



“KNOWLEDGE AND ATTITUDE REGARDING EGG FREEZING (OOCYTE CRYOPRESERVATION) AMONG WORKING WOMEN AT SELECTED OFFICES OF KAMRUP (M), ASSAM WITH A VIEW TO DEVELOP AN INFORMATION BOOKLET: A DESCRIPTIVE STUDY.”

SONAM DREMA¹, PAPORI PATHAK CHOUDHURY², DIKSHA SHARMA³

¹ M.Sc. Nursing, Department of Obstetrics and Gynaecological Nursing, Asian Institute of Nursing Education, North Guwahati, Assam, India

² Associate Professor, Department of Child Health Nursing, Asian Institute of Nursing Education, North Guwahati, Assam, India

³ Lecturer, Department of Mental Health Nursing, Asian Institute of Nursing Education, North Guwahati, Assam, India

Corresponding Author: Sonam Drema

ABSTRACT

BACKGROUND:

Egg freezing, also known as Oocyte cryopreservation, it is a procedure to preserve a Woman's eggs (Oocyte). This technique has been used to postpone pregnancy. When pregnancy is desired, the eggs can be thawed, fertilized, and transferred to the uterus as embryos. Several studies have shown that most infertility problems are due to germ cell deterioration related to aging. The procedure's success rate varies depending on the age of the woman, with the odds being higher in younger women. Initially, Egg Freezing was only used for Women undergoing treatments that negatively affected their ability to conceive, such as gonadal-toxic chemotherapy, radiation, or ovarian surgery. However, the increasing trend of delaying childbearing for financial, personal or career-related has also become an indication for social Egg Freezing.

OBJECTIVES OF THE STUDY

1. To assess the Knowledge regarding Egg Freezing among Working Women at selected Offices of Kamrup (M), Assam.
2. To assess the Attitude regarding Egg Freezing among Working Women at selected Offices of Kamrup (M), Assam.
3. To find out the correlation between the Knowledge and Attitude regarding Egg Freezing among Working Women at selected Offices of Kamrup (M), Assam.
4. To find out the association between Knowledge regarding Egg Freezing among Working Women at selected Offices of Kamrup (M), Assam with the selected demographic variables.
5. To find out the association between Attitude regarding Egg Freezing among Working Women at selected Offices of Kamrup (M), Assam with the selected demographic variables.
6. To develop an Information Booklet regarding Egg Freezing (Oocyte cryopreservation).

METHODS AND MATERIAL

A Descriptive research design was used in the study to accomplish the objectives. Convenience sampling technique was used to obtaining adequate sample for the study. Study was undertaken on 100 samples of Working Women at selected Offices of Kamrup (M), Assam. Respondents were selected on the basis of inclusion and exclusion criteria. Self- structured knowledge questionnaire and 5 point Likert Scale were used as tools for the study.

RESULT

Out of total 100 respondents, majority i.e., 53 (53%) of the respondents were between the age group of 31- 40 years, 50 (50%) were postgraduate and above, 79 (79%) respondents have heard about Egg Freezing, 59 (74.7%) respondents has heard through social media, majority i.e., 83 (83%) respondents were from urban, 26 (26%) respondents monthly family income were in between Rs. 80,110 – 1,06,849, 83 (83%) respondents were Hindu, 62 (62%) respondents were married. On assessment of Knowledge regarding Egg Freezing (Oocyte cryopreservation) among Working Women, 92 (92%) had moderately adequate Knowledge regarding Egg Freezing with mean 12.66 and SD 3.28. The association was statistically tested and it was observed that demographic variables did not show statistically significant association with level of Knowledge regarding Egg Freezing among working women at $p < 0.05$ level. On assessment of the level of Attitude regarding Egg Freezing among Working Women, 95(95%) had desirable Attitude regarding Egg Freezing with mean 76.81 and SD 6.73. The association was statistically tested and it was observed that the demographic variables monthly family income ($p = 0.0001$) and source of information ($p = 0.019$) had statistically significant association with level of Attitude

