

# A survey on the intentions and attitudes towards oocyte cryopreservation for non-medical reasons among women of reproductive age

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**BACKGROUND:** Although cryopreservation of semen is a routine procedure for preserving male gametes, an efficient method of preserving fertility through oocyte freezing has only recently become available for women. In view of the limited female reproductive lifespan, oocyte freezing can now offer women some protection against the decline in fertility with aging.

**METHODS:** A survey was performed in Belgium among 1914 women of reproductive age (21–40 years) to assess public attitudes towards the phenomenon called 'social oocyte freezing'. Women were questioned on their awareness of the age-related fertility decline and their views and intentions towards considering undergoing oocyte cryopreservation.

**RESULTS:** The electronic questionnaire was completed by 1049 women, giving a response rate of 55%, and 25 were excluded as they were incomplete/inconsistent. Our results demonstrate that 31.5% of respondents consider themselves as potential social oocyte freezers, of which 3.1% would definitely consider the procedure. Just over half of the women (51.8%) would not consider the procedure while 16.7% indicated they had no opinion. Potential oocyte freezers are characterized by a higher number of desired children and more openness to oocyte donation. The decision to actually embark on such treatment would primarily depend on conditions, such as the procedure not affecting their natural fertility and the health of future children.

**CONCLUSIONS:** We conclude that a significant proportion of young women would consider safeguarding their reproductive potential or are at least open to the idea of social oocyte freezing.

**Key words:** survey / cryopreservation / social oocyte freezing / attitudes / aging

## Introduction

The advent of successful oocyte freezing techniques may open the doors to a new medical and societal phenomenon of oocyte freezing to avoid age-related subfertility. Oocyte cryopreservation had relatively low success rates in the past but with the introduction of the vitrification technique, pregnancy outcomes to date have been encouraging. Oocytes preserved using vitrification have a more than 90% survival rate per oocyte after thawing and a 75% fertilization rate (Oktay *et al.*, 2006; Gook and Edgar, 2007). Some IVF units report success rates with oocyte cryopreservation that approach those for fresh oocytes (Nagy *et al.*, 2009; Rienzi *et al.*, 2010).

Although embryo cryopreservation is considered part of the standard practice for fertility preservation, oocyte cryopreservation holds the

major advantage that it avoids the necessity for sperm at the time of oocyte retrieval (Lee *et al.*, 2006). Therefore, oocyte cryopreservation has become a tool for medical fertility preservation (e.g. before gonadotoxic treatment), especially in adolescents and single women (Bromer and Patrizio, 2008; Gidoni *et al.*, 2008). The use of oocyte cryopreservation for fertility preservation for social indications has caused much debate (Dondorp and De Wert, 2009; Homburg *et al.*, 2009). As the oocyte cryopreservation techniques are still considered experimental, the main professional bodies consider its non-medical use (i.e. social oocyte freezing) premature (Shenfield *et al.*, 2004; Practice committee, 2008). However, several fertility centres around the world have started to offer oocyte cryopreservation to healthy women.

Research aimed at characterizing women who opt to freeze oocytes for social reasons is scarce. Gold *et al.* (2006) counselled 20 women

prior to elective oocyte preservation. These women had an average age of 38 years and had a high educational level and described themselves as intelligent and extroverted. The majority of women were single and wanted to take the pressure off the search for relationships and their biological clock from ticking. Almost half of them considered single parenting after the age of 40 years. The pivotal event in their decision to opt for oocyte freezing was the recent awareness of the egg-freezing technology and the advanced age of some women undergoing the procedure.

The aim of the present study was to investigate attitudes concerning social oocyte freezing among women of reproductive age in Belgium. The following research questions were addressed: (i) How many women would consider social oocyte freezing? (ii) Are there significant differences between women who are categorized according to their willingness to cryopreserve oocytes? (iii) What is the profile of the women who are categorized as potential oocytes freezers regarding their awareness about fertility and aging, their desire for a child, attitudes towards motherhood and career, and the use of donor material?

