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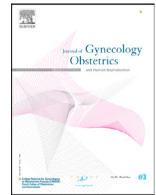

Original Article

An unconventional path to conventional motherhood: A qualitative study of women's motivations and experiences regarding social egg freezing in the Netherlands

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ABSTRACT

Study question: What are women's motivations for social egg freezing and what are their experience regarding the egg freezing process in the Netherlands?
Summary answer: Women who engage in social egg freezing are driven by feelings of fear, including the fear of not finding the suitable partner and fear of declining fecundity. They aim to fulfil their desire for having children with a partner. Alternative ways to achieve parenthood are considered if the conventional way of motherhood cannot be achieved.
What is already known: The reasons for social egg freezing are multi-fold, including amongst others economic, social, health, educational and career factors. The lack of a (stable) partnership, and a strong desire for a genetically related child with a committed partner are considered main reasons.
Study design, size, duration: A qualitative interview study, including 20 women, was conducted in the Netherlands between October 2018 and August 2019. Material & methods: Women between 32 and 42 years of age, who had completed the egg freezing trajectory for social reasons at three different medical centres in the Netherlands participated in the study. Semi-structured interviews were conducted face-to-face or via a teleconference tool and were recorded and transcribed verbatim. The interviews lasted between 30 and 90 minutes. Data were analysed using thematic content analysis.
Main results and the role of chance: This study identified one overall theme: "an unconventional path to conventional motherhood" and five interpretive theme's: "fear of not becoming a mother, peace of mind, an unconventional path to motherhood, conventional perspectives, and financial discrimination". Women were afraid of not becoming a mother in the future. Despite the fact that all kinds of alternatives were available, conventional motherhood was preferred. Women chose a non-conventional path to reach this goal and they had to let go of traditional perspectives. Although they had the feeling of being discriminated financially, it gave them 'peace of mind'. The preserved oocytes gave them the sense of a fertility insurance for the future.
Limitations, reasons for caution: The demographic profile displays a high degree of homogeneity, which may impact generalisability.
Wider implications of the findings: This study contributes to a better understanding of women who cryopreserve their oocytes for social reasons. Healthcare professionals need to be aware of these motivations and perspectives. Understanding the underlying factors and emotional considerations in the decision-making process is crucial to provide proper counselling and optimal patient-centered infertility care. Furthermore, it is important to raise awareness about the possibilities of pursuing (alternative) motherhood to support effective policy making. However, social egg freezing remains closest to women's preferences of conventional motherhood, even in a country like the Netherlands, which is known for its progressiveness and focus on gender equality. Last, policy makers need to stimulate cost-effectivity and prevent younger women of pursuing social egg freezing as kind of a prevention method.

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Introduction

The average age of women when having their first child has rapidly increased during the last decades. In the Netherlands, women's age has increased from 30.7 to 31.5 years between 2008 and 2018 [1]. At the same time, the number of women having their first child at an age between 40 and 45 years is also increasing in the Netherlands [2]. However, female fertility declines rapidly after the age of 35, making the use of assisted reproductive technologies (ART) more important than ever before.

Oocyte cryopreservation, also called egg freezing, is an ART that preserves the opportunity to conceive later in life [3]. Initially, this technology was exclusively used for medical indications, e.g. when a woman was suffering from certain health issues or needed medical treatment that could put her fertility at risk (e.g. chemo- or radiotherapy) [4,5]. The so-called 'medical egg freezing' has established as an accepted intervention and is even covered by the health insurance in some European countries, such as the Netherlands [3,6,7].

During the last decade, egg freezing has increasingly gained importance as a tool to preserve fertility also for other reasons than clear medical ones. This is often referred to as 'social egg freezing,' non-medical egg freezing', 'elective' or 'planned oocyte cryopreservation' [8−12]. In this study we refer to 'social egg freezing' since this is the most commonly used term amongst lay persons and in the public discourse (Medisch Contact, 16 November 2011; the Guardian, 9 February 2016; Trouw, 7 June 2019; Zwangerenportaal, 7 September 2020).