regarding Egg Freezing at $p < 0.001$ and $p < 0.05$ level respectively and the other demographic variables did not show statistically significant association with level of Attitude Egg Freezing among Working Women at $p < 0.05$ level. The other demographic variables such as age, Educational status, previous knowledge, residence, religion and marital status had not shown statistically significant association with level of Attitude among Working Women regarding Egg Freezing. On the assessment of correlation between Knowledge and Attitude scores regarding Egg Freezing among Working Women, the 'r' value is 0.368 and 'p' value is 0.001 which is significant at $p < 0.001$ level of significance. There is positive correlation between Knowledge and level of Attitude among Working Women towards Egg Freezing. It clearly infers that there was moderately adequate Knowledge of Working Women regarding Egg Freezing with desirable Attitude.

CONCLUSION

The study concludes that the Working Women had moderately adequate Knowledge and desirable Attitude regarding Egg Freezing. Therefore, it is recommended that awareness programmes regarding Egg Freezing among women may be organized by health care personnels to update their knowledge, its process and benefits.

KEY WORDS: Knowledge, Attitude, Egg Freezing (Oocyte cryopreservation), Working Women, Offices, Information Booklet.

1. INTRODUCTION

Egg freezing is a procedure to preserve a woman's eggs (Oocyte). Also known as Oocyte cryopreservation. This technique has been used to postpone pregnancy. When women desire for pregnancy, the preserved eggs can be thawed, fertilized, and transferred to the uterus as embryos. Several studies have shown that most infertility problems are due to germ cell deterioration related to aging. The procedure's success rate varies depending on the age of the woman, with the odds being higher in younger women.¹ Initially, Egg Freezing was only used for women undergoing treatments that used to affect their ability to conceive, such as Gonadal-toxic chemotherapy, radiation, or ovarian surgery. However, the increasing trend of delaying childbearing for financial, personal issues or career-related has also become a reason for social Egg Freezing.²

In the year 2013, the American Society for Reproductive Medicine (ASRM) has published a practice guideline for approving the use of Egg Freezing only for medical purposes, but cautioned against social freezing “for the sole purpose of circumventing reproductive aging in healthy women” due to limited data on its “safety, efficacy, emotional risks, and cost-effectiveness.”³ However, with emerging reassuring evidence on the efficacy of Egg Freezing, the ASRM has since published a new Ethics Committee Opinion stating that “Planned Oocyte cryopreservation is an ethically permissible medical treatment that may enhance women’s reproductive autonomy and promote social equality.”⁴

Several studies have been conducted to assess Attitudes towards Egg Freezing across different countries. A survey conducted in Belgium (2023) which included 1049 women between the ages of 21 and 40, showed that 31.5% would consider social freezing, 51.8% would not consider it, and 16.7% had a neutral attitude.⁶ Another study conducted in German (2017) where 643 including female and male participants showed that the majority of participants had a negative Attitude toward social Egg Freezing (52%), while 34% were positive and the rest had a neutral Attitude.⁵ In both studies, almost half of the participants has negative Attitudes compared to one-third of positive Attitudes. Thus, over all acceptance of the procedure is further portrayed in studies. The percentage of women considering themselves to be potential social Oocyte freezers in the UK/Denmark (27%), in the US (21.6%), and 19.5% in the Italian cohorts respectively.⁷

2. NEED OF THE STUDY:

- The increasing trend of delaying child bearing for personal, financial or career-related reasons has paved the way for a new indication for freezing social Egg Freezing.⁸
- Population-based birth statistics show a consistent increase in the number of women choosing to postpone childbearing, primarily due to the increasing involvement of women in the labor market at the expense of having children.⁵
- The fertility of women decreases gradually but significantly beginning approximately at age 32 years and decreases more rapidly after age 37 years.⁹
- Numerous population studies have confirmed that the decline in birth rates begins at age of 35 years. The decline in primordial follicles at reproductive age remains steady at around 1,000 per month until 37 years, after which it accelerates. In addition to Oocyte quantity, declining Oocyte quality plays a pivotal role in the reproductive potential of women older than 35 years due to increasing Oocyte aneuploidy rates with age. The rate is low in women younger than 35years (10%) but escalates to 30% at 40years, to 40% at 43years, and around 100% in women over age of 45 years due to increasing Oocyte aneuploidy rates with age.⁹
- Sayegh L, Coussa A, et al. (2023) study result showed that about 57% will not consider POC, mainly due to cost, cultural issues, and safety. Majority had poor Knowledge, and cost was the main barrier.¹⁰
- Between January 2016 and March 2022 for all women who under went Egg Freezing during this period overall 167 women had 184 social egg freezing cycles. The mean age at freeze was 37.1 years and an average of 9.5 eggs were frozen per retrieval. In total, 16% of the women returned to use their frozen eggs.¹¹