## Materials and Methods

### Procedure

An electronic survey was sent to 1914 women between 21 and 40 years of age and living in Belgium. Email addresses of the women surveyed were retrieved from a large nationwide registry of people that consented to be contacted for the purpose of surveys. The questionnaire was sent by email to women who were representative of all social classes and geographic locations within the country. It is difficult to evaluate the validity of recorded attitudes of the respondents in the absence of other surveys on this topic, however, several interventions, as follows, were performed in order to maximize the validity: the construction of the questionnaire was based on previous research on oocyte donation resulting in the 'Attitudes towards donation scale' (Skoog *et al.* 2003) and on the basis of the information gathered after explorative interviews with women who were candidates for freezing their oocytes, and focus group interviews with students and health care professionals. During administration of the questionnaire, women received an informative text on oocyte cryopreservation, in which the possible use of the technique for medical and social reasons, the success rates, the associated risks, the side effects and the experimental state of the technique were described, according to the recommendations made by the Practice Committee of the Society for Assisted Reproductive Technology and the Practice Committee of the American Society for Reproductive Medicine (2008). The study was approved by the Ethics Committee of the UZ Brussel. To investigate reliability, an exploratory factor analysis was performed on items in the questionnaire. Cronbach's alpha was performed to test for internal consistency of items in different subsections of the questionnaire and all values were between 0.67 and 0.94.

### The questionnaire

A questionnaire about the attitudes towards oocyte freezing was constructed on the basis of previous research on oocyte donation (Skoog *et al.*, 2003; Tydén *et al.*, 2006; Purewal *et al.*, 2009) resulting in the 'Attitudes towards donation scale' (Skoog *et al.*, 2003).

#### *Willingness to freeze oocytes in the future*

The question was formulated as follows: 'would you consider freezing oocytes at some point in time?'. The response categories were: 'yes', 'maybe', 'no', 'I do not know'.

#### *Demographics*

Respondents were asked to answer an extensive questionnaire on their demographics. The questions were designed to relate the intentions and attitudes of the women towards social oocyte freezing to age, educational level, relational status, children, religion, ethnicity, monthly income and the experience of infertility.

#### *Fertility awareness*

In order to assess fertility awareness, the study participants had to answer five questions allowing us to categorize these women according to their degree of fertility awareness (Warburton and Fraser, 1964; Dunson *et al.*, 2002, Report of the College of Physicians for Assisted Reproduction Therapy, Belgium). We considered the optimists; giving a wrong answer to the question and thereby overestimated their reproductive potential, the pessimists; giving a wrong answer to the question and thereby underestimating their reproductive potential and the realists; who mostly gave correct answers to the questions and thereby making a realistic estimate of their reproductive potential.

#### *Factors that would make women more likely to freeze oocytes*

Items that influence the decision to freeze oocytes were identified on the basis of data gathered in focus groups, explorative interviews with candidates for social oocyte freezing and published literature (Skoog *et al.*, 2003). The respondents were asked to indicate on a five-point scale to what extent each item applied to them. The percentages reported here represent the proportion of women who assigned a high importance of that criterion by selecting four or five on the five-point answer scale.

#### *Attitudes and intentions regarding age of motherhood and child desire*

These questions were asked to assess the views of the responders towards the age and age limits for motherhood and their desire for children.

#### *Attitudes towards oocyte donation*

The question was formulated 'would you consider to donate oocytes to someone you know' and 'would you consider to anonymously donate your oocytes?'. The respondents were asked to indicate on a five-point scale to what extent each item applied to them. The percentages reported represent the proportion of women indicating a high openness to donate, by selecting four or five on the five-point answer scale.

## Data analysis

A latent class analysis (LCA) has been performed in order to classify the respondents into mutually exclusive groups. The LCA attempts to detect the presence of latent classes within the responding population based on the answers given to two sets of questions. A first LCA was performed based on the views and attitude towards family planning and maternal age, and a second LCA was performed on the basis of the nature of the desire for children. The LCA creates patterns of association in the answers towards these questions.

