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The pros and cons of fertility awareness and information: a generational, Swedish perspective

Maja Bodin^a , Lars Plantin^a , Lone Schmidt^b , Søren Ziebe^c  and Eva Elmerstig^a 

^aCentre for Sexology and Sexuality Studies, Malmö University, Malmö, Sweden; ^bDepartment of Public Health, University of Copenhagen, København, Denmark; ^cFertility Clinic, Copenhagen University Hospital, Copenhagen, Denmark

ABSTRACT

Being aware of factors that affect fertility can help people make informed decisions about their reproductive futures. To some, however, fertility information leads to worry and self-blame. In this paper, we explore how people from different generations discuss fertility and reproductive decision-making, along with their perceptions of fertility information. The study was conducted in southern Sweden with 26 focus-group discussions that included a total of 110 participants aged 17–90 years. The material was analysed thematically. Our results show that fertility knowledge and openness to talking about fertility problems have increased over generations. Participants who were assigned female at birth were more often concerned about their fertility than those who were not, and fertility concerns were transferred from mothers to daughters. While age-related fertility concerns had been uncommon in older generations, participants aged 25–40 often expressed these concerns. Young adults appreciated being knowledgeable about fertility but simultaneously expressed how fertility information could lead to distress. Our conclusion is that fertility information was best received by high-school students, and efforts to improve fertility education in schools are therefore recommended.

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KEYWORDS

Fertility awareness; reproductive decision-making; generations; focus group discussions

Introduction

Being aware of factors that affect fertility can help people make informed decisions about their reproductive futures. For example, individuals can avoid lifestyle-related factors that negatively impact their fertility. Unlike congenital or chronic disease-related causes of infertility, lifestyle factors are potentially modifiable. Hence, fertility awareness – the understanding of reproduction and related individual and non-individual risk-factors, as well as the social and cultural factors that affect options to meet reproductive family planning (Zegers-Hochschild et al., 2017) – can contribute to reproductive empowerment.

One factor that clearly impacts human reproduction is female age. While men normally produce sperm from puberty until death (though with deteriorating quality after age 40), women only ovulate from menarche to menopause. There is an increased risk of chromosomal errors in the beginning and end of this fertile period, which is likely to explain the U-shaped curve of natural fertility in humans (Gruhn et al.,

2019). According to the curve, fertility is highest when people are in their 20s. As males and females age, it takes longer to become pregnant, and spontaneous abortions become more common (Schmidt et al., 2012). Ten years before menopause, women are functionally infertile. In an era when parenthood is increasingly postponed and both female and male age at first birth is increasing, age can be viewed as one of the potentially modifiable risk factors for infertility. While biological ageing is not modifiable, the timing of parenthood is.

Recent studies from Western societies have shown that young people often lack evidence-based knowledge about fertility (Pedro et al., 2018). Education is needed to increase awareness of modifiable risk factors, and several effective fertility education initiatives have been launched worldwide in recent years (Bodin et al., 2018; Boivin, Koert, et al., 2018; Conceição et al., 2017; Goundry et al., 2013; Stern et al., 2013; Wojcieszek & Thompson, 2013). However, exposure to fertility information can also be perceived as distressing. Fertility-awareness messages have been criticised for not being sufficiently tailored

(Boivin, Sandhu, et al., 2019; Maeda et al., 2016) and for putting a disproportionate amount of reproductive responsibility on the woman (Campo-Engelstein, 2014; Cutas et al., 2018). Further, many believe that emotional stress per se is a risk factor for infertility (Bodin et al., 2018; Daumler et al., 2016; Ekelin et al., 2012; Mu et al., 2019). Therefore, initiatives that intend to increase fertility awareness can elicit negative responses if the information induces anxiety. There is poor evidence that emotional (non-traumatic) stress actually affects fertility (Boivin et al., 2011). However, involuntarily childless individuals have described interpersonal and sexual distress – caused by problems with sexual desire, erection, ejaculation and pain – as negatively affecting their ability to conceive (Lundin & Elmerstig, 2015).