- A study done in 2020, among 500 women (age 25-40 years) in India about their Knowledge and Attitudes towards Egg Freezing. The study showed only 22.4% of women had heard about it and only 12.1% had a good Knowledge.

Hirsch A et al. (2024) conducted a systematic review and meta-regression analysis to assess Planned Oocyte cryopreservation which included PubMed (MEDLINE) and (EMDELINE) and EMBASE. A total of 3847 records were obtained. The study reveals that 8750 women underwent POC, with a mean cryopreservation age of 37.2 (0.8) out of which 1517 women returned to use their Oocytes with a return rate of 11.1% ($\pm 4.7\%$). The mean age at the time of cryopreservation for women who returned to use their Oocytes was 38.1 (40.4), with an average of 126 (+3.6) cryopreserved Oocytes per woman. In a meta- analysis, the Oocyte survival rate was 78.5% with live birth rate per patient was 28%. Overall, 447 live births were reported. In a sub-group analysis, women who underwent cryopreservation at age 240 achieved a live birth rate per patient of 19% (95% CI 0.13 0.29, F6%), while women aged 35 years old or younger had a higher live birth rate per patient of 52% (95% CI 0.41-0.63, F7%).¹³

The investigator felt that majority of the Women even after 30 years of age are more focused in building their career and stability which puts them in high risk for family planning as with increase in years there is decrease in fertility. So the investigator felt to do the study to create awareness on Egg Freezing among Women to preserve their eggs (Oocyte) for future use, offering greater control over their fertility and family planning timeline.

3. OBJECTIVES:

1. To assess the Knowledge regarding Egg Freezing among Working Women at selected Offices of Kamrup (M), Assam.
2. To assess the Attitude regarding Egg Freezing among Working Women at selected Offices of Kamrup (M), Assam.
3. To find out the correlation between the Knowledge and Attitude regarding Egg Freezing among Working Women at selected Offices of Kamrup (M), Assam.
4. To find out the association between Knowledge regarding Egg Freezing among Working Women at selected Offices of Kamrup (M), Assam with the selected demographic variables.
5. To find out the association between Attitude regarding Egg Freezing among Working Women at selected Offices of Kamrup (M), Assam with the selected demographic variables.
6. To develop an Information Booklet regarding Egg Freezing (Oocyte cryopreservation).

4. METHODS AND MATERIAL:

A descriptive research design was used in the study to accomplish the objectives. Non- probability convenience sampling technique was used for obtaining sample for the study. Study was undertaken on 100 samples in setting of selected Offices of Kamrup (M), Assam. Respondents were selected on the basis of inclusive and exclusive criteria. Self-structured Knowledge questionnaire and 5 point Likert Scale was used as a tool to assess the level of Knowledge and Attitude.

5. DESCRIPTION OF TOOLS:

To meet the objective of the study, the following tools were constructed which consist of three sections:

SECTION I :- DEMOGRAPHIC DATA

Age, educational status, previous knowledge, place of residence, family monthly income, religion, marital status.

SECTION II :- SELF- STRUCTURED KNOWLEDGE QUESTIONNAIRES

Self- Structured knowledge questionnaire to assess the Knowledge. It consisted of 24 questions related to Egg Freezing (Oocyte cryopreservation) each question had one correct answer out of four options. For every correct response a score 1 mark is given and a score of 0 mark for incorrect response.

SCORING KEY

Each question had only one correct answers. For every correct response a score 1 mark was given and a score of 0 mark for incorrect response. Hence the maximum score was 24 and the minimum score was 0.