Social egg freezing is associated with financial, physical and psychological risks. Costs for the procedure are currently not funded in any European country [6]. The costs per treatment cycle (including ovarian stimulation, follicle aspiration, and oocyte banking) vary between €3000 to €5000 [13]. However, the chance of getting pregnant is on average 5% per frozen oocyte, and for a realistic chance of live birth, approximately 20 oocytes are needed. Therefore, usually several treatment cycles are needed in order to achieve a realistic chance of pregnancy [14]. The total average cost for the whole egg freezing trajectory are between €10.000 and €15.000 [15]. The procedure itself may furthermore cause ovarian hyperstimulation syndrome, and bears a risk of infection, bleeding, bloating, nausea and tiredness. The emotional and mental health aspects of engaging in this egg freezing trajectory are furthermore noteworthy [3,16].

The motivations and perspectives of women who are interested in, or have completed the social egg freezing trajectory, have been explored by several researchers in a variety of countries [9,17−21]. It was found that the primary reasons of engaging in egg freezing were the lack of a relationship, and a strong desire for a genetically related child with a committed partner [10,17,20]. Furthermore, it was found that women perceive it difficult to create suitable conditions for starting a family, which can be due to higher education and training, expensive housing, and employment factors [10,22,23]. These can be indirect factors for the postponement of childbearing [23]. Women interested in social egg freezing are often driven by conventional perspectives of building a family with genetic relatedness of both parents [20,22]. Alternative ways of parenthood, such as single motherhood via sperm donation, are considered second-best choice [21] which want to be avoided [10].

With this research, we build on the existing scholarly work yet take a closer look at women's motivations for social egg freezing and their experiences of the process. Qualitative research of women's specific life circumstances is necessary to better understand their life perspectives. Currently, there is insufficient understanding what motivates women to consider unconventional ways to parenthood. Taking the example of the Netherlands, where egg freezing for social reasons has been available since 2011, we take a qualitative approach to gain novel insights into women's perceptions of their life course. The example of the Netherlands is of particular interest, and adds value to already existing literature, as it is a country known for its progressiveness and focus on gender equality, which constitutes an interesting site of research for this particular topic. Additionally, we shed light on underlying dynamics leading to the postponement of childbearing and the experienced fears of not becoming a mother "the traditional way". This can support the provision of optimal patient-centred care delivery and effective policy making.

Materials and methods

Design

A qualitative interview study design was chosen. The consolidated criteria for reporting qualitative research (COREQ) were used to report the study [24].

Population and participants

The population consisted of women who had their oocytes frozen for social reasons. Women who engaged in medical egg freezing were excluded from the study. Participants were recruited at the fertility department of the University Medical Centre Utrecht and the Erasmus Medical Centre Rotterdam. A purposeful sampling with maximum variation in age, number of treatments and number of cryopreserved oocytes was used to gain insight into different perspectives (see Table 1). Selected women were contacted by an independent investigator by phone or email to ask if they were interested in the study. Thirteen women refused to participate in the study due to time and emotional conflicts. In total, 20 women participated in the study, ten of these had completed the trajectory at the University Medical Centre of Utrecht and eight at the Erasmus University Medical Centre Rotterdam. Two women were recruited via snowball sampling. These women completed the trajectory at the University Medical Centre of Amsterdam. All participants received an information leaflet and an informed consent form, and agreed to take part in the study.

Data collection

Semi-structured interviews were carried out by the first authors (both female and Master Degree) between October 2018 and August 2019. The interviews were held one month up to four years after the social egg freezing trajectory was completed. The interviews were done in a quiet setting, either in the hospital or at the participants home (at their request) and lasted between 30 and 90 minutes. Open questions were asked to gain insight into the motivations and experiences of women of reproductive age who had their eggs frozen for social reasons (e.g. 'What was the reason/motivation for you to freeze your oocytes?', 'How do you see your future concerning the frozen oocytes?'). Interviews were conducted until data saturation was obtained. Each woman was interviewed once, face-to-face or via a teleconference tool. All interviews were tape-recorded and transcribed verbatim.