Since fertility awareness is a relatively new research field, much is unknown about its relevance to previously reproductive generations and how fertility beliefs and experiences are transferred between generations. At this background, the aim of this study was to deepen the understanding of the interplay between fertility awareness and reproductive decision-making, and of responses to fertility-awareness information, within and between different age-groups. Hopefully this multi-generational perspective can produce important knowledge useful to the development of future fertility education.

Materials and methods

This study is part of a Danish-Swedish research collaboration on reproductive medicine (ReproUnion 2.0) and was approved by the Swedish Ethical Review Authority (Dnr: 2019-02831).

To collect data, focus group discussions (Krueger & Casey, 2015) were conducted in the region of Skåne, southern Sweden, between September 2019 and June 2020. Since the broader aim of this study was to look at intergenerational differences and changes over time, each focus group consisted of participants of approximately the same age. To be able to identify patterns related to age, Krueger and Casey (2015) recommend at least three groups per age interval. We used nine different intervals and managed to recruit three groups per interval except for age interval 20–25. The groups consisted of strangers and/or people who knew each other. Participants were recruited through an online advertisement and through personal and professional networks. Snowball sampling was also used. The recruitment was strategic in its aims of an even distribution of ages and genders and the most diverse backgrounds and reproductive

intentions/experiences possible. However, discussions were only conducted in Swedish, and people who could not follow or be active in a discussion in Swedish were therefore not eligible to participate. Despite the efforts, the study mostly attracted women.

Interested and eligible people were given detailed oral and written information about the study's purpose and procedure, and, if still interested, booked for a group discussion. The aim was to include 4–6 participants per group as recommended by Halkier (2010), based on the ideal that all participants should be able to have eye contact during the FGD and to avoid the formation of subgroups. In a few cases, one or two persons did not show up at the time booked, which resulted in smaller groups than anticipated (three participants only). Fortunately, these FGD's nevertheless became dynamic and informative.

The first author (MB) moderated all interviews, and three other research group members took turns taking notes during the discussions with larger groups (5–6 participants). Before the discussion started, the moderator informed the group about the voluntariness of participation, urged them to only share as much information as they were comfortable with, that they had the right to leave the study at any time without giving a reason and that they could ask to have their statements erased from the transcript afterwards. The moderator and participants also agreed upon “housekeeping rules” for the discussion.

The moderator used a semi-structured interview guide during discussions. The questions encouraged discussions around family building ideals, timing of parenthood, fertility awareness and information seeking. To initiate a discussion about fertility education, a Danish fertility-awareness campaign from 2015 was used as vignette. The campaign consisted of two posters: one describing how female fertility declines with age, and the other informing readers that many men have reduced sperm quality and that it can take longer than expected to become a father. The posters contained the logotype of the Copenhagen municipality and the web address for the Fertility Assessment and Counselling (FAC) Clinic at Copenhagen University Hospital. The target group of the campaign was originally men and women aged 25–30.

The focus group discussions lasted 40–120 minutes. The discussions were audio recorded and transcribed verbatim. During transcription, the material was de-identified and all names used in the results section are pseudonyms. The data was analysed inductively and thematically, according to a stepwise procedure outlined by Braun and Clarke (2006). First, data relevant

to the research questions was identified by the first author and extracted to form the dataset. The dataset was then read several times, coded by the first author by using the qualitative data analysis software NVivo (version 12), and preliminary themes were identified. These themes were then discussed with the co-authors to ensure reliability, and thereafter modified and refined into the final themes presented below. The quotations used in the paper were translated by the first author from Swedish to English and thereafter discussed with and verified by the language proof-reader.

Results

Table 1 gives an overview of group characteristics (age, gender and education). The 26 focus groups included a total of 110 people aged 17–90 years, henceforth classified in the text as young (17–39) middle-aged (40–60) and older (61+). Seventy-three participants self-identified as women, 36 as men and one as gender-fluid. Two men had experienced a gender transition from female to male. A vast majority were Swedish-born ($n=102$). About half of the participants ($n=61$) were parents. Among non-parents, 37 wanted to have children, six were unsure and six wanted to remain childfree. Fifteen of the participants had experienced difficulties in achieving a pregnancy or live birth.

