

**Young women's opinion about the possibility of predicting premature ovarian failure
(POF): a qualitative study**

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ENGLISH ABSTRACT

Title: Young women’s opinion about the possibility of predicting premature ovarian failure (POF).

Background: The serum levels of Anti-Müllerian Hormone (AMH) can be used to predict the age when menopause will occur. When this occurs before the age of 40, it is called premature ovarian failure (POF). POF is influenced by a number of factors, including age, obesity, smoking, and alcohol consumption. In addition, highly educated women are more likely to seek medical help for infertility. The predictive value of AMH to predict POF has been investigated in quantitative research, but there is a lack of qualitative research exploring opinions on predicting POF.

Research question: How do young women (18–30 years) with different educational levels perceive the possibility of predicting POF?

Method: A generic qualitative design was conducted using fifteen face-to-face semi-structured interviews. Maximum variation in educational levels was achieved by purposeful sampling. The data was analysed using the Qualitative Analysis Guide of Leuven.

Results: One overarching theme “possibility of predicting POF” and three interpretive themes “passive knowledge”, “preconditions”, and “future child wish” were identified. For all participants, the interview was the first encounter with the possibility of predicting POF. Overall, eight out of fifteen participants would undertake the AMH test to predict POF.

Conclusion: This research provides insight into women’s opinions about the possibility of predicting POF. Most participants are interested in an AMH test regardless of their educational level.

Implications of key findings: Further research should focus on increasing awareness around the possibility of predicting POF, especially for women with an increased risk of fertility issues. In addition, the research population could be comprehensive by including women between the ages of 25 and 40.

Keywords: Premature ovarian insufficiency, Anti-Müllerian Hormone, qualitative research

NEDERLANDSE SAMENVATTING

Titel: De mening van jonge vrouwen over de mogelijkheid om prematuur ovariumfalen (POF) te voorspellen.

Achtergrond: De waarden van het Anti-Müller-Hormoon (AMH) in het bloed kunnen worden gebruikt om de leeftijd te voorspellen waarop de menopauze zal optreden. Wanneer dit voor de leeftijd van 40 jaar gebeurt, wordt dit prematuur ovariumfalen (POF) genoemd. POF wordt beïnvloed door een aantal factoren, namelijk: leeftijd, obesitas, roken en alcoholgebruik. Daarnaast zoeken hoger opgeleide vrouwen vaker naar medische hulp bij onvruchtbaarheid. De voorspellende waarde van AMH is eerder onderzocht in kwantitatief onderzoek, maar kwalitatief onderzoek ontbreekt op dit gebied.

Onderzoeksvraag: Hoe ervaren jonge vrouwen (18-30 jaar) met verschillende opleidingsniveaus de mogelijkheid om POF te voorspellen?

Methode: Het onderzoek heeft een generiek kwalitatief design. Er is gebruik gemaakt van vijftien semi-gestructureerde interviews die face-to-face zijn afgenomen. Een maximale variatie in opleidingsniveaus is bereikt door een doelgerichte streekproef te trekken. De gegevens zijn geanalyseerd met behulp van de handleiding kwalitatieve analyse van Leuven.

Resultaten: Eén overkoepelend thema is geïdentificeerd namelijk: "de mogelijkheid om POF te voorspellen". Daarnaast zijn drie interpretatieve thema's geïdentificeerd: "passieve kennis", "randvoorwaarden" en "toekomstige kinderwens". Voor alle geïnterviewden was het interview de eerste kennismaking met de mogelijkheid om POF te voorspellen. Deze studie toont aan dat acht van de vijftien participanten de AMH-test zouden willen doen om POF te voorspellen.

Conclusie: Dit onderzoek geeft inzicht in de mening van vrouwen over de mogelijkheid om POF te voorspellen. De meerderheid van de deelnemers is geïnteresseerd in een AMH test, ongeacht hun opleidingsniveau.

Implicaties: Vervolgonderzoek zou zich moeten richten op het vergroten van kennis over POF, specifiek bij vrouwen met een verhoogd risico op vruchtbaarheidsproblemen. Daarnaast kan de onderzoekspopulatie uitgebreid worden door vrouwen tussen de 25 en 40 jaar op te nemen.