Data analysis

To organise and analyse the data, the software programs, MS Excel and Word, were used. Thematic analysis as outlined by Braun and Clarke [25] was used to analyse the data. This process consists of six phases. In the first phase of data familiarization, data was transcribed and initial ideas were noted down. The second phase, generation of initial codes, consisted of coding interesting features across the entire data set using open codes. The third phase, searching for themes, contained clustering the codes into themes by grouping together those that seemed to share common meaning. Overarching themes were identified. In the fourth phase, reviewing themes, the themes were

Table 1
Participants characteristics.

Participant	Age at time of interview	Age at time of oocyte cryopreservation	Highest level of education*	Relationship at time of oocyte cryopreservation	Number of oocyte retrievals	Number of oocytes cryopreserved	Used their oocyes
1	40	39	Higher education	Single	2	13	No
2	38	37	Higher education	Single	2	20	No
3	32	32	Higher education	Single	3	27	No
4	42	39	Higher education	Single	3	17	No
5	40	39	Higher education	Single	3	33	No
6	37	35	Higher education	Single	1	12	No
7	36	36	Higher education	Partner	1	3	No
8	41	40	Higher education	Single	Unknown	Unknown	No
9	39	38	Higher education	Single	2	37	No
10	39	37	Higher education	Single	2	12	No
11	42	39	Higher education	Single	3	39	Yes
12	41	36	Lower education	Single	2	21	No
13	38	35	Higher education	Single	2	22	No
14	40	38	Higher education	Single	4	23	No
15	40	37	Higher education	Single	1	2	No
16	36	32	Higher education	Single	4	48	No
17	41	39	Higher education	Single	1	3	No
18	36	36	Higher education	Single	3	20	No
19	37	34	Higher education	Single	1	32	No
20	35	34	Higher education	Single	1	7	No

*Lower education: Primary school/intermediate vocational education.
Higher education: Higher vocational education/university.

reviewed and refined. This was achieved by discussion amongst the co-investigators. The fifth phase, defining and naming themes, consisted of defining clear definitions and names for each theme. In the last phase, producing the report, a final analysis was done and a clear report was made. With audit trail, peer debriefing and investigator triangulation the trustworthiness and quality of the findings were ensured [26]. All data were handled anonymously.

Ethical approval

Ethical approval was granted by the Medical Ethics Review committee of Erasmus Medical Centre (MEC-2019–0192) and University Medical Centre Utrecht (18/667). This study did not fall within the scope of the Dutch Medical Research Involving Human Subjects Act (WMO) according to the Medical Research Ethics Committee.

Table 2
Participants' demographic characteristics.

	N	%
Age at time of oocyte freezing (years)		
≤ 35	6	30
≥ 36	14	70
Relationship status at time of oocyte freezing		
In a relationship	1	5
Single	19	95
Residence		
City in The Netherlands	18	90
Village in The Netherlands	2	10
*Highest level of education**		
Lower education	1	5
Higher education	19	95
Number of oocyte retrieval cycles		
1	5	25
2	6	30
3	6	30
4	2	10
Unknown	1	5
Total number of oocytes cryopreserved		
1–10	4	20
11–20	6	30
21–30	4	20
31–40	4	20
> 40	1	5
Unknown	1	5

*Lower education: Primary school/intermediate vocational education.
Higher education: Higher vocational education/university.

Results

In total, 20 women between 32 and 42 years of age participated in the study. One woman was in a relationship at the time of oocyte cryopreservation, and three women had children with their current partner or were pregnant at the time (however, all of them conceived naturally and had not used their banked oocytes). One woman was trying to achieve pregnancy through ICSI (Intracytoplasmic Sperm Injection) with her previously frozen oocytes. The sample represents the typical group of women who engage in social egg freezing, as these are usually single, in their late thirties, and higher educated, as previous studies found [18,19,21,22,27]. Table 2 presents the participants' demographic characteristics in more detail.