Table 1. Characteristics of participants ($n=101$) in various focus group discussions (FGD); age, genders and highest level of education.

FGD	Ages (years)	Gender(s)	Highest level of education
1	36–40	Mixed	University/college
2	32–35	Female	Mixed
3	62–66	Female	Mixed
4	48–54	Mixed	University/college
5	33–44	Female	University/college
6	17	Mixed	High-school students
7	63–65	Female	University/college
8	17–19	Male	High-school students
9	67–75	Female	Mixed
10	77–83	Female	University/college
11	70–90	Female	Mixed
12	50–51	Male	Mixed
13	25–26	Female	University students
14	33–36	Mixed	University/college
15	35–54	Mixed	University/college
16	18	Female	High-school students
17	31–33	Mixed	University/college
18	30–32	Male	University/college
19	28–32	Female	University students
20	26–27	Mixed	High-school/vocational training
21	49–57	Mixed	Mixed
22	39–41	Female	Mixed
23	50–59	Male	High-school/vocational training
24	23–24	Mixed	Mixed
25	22–26	Female	University students
26	71–74	Male	Mixed

The analysis resulted in four themes: (i) Fluctuating fertility knowledge; (ii) Infertility awareness and openness; (iii) Negotiating time; and (iv) Do you really want to know in advance? Levels of fertility awareness, knowledge and concern varied widely between participants. Some did not know the meaning of the term ‘fertility’ and had never given it a thought, while others had given their reproductive capabilities and options a lot of consideration. The age and gender of participants was significant for their interpretation, as exemplified in the following sections.

Fluctuating fertility knowledge

Although fertility knowledge fluctuated, some patterns could be identified. First, when asked about what they believed affected fertility, participants often said, ‘the usual stuff that is bad for your body’, giving examples of smoking, alcohol, drugs, poor nutrition, stress, and a sedentary lifestyle. These assumptions were usually drawn from general awareness about health, without having read up on fertility health specifically.

Highly educated women usually added more to the list of risk factors, and young women and trans men were more aware than older women about reproductive diseases and their possible adverse effects. Endometriosis and polycystic ovary syndrome (PCOS) were regularly mentioned among the younger group, but never among the older. Older women confirmed that knowledge about reproductive health is more common today, and talked about how they smoked and drank alcohol around the time of conception and during pregnancy without knowing better:

Anna: I had children when I was just 20, then I did not care about how healthy I lived. Or, I did, but you did not have these kinds of thoughts, it was not fashionable at the time to be so healthy.

Birgitta: No it was not.

Anna: There were a lot of people who smoked, and sat in the car and smoked.

Birgitta: Yes, you smoked at the same time [as you were pregnant], friends of mine did.

Denise: But it also has to do with the fact that you know more today than you knew before.

[FG9]

By saying ‘it was not modern at the time’ Anna shows her perception of social ideals, and what we in Western societies today regard as good behaviour. The discussion reveals how ideals have changed over time and have been influenced by new knowledge and more readily accessible information. So-called

'fertility myths' were described among all generations, but while older generations described fertility myths related to decency, younger generations described myths related to technology or medical procedures. For example, one woman in her 60s had been told by her mother to not wear tight jeans, since it could give her a sexually transmitted infection (STI) that would make her infertile. Interestingly, STIs were very seldom mentioned as risk factors for infertility by younger or middle-aged generations. Instead, younger participants believed that the use of hormonal contraception or legal abortions would negatively impact female fertility.