Trefwoorden: Prematuur ovarium insufficiëntie, Anti-Müller-Hormoon, kwalitatief onderzoek

INTRODUCTION

Worldwide, the average prevalence of infertility among women is 9.0%.¹ Prevalence rates range from 3.5% to 16.7% in more developed countries and from 6.9% to 9.3% in less developed countries.¹ Infertility is defined as the inability to conceive after twelve months of regular unprotected sexual intercourse.² Infertility is a known health problem that influences the quality of life through physical, psychological, and social effects.²

Every woman is born with a finite number of oocytes (around 1 million follicles/oocytes).³ Each month, the number of oocytes decreases. At some point, the number of oocytes is too low, and a woman stops menstruating. The moment when no menstrual periods have occurred for twelve consecutive months is defined as the start of the menopause.^{4,5} Worldwide, the average natural transition to menopause is around 51 years of age, with a broad range of 40 to 60 years.^{3,6-8} If the final menstrual period occurs before the age of 40, it is called premature ovarian failure (POF), which affects 1.0%–2.0% of women.^{6,9} The treatment for POF is most effective before the age of 30.¹⁰ POF can be described as a decline in both ovarian function and the ovarian response to follicle-stimulating hormone (FSH) and as a reduction of oestrogen levels.¹¹ Risk factors for POF are hereditary diseases, enzyme shortage (decreased oestrogen production), smoking, alcohol use, and autoimmune diseases, as well as damage to the ovaries as a result of chemotherapy and radiation therapy.³

There are several hormones involved in the regulation of the early stages of follicle development,¹² for instance, Growth differentiation factor-9¹³, FSH¹¹, inhibin B¹³, and Anti-Müllerian Hormone (AMH)¹⁴. Serum AMH is a marker for the number of growing follicles. Due to the depletion of the ovarian primordial follicle pool, the amount of serum AMH will decline.^{11,15,16} The AMH test requires a relatively small blood sample.

Many studies on the predictive value of AMH for POF have been published.^{3,6,11,14,17} A meta-analysis by Kelsey et al.¹⁷ investigated 3260 samples of serum AMH to calculate the normal range of AMH for different age classes of women. This examination showed that the AMH level of growing follicles rises from birth up to the age of puberty, reaching a peak around 24–25 years (0.8 ng/ml); after menopause this value is lower (0.1 ng/ml).^{12,17} The occurrence of repeated low levels of AMH is a marker for POF.^{3,11,14} Thus, a validated model to calculate expected menopause onset was developed.¹⁷ Although the accuracy of the prediction has wide margins (95% CI 0.01–0.22).¹⁸ Multiple blood samples over a longer period are needed to increase the reliability of the test.¹⁹

The possibility of predicting POF is expected to be used more by higher-educated women than in lower-educated women. Highly educated women are more likely to seek medical help for infertility.²⁰ Fertility awareness is significantly associated with the level of

education ($p = .007$) and increased linearly with a higher level of education ($p < .001$).²¹ In this research, one of the questions was to investigate the opinion of women of different educational levels on this topic.

Women with POF have difficulties coping not only with the inability to become pregnant but also with mood swings, sweating, weight gain, and loss of sexual desire.²² Additionally, women experience POF as something very painful and hard to accept, both physically and psychologically.²² It is expected that the possibility of predicting POF can help women prepare for this unexpected outcome and potentially undertake preventive actions.^{23,24}

Currently, there is little insight in the Netherlands into women's opinions about fertility, fertility preservation, and the possibility of predicting POF with an AMH test. This research is necessary and useful in order to gain an understanding of whether women would like to know when their menopause will start. More specifically, the study can shed light on the opinion of women with different educational backgrounds on fertility, fertility preservation, and the possibility of predicting POF.

RESEARCH QUESTION

The research question of this study was, "How do young women (18–30 years) with different education levels perceive the possibility of predicting premature ovarian failure (POF)?"

METHOD

Design

A generic qualitative design was used to establish how women perceive the possibility of predicting POF.^{25–27} This design was chosen to gain insight into the thoughts and considerations women bring up while talking about this subject. Since the research question does not fit neatly within the confines of a single established methodology (phenomenology, ethnography, or grounded theory), a generic qualitative design was chosen.^{25–27} More structured than a phenomenological design, this is an inductive approach that can provide insight into the essential meaning of participants' experience and perspectives.²⁸

Population and Domain

The population of interest consisted of 18 to 30-year-old women of different educational levels, living in the area of Utrecht (the Netherlands). Purposeful sampling was used to reach maximum variation in educational level and age.²⁹ The age range was chosen because the treatment of POF is most effective before the age of 30.¹⁰ As mentioned in the introduction, a relation exists between educational level and awareness of infertility.²¹ A broad education

range was covered by including participants with a middle-level-applied education, university of applied science education, and scientific education.