The scores are graded as below:

MARKS OBTAINED	PERCENTAGE	REMARKS
< 8	<33 %	Inadequate knowledge
8 – 16	33 – 66%	Moderately adequate knowledge
> 16	>66 %	Adequate knowledge

SECTION III:- ATTITUDE SCALE

It consists of 20 statements to assess the Attitude towards Egg Freezing (Oocyte cryopreservation) among samples. The section assessed the Attitude using 5-point Likert Scale.

The tool consists of 20 items and the scale was given in the form of statements out of which item number 1, 3, 5, 7, 9, 11, 13, 15, 17, 19 are positive statements and item number 2, 4, 6, 8, 10, 12, 14, 16, 18, 20 are negative statements.

SCORING KEY

For each response a score was given as follows-

Positive statements: strongly agree- 5 marks, agree- 4 marks, uncertain- 3marks, disagree-2 marks, strongly disagree- 1 mark.

Negative statements: strongly agree- 1 mark, agree- 2 marks, uncertain-3 marks, disagree-4 marks, strongly disagree- 5 marks.

To interpret the Attitude of Working Women regarding Egg Freezing (Oocyte cryopreservation), the score were converted into percentage and were categorized as follows:

The score are graded as below:

MARKS OBTAINED	PERCENTAGE	REMARKS
< 33	< 33 %	Undesirable Attitude
33-66	33 % - 66%	Moderately desirable Attitude
>66	> 66%	Desirable Attitude

6. DATA COLLECTION PROCEDURE

The data collection was scheduled from 10th September 2024 to 3th October 2024. Prior to data collection, the ethical clearance was obtained from ethical committee INS trust, Dispur, Guwahati, Assam. A formal written permission was obtained from higher authority of selected Offices of Kamrup (M) Assam. A brief- self introduction and purpose of the study were explained to the sample prior to data collection, keeping in mind the ethical aspect of research, the data was collected after obtaining the informed consent of the sample for the their willingness to participate in the study. The sample were selected through non- probability convenience sampling technique and also according to the inclusion criteria. The samples were assured anonymity and confidentiality of information provided by them. The Knowledge of respondents were assessed through self-reporting questionnaire. The Attitude level were found out through 5 point Likert scale. The respondents took around 30-40 minutes to complete the questionnaire. On completion of the data, the investigator provided Information Booklet which contains basic information regarding Egg Freezing (Oocyte cryopreservation).

7. RESULT

SECTION-I

Frequency and percentage distribution of demographic variables of Working Women.

Table 1: Frequency and percentage distribution of demographic variables of Working Women.

n = 100

Demographic Variables	Frequency (f)	Percentage (%)
Age(in years)		
21 – 30	33	33.0
31 – 40	53	53.0
41 – 50	13	13.0
51 – 60	1	1.0
Educational status		
Higher secondary	3	3.0
Graduate	47	47.0
Postgraduate & above	50	50.0
Others	-	-
Have you heard about egg freezing?		
Yes	79	79.0
No	21	21.0
If yes, source of information		
Social media	59	74.7
Family	8	10.1
Health care professionals	7	8.9
Others	5	6.3
Residence		
Urban	83	83.0
Rural	17	17.0
Monthly family income (In Rupees)		
2,13,814 & above	22	22.0
1,06,850 – 2,13,813	18	18.0
80,110 – 1,06,849	26	26.0
53,361 – 80,109	20	20.0
31,978 – 53,360	9	9.0
10,703 – 31,977	4	4.0
≤ 10,702	1	1.0
Religion		
Hindu	83	83.0
Islam	10	10.0
Christianity	7	7.0
Others	-	-
Marital status		
Married	62	62.0
Unmarried	38	38.0

The table 1 portrays that most of the Working Women, 53(53%) were aged between 31 – 40 years, 50(50%) were postgraduates & above, 79(79%) had heard about Egg Freezing, 59(74.7%) had social media as source of information, 83(83%) were residing in urban area, 26(26%) had monthly family income of between 80,110 – 1,06,849, 83(83%) were followers of Hindu and 62(62%) were married.

SECTION-II

Assessment of Knowledge of regarding Egg Freezing among Working Women.