Female age was overall the most often mentioned risk factor for infertility. Participants (across all ages and all genders) claimed that it was common knowledge that female fertility declines with age and they mentioned age 35 as a tipping point. When discussed further, it turned out that the age-related concern usually had more to do with the risk of having a child with chromosomal abnormalities than the difficulty of becoming pregnant in the first place. Participants rarely knew that female fertility declines as rapidly as it does, or that higher male age also leads to increased risk of miscarriages, length of time it takes to become pregnant and infertility. What usually happened when talking about age as a possible risk factor was that someone in the group contrasted this risk with a success story of a person older than 40 who had had a healthy child. The participants hence expressed an ambivalence about whether they believed that age should be generalised as a risk factor.

Infertility awareness and openness

Although participants generally seemed aware that *some* people have fertility problems, few had thought that *they* would have problems themselves, especially not participants from the older generations. They expressed a feeling that fertility problems have increased in the past decades, but when discussed further, it became clear that what has changed is rather the openness to talking about infertility, as expressed in this group of women in their 60s:

Elisabeth: At that time, it was only natural to have children; people just had them, sort of.

Frances: That you could not [have children], it was not something that people talked about, not as I remember anyway.

Gudrun: My parents had friends – we had neighbours – and they had no children. And it was sad, I

understood that. It was sad because they had not had any children and they were the best [potential] parents in the world and they looked after me, and so on. It was a grief for them.

Frances: Yes, mom and dad had it too, friends who –

Helena: My uncle and his wife had no children.

Frances: But it was sad, as I said, almost Greek-drama-sad, so it was nothing that could affect just *anyone*, nothing that was part of what you had to calculate for yourself. It was self-evident that I could have children; I remember I thought something like that.

[FG7]

Apparently, infertility had affected the older generations as well, but to a greater extent, it was considered a private issue. In the rare case above, where infertility had been talked about openly, it stood out as overly dramatic, and therefore not something that could happen to just anyone.

Middle-aged participants who had experienced fertility problems tried to be more open about their problems. They talked to their friends and children in a way that would make infertility, and related treatments, appear less dramatic. Peter, who participated in a group of middle-aged parents, said that he had never talked to his parents about reproduction before he and his wife started an IVF-treatment, but now, afterwards, it seemed perfectly normal to do it. He also used to tell his 11-year-old daughter that having a child is a gift, not something you can count on having:

I try to talk to her about it, or I'm just trying to tap it in a little bit so she might keep it in the back of her head, that it might be something very special. But I probably do so because of what we've been through, I think; otherwise I might not have done it. [FG4]

Young women and trans men had more worries about their fertility and reproductive health than young cis men. Fertility, as such, was presented as more present in their lives. They were also more prone to telling stories about how the reproductive health of their mothers or friends affected their own awareness. Consistently, mothers who had experienced gynaecological cancer, endometriosis or irregular cycles described how they openly discussed reproductive health with their daughters and encouraged them to attend screening programmes and pay attention to symptoms. They stressed the importance of not suppressing these topics. However, being aware of one's parents' experiences is not entirely uncomplicated, as it could cause worries about the risk of heredity:

Liv: I have also thought about [fertility] quite a lot, partly because I know that my own mother, when she was trying to get pregnant, she had problems and

went to the doctor who said that she apparently had menstruation but not ovulation due to hormonal imbalance in the body, so she had to take supplements or something like that, just to get pregnant. I myself have had problems with my mood, I take different medications; I just think stress and things like that can probably also affect ovulation. So I think that when I'm going to have children, I'm a little worried – I do not know, but I think I should probably check out what it [my uterus] looks like. I also know that my own mother had quite a lot of cysts and stuff like that, and I myself had cervical dysplasia/ ... /So it's also something I have thought about a bit, how it will affect [my fertility]. [FG25]

In this quote, Liv describes a range of possible risk factors to her fertility, of which heredity is one. Altogether, the potential risks caused her distress, since she had a very strong longing to become a mother. There were also women in the study who were afraid of giving birth because of birth horror stories from their mothers, which had caused a disbelief in their own body's ability to give birth. This fear led some of them to postpone or refrain from motherhood.