A logistic regression has been performed in order to identify characteristics that are associated with the population interested in undergoing oocyte cryopreservation for non-medical reasons. We used the backward selection method, meaning that non-significant variables were removed one by one, with the less significant variable removed at each step. A final set of independent variables which was significantly associated with the profile of potential oocyte freezers was identified. Statistical significance was set at  $P < 0.05$ .

## Results

### Intentions to cryopreserve oocytes for non-medical reasons

A total of 1049 women out of 1914 filled out the questionnaire, leading to a response rate of 55% (Table I). Of these women, 25 cases were excluded because of an inconsistent or incomplete answering pattern. Of the 1024 responders 3.1% answered 'yes' as to the question whether they would consider freezing their oocytes in the future (Table I). In total, 28.4% answered 'maybe', 16.7% stated they 'do not know/have no idea' and half of the women (51.8%) answered 'no'.

In order to simplify the further analyses, the sample was split into three groups according to women's willingness to freeze their oocytes: the 'potential freezers' ( $n = 323$ ; 31.5%) reported they would or maybe would freeze their oocytes in the future, the 'doubtful group' (16.7%) could not form an opinion on the matter and the 'non-freezers' (51.8%) reported they would not freeze their oocytes.

### Demographics

Potential freezers are more likely to belong to the youngest age category (21–29 years) than the respondents in the non-freezer group or doubtful group [ $\chi^2(8) = 102.1$ ;  $P < 0.001$ ; Table II]. The non-freezers are significantly older than the potential freezers and the doubtful [ $F(2, 1021) = 57.56$ ,  $P < 0.001$ ]. There were no differences between the three groups for ethnic background, sexual orientation, religiosity or educational level. Potential freezers were less often married and more often in a non-cohabiting relationship than the non-freezers [ $\chi^2(2) = 30.43$ ;  $P < 0.000$ ] and consequently less often divorced [ $\chi^2(2) = 12.8$ ;  $P < 0.001$ ]. The non-freezers more often have children than the potential freezers and the doubtful [ $\chi^2(2) = 58.93$ ;  $P < 0.001$ ].

When it comes to the professional activities, the doubtful group differs from the other two groups as they are less often self-employed and manual workers, and more often the employee. The non-freezers are less likely to be part of the paid work force [ $\chi^2(8) = 19.54$ ,  $P < 0.05$ ].

A trend was found regarding monthly income with the non-freezers less often having a 'medium income' (between 1250 and 1749 euros) and more often having a low income when compared with the potential freezers and the doubtful [ $\chi^2(4) = 7.96$ ,  $P < 0.01$ ]. In contrast, the partners of the non-freezers more often had a high income

(>1750 euros) when compared with the partners of the potential freezers and the doubtful [ $\chi^2(4) = 9.94$ ,  $P < 0.05$ ].

### Public awareness about reproductive aging and oocyte cryopreservation

Intentions towards social oocyte freezing are not reflected in the scores of a multiple-choice test on the awareness of age-related fertility decline (Table III). The majority of the women in our sample (77.9%;  $n = 798$ ) were quite pessimistic as to their reproductive potential; 14.3% ( $n = 146$ ) were realistic about their reproductive potential and 7.8% ( $n = 80$ ) were optimistic about their reproductive potential. There was no difference between the groups in number of pessimistic, optimistic or realistic women observed or in the scores for pessimistic, optimistic or realistic opinions [ $F(2, ) = 0.201$ ,  $P = 0.818$ ].

About 77.6% of all respondents had already heard about the possibility to vitrify oocytes but no difference was found when the three groups were compared. However, the potential freezers were more willing to receive additional information on oocyte freezing when compared with the non-freezers (40.2 versus 3%;  $\chi^2 = 219.6$ ;  $P < 0.001$ ). The majority of the potential freezers wanting more information would consult the website of a fertility centre (38.5%) or look on the internet (26.9%) or talk to their gynaecologist (22.3%). Only 10.8% would contact the fertility centre by phone and only 1.5% would contact their general practitioner.