Table 2: Frequency and percentage distribution of level of knowledge regarding Egg Freezing among Working Women.

n = 100

Level of Knowledge	Frequency	Percentage (%)
Inadequate knowledge (<8)	5	5.0
Moderately adequate knowledge (8 – 18)	92	92.0
Adequate knowledge (>18)	3	3.0

The table 2 depicts the frequency and percentage distribution of level of knowledge regarding Egg Freezing among Working Women.

It shows that, 92(92%) had moderately adequate knowledge, 5(5%) had inadequate knowledge and 3(3%) had adequate knowledge regarding Egg Freezing.

SECTION- III

Assessment of Attitude regarding Egg Freezing among Working Women.

Table 3: Frequency and percentage distribution of level of Attitude regarding Egg Freezing among Working Women

n = 100

Level of Attitude	Frequency	Percentage (%)
Undesirable attitude (<33)	-	-
Moderately desirable (33 – 66)	5	5.0
Desirable(>66)	95	95.0

The table 3 depicts the frequency and percentage distribution of level of attitude regarding Egg Freezing among Working Women.

It illustrates that, 95(95%) had desirable attitude and 5(5%) had moderately desirable attitude regarding Egg Freezing.

SECTION IV

Table 4: Correlation between knowledge and attitude scores regarding egg freezing among the working women.**n = 100**

Variables	Mean	S.D	Karl Pearson's Correlation "r" and p- Value
Knowledge	12.66	3.28	r = 0.368 p=0.0001, S***
Attitude	76.81	6.73	

***p<0.001, S – Significant

The table 4 shows that the mean score of knowledge was 12.66±3.28 and the mean score of Attitude was 76.81±6.73. The calculated Karl Pearson's Correlation value of $r=0.368$ shows a fair positive correlation statistically significant at $p<0.001$ level. This clearly infers that the when the knowledge regarding Egg Freezing among the Working Women increases or decreases then their Attitude towards it also increases or decreases.

SECTION V

Association between Knowledge regarding Egg Freezing among Working Women with their selected demographic variables.

Table 5: Association of level of Knowledge regarding Egg Freezing among Working Women with their selected demographic variables.**n= 100**

Demographic Variables	Inadequate		Moderate		Adequate		Chi-Square p-value / Fisher Exact test p-value
	f	%	f	%	f	%	
Age (in years)							p=0.208 (N.S)
21 – 30	4	4.0	27	27.0	2	2.0	
31 – 40	1	1.0	51	51.0	1	1.0	
41 – 50	0	0	13	13.0	0	0	
51 – 60	0	0	1	1.0	0	0	
Educational status							p=0.901 (N.S)
Higher secondary	0	0	3	3.0	0	0	
Graduate	2	2.0	43	43.0	2	2.0	
Postgraduate & above	3	3.0	46	46.0	1	1.0	
Others	-	-	-	-	-	-	
Have you heard about egg freezing?							p=0.365 (N.S)
Yes	3	3.0	73	73.0	3	3.0	
No	2	2.0	19	19.0	0	0	
If yes, source of information							p=0.148 (N.S)
Social media	1	1.3	56	70.9	2	2.5	

Demographic Variables	Inadequate		Moderate		Adequate		Chi-Square p-value / Fisher Exact test p-value
	f	%	f	%	f	%	
Family	1	1.3	6	7.6	1	1.3	
Health care professionals	0	0	7	8.9	0	0	
Others	1	1.3	4	5.1	0	0	
Residence							p=0.162 (N.S)
Urban	3	3.0	78	78.0	2	2.0	
Rural	2	2.0	14	14.0	1	1.0	
Monthly family income							p=0.276 (N.S)
2,13,814 & above	1	1.0	21	21.0	0	0	
1,06,850 – 2,13,813	0	0	18	18.0	0	0	
80,110 – 1,06,849	1	1.0	22	22.0	3	3.0	
53,361 – 80,109	1	1.0	19	19.0	0	0	
31,978 – 53,360	1	1.0	8	8.0	0	0	
10,703 – 31,977	1	1.0	3	3.0	0	0	
≤ 10,702	0	0	1	1.0	0	0	
Religion							p=0.551 (N.S)
Hindu	5	5.0	76	76.0	2	2.0	
Islam	0	0	9	9.0	1	1.0	
Christianity	0	0	7	7.0	0	0	
Others	-	-	-	-	-	-	
Marital status							p=0.160 (N.S)
Married	1	1.0	59	59.0	2	2.0	
Unmarried	4	4.0	33	33.0	1	1.0	