Data collection

Semi-structured interviews were conducted by the researcher, A. Grootenhuis (AG), master student in clinical health science. An interview guide was developed in Dutch (appendix 1). The main topics of the interview were fertility, fertility preservation, and the possibility of predicting POF. The interview guide was based on literature^{18,30-32} and on the knowledge of the researcher; her supervisor, Dr. H. Ockhuijsen (HO); and the fertility doctor H. Torrance (HT). Open questions using prompts and probes were used to elicit more detailed information.³³ To increase the credibility of the findings, AG completed interview training provided by Utrecht University to strengthen her skills.^{33,34}

The quality of AG's interview skills was judged after two interviews and was found adequate. The interviews were audio-taped to ensure the reliability of the results.³⁵ During and at the end of the interview, a summary was provided of the main topics to check if the received information was well interpreted by AG. Several demographic characteristics were collected, such as age, educational level, and marital status. Various studies³⁶⁻³⁸ have shown that sexual orientation, marital status, and religion play an influential role in fertility awareness.

Data analysis

The analysis was guided by the Qualitative Analysis Guide of Leuven (QUAGOL).^{39,40} This guide was used because it includes a spiral of analysis, which results in a forward-backward movement between within-case and across-case analysis.³⁹ The interviews were fully transcribed, and the MAXQDA 12 Standard (Berlin, Germany) program was used to support the data processing.⁴¹ The process of analysis consisted of two parts: (1) preparation for the coding process (five stages) and (2) the actual coding process (five stages).³⁹

In the first part, as soon as possible after an interview, transcripts were coded by AG, based on observational memos and recordings to ensure the highest possible reliability of the data.⁴² This preparatory work was crucial to develop a useful and empirical framework for the coding process.²⁹ The forward-backward movement between within-case and across-case was analysed by AG and HO independently from each other. Next, the essence of the participants' responses to the research question was analysed by constant comparison.

In the second part, the list of concepts was converted to MAXQDA.^{43,44} Based on the previous stages, a list of contextual and analytical concepts was drafted. This part ends with a description of the results. During this iterative process, the data analysis was alternated

with data collection. After every three interviews, the researchers AG and HO discussed their differences and similarities to reach consensus in the coding process.³⁴ When presenting the results, each quotation of the participant is followed by age and education level.

Procedures

In October 2017, AG first approached the various schools with an invitation email followed by a telephone conversation. Different schools were approached to select women of different educational levels. Three schools gave permission to recruit students with an advertisement for participation. The recruitment of participants took place from December 2017 to March 2018. All participants received an information letter; one week later the researcher contacted the participants by telephone to ask if there were questions and to make an appointment. Before the interview, written consent was obtained. None of the participants withdrew.

The interviews were conducted at the participants preferred location, such as at home or at school. In addition, the interviewer devoted attention to building a good, empathetic but nevertheless professional relationship with the participant.⁴⁵ All interviews were conducted by AG.

Observational and theoretical memos were made during the analysis discussions.^{29,34} To increase reliability and validity, peer debriefing was conducted between HO and AG throughout the interviewing period.^{33,34} Interviews were performed until data saturation occurred.³³ Data saturation is defined as “the collection of qualitative data to the point where a sense of closure is attained because new data yield redundant information”.^{29 (p.744)} To determine if saturation had occurred, one extra interview was conducted at every education level.

Ethical issues

The study was conducted according to the World Medical Association Declaration of Helsinki.⁴⁶ The Medical Research Ethics Committee has stated that this study did not fall within the scope of the Dutch Medical Research Involving Human Subjects Act (WMO) (protocol ID:17-834/C). All data were handled confidentially and anonymously. The names of the participants are fictitious. The handling of personal data complied with the European Commission’s laws on the protection of personal data.^{47,48}

RESULTS

Fifteen interviews were conducted, and the researcher (AG) reached saturation after twelve interviews. Three extra interviews (one per educational level) were conducted to confirm saturation. The duration of the interviews ranged from 23 to 57 minutes (*Mean* 40). The

mean age of the participants was 24 years (min 19 – max 28) (*Table: 1 and 2*). All the participants were approached through the advertisement.