### Factors that would make women more likely to freeze oocytes

Potential freezers would be more likely to embark on social oocyte freezing, primarily if they were more reassured about risks to their future fertility related to the procedure (75.2%) and the health safety of the children resulting from cryopreserved oocytes (70.9%; Table IV). Women in the doubtful group report the same concerns, but in a different order. Non-freezers indicate that if they had not yet had children (36.2%) or had not completed their desire for children (34.9%) they would be more likely to freeze oocytes.

### Latent class analysis

LCA on the basis of questions related to the age of motherhood divides the responders in two distinct latent classes (Table V and Fig. 1, upper panel). Women belonging to the latent class named 'strong child desire, advanced age acceptable' (19.6% of the population) were also more likely to be a potential oocyte freezer. They all stated that they at least want one (more) child and the majority would like (or had) their first child after the age of 29 years and feel it is alright to have a child after the age of 35 years. The second latent class, described as 'moderate child desire, age restricted' (80.4%) is characterized by the absence of women intending to conceive beyond 35 years of age.

A second LCA conducted with a set of questions related to the desire for a child resulted in three latent classes (Fig. 1, lower panel). Women in the 'latent child desire' class (51.8%) are more likely to be potential oocyte freezers. All women belonging to this group have a desire for children but are currently not trying to conceive. This group also includes all responders stating that their partner has no further desire for children.

**Table I** Intentions to freeze oocytes among women aged 21–40 years.

Would you consider to freezing oocytes for social reasons?	n	%	Group	%
Yes	32	3.1	Potential freezers	31.5
Maybe	291	28.4		
I don't know	171	16.7	Doubtful group	16.7
No	530	51.8	Non-freezers	51.8

**Table II** Demographic data of the female responders, grouped according to attitude toward social oocyte freezing ( $n = 1024$ ).

Demographic data	Potential oocyte freezers ( $n = 323$ )	Doubtful group ( $n = 171$ )	Non-freezers ( $n = 530$ )	P
Age, years mean	28.57	28.70	32.28	<0.001
Living in the Dutch speaking part of the country (%)	66.9	55.6	54.3	<0.001
Caucasian (%)	98	95	97	NS
Educational level: low, medium, high (%)	9.3/29.5/61.2	6.5/36.9/56.5	10.3/36.1/53.6	NS
Relational status				<0.001
Single (%)	22.3	22.8	16.4	
Non-cohabiting (%)	20.4	15.8	11.1	
Cohabiting (%)	31	28.7	30.9	
Married (%)	26.3	32.7	41.5	
History of a divorce: yes (%)	5	7	12	0.002
Heterosexual orientation (%)	96	94	95.5	NS
Children				
Children: yes (%)	34.4	39.2	59.8	<0.001
Number of children	1.86	1.90	1.96	NS
Professional activities				<0.05
Self-employed	5.7	3.9	4.7	
Employee	57.7	58.5	48.8	
Manual worker	13.4	13.1	14	
Unemployed (e.g. housewives, students)	23.2	24.5	32.6	
Monthly income				
Low, medium, high (%)	31.7/49.1/19.2	32.2/51.7/16.1	38/40.2/21.8	0.093
Income partner: low, medium, high (%)	11.7/51.5/36.8	24.1/43.7/32.2	15.8/41.9/42.2	0.041
Women as principal earner (%)	39.3	36.8	37.2	NS
Infertility				
Experience of infertility	9	8.8	4.9	0.040
Know someone with a fertility problem	70.6	69.6	67.7	NS
Aware of oocyte freezing technique	80.2	79.5	75.5	NS