Negotiating time

Many women who were 25–35 years old and not yet mothers spontaneously expressed that they felt stressed by their age, and men who had girlfriends aged around 35 expressed similar feelings. They felt stressed by the pressure of getting life settled (having an education, job, housing, life experience and a partner) and at the same time showing consideration for the 'biological clock'. A female student who had been in the same relationship for 10 years but postponed parenthood argued that:

'it is so important that you feel that you are really there, that you not just [have children] because you are stressed, but that you really feel ready. Because it is a life you will raise' [FG24].

Despite a strong longing to become a mother, she underlined the importance of becoming a *prepared* parent, who is capable of caring for a new life. She was currently in a favourable position to say this, since she was young and in a stable relationship. Participants who had not found a partner at age 30–35, on the other hand, were in a quite different position. They, for example, expressed feeling stressed about lagging behind their friends in the family-building process. In their search for a partner, some of them decided to declare their fertility intentions at an early phase of dating, to not waste time on someone who didn't want to have children.

Both men and women also talked about the risk that fertility stress could lead to 'panic pregnancies', which would be especially devastating if the relationship was bad. Maria [FG2] spoke about a friend who had been frightened by fertility-risk messages during her medical training, and who decided to have a child at 25 even though she was in an unhappy marriage, because she was too afraid to wait. Maria further described how her highly educated friends discuss age in a way that collectively – and excessively – increases their worries. From her own experience of having had a fertility assessment, she pointed to the importance of individualised fertility counselling, instead of giving general advice about age.

While emotional stress was believed to lead to hasty decisions, it was also believed to hinder conception. Participants substantiated this argument by referring to themselves or friends who had tried to conceive for a very long time, and who had not succeeded until they gave up or started to focus on other things in life. A group of men in their 50s discussed:

David: We were probably a little comfortable because we wanted to do a lot of things before [having children], but then once we decided [to start trying] it took seven years. But that's another story. It was not something we chose ... so ... that's why we became parents so late.

Moderator: Did you get help from healthcare?

David: No, yes, or we did, but once we had come that far, we put off the project. And, as in all such cases, once you put it off, all of a sudden, bang, boom: it worked.

Eric: It is a tension that releases when you come to terms with the fact that 'no, we may not become parents'.

David: Yes.

[FG12]

In these stories, different stressors had to be removed for the body to reproduce. The stressor could be a demanding career, a mother-in-law, or just a very intensive, energy-consuming longing for a biogenetic child. Sigrid, who strived for a second child during an era when medically assisted reproduction was not available, shared her experience of distress with the group:

Sigrid: I ran to every doctor in town [for seven years] and the last one, he said, 'stop thinking about it. Yes,' he said, 'you've been stuck in the thought too long, stop thinking about it. If you can afford it, stop working a little and stay at home with your other child' and I did it as best I could. There was nothing wrong with me or my husband, but it still took seven years.

Turid: But we actually had neighbours who had been trying to have children for many years, so they adopted a girl, and all of a sudden they had two children in a natural way, they let go of all thoughts that 'we have to'....

Ulla: But this with adopting children because they can't have it, and then there will be a child of their own –

Turid: It was like that for my neighbours.

Ulla: – I have good friends who experienced just this. It can be a tension in the body that does it.

[FG11]

In the case of Sigrid, she had been desperate to know what was wrong with her or her husband and sought help from a plethora of experts, but it was not until a doctor told her to relax that she became pregnant.

Seeking help from experts when problems arose was a natural step for participants, especially the younger ones. To assess one's fertility *before* trying to conceive, however, felt alien to most, as is described in the next section.

Do you really want to know in advance?

During the discussions, participants were asked to look at two fertility-awareness posters, one of which described the age-related decline in female fertility, while the other reported that many (Danish) men have reduced sperm quality. Many participants found the information valuable, that it was food for thought, and they liked that the campaign also targeted men (and not only women). The campaign was best received by male high-school students and some of the participants who were no longer of reproductive age.