One overarching theme, namely “possibility of predicting POF”, and three interpretive themes, namely “passive knowledge”, “preconditions”, and “future child wish”, were identified. The women’s perception of possibly predicting POF emerged from the different views that women had when they imagined having POF; they were thinking about how they would respond. This overarching theme links the three interpretive themes. The theme of passive knowledge emerged from the fact that none of the participants had prior knowledge of fertility, fertility preservation, or POF; the interview was their first encounter. Preconditions such as housing conditions and economic certainty needed to be fulfilled before women would consider having children and therefore think about fertility. Accordingly, most of the participants preferred to have settled these matters before considering an AMH test. The theme of a future child wish emerged because none of the participants had already set their mind on having children, so they did not have a child wish at the time. Should the participants wish to have children in the future and want to know if the attempt will be successful, the AMH test might be a facilitator. Each theme is described in detail below. In addition, an overview of the themes and the relation between them is shown (*Figure: 1*).

>Insert: Table 1, Table 2, Figure 1<

Possibility of predicting POF

It was clear that most participants would take the AMH test if it would be easy to do in a comfortable place, preferably without a hospital visit, and would not be too expensive (*Quote 1*). The possibility of predicting POF was perceived differently by each participant. During the interview, participants were asked if they would take the AMH test. Most of the participants ($N = 8$) were positive about the AMH test and said that the test would give them more certainty about their fertility (*Quote 2*). The desire to become a mother was high among these participants. Some participants ($N = 5$) said that they would undertake the test in the future but would postpone it for the moment. Some participants said they would like to be older before taking the AMH test, and they would like to have more information about how invasive the AMH test would be (*Quote 3*). A few participants ($N = 2$) reported that they were against the AMH test because it would provide confrontational information and would affect their day-to-day life. Examples of such disruptions were both the regular blood collections and the constant thinking about the ability to have children and/or the consequences of being single (*Quote 4*). Two participants gave two clear examples of situations in which to undergo the

AMH test: in the case of serious illness, for example with cancer, or in the case of POF occurring in the family. One thing was certain: If POF occurred in the family, all the participants in this study would undertake the AMH test to decrease uncertainty about fertility. One participant mentioned her boyfriend's Muslim religion as an influencing factor on her thinking about the AMH test. She said that he would probably not want her to take the AMH test or fertility preservation measures (*Quote 5*).

Box 1: "possibility of predicting POF": illustrative quotes

"If the AMH test is just as easy as a pregnancy test and low in costs, then it would be easier to choose it." (Quote 1: Femke 23-Middle)

"Yes, I would definitely do the test. Then I know what I can expect. Because I am someone who would like to know." (Quote 2: Elif 22-Low)

"Not at this moment. I would first want to read more about how invasive the test will be and get some information from my family and my boyfriend. Then write down advantages and disadvantages and then make a well-considered choice. But I am certainly not negative about it." (Quote 3: Katie 26-Middle)

"I would not do the test. I live in the moment. In addition, I find it an extra step that you have to go to the hospital. If you can buy something from a drug store such as a pregnancy test, the step is less. But this is really an investigation." (Quote 4: Femke 23-Middle)

"I think my boyfriend thinks differently about fertility preservation (for example IVF). That is because he is Muslim. According to him, it has to be in a natural way, otherwise it is not allowed." (Quote 5: Frederike 25-Middle)

Passive knowledge

This theme emerged from the interviews because the participants' knowledge of (in)fertility was based on experiences within their social network (friends and family) rather than on existing literature. Most participants described a lack of knowledge regarding fertility, fertility preservation, and POF. Participants did not know much about fertility, irrespective of their level of education. Twelve participants said that becoming pregnant is not self-evident; they had heard this from family and friends who had experienced miscarriages and infertility (*Quote 6*). One participant said that she was uncertain about her fertility because she had an unhealthy lifestyle, indicated by her smoking and overweight. The participants also had passive knowledge of fertility preservation. They were not aware or had only basic knowledge of treatments for fertility preservation, such as in vitro fertilisation (IVF) and intracytoplasmic sperm injection (ICSI) (*Quote 7*). The researcher provided information about fertility preservation options and asked the participants what they would do in the case of being able to predict infertility. Most of the women considered preventive measures, such as freezing oocytes or embryos. Some said they would fulfil their wish for children earlier. The interviews also revealed that there was little knowledge, and especially passive knowledge, of POF and the transition to menopause. The main reason was that few people in the

participants' surroundings had to deal with POF. Participants noted examples of a mother or aunt who was in transition, but the interviewees were not aware that POF was also possible. Fourteen participants said that they had never heard of POF or that they had no idea at what age this could occur (Quotes 8–10). One participant had more knowledge of POF because a colleague suffered from it (Quote 11).