**Table III** Questions in the survey to determine the awareness of women about fertility and aging.

Question	1	2	3	4	5
1. If a woman and a man regularly have unprotected intercourse during a period of a year, how large is the chance that she will become pregnant if she is 35–40 years old?	0–29%	30–39%	40–49%	50–59% <sup>a</sup>	60–100%
2. At what age is there a marked decrease in women's ability to become pregnant?	15–24 years	25–29 years	30–34 years	35–39 years <sup>a</sup>	40–50 years
3. The chance for a pregnancy to end with a miscarriage at the age of 40 years is?	<1%	1–10%	11–20%	21–30% <sup>a</sup>	>30%
4. The chance for a pregnancy after one IVF treatment at an age between 40 and 43 years old is?	0–15%	16–25% <sup>a</sup>	26–35%	35–45%	>45%
5. The chance to be pregnant of a child with Down Syndrome at the age of 40 is?	0.01%	0.1% <sup>a</sup>	1%	5%	>10%

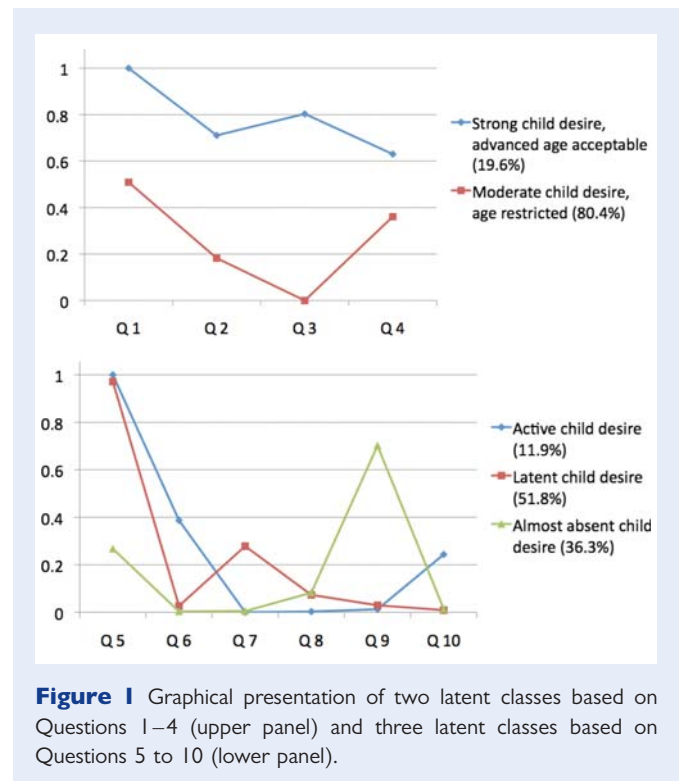
<sup>a</sup>Indicates the correct answer according to published data.

**Table IV** Factors that would make women more likely to freeze oocytes.

Potential freezers	Doubtful	Non-freezers
1. Doesn't affect future fertility	75.2%	1. Health safety children 59.6%
2. Health safety children	70.9%	2. Doesn't affect on future fertility 57.3%
3. More financial reimbursement	65.9%	3. Treatment less complex 51.5%
4. More guarantees for success	61.6%	4. More guarantees for success 45.6%
5. Treatment less complex	58.2%	5. More reimbursement 43.9%
6. If I wouldn't have children	57.3%	6. If I had a desire for a child 42.1%
7. If I had a desire for a child	55.7%	7. If I wouldn't have children 40.4%
8. Treatment in nearby hospital	47.4%	8. Spoken to women that have undergone the treatment 34.5%
9. Spoken to women that have undergone treatment	42.4%	9. Treatment in a nearby hospital 32.2%
		1. If I wouldn't have children 36.2%
		2. If I had a desire for a child 34.9%
		3. Health safety children 29.4%
		4. Doesn't affect future fertility 27.2%
		5. More guarantees for success 24.2%
		6. Treatment less complex 20.0%
		7. More reimbursement 16.2%
		8. Spoken to women that have undergone the treatment 16.0%
		9. Treatment in a nearby hospital 11.5%