Among participants who were 25–40 and not yet parents, however, the campaign was perceived as causing or increasing distress. Although they believed that fertility information is important, they did not appreciate the way they received the information. After looking at the campaign, a female university student said:

'I would have felt offended if I had seen this [in town]! It's like it's talking to me, saying, "Yes, in two years: it's over. It was a bad life choice you made"' [FG17].

She felt that the campaign was blaming her for making the wrong decisions in life. Several other women mentioned similar reactions to the campaign, like feeling attacked, frightened, stressed, and angry. There were also many voices questioning why the

State should be involved in a private issue like this. Instead, people suggested that the State should address the societal reasons behind postponed parenthood, such as the housing shortage. Hence, the posters were perceived differently depending on factors such as age, gender, class and relationship status.

However, all participants agreed that having basic fertility knowledge is crucial, and they came up with several suggestions of how to increase fertility awareness in the population. A common suggestion was that it must be taught in schools. A man in a group of 30-year-olds, who was unaware of how rapidly female fertility declines, said:

Carl: I think it's strange that we have not learned about this in school, so it should definitely be part of [one's] education. If you want to improve fertility, you have to learn about it. I can only [find out] for myself; this is not something I know. It's something that I [learned when] you spoke about it a little and my friend told me a little, but it's nothing I've read about myself, so I have no overall picture in any way, which I think is strange. When I left the school system, I should have known more. And then after the school system, what [sort of information] gets through then? It's not that damn much, because there's all that noise. [FG 18]

The other members of his group agreed that there is so much information circulating in today's society that people become fact-resistant, also saying that we are so individualistic today that we get offended if someone tries to tell us how to live our lives. Therefore, they believed that a fertility awareness campaign targeting adults needs to be less insinuating in the way it addresses its audience, rather neutrally guiding people with fertility questions to a reliable source. Participants also believed that if the target group is younger people, advertising on social media is crucial.

Some high-school students were intrigued by the possibility of attending fertility counselling and having a fertility check-up, which they first learned about through this fertility campaign. Most of the other participants were more uncertain about whether they wanted to be aware of their fertility status before trying to conceive. They talked about how there are two sides to every coin. Knowing that you have reduced fertility could lead, on the one hand, to action or relief, but on the other hand, to unnecessary distress and anxiety:

Alex: I think for my part right now, I'm happily ignorant. If I were to find out that my fertility is very low, 50% of what one should have or something like that – or non-existent – I think it would only give me anxiety, especially since I'm not actively trying to have

children. Until the day it has to be assessed, I think I would feel best about being ignorant.

Benjamin: Mmm, you probably also think that you are fertile unless you, for some reason, know something about your body from before. You think that the starting point is that you are fertile until proven otherwise. You may not want to know everything, all the problems you have to face in life in general, so maybe it's one of those things.... or maybe you make some choices as a 22-year-old, 'OK, my sperm is pretty bad,' then maybe you would do something, like freeze it, if you want to become a parent ten years later/.../it has two sides to it.

Alex: Yes, I'm trying to play with that thought. Then in my case I really think, if it turns out I'm not fertile, ahem, I hope I would be as rational as I am sitting here [now] and say, 'OK, then there are other options', there is adoption and the like, which I can look at if I would not be fertile enough. Or insemination or whatever you choose. But I believe and hope that this would not result in me regretting that I drank too much beer in my early 20s, or whatever it is that could affect [my fertility] ...

[FG18]

In this conversation, the participants reasoned that it is better not to know and just assume that you are fertile, unless you have a reason to doubt your fertility. However, they also considered the risk of ignorance, that it would lead to self-blame and anxiety in the future if they turned out to be infertile and could have done something to prevent it.

One benefit of knowing, mentioned by young women in some groups, was that it would make a difference for them in terms of contraceptive use and their fear of unintended pregnancies:

Alma: Now you fight like hell not to get pregnant, and what if you even can't?!

Brita: Yes, exactly!

Alma: Then I have been taking all these hormones and things for years, without it even being necessary.

Camilla: Yes, but why don't you assess it then, so you can see if you are fertile? So you can enjoy either or!

