018. "Barriers to Fertility Preservation in Transgender (TG) Patients: A Survey Study." *Fertility and Sterility* 110 (4): e282. doi:10.1016/j.fertnstert.2018.07.795
- Nahata, L., D. Chen, M. B. Moravek, G. P. Quinn, M. E. Sutter, J. Taylor, A. C. Tishelman, and V. Gomez-Lobo, 2019. "Understudied and under-Reported: Fertility Issues in Transgender Youth—A Narrative Review." *The Journal of Pediatrics* 205: 265–271. doi:10.1016/j.jpeds.2018.09.009
- Nahata, L., G. P. Quinn, and A. Tishelman, 2016. "A Call for Fertility and Sexual Function Counseling in Pediatrics." *Pediatrics* 137 (6). doi:10.1542/peds.2016-0180

- Nahata, L., A. C. Tishelman, N. M. Caltabellotta, and G. P. Quinn, 2017. "Low Fertility Preservation Utilization among Transgender Youth." *Journal of Adolescent Health* 61 (1): 40–44. doi:10.1016/j.jadohealth.2016.12.012
- OECD 2015. *Pensions at a Glance 2015: OECD and G20 Indicators*. Paris: OECD Publishing. [http://dx.doi.org/10.1787/pension\\_glance-2015-en](http://dx.doi.org/10.1787/pension_glance-2015-en), Figure 3.3, p. 79, [https://www.oecd-ilibrary.org/docserver/pension\\_glance-2015-en.pdf?expires=1559022964&id=id&accname=guest&checksum=0416FD6EEEEAC848322CC9FC30124CFB6](https://www.oecd-ilibrary.org/docserver/pension_glance-2015-en.pdf?expires=1559022964&id=id&accname=guest&checksum=0416FD6EEEEAC848322CC9FC30124CFB6)
- Psihopaidas, D. 2017. "Intimate Standards: Medical Knowledge and Self-Making in Digital Transgender Groups." *Sexualities* 20 (4): 412–427. doi:10.1177/1363460716651415
- Pyne, J., G. Bauer, and K. Bradley, 2015. "Transphobia and Other Stressors Impacting Trans Parents." *Journal of GLBT Family Studies* 11 (2): 107–126. doi:10.1080/1550428X.2014.941127
- Riggs, D. W., and C. Bartholomaeus, 2018. "Fertility Preservation Decision Making Amongst Australian Transgender and Non-Binary Adults." *Reproductive Health* 15 (1): 181–191. doi:10.1186/s12978-018-0627-z
- Rosner, Y. 2019. "HMO Prevents Vital Surgeries from Transgender Persons." Retrieved December 21, 2019. <https://mailchi.mp/phr/muwsh5pulz-992789?e=74d67bfa14>
- Strang, J. F., J. Jarin, D. Call, B. Clark, G. L. Wallace, L. G. Anthony, L. Kenworthy, and V. Gomez-Lobo, 2018. "Transgender Youth Fertility Attitudes Questionnaire: Measure Development in Nonautistic and Autistic Transgender Youth and Their Parents." *Journal of Adolescent Health* 62 (2): 128–135. doi:10.1016/j.jadohealth.2017.07.022
- Stritof, S. 2019. "Estimated Median Age of First Marriage by Gender: 1890 to 2018." *The Spruce*. <https://www.thespruce.com/estimated-median-age-marriage-2303878>
- Tishelman, A. C., M. E. Sutter, D. Chen, A. Sampson, L. Nahata, V. C. Kolbuck, and G. P. Quinn, 2019. "Health Care Provider Perceptions of Fertility Preservation Barriers and Challenges with Transgender Patients and Families: Qualitative Responses to an International Survey." *Journal of Assisted Reproduction and Genetics* 36 (3): 579–588. doi:10.1007/s10815-018-1395-y
- Toomey, A., and B. Machado. 2015. Caitlyn Jenner Legally Changes Her Name and Gender. Enews, September 25, 2015. Retrieved on 10 March, 2020. <https://www.eonline.com/news/699992/caitlyn-jenner-legally-changes-her-name-and-gender>
- Tornello, S. L., and H. Bos, 2017. "Parenting Intentions among Transgender Individuals." *LGBT Health* 4 (2): 115–120. doi:10.1089/lgbt.2016.0153
- Von Doussa, H., J. Power, and D. Riggs, 2015. "Imagining Parenthood: The Possibilities and Experiences of Parenthood among Transgender People." *Culture, Health & Sexuality* 17 (9): 1119–1131. doi:10.1080/13691058.2015.1042919
- Wallace, S. A., K. L. Blough, and L. A. Kondapalli, 2014. "Fertility Preservation in the Transgender Patient: Expanding Oncofertility Care beyond Cancer." *Gynecological Endocrinology* 30 (12): 868–871. doi:10.3109/09513590.2014.920005
- Waters, M. C., P. J. Carr, M. J. Kefalas, and J. Holdaway. 2011. *Coming of Age in America: The Transition to Adulthood in the Twenty-First Century*. Berkeley: University of California Press.
- Wierckx, K. E., Van Caenegem, G. Pennings, E. Elaut, D. Dedeker, F. Van de Peer, S. Weyers, P. De Sutter, and G. T'Sjoen, 2012. "Reproductive Wish in Transsexual Men." *Human Reproduction* 27 (2): 483–487. doi:10.1093/humrep/der406