N.S – Not Significant, $p > 0.05$

The table 5 indicated the level of knowledge regarding Egg Freezing among Working Women with their selected demographic variables. It was observed that demographic variables did not show statistically significant association with level of knowledge regarding Egg Freezing among Working Women at $p < 0.05$ level.

SECTION VI

Association between Attitude regarding Egg Freezing among Working Women with their selected demographic variables.

Table 6: Association of level of Attitude regarding Egg Freezing among Working Women with their selected demographic variables.

n = 100

Demographic Variables	Moderately desirable		Desirable		Chi-Square p-value / Fisher Exact test p-value
	f	%	f	%	
Age (in years)					p=0.575 (N.S)
21 – 30	2	2.0	31	31.0	
31 – 40	2	2.0	51	51.0	
41 – 50	1	1.0	12	12.0	
51 – 60	0	0	1	1.0	

Demographic Variables	Moderately desirable		Desirable		Chi-Square p-value / Fisher Exact test p-value
	f	%	f	%	
Educational status					p=0.103 (N.S)
Higher secondary	1	1.0	2	2.0	
Graduate	3	3.0	44	44.0	
Postgraduate & above	1	1.0	49	49.0	
Others	-	-	-	-	
Have you heard about egg freezing?					p=0.061 (N.S)
Yes	2	2.0	77	77.0	
No	3	3.0	18	18.0	
If yes, source of information					p=0.019 (S*)
Social media	0	0	59	59.0	
Family	2	2.0	6	6.0	
Health care professionals	0	0	7	7.0	
Others	0	0	5	5.0	
Residence					p=0.199 (N.S)
Urban	3	3.0	80	80.0	
Rural	2	2.0	15	15.0	
Monthly family income					p=0.0001 (S****)
2,13,814 & above	0	0	22	22.0	
1,06,850 – 2,13,813	0	0	18	18.0	
80,110 – 1,06,849	2	2.0	24	24.0	
53,361 – 80,109	0	0	20	20.0	
31,978 – 53,360	0	0	9	9.0	
10,703 – 31,977	2	2.0	2	2.0	
≤ 10,702	1	1.0	0	0	
Religion					p=0.114 (N.S)
Hindu	3	3.0	80	80.0	
Islam	2	2.0	8	8.0	
Christianity	0	0	7	7.0	
Others	-	-	-	-	
Marital status					p=1.000 (N.S)
Married	3	3.0	59	59.0	
Unmarried	2	2.0	36	36.0	

***p<0.001, *p<0.05, S – Significant, p>0.05

N.S – Not Significant, p>0.05

The table 6 illustrated the level of Attitude regarding Egg Freezing among Working Women with their selected demographic variables. It was observed that the demographic variables monthly family income (**p=0.0001**) and source of information (**p=0.019**) had statistically significant association with level of attitude regarding Egg Freezing at p<0.001 and p<0.05 level respectively and the other demographic variables did not show statistically significant association with level of Attitude regarding Egg Freezing among Working Women at p<0.05 level.

CONCLUSION

Based on the analysis of the findings of the study, the following inferences were drawn:

The study reveals that out of 100 Working Women majority i.e, 92 (92%) had moderately adequate Knowledge, 5 (5%) had inadequate Knowledge and 3 (3%) had adequate Knowledge regarding Egg Freezing. Out of 100 Working Women majority i.e, 95 (95%) had desirable Attitude and 5 (5%) had moderately desirable Attitude and none of them had undesirable Attitude towards Egg Freezing. There is correlation between Knowledge and Attitude regarding Egg Freezing among the Working Women. The calculated Karl Pearson's Correlation Coefficient value of $r=0.368$ shows a fair positive correlation statistically significant at $p<0.001$ level. In the present study, it was observed that demographic variables did not show statistically significant association with the level of Knowledge regarding Egg Freezing among Working Women at $p<0.05$ level. In the present study, it was observed that the demographic variables which includes monthly family income ($p=0.0001$) and source of information ($p=0.019$) had statistically significant association with level of Attitude regarding Egg Freezing at $p<0.001$ and $p<0.05$ level respectively. Whereas, other demographic variables did not show statistically significant association with the level of Attitude regarding Egg Freezing among Working Women at $p<0.05$ level.