Alma: Yes, although, I do not want to know

Brita: Why not?

Alma: I don't know, but it's like you don't want to know if you –

Brita: When you die?

Alma: Yes, a bit like that. That day, [that sorrow,] we deal with it then. Now it is not even relevant.

Camilla: But what if you have something that they can [do something about], if it is found early?

Alma: Yes, yes, I see both sides.

Brita: Ugh. I do not want to think about that. It would be so damn sad.

Camilla: One assumes that one can have children

[FG13]

Alma and Brita have a fatalist discussion around the relationship between infertility and death; you do not want to know if or when it is going to happen, it is something you just deal with when the day comes. Their views are supported by a group of 50-year-olds [FG21], of which one participant had had fertility problems, who compare infertility to cancer. This group concluded that knowing of your disease in advance, whether it is cancer or infertility, would only cause distress and could ruin the chances of having or keeping a romantic relationship. All in all, having a fertility assessment to find out how fertile one is before having problems was not viewed as very appealing. Some childfree women, however, were keener on knowing their reproductive status, since their potential fertility bothered them. Wanda [FG14], a childfree woman in a heterosexual relationship, said about her fertility, '*I just wish I could kill it*', perceiving it as unwanted and problematic. To these women, finding out that they were infertile upon attending a fertility assessment could thus be perceived as a relief.

Discussion

Based on the focus group discussion of this study, we have identified a pattern showing an increase in fertility awareness over time, alongside new research findings and channels for disseminating information, and an increasing openness to conversations about reproduction. Still, beliefs about fertility are not always evidence-based; just as often, it is based on one's own or others' experiences, storytelling and opinions, or unreliable media reports. This is exemplified by the discussions around age. Female age is one of the fertility factors that people have become increasingly aware of, due to the trend of postponed parenthood and subsequent research and media attention. Women aged 25–40 are especially aware (and stressed) by this factor. Few older people, on the other hand, had been worried about this factor when younger, probably since they often settled down and had children at an earlier age. However, distress experienced by young adults is not only based on awareness about the age-related fertility decline, but also equally based on social expectations of when to have a child. Young people juggle the awareness of fertility decline with the desire to have finished an education, having found a loving partner, being in phase with their friends and

not becoming a too old and tired parent (Bergnéhr, 2008; Bodin & Käll, 2020; Ragnar et al., 2018).

What this study also shows is that fertility awareness means more than just being aware of factors that pose a risk to fertility and acting upon this knowledge. Although medical literature discusses many risk factors leading to infertility as potentially modifiable, they are not always perceived as such by the individual (for example, age at first birth). Neither is 'being aware' regarded as inherently positive or uncomplicated. As described in previous studies, many people take their fertility for granted and do not wish to think about their fertility until it is time to conceive or until a problem arises (Bodin et al., 2018; Bodin & Käll, 2020; Hviid Malling et al., 2020). Thinking actively about one's fertility and having it assessed can lead to existential thoughts and dilemmas. In our study, some of the participants questioned what they should do with their potentially new knowledge and were unsure whether it would increase or decrease distress and self-blame.

Fertility education apparently deals with several dilemmas. From one perspective, it could be regarded as unethical to withhold information from people that could prevent them from having fertility problems. Still, some people feel very stressed by fertility messages, leading them to reject the information rather than embrace it. Regarding the issue of postponed parenthood, it has also been questioned if education is the solution, since it is mostly those who are highly educated who postpone parenthood (Cutas et al., 2018). However, as we and several others have shown, many people, including the highly educated, do not know how rapidly female fertility declines and that medically assisted reproduction cannot help everyone. We have also noted in a previous article (Bodin et al., 2021) that some young people have the impression that the biological reproductive timeline has been extended as life expectancy has increased, which unfortunately is not the case. As concluded in several previous studies (see e.g., Harper et al., 2017; Hviid Malling et al., 2020) better education in high school is warranted. In addition to education, politicians should also consider addressing the societal factors that make it feel impossible or unattractive for 'postponers' to have children at an earlier age (e.g., housing shortages, precarious employment, low parental-leave allowance for students, etc.) (Nielsen et al., 2016).