This study revealed one overall theme: “an unconventional path to conventional motherhood” and five interpretive themes: “fear of not becoming a mother”, “peace of mind”, “an unconventional path to motherhood”, “conventional perspectives”, and “financial discrimination”.

An unconventional path to conventional motherhood

This overarching theme relates the five interpretive themes. Women were afraid of not becoming a mother in the future. Despite the fact that all kinds of alternatives were available, conventional motherhood was preferred. Women chose a non-conventional path to reach this goal and they had to let go of traditional perspectives. Although they had the feeling of being discriminated financially, it gave them ‘peace of mind’. The preserved oocytes gave them the sense of a fertility insurance for the future.

Fear of not becoming a mother

The two most important reasons for women to cryopreserve their oocytes for social reasons were the so-called “ticking biological clock” and the lack of a suitable partner at the time. Women were aware of the loss of fertility and were afraid not to find an appropriate partner and to conceive naturally in time.

'Well, I felt the pressure of age. Not to do it, but to do it as soon as possible. Because that's how our body works. And it just gets less and less the older you get… that's just a fact.' (Interviewee 7, 36 years old)

Experiencing the pressure of limited time available and loss of fecundity made them consider the option to preserve their fertility over time:

'But in the meantime, you become older and your oocytes will not get better. So that's when I seriously thought about social egg freezing.' (Interviewee 18, 36 years old)

Social freezing was therefore seen as a last resort in order to fulfil their strong desire to start a family. Several women reported that their unfulfilled wish for children was an emotional burden, and some had difficulties accepting a future without children. This sometimes resulted in health problems as depression, burnout or other problems related to mental well-being. Few women expressed their attempts to control their thoughts and preferred to not even think about a future without a partner and child. Questions asked by people in the women's environment about when having children were very sensitive topics causing distress, and were often considered inappropriate.

'At 35 I realised, once I had a burnout and was at home, oh what awful, maybe I will never become a mother. And I really found that so painful that I went to the psychologist. Because I really thought, what if I will never get a chance to have children, what will my life look like then? That's a big thing of course, it's such a decisive thing.' (Interviewee 13, 38 years old)

'Yeah, I thought it was really confronting, like oh, your relationship is over and suddenly thoughts come up like, "maybe I will never become a mother," because that's what goes through your mind. It's hard to meet someone that you think of, "yeah with you I want to become old." So, I thought that was really confronting for me. I saw all these people cycling with a child seat in front and I only could think of, "oh maybe I will never have that." (Interviewee 5, 40 years old)

'I think the process before is really hard, the reason why you do this is a disappointment. At that moment you don't have a partner to have children with. So, it's more like frustration, despite lots of dating, it still doesn't work out. So, I think that's the hardest emotional part.' (Interviewee 18, 36 years old).

Peace of mind

Women participating in this study explained that social egg freezing gave them serenity and peace of mind. They described it as extra "breathing space" and a feeling of relief. Preserving their oocytes for later in life gave them the sense of a fertility insurance and created an extra chance as it took away the pressure and gave faith for a future they desired.

'It feels strange, but yeah it still feels like a safe idea that they are there in the freezer. So, the pressure is totally off now. And yeah, it sounds silly, but it's like an insurance, maybe.' (Interviewee 2, 38 years old)

'No, I just thought, oh that is nice, if that's done, I have got the feeling of a bit extra breathing space. Maybe it will give me some extra years and less pressure.' (Interviewee 15, 40 years old)

Despite the fact that women realised that egg freezing was no guarantee for having a child, they wanted to take responsibility and do everything within their power before their fertile life years were about to expire.

'I am also really glad that I did it, that I know that they are there. Yes, it is still not a 100% guarantee of having a child, but at least the chances are higher than if I didn't have them.' (Interviewee 3, 32 years old)

One third of the women mentioned they were afraid if they did not make use of oocyte cryopreservation, they would regret this opportunity later in life. The idea of having a little more time and a backup gave them confidence, power and faith for the future.