**Table V** Questions used to classify respondents into mutually exclusive groups using LCA.

Analysis based on age of motherhood			
Q1	How many (more) children do you want?	0	≥ 1
Q2	At what age do you want (did you have) your first child?	≤ 29 years	> 29 years
Q3	At what age would you wish your last child?	≤ 35 years	> 35 years
Q4	From what age is it no longer acceptable to give birth?	≤ 40 years	> 40 years
Analysis based on child desire			
Q5	I can imagine to have (more) children.	No	Yes
Q6	My partner and I are currently trying to conceive.	No	Yes
Q7	I have a desire for (more) children while my partner has not.	No	Yes
Q8	My partner has a desire for (more) children while I have not.	No	Yes
Q9	I will never want any (more) children	No	Yes
Q10	I am pregnant	No	Yes



**Figure 1** Graphical presentation of two latent classes based on Questions 1–4 (upper panel) and three latent classes based on Questions 5 to 10 (lower panel).

**Attitudes toward oocyte donation**

Women who are potentially interested in social oocyte freezing are also more open to the idea of donating oocytes (Table VI).

**Logistic regression: potential freezers versus doubtful and non-freezers**

The logistic regression was aimed to characterize potential freezers as opposed to doubtful or non-freezers based on all variables assessed (Table VII). It indicates that women of the cluster 'Strong child desire, advanced age acceptable' have a higher chance of considering oocyte freezing than patients belonging to the cluster 'Moderate child desire, age restricted'. Also, the logistic regression

indicates that women of the cluster 'Latent child desire' have a higher chance of considering oocyte freezing than patients belonging to the cluster 'Almost absent child desire' and the cluster 'Active child desire'. The more inclined women were to donate oocytes and the greater the importance attributed to conditions before freezing, the higher the chance of considering oocyte freezing. More precisely, potential freezers are characterized by the higher importance attributed to the degree of fulfilment of the additional conditions related to the procedure (Table IV) before embarking on social oocyte freezing. Women living in the Dutch speaking part of the country are more likely to consider oocyte freezing than patients living in the French-speaking part of the country. The lower the price women say they are prepared to spend on social



**Table VI Attitudes of women towards oocyte donation.**

Question	Potential freezers	Doubtful	Non-freezers	Test	P
Would you consider to donate oocyte to someone you know? (yes, %)	40.2%	25.3%	29.8%	$\chi^2(4) = 44.07$	<0.001
Would you consider to anonymously donate your oocytes? (yes, %)	26.9%	14.7%	19.3%	$\chi^2(4) = 40.44$	<0.001

**Table VII Logistic regression: women who were potential freezers versus doubtful and non-freezers.**

Parameter	Estimate	Standard Error	z value	P-value
LCA: Strong child desire, advanced age acceptable	0.627	0.584	3.195	<0.001
LCA: Latent child desire	-0.835	0.196	-6.108	<0.001
Proneness to donate	0.200	0.136	2.430	0.015
Fulfillment of conditions	0.963	0.100	9.541	<0.001
Language	0.847	0.170	4.968	<0.001
Money prepared to spend	0.137	0.023	-5.799	<0.001

oocyte freezing, the higher the chance they would actually consider undergoing the procedure.

## Discussion

To our knowledge, this is the first study that has investigated attitudes towards social oocyte freezing in a large group of women of reproductive age. The study was also aimed at characterizing women who are interested in oocyte cryopreservation.

Postponing having a child until after the age of 35 years confronts women with dramatically decreased pregnancy rates, which are even more pronounced if they postpone until the age of 40 years (Schwarz and Mayaux, 1982; De Brucker et al., 2009). Therefore, many women run the risk of 'social' (age-related) infertility and some women will never get pregnant, at least not with their own oocytes. Assisted reproduction technique (ART) constitutes an integrated part of the tools used to address these demographic challenges in some countries as a more curative measure (Ziebe et al., 2008).

Only a small proportion of the women considered cryopreserving their oocytes for social reasons. However, another 28.4% of the women state that they would maybe consider undergoing such a procedure. In contrast to the few women currently undergoing preventive oocyte cryopreservation, half of the responding women reported not considering oocyte freezing.