It is clear from the interviews that 'stress' is a common social phenomenon and a word that participants often use. In this context, it is a blanket term for a spectrum of nuanced meanings (distress, worry,

anxiety, pressure, fear, blame, guilt, and more) that do not always conform to the definitions in medical literature. The evidence indicates that emotional stress does not directly affect fertility (Boivin et al. 2011), but most participants believe that it does. Accordingly, they react negatively towards fertility information that they experience as increasing their stress levels. Participants base this belief on experiences or stories in which they assume actions to reduce stress had led to improved fertility, such as 'thinking about other things', 'stop trying' and/or adopting a child (see also Bunting & Boivin, 2008). It is, however, more likely that these success stories can be explained by the fact that subfertile couples need a longer time to become pregnant due to their physical conditions. It should be noted that interpersonal distress can negatively affect fertility through sexual difficulties, and that when an individual's sexual interactions become more technical and outcome-focused, performance anxiety can occur (Lundin & Elmerstig, 2015). Hence, the health of a couple's sex life is an important part of fertility assessments. However, stressful feelings in terms of worry about one's reproductive possibilities is not likely to cause fertility problems per se, which the public needs to be better informed about.

Another finding that can be useful for future educational incentives is that the knowledge about sexually transmitted infections seems to have been lost over generations. Tubal factor infertility, often caused by a STI, ranks among the most common causes of female infertility (Tsevat et al., 2017). The evidence linking Chlamydia and gonorrhoea to infertility is compelling, but only three focus groups mentioned STI as a risk factor for infertility. Similar findings have been found in previous Swedish, Danish and British studies (Bodin et al., 2018; Goundry et al., 2013; Hviid Malling et al., 2020), indicating that young adults are not fully aware of *why* they should protect themselves from STIs. Instead, some younger participants in our study believed that abortions negatively impact female fertility, an assumption that, with the modern and legal methods used today, can no longer be regarded as true.

Although the purpose of qualitative studies is not to generalise, the aim of this study was to include people with as many varied backgrounds and experiences as possible. This has been fulfilled to some extent by the variety of ages, occupations, sexual and gender identities, reproductive intentions, and family formations represented here. However, women and people born in Sweden dominate the sample, and the study does not include the perspectives of childless

people older than 55 years. The results should be interpreted based on this knowledge.

In conclusion, increasing fertility awareness can be a challenging task. Everyone has the right to know how fertility works, but the way fertility information is presented can be perceived as offensive and judgemental to certain groups who, for example, feel that fertility facts only compound the societal pressures they already experience, or that there are other factors involved in reproductive decision-making that are beyond their control. There are also people who prefer to remain unaware of their fertility status until it is time to conceive. Overall, we found that the youngest participants (17–24) were the most receptive to fertility information, indicating that it might be easier to receive this information when the road to parenthood is ahead of you. Although young adults (25–35) were less receptive, they expressed that they wished that they had learned more about fertility in school.

Our conclusion is that we cannot solely rely on older generations to educate children about reproductive health. Not all parents take on this task, nor are older people likely to share the same fertility concerns with consequent generations, who have access to more, updated information and who experience different socioeconomic constraints, freedoms, pressures, and choices. Hence, improving fertility education in schools and providing all young adults with a foundation of evidence-based knowledge seems to be the best way forward. We have identified several knowledge gaps and topics for discussion (STIs, stress, PCOS, age) that could be incorporated in future fertility education to improve lay people's fertility awareness.

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ORCID

Maja Bodin  <http://orcid.org/0000-0003-4647-5709>
 Lars Plantin  <http://orcid.org/0000-0002-4663-4004>
 Lone Schmidt  <http://orcid.org/0000-0002-9518-1734>
 Søren Ziebe  <http://orcid.org/0000-0003-4904-1623>
 Eva Elmerstig  <http://orcid.org/0000-0003-2255-6547>

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