'I have the feeling that I've done everything within my power. So, that still gives me a happy feeling that I've done this.' (Interviewee 1, 40 years old)

'You never know, but you have a little hope, I guess. And that hope… you pay for that. That's worth a lot. For me that's worth so much, it just gave so much peace of mind. First, I was really restless… Now I have done everything within my power and now it's up to life how things will go and I will see whatever it brings me.' (Interviewee 13, 38 years old)

'I think I was more relaxed about dating. I do not have to do it all before my 35th. It would be nice, but the pressure was gone. And I still notice that. I have a partner and it's serious between us, but I don't need to rush things.' (Interview 18, 36 years old)

Conventional family perspectives

The majority of women had a strong desire for having children with a partner, ideally within a stable relationship. Interviewees mentioned they were looking for a specific family composition, with a father and mother raising a child. This was essential, because having a genetically related child was an important factor for most women as they wished to see their own (physical) characteristics in their offspring while growing up and wanted to pass on their genes. Some women mentioned that life events, like the loss of a loved one, made them realise the importance of family. All women in this study preferred a pregnancy in the near future with a committed partner and without the use of assisted reproductive technologies. Only as a second-best choice, women considered to use their cryopreserved oocytes when there are no other options left.

'*To me it is important to have offspring, since I do not have a big family. And also, for the future, I think it is crucial to have a family.*' (Interviewee 4, 42 years old)

'Yeah, I think it's beautiful if your genes are passed on and you see something of yourself in a child.' (Interviewee 5, 40 years old)

Regarding the timely context of when to have children, women mentioned they imposed an age limit on themselves. Noticeable is, however, that a few women, mostly around the age of 40 years, adjusted their ideal image and the number of children they would like to have over the years. These women imagined a feeling of happiness when entering motherhood.

'So, I always dreamed of a family with three or four children. Me, myself, I am coming from a family with four children and to me it seemed always cosy to have a big family. The children can play together and so on. But I think it is not realistic, starting at the age of 42, to be able to have three children. So, I can speak of happiness when I will have one child.' (Interviewee 1, 40 years old)

'If I would have thought in the past about the age of 40, I really did not think about this. I would have imagined such another life.' (Interviewee 14, 40 years old)

'I still have the ideal image in mind, I would like to have two children.' (Interviewee 19, 37 years old)

However, a few women also had sincere doubts about having children at all, and therefore decided to create more time by engaging in

egg freezing to decide on this matter. These women also mentioned a self-imposed age limit to decide as to whether have children or not as they were afraid of becoming an 'old mother'. However, one woman also expressed ambiguous feelings towards this approach:

> *'Well, I think I should have a deadline, because otherwise I am so afraid, I'm going to postpone it indefinitely. And I also think, what would I prefer... because ideally, I would like to have two children. So, if I go for plan B, then it would be with a donor and having two children, or should I wait a little longer with the frozen eggs for the man of my dreams. And then you might get one child or none. These are horrible choices.'* (Interviewee 19, 37 years old)

> *'I gave myself six months at the beginning of the year, so I had to decide in September. But that's not how this works. It does not work with timeframes. It is about a feeling and you cannot put deadlines on that. This is the difficulty. You need to feel that you want it, that's step one. That is where it starts with and after that you will see.'* (Interviewee 10, 39 years old)

An unconventional path to motherhood

Some women who were faced with a different reality they had initially wished for (e.g., having a baby earlier with a committed partner) now also considered other options to fulfil their desire for a child. Alternatives were single motherhood or having children in co-parenting with a male homosexual couple. Foster parenthood or adoption were additional options women with a partner were thinking about. However, because of the age limitation and the long trajectory of the adoption process, one woman also expressed her concerns to be able to adopt a child.

> *'So, before I thought, okay, I will see... I would prefer a child with a partner, and if that doesn't succeed, I can always get children with a homosexual couple, but I have already thought that I need to decide around the age of 38.'* (Interviewee 8, 41 years old)

Women who decided to become single mothers mentioned that making this decision was a lengthy process and well thought through. Letting go of the traditional perspective of parenting was an emotional process for them. Some women sought professional support. Participants said that independency was an important reason for choosing single motherhood instead of having a child that is being co-parented with a homosexual couple.