Women considering themselves as 'potential oocyte freezers' and the women in doubt are significantly younger than women stating they would not freeze oocytes: these women also have fewer children and the number of (more) children desired is higher than the number desired by the women who are not interested in freezing their

oocytes. We could therefore state that young women with a largely unfulfilled desire for children are more open to the idea of oocyte cryopreservation.

Women who would consider cryopreserving oocytes did not appear to have a better awareness of reproductive ageing. Overall, the respondents appeared to be quite pessimistic as to their reproductive potential. Although only few fertility awareness studies have been conducted, this finding contradicts the overly optimistic attitude reported by other authors (Lampic et al., 2006; Tydén et al., 2006; Tough et al., 2007).

On average, the potential freezers have almost a decade before they might be confronted with the age-related fertility decline. However, they have started, or plan to start, their family at an older age. Postponement of motherhood cannot be explained by differences in education, profession or financial means. The lower number of married women in the freezing group may be partially explained by their overall younger age but may also reflect a lower appetite for commitment or the absence of the 'ideal' partner.

Potential freezers also pointed to a significantly older age at which it is still responsible to become pregnant when compared with 'non-freezers' (41.84 versus 39.59 years), ages which, although only just over 2 years apart, reflect a huge difference in reproductive potential. As no difference was noted in knowledge concerning the age-related fertility decline, the higher acceptable maximum age may reflect the openness towards ART among the potential freezers. In view of these proposed maximum ages for pregnancies by the different groups, it seems evident that strong support was found for the maximum age limit of 46 years for embryo transfer, as stated in the Belgian Law.

Although desire to have children and the planned age for motherhood are important in women's attitude toward oocyte freezing, for most women, some important conditions still need to be fulfilled before embarking on the treatment. Although there are no indications to assume that it would, it still needs to be established that ovarian stimulation and oocyte retrieval do not negatively impact future fertility in healthy women. A second important condition is the health safety of future children.

This study shows that women who are potentially interested in social oocyte freezing are also more open to the idea of donating oocytes. Egg donation programmes, often short of oocyte donors, could therefore use the already available oocyte pool from social freezers, no longer needing their preserved oocytes.

Cryopreservation of semen is a routine procedure for preserving male gametes for subsequent use in ART. It has a long history that stretches back over 200 years to the first recorded experiments involving cooling followed by successful re-warming of spermatozoa in snow (Spallanzani, 1776). The landmark reports of human semen cryo-banking and subsequent successful insemination were published in the 1950s (Bunge and Sherman, 1953). Indications for

cryopreservation include several applications, namely homologous and donor insemination, cryopreservation prior to surgical treatment of infertility, cryopreservation prior to treatment for malignancies and non-malignant disease, pre-mortem and post-mortem cryopreservation as well as pre-operative sperm cryo-banking as an insurance in case of regrets after a vasectomy (Anger *et al.*, 2003).

In contrast, women have only recently come to a point where technology will allow them to balance their fertility preservation potential with that of men.

Moreover, unlike men, women have a limited reproductive lifespan and are faced with increasing difficulties in conceiving from their mid-thirties onward. Advancing age then becomes the most important reproductive risk factor even for women still more than 10 years away from menopause. Worldwide, women in their late 30s and early 40s are overrepresented in fertility clinics.

The World Health Organization is committed to ensuring that individuals have the capability to reproduce and the freedom to decide if, when and how often to do so (Finkle and McIntosh, 1995). Implicit to this right is information about and access to safe, effective, affordable and acceptable methods of fertility treatment (Glacier *et al.*, 2006). We would argue that techniques aimed at preserving fertility should be equally considered a method of fertility treatment.

One study in men shows that having banked sperm was a positive factor in coping with cancer, even if the samples were never used (Saito *et al.*, 2005). It is our conviction that oocyte freezing for women who are temporarily unable to enjoy motherhood, owing to their relational or professional situation, potentially has the same positive psychological effect and may be crucial in preserving fertility for many women.

## Authors' roles

D.S.: author, study design. J.N.: author, study design, statistical analysis, review. P.D.: author, review, critical discussion.

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