Box 2: "passive knowledge": illustrative quotes

"You cannot think, I want to get pregnant, and it will succeed. You do not know that at all. A girlfriend of mine has had a few miscarriages." (Quote 6: Katie 26-Middle)

"That you ... freeze the sperm? But for the rest, I have no idea." (Quote 7: Sanne 23-Low)

"I have never heard of it. Can you explain it to me?" (Quote 8: Marja 21-Low)

"Early menopause? I have never heard of this. There is less information about it, unless you are looking for it, then there is plenty to find. I think this can be better, for example, with brochures and advertisements." (Quote 9: Lenne 27-Middle)

"I have no idea what premature ovarian failure or early transition means." (Quote 10: Denise 28-High)

"One colleague is 31 years old and she is already in transition. She has endometriosis. She had a desire for a child but is already super young in the transition." (Quote 11: Karlijn 24-Middle)

Preconditions

Most participants mentioned that they did not yet want to get pregnant; they would like to arrange better preconditions first, such as housing, economic certainty, a stable relationship, or having a partner in the case that the participant was single (Quote 12). Most of the participants found education important to provide stability and a full-time job to be an important precondition. One participant said that she had had an abortion. It had been clear to her that the preconditions must be better before having a child because she had had no work or a boyfriend (Quote 13). Participants stated that having a partner is a precondition for having a first child (Quote 14).

Box 3 "preconditions": illustrative quotes

"Hmm, I would rather do as my parents did. That you spend a lot of time together with your partner, such as travelling. And then preferably the perfect picture of getting married, a house, and then children. That all conditions are present. And as far as my career is concerned, this must first be a permanent job before I start with children. In short, I would like stability first before I want children." (Quote 12: Birgitte 25-High)

"I wanted to have my own place, have a good job and have certainty that I can give the baby what she deserves. I did not have that when I was pregnant. That is why I chose an abortion." (Quote 13: Sanne 23-Low)

"Yes, I really want children, but no idea when. I am not thinking about that, because I do not have a boyfriend" (Quote 14: Evelien 26-High)

Future child wish

None of the participants had already set their mind on having children, so they did not have a child wish (Quote 15). However, becoming pregnant and genetically having children was a future wish for all the interviewed women (Quote 16). If POF occurred and it was not possible to become pregnant in a natural way or through a reproductive technique, all the participants said they would certainly consider adoption (Quote 17). Most of the women claimed to have a strong desire to have children; however, they had never thought about reproductive techniques and adoption because they were not thinking about getting pregnant yet (Quote 18).

Box 4 "future child wish": illustrative quotes

"Yes, I really want children, but later because I am now 26 years old. At this moment I find myself too young." (Quote 15: Katie 26-Middle)

"I am still quite young, but I would like to have children later." (Quote 16: Christel 24-High)

"I would love to have children, and I have thought about adoption, but I would really like to have my own biological children. But I am open for adoption." (Quote 17: Amira 19-Low)

"I have never heard of ICSI, but I will do everything to become pregnant in a natural way." (Quote 18: Denise 28-High)

DISCUSSION

The research question of this study is how young women with different education levels perceive the possibility of predicting premature ovarian failure (POF). One overarching theme emerged: "possibility of predicting POF". It was linked with three interpretive themes: "passive knowledge", "preconditions", and "future child wish". Passive knowledge of fertility and fertility preservation measures are thought to influence women in whether to take an AMH test or not. Women tend to think more about fulfilling preconditions before getting pregnant than about actually being able to get pregnant: being fertile. All of the interviewed women had a child wish; this might have had a positive influence on their perception of taking the AMH test to predict POF. Overall, this research showed that regardless of their education levels, most participants would undertake the AMH test to predict POF. This study is a first step towards gaining more knowledge about women's opinions on the possibility of predicting POF.

There is a lack of previous qualitative studies of the overarching theme "possibility of predicting POF". Therefore, the results of this study cannot be compared directly. However, women's experiences with menopause have been previously studied and can be related to the outcomes of this study.⁴⁹ This qualitative study shows that women should be prepared for menopause,⁴⁹ and the AMH test could help. Faubion et al.⁵⁰ have described several

consequences of premature menopause, such as effects on cognition, mood, cardiovascular system, bones, and sexual health. The psychological impact of early menopause is very important to address as early as possible. The AMH test would make it possible to think about these consequences early on and act accordingly.