> *'I realised at a certain moment: I think I need to let go of that particular image. A kind of an ideal image that I always had in my mind, and all the time I found that the hardest part. I think it's been a process of 1,5 years and I think I'm in a better place right now, but letting go of that ideal future took quite a long time. And, egg freezing is the first step, it feels a bit like failure, like Jesus, I'm still alone and I need to do something.'* (Interviewee 10, 39 years old)

Furthermore, a few women between 32 and 35 years mentioned that they were generally open for single motherhood at a certain point in their lives but did not want to think of that at the present moment. They felt that becoming a single mother would take a lot of (financial) responsibility and would be a challenging task. Therefore, a lot of women were actively engaging in dating and trying to find a committed partner to start a family with in the meantime. Besides, some women had ambiguous feelings about sperm donation and did not like the idea to only know a few (e.g., physical) characteristics of the potential biological father. Therefore, some women doubted whether single motherhood would make them happier.

> *'To me it seems very sad to have a child of someone I do not know. If you choose a man randomly on the street and someone would say you have to kiss him, then I'd prefer not to. But that person might become the father of your children.'* (Interviewee 13, 38 years old)

Financial discrimination

Interviewed women were concerned that social egg freezing might cause discrimination due to the high costs and the inability of many women to pay. They thought it was unfair that some women are simply not in the position to opt for this trajectory due to financial constraints and that only the wealthier or those with a good support system could access egg freezing. Interviewees argued that everybody should have the same opportunities irrespective of income levels. One woman mentioned that social egg freezing was not even an option earlier in her life because of her low income at the time.

> *'You should offer this to everybody, because my wish for a child is as important as someone else's wish for a child.'* (Interviewee 16, 36 years old)

> *'I think it is very important that people can make that decision. I think it would be fair if everybody can make use of it and not only if you can pay for it.*' (interviewee 5, 40 years old)

Different approaches in terms of insurance coverage of various infertility treatments (e.g. In Vitro Fertilisation (IVF) or Intrauterine Insemination (IUI) for homosexual couples and single women, egg freezing for medical and social reasons) caused irritation amongst the interviewed women. Participants said that it was unfair and discriminating that women with a partner who got infertility treatments receive reimbursement, and single women who want to create the same future possibilities have to bear all the costs by themselves. They felt punished instead of appreciated when taking responsibility for their own future.

> *'Is it fair that people with a partner can get everything reimbursed, and people without a partner not? I think that is outdated.'* (Interviewee 9, 39 years old)

Hence, the majority of the interviewees supported reimbursement by health insurances or other public sources. Some women even argued that all costs of the trajectory should be reimbursed, while others said that a partially compensation would be appropriate. One woman mentioned that social egg freezing would benefit the mental health of a lot of women and could even prevent depressions.

> *'I think it would be fair if the richer people pay the costs by themselves, but women who earn less could receive a compensation. I totally support that.'* (Interviewee 7, 36 years old)

However, some participants argued that by (partially) including social egg freezing in the health insurances' benefit package, insurance fees would rise, which was unfavourable. A distinction between necessary and non-necessary treatments should be made. Still, both proponents and opponents of cost coverage mentioned that there should be a certain financial threshold to engage in social egg freezing. Otherwise, women could too easily (mis)use this treatment as a preventive tool, rather than having to thoroughly consider the different options.

Discussion

This qualitative study revealed new insights into the motivations and the experience of the process of social egg freezing in the Netherlands, which we will reflect upon in the following.