RECOMMENDATIONS

The present study recommends the following:

1. A similar study can be replicated on a larger sample for generalizations.
2. A study can be conducted to evaluate the effectiveness of planned teaching programme on Knowledge and Attitude on Egg Freezing (Oocyte cryopreservation) among the Working Women.
3. Comparative study between Working Women and home maker.
4. A study can be conducted to assess the experience of Women who had undergone Egg Freezing procedure.

REFERENCES

1. No items found. What is Oocyte cryopreservation? [Internet]. Cofertility.com. [cited 2024 Dec 13]. Available from: <https://www.cofertility.com/freeze-learn/what-is-oocyte-cryopreservation>
2. Chung K. and Smith M.M.B., Fertility preservation for deferred childbearing for nonmedical indications
3. The American, T.P.C.J.F. and Sterility, Mature Oocyte cryopreservation: a guideline. 2013.99(1):p.37-43. <https://doi.org/10.1016/j.fertnstert.2012.09.028> PMID:23083924
4. Petropanagos A, Cattapan A, Baylis F, Leader A. Social egg freezing: risk, benefits and other considerations. CMAJ [Internet]. 2015;187(9):666–9. Available from: <http://dx.doi.org/10.1503/cmaj.141605>
5. Ghazeeri G, Beyrouthy C, El-Taha L, Abiad M, Fahs D. Knowledge & attitudes toward fertility preservation (Medical and social freezing) among Lebanese women between the ages of 18 and 39 years.

- PLoS One [Internet]. 2023;18(9):e0291249. Available from: <http://dx.doi.org/10.1371/journal.pone.0291249>
6. Stoop D., Nekkebroeck J., and Devroey P.J.H.R., A survey on the intentions and attitudes towards oocyte cryopreservation for non-medical reasons among women of reproductive age. 2011. 26(3):p. 655–661. <https://doi.org/10.1093/humrep/deq367> PMID: 21212052
 7. Lallemand C., et al., Medical and social egg freezing: internet-based survey of knowledge and attitudes among women in Denmark and the UK. 2016. 95(12): p. 1402–1410. <https://doi.org/10.1111/aogs.13024> PMID: 27638056
 8. Zabak S, Varma A, Bansod S, Pohane MR. Exploring the complex landscape of delayed childbearing: Factors, history, and long-term implications. Cureus [Internet]. 2023;15(9):e46291. Available from: <http://dx.doi.org/10.7759/cureus.46291>
 9. Female age-related fertility decline[Internet].Acog.org.[cited 2025 Mar 28].Available from <https://www.acog.org/clinical/clinical-guidance/committee-opinion/articles/2014/03/female-age-related-fertility-decline>
 11. Sayegh L, Coussa A, Kadhom M, Neinavaei N, Hasan H. Knowledge and attitude of reproductive-aged women towards planned oocyte cryopreservation in the United Arab Emirates. J Assist Reprod Genet [Internet]. 2023;40(3):609–16. Available from: <http://dx.doi.org/10.1007/s10815-023-02715-0>
 12. Kakkar P, Geary J, Stockburger T, Kaffel A, Kopeika J, El-Toukhy T. Outcomes of social egg freezing: A cohort study and a comprehensive literature review. J Clin Med [Internet].2023;12(13). Available from: <http://dx.doi.org/10.3390/jcm12134182>
 13. Hirsch A, Hirsh Raccach B, Rotem R, Hyman JH, Ben-Ami I, Tsafirir A Planned oocyte cryopreservation: a systematic review and meta-regression analysis. Hum Reprod Update [Internet]. 2024;30(5):558–68. Available from: <http://dx.doi.org/10.1093/humupd/dmae009>