One of the interpretive themes that emerged from the data was “passive knowledge”. This is in line with previous studies, including the studies of Bunting et al.³⁰ and Hickman et al.,³¹ which state that the participants’ knowledge of (in)fertility was based on experiences within their social network (friends and family) rather than on existing literature. For the participants in this study, more education would probably improve decision-making about POF.

The theme “preconditions” provided insight into a few central elements, such as housing, economic certainty, and a stable relationship. A review of Rindfoss et al.⁵¹ revealed that suboptimal housing conditions or financial status are the primary reasons for delaying childbearing. In this study, similar findings were discovered. Another reason for postponing parenthood was the wish for further education.⁵²⁻⁵⁴ Most of the participants found education important in providing stability and ultimately offering children the best conditions for growing up.

The findings presented under the theme “future child wish” indicate that during the interviews, all the participants were voluntarily childless but interested in their future fertility. Worldwide, the average age of women at childbirth was 30 years in 2015.⁵⁵ The average age of the participants in this study was 24 years, which may explain the fact that these women were not busy with fertility, fertility preservation, and POF. Other studies have shown that women have a strong desire to bear genetically linked children, which is in line with the responses of the participants in this study.^{56,57}

Although previous research found that educational level has been identified as a strong predictor of fertility awareness and the willingness to seek medical help in the case of infertility, in this study, no differences were found between participants of different educational levels.²⁰ A possible explanation is that in the Netherlands the middle-level-applied education can be differentiated into level 1 (lowest) up to level 4 (highest).⁵⁸⁻⁶⁰ In this study, only women with middle-level-applied education with level 4 were accidentally interviewed. Perhaps, this may have affected the results of this study.

Strength of this study is that the coding process and identification of themes were based on consensus between the researchers AG and HO; this makes the reliability of this study high. In addition, to improve the rigor, validity, and transferability, several methods were used: writing memos, conducting a pilot interview, audio recording, verbatim transcribing of the interviews, providing summaries during the interviews, and using a

COREQ checklist⁴⁰ (appendix 2).^{61,62} Another strength was the maximum variation approach, which was achieved for educational level and age.³⁴ The variation in age (19–28) could have influenced the results regarding the relevance of the subject under discussion. Most women were under the age of 24 and were not ready to think about getting pregnant or having children. This may have affected their opinion about prediction POF. However, there were some limitations within this study: The participants had passive knowledge of the various themes during the interviews (fertility, fertility preservation, and POF), and the participants had limited time to think about the consequences of POF for their situation and how to cope. Therefore, most participants considered many kinds of dilemmas during the interview regarding fertility. One of these dilemmas was that it was unknown how invasive the AMH test is. This made the question “are you willing to use the AMH test to predict POF” an even more difficult question than it already was. The participants not only had to think about POF but also had to consider how invasive this test could be. The researcher provided the information that the AMH test would require several small blood samples. The researcher could not say how many blood samples are needed and at what kind of intervals. The influence of the invasive character of the AMH test may have disrupted the results of the study. Participants should have more information to make an informed choice.

Based on the identified themes, it is recommended that more education should be given to young women about fertility, fertility preservation, and POF, especially if there is an increased risk of fertility issues, for example, if there is a family history, or after chemo/radiotherapy. Therefore, extensive information seems to be very important. Another recommendation is to interview women who are older: 25–40 years. This is because the participants in this study did not yet have a desire to have children. Older participants would probably be more concerned with a child wish, more informed about (in)fertility, and could make other choices.

In conclusion, this research provides insight into women’s thoughts about the possibility of predicting POF with an AMH test. Regardless of the level of education, most of the participants were interested in an AMH test to predict POF. All participants would perform the AMH test if POF had occurred in their family.

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Table 1: Demographic characteristics of participants (N=15)

Name	Age,yrs	Education level	Sexual orientation	Marital status	Religious
Anne	24	High ^a	Heterosexual	Cohabiting	Catholic
Birgitte	25	High ^a	Heterosexual	Single	None
Christel	24	High ^a	Heterosexual	Single	None
Denise	28	High ^a	Heterosexual	Long distance relationship	None
Evelien	26	High ^a	Heterosexual	Single	Catholic
Femke	23	Middle ^b	Heterosexual	Cohabiting	Catholic
Frederike	25	Middle ^b	Heterosexual	Long distance relationship	Catholic
Karlijn	24	Middle ^b	Heterosexual	Single	Catholic
Katie	26	Middle ^b	Heterosexual	Cohabiting	None
Lenne	27	Middle ^b	Homosexual	Cohabiting	None
Amira	19	Low ^c	Heterosexual	Long distance relationship	Muslim
Marja	21	Low ^c	Heterosexual	Long distance relationship	None
Monique	21	Low ^c	Heterosexual	Single	None
Elif	22	Low ^c	Heterosexual	Long distance relationship	Muslim
Sanne	23	Low ^c	Heterosexual	Single	None