'Conventional family perspectives' is a key theme for women engaging in social egg freezing. The interviews made clear that women already had a specific image in mind of what their life, and in

particular their family life, should look like in the future. This mostly consisted of a more traditional family composition with a committed (male) partner and a genetically related child. In order to achieve this goal, we found that women used fertility preservation to slow down the 'biological clock' and to buy some more time finding a suitable partner, which also relates to previous findings in other countries [17,28,29]. This also means that alternative ways of parenthood, including for example egg donation or adoption, were preferred less. Therefore, social egg freezing remains closest to women's preferences of conventional motherhood, also in a country like the Netherlands, which is known for its progressiveness and focus on gender equality, ranking way above the EU average and on place five on the gender equality index for 2018 (NL=74.1, EU28=67.9) [30]. Although the emphasis on a traditional family formation and marriage is less pronounced in the Netherlands [31], women of this study have no other viewpoints about fulfilling a family life and are aiming to have a traditional family life. Research of Kostenzer et al. (2020) has shown that the acceptance of medical egg freezing in the Netherlands is stronger than social egg freezing because the empathy towards a medical condition is accepted more in Dutch society [19]. Furthermore, the study by de Groot et al. (2016) has revealed that women in the Netherlands desire shared parenthood wherefore social egg freezing is a more 'natural' option to increase this chance. Women seem to avoid genetic manipulation by other techniques [19]. These findings explain that women's perceptions about traditional motherhood are not much different than in other countries such as Turkey, USA or Israel [20]. These findings, however, also support previous research showing that women perceive higher levels of stigma about nongenetic or non-traditional parenthood than men [32,33]. Furthermore, it shows that traditional perceptions of the life course (including parenthood, family life etc.) are an important underlying driver for women seeking fertility preservation. What we can learn from this is that the image of the apparent progressive culture in the Netherlands seems to be in conflict with the viewpoints of women interested in social egg freezing and aiming for a traditional family formation. Further research is needed to explore this conflict further.

Letting go of traditional perspectives when the ideal conditions for mother-/ parenthood could not be met, was a key topic we identified in this study. Also in previous studies women searched for alternative ways of motherhood [18,19,22]. The decision-making process when shifting from the conventional idea of parenting to single motherhood, for example, is a long, intensive and ongoing process as was found by Bock [34]. It includes different stages of grieving and thinking, and is influenced by factors like marital status and financial stability. Related to social egg freezing, however, this process requires time that most women reaching the end of their reproductive lifespan do not have. Social egg freezing can hence be considered a tool to provide more time in order to shift family perspectives. Yet even though alternative ways of parenting were mentioned in this study (like single motherhood, co-parenting with a male homosexual couple, foster parenting or adoption), a genetic-related child was still preferred, irrespective of the financial, physical and mental burden of the egg freezing trajectory.

Furthermore, this study provides more detailed insights about the ambivalent feelings women experience regarding the role of childbearing and motherhood, which have been touched upon in previous research [35,36]. As we have learned from the findings of this study and as is confirmed by LaPierre T et al. [37], however, family planning decisions are not static, and can change over time. Social egg freezing is considered to provide extra time for women to make a well thought of decision about their future family and whether to have children or not.

Anxiety and the fear of not becoming a mother is another important theme we need to explore further. Our study makes clear that an unfulfilled desire for a child can cause severe emotional distress amongst women. This again relates to previous findings in other cultural contexts [10,17,20,38].

All of these factors; the role of anxiety, ambivalent feelings, future family perspectives, and the decision-making process of alternative ways of motherhood are present in the target group, interested in social egg freezing. It is important for healthcare professionals to become aware about the characteristics, feelings and motivations of women interested in social egg freezing in order to offer proper counselling and provide best care possible [39]. Furthermore, it is important to raise awareness about the possibilities of pursuing (alternative) ways of parenthood to support effective policy making. Offering professional help to women in making a choice about their insecure child wish, could possibly prevent from undergoing the intensive trajectory of social egg freezing. Also, healthcare professionals need to consider women's values and preferences regarding motherhood, to find the best available alternatives ways of motherhood. This will contribute to the reinforcement of patient-centred care and will improve quality of life for these women [37].

Interesting to further discuss is also the financial aspect of the egg freezing trajectory and the experienced discriminatory aspect. As the costs of the intervention are considered to be high for an individual, only those who are financially better off can opt for fertility preservation to fulfil their traditional family wish later. This raises concerns in terms of inequality in access, which has also been discussed by de Groot M et al. [19] who introduced the term of "social discrimination" in this particular context. Financial inequality limits women who would like to achieve their desired motherhood but cannot afford to do so.

Options for a (partly) coverage or a construction with cash back are being discussed [40] and offered in fertility clinics outside the Netherlands (e.g., the "freeze and share" option at a UK based egg bank [41]). Nevertheless, coverage of social egg freezing bears the risk of the technology being used as a preventive measure, which could lead to more younger women freezing their oocytes, just to be on the supposedly safe side. Early freezing is indeed related with higher success rates; however, the current usage rate later in life is rather low (3.1 – 9.3%) [21,42]. Social egg freezing is therefore currently not considered to be cost-beneficial [43,44].

The limited discussion on cost coverage is also partly due to the categorisation into medical and social reasons and the seemingly elective nature of social egg freezing. This disregards life circumstances that women seeking the procedure have no control over. The ongoing Covid-19 pandemic, however, further blurs these demarcation lines. Media and other reports let assume that an increasing number of women engage in egg freezing due to the implemented restrictions which lower the chance of meeting a partner to start a family with (see e.g. BioNews, 19 October 2020; Time, 13 January 2021; The Sunday Times, 11 October 2020). However, further research is needed to verify this development and explore potential underlying dynamics.

It is important to broadly inform women about the success rates, costs, and potential alternatives for social freezing to create more cost-beneficial results. Women need to be aware that freezing their oocytes is not an insurance for their child wish, there is still a chance that they do not succeed. Furthermore, it is crucial for policy makers to stimulate cost-effectivity and prevent younger women of pursuing social egg freezing as kind of a prevention method [40] for example by setting a minimum age.

Finally, this study also has limitations that need to be reflected upon. While we succeeded in recruiting a sufficiently large sample for this qualitative study, the demographic profile displays a high degree of homogeneity. However, we recruited interviewees from different hospital settings to explore different experiences and also paid attention to geographic variation, including participants from areas all across the country. Finally, data saturation was achieved. Two individual researchers collected the data, coded the material,

and discussed initial findings with the group of authors, which finally provided a rich analysis.

Conclusion

Exploring women's motivations and experiences regarding social egg freezing allowed us to better understand underlying dynamics and driving factors, shedding light on their very personal perceptions of the life course. Most women have a strong desire for a traditional family composition. However, when the 'biological clock is ticking', feelings of fear increase. Social egg freezing can give 'peace of mind' to some women, irrespective of the costs. For interested women, the available technology provides them with an option to pursue an unconventional path to conventional motherhood also later in life.

Knowing and acknowledging women's motivations for fertility preservation is crucial in terms of providing good patient-centred fertility care, including consultation regarding the treatment, the costs involved, and potential alternatives. It finally also lets us reflect upon the larger underlying dynamics that lead to the postponement of parenthood in general, which are rooted in social conditions. Therefore, it is important to know the motivations of these women, so that professionals can give customised advice and the best suitable treatment. This may prevent unnecessary treatments and costs, which is beneficial for society as a whole.

Authors' roles

K.E. Brokke and N.T.J. Kanters conceptualized, designed, constructed the interview guide, and executed all aspects of the study. K. E. Brokke conducted the research in UMC Utrecht and N.T.J. Kanters conducted the research at the EMC Rotterdam. K.E. Brokke and N.T.J. Kanters both had the main responsibility. A.M.E. Bos and J. Kostenzer initiated this research collaboration in the field of social egg freezing. A.M.E. Bos and S. H. Benneheij assisted in finding participants, assisted with the research design, patient support and advised on medical aspects. H.D.L. Ockhuijsen and J. Kostenzer contributed to every stage of the research design, discussion of analysis and results, manuscript drafting, and revision of the manuscript. All authors have read and approved the final version.

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Data availability

The data underlying this article cannot be shared publicly due to privacy of individuals that participated in the study. The data will be shared on reasonable request to the corresponding author.

Declaration of competing interest

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