^a High: scientific education

^b Middle: university of applied science education

^c Low: middle-level-applied education

Table 2: Characteristics of the participants (N=15)

Characteristics	N
Weekly smoking use > 10 cigarettes	3
Weekly alcohol use > 4 glasses	8
Family history with fertility problems	0
Employment full-time	10
Body Mass Index (BMI)	
Underweight (<18.5)	0
Normal weight (18.5-25)	11
Overweight (25-30)	4
Obesity (>30)	0

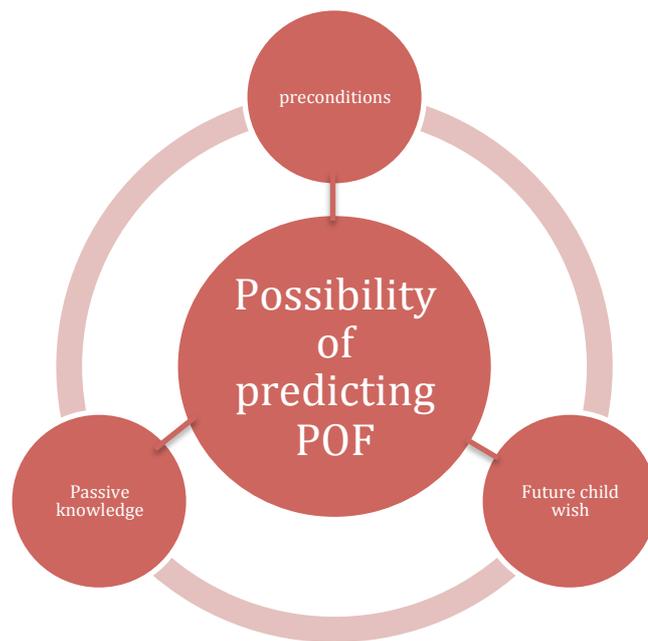


Figure 1: One overarching theme “possibility of predicting POF” and three interpretive themes “passive knowledge”, “preconditions” and “future child wish” were identified.

APPENDIX 1: Interview guide

Main concepts:	Questions:
Introductie	<p>Wie ben ik</p> <p>Waarom dit onderzoek</p> <p>Doel van het onderzoek</p> <p>Bedankt dat u deel wilt nemen (altijd anoniem). Zullen we afspreken om elkaar met je en jij aan te spreken?</p> <p>Geeft je toestemming voor opname van dit interview (als u wilt dat de opname even gestopt wordt kan dat altijd)?</p> <p>Heb je nu een uur de tijd voor het interview?</p> <p>Ik ben benieuwd naar uw ervaringen, mening en ideeën. Op die manier kan ik veel informatie verzamelen voor deze studie. Jouw verhaal is voor mij belangrijk.</p>
Vruchtbaarheid	<p>Denk je wel eens na over vruchtbaarheid?</p> <p>Hoe komt het dat je daar zo over nadent?</p> <p>Wat weet je over vruchtbaarheid/onvruchtbaarheid?</p> <p>Hoe ziet jou situatie thuis eruit?</p> <p>Hoe belangrijk is vruchtbaarheid voor jou?</p> <p>Hoe sta je tegenover kinderen krijgen?</p> <p>Welke factoren spelen een rol bij je beslissing?</p> <p>Welke ervaringen heb jij in jouw omgeving met vruchtbaarheidsproblematiek?</p> <p>Hoe heeft dat jouw manier van denken over vruchtbaarheid beïnvloed?</p> <p>Hoe dacht je hiervoor over vruchtbaarheid?</p> <p>Kort samengevat:... klopt dat?</p>
Vruchtbaarheidsbehoud	<p>Heb je ooit met vruchtbaarheidsbehoud te maken gehad?</p> <p>Weet je wat vruchtbaarheidsbehoud is?</p> <p>Heb je wel eens iets gehoord over vruchtbaarheidsbehandelingen?</p> <p>En weet je welke vruchtbaarheidsbehandelingen er zijn?</p> <p>Wat vind je van deze vruchtbaarheidsbehandelingen?</p> <p>Heb jezelf wel eens nagedacht over vruchtbaarheidsbehandeling?</p> <p>Welke voordelen zie jij in de vruchtbaarheidsbehandelingen?</p> <p>Welke nadelen zou je kunnen bedenken?</p> <p>Wat zou jij vinden van de kosten die eraan verbonden zijn? Heb je dat ervoor over?</p> <p>Kort samengevat:... klopt dat?</p>
Prematuur ovarium falen voorspellen.	<p>Heb jij ooit een keer te maken gehad met vervroegd in de overgang of ooit een keer van gehoord?</p> <p>Wat weet jij over vervroegd in de overgang komen?</p> <p>Hoe denk je daar over?</p> <p>Wat zijn de gevolgen van vervroegd in de overgang komen?</p> <p>Heb jij ervaring met mensen in jouw omgeving die vervroegd in de overgang komen?</p> <p>Hoe sta jij er tegenover dat mensen vervroegd in de overgang kunnen komen?</p> <p>Stel dat het in de toekomst mogelijk is om met een eenvoudige test te weten te komen of je vervroegd in de overgang komt zou je dan gebruikt maken van die test?</p> <p>Op welke leeftijd zou je dan deze test willen doen?</p> <p>Wat zou je doen met de uitslag van de test?</p> <p>Kort samengevat:... klopt dat?</p>
Eindgesprek	<p>Zijn er nog andere vragen die je mij had willen vertellen?</p> <p>Kan ik je nog ergens mee van dienst zijn?</p> <p>Als er nog vragen zijn kan je altijd contact opnemen.</p>

APPENDIX 2: COREQ checklist qualitative research reporting

Domain 1: Research team and reflexivity

Personal characteristics

- | | |
|----------------------------|--|
| 1. Interviewer | Master student: Anouk Grootenhuis |
| 2. Credentials | Master student Clinical Health Science, Nursing Science, University Utrecht |
| 3. Occupation | Nurse |
| 4. Gender | Female |
| 5. Experience and training | Works as a nurse for 4 years in the hospital at the obstetrics department.

In addition, since 6 months working as team head of the department of neonatology, children's day-care treatment, and children's department. |

Relationship with participants

- | | |
|---|--|
| 6. Relationship established | No established relationship with the participants. |
| 7. Participant knowledge of the interviewer | No known previous knowledge of the interviewer |
| 8. Interviewer characteristics | No characteristics reported. |

Domain 2: Study design

Theoretical Framework

- | | |
|--|--|
| 9. Methodological orientation and theory | Qualitative analysis was guided by the Qualitative Analysis Guide of Leuven (QUAGOL). MAXQDA12 Standard (Berlin, Germany) program was used to organise and analyse the data. |
|--|--|

Participant selection

- | | |
|------------------------|-------------------------------|
| 10. Sampling | Purposeful sampling |
| 11. Method of approach | Invitation email and phone |
| 12. Sample size | 15 were interviewed, $N = 15$ |
| 13. Non-participation | Inapplicable |

Setting

- | | |
|----------------------------------|--|
| 14. Setting of data collection | Home setting or at school |
| 15. Presence of non-participants | No |
| 16. Description of sample | Age, educational level, sexual orientation, marital status, religious. |

See table1 and 2

Data collection

- | | |
|----------------------------|--|
| 17. Interview guide | The questions were based on the literature and the knowledge of the researcher (AG fertility doctor (HT), and supervisor (HO). |
| 18. Repeat interviews | No |
| 19. Audio/visual recording | Yes, audio recording |
| 20. Field notes | Yes |
| 21. Duration | 40 minutes |
| 22. Data saturation | Yes |
| 23. Transcripts returned | No |

Domain 3: Analysis and findings

- | | |
|-------------------------------------|--|
| 24. Number of data coders | Two (AG and HO) |
| 25. Descriptions of the coding tree | The process of analysis consisted of two parts:

(1) preparation of the coding process (five stages) and

(2) the actual coding process (five stages). |
| 26. Derivation of themes | Themes were derived from the data |
| 27. Software | MAXQDA-12 |
| 28. Participant checking | During and at the end of the interview a summary was provided on the main topics, to check if the received information was well interpreted by AG. |

Reporting

- | | |
|----------------------------------|-----------------------------|
| 29. Quotations presented | Yes |
| 30. Data and findings consistent | Yes |
| 31. Clarity of major themes | Major themes are presented. |
| 32. Clarity of minor themes | Themes are categorised. |