

Gynecology & Reproductive Health

Knowledge of Zygote Cryopreservation among Female Lecturers in Universities in Enugu State, Nigeria

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Received: 19 Jul 2023; **Accepted:** 28 Aug 2023; **Published:** 03 Sep 2023

Citation: Iheanacho IL, Nweze SO, Ugwuegede CM, et al. Knowledge of Zygote Cryopreservation among Female Lecturers in Universities in Enugu State, Nigeria. *Gynecol Reprod Health*. 2023; 7(5): 1-6.

ABSTRACT

One of the vital indices of stable family life and living in most societies is the capacity to procreate hence the need for examination of knowledge of female lecturers on possible ways to actualize it. The study investigated knowledge of oocyte cryopreservation among female lecturers in universities in Enugu State in a cross-sectional descriptive survey involving 171 female lecturers from six out of seven universities in Enugu State. Purposive and proportionate sampling procedures were used in selecting the six Universities and 171 female lecturers used for the study respectively. Self-administered questionnaire was used as instrument for data collection while data analysis was carried out with frequency counts and percentages. The results showed that female lecturers in universities in Enugu State had low level of knowledge on oocyte cryopreservation, reasons for oocyte cryopreservation and procedure involved in oocyte cryopreservation (36.49%;38.36%;30.29%). Furthermore, majority of the respondents were not knowledgeable enough in most of the medical health challenges that could necessitate oocyte cryopreservation. It was concluded that there is low level of knowledge on oocyte cryopreservation, reasons for oocyte cryopreservation as well as the procedures involved in oocyte cryopreservation among female lecturers in universities in Enugu State. The recommendation among others is that Clinicians should endeavor to discuss the possibility of oocyte cryopreservation for medical and elective purposes during clinical meetings especially for single women of child bearing age who may wish to delaying procreation. Consequently, there is the need to set up counseling centres in major cities and towns in Enugu State in order to allay women 's fears about possible unfavourable outcomes of the procedures.

Keywords

Knowledge, Oocyte cryopreservation, Female lecturers in universities.

Introduction

The utilization of oocyte cryopreservation (OC) has become popularized with increasing numbers of reproductive-aged patients desiring to maintain fertility for future family building [1]. One of the foremost desires of most women within the age of child bearing is to procreate within the safest childbearing years when her oocyte (human eggs) is most productive and sprightly. In women that prefer to delay motherhood, egg freezing technology provides an opportunity to extend fertility by freezing and storing unfertilized eggs [2]. It has been reported that many women can

now preserve their fertility ability through egg freezing or oocyte cryopreservation [3]. Oocyte cryopreservation is defined as the act of freezing and storing a woman's oocytes, or eggs, for the purposes of preserving a woman's reproductive potential for future use [4]. Oocyte cryopreservation has increased worldwide [5]. A 25% increase in the utilization of OC was seen from 2015 to 2016 [6]. With improved techniques of cryopreservation (i.e. slow freeze to ultra-rapid vitrification) there have been tremendous improvement in oocyte survival and clinical pregnancy rates [7,8]. Women who want to become pregnant but not yet ready due to different reasons such as career planning, prioritizing education, insurance against future fertility, lack of partner, work flexibility, endometriosis, fibroids, diminished ovarian reserve, early menopause and several other social and medical reasons. Oocyte cryopreservation is

considered a credible alternative to plan for future parenthood.

Women in the academic arena are career minded individuals which usually take years of preparation and as such may benefit from oocyte cryopreservation. It has been noted that women who choose to freeze eggs want to have babies in the future but may however, wish to postpone child bearing due to careers, relationships, or other personal choice. Notable reasons why women may decide to freeze eggs include health concerns, such as planned surgeries for endometriosis, fibroids or prior to cancer treatments, each of which can threaten future fertility potential [9,10]. Most patients who pursue OC report that the reason is the lack of a suitable partner and a source of protection against future medical issues that may affect fertility [11-13]. Others include preserving supernumerary oocytes for future use in situations where fertilizing all oocytes is not desired, unexpected unavailability of sperm at the time of oocyte retrieval, and planned female-to-male transition [14]. This probably may have accounted for oocyte technology being legal in many western countries of the world.

Many countries in the western world accept and legalize the use of egg freezing for future planning of parenthood. The practice has become more widespread; recent data have shown that over 50% of clinics in the USA are using oocyte cryopreservation, and in Europe its use is extremely popular in countries averse to freezing embryos, like Italy. Reproductive technology of which egg freezing is inclusive is legal within the context of Nigeria health care delivery system.

In Nigeria context, egg freezing is a developing programme practiced in the major cities like Enugu, Port-Harcourt, Warri, Lagos and others. Although there are few fertility hospitals that practice egg freezing, few couples, and singles are yet to key into it for reason or reasons best known to them. That is why this study is focused on finding out whether female lecturers possess knowledge of oocyte cryopreservation. Egg freezing is evolving in Nigeria and some fertility clinics offer the services [15]. The report further points out that in Nigeria, oocyte cryopreservation is still a hugely untapped area and few fertility clinics offer the services at exorbitant rates. This further confirms earlier report that fertility preservation is untapped in Nigeria [15], and forms the major focus of this study in finding out the level of knowledge of oocyte cryopreservation among female lecturers in the study area. It relates the fact of understanding events, issues or objects that are acquired either through learning or experience. Knowledge of oocyte cryopreservation means female lectures being well informed about oocyte, the nature of it, reasons why some women embark on it as well as the procedures for oocyte. Knowledge of oocyte cryopreservation is necessary because it is the first step to understanding that a woman reproductive ability is limited by age and certain medical conditions. In this study attention was focus on fining out the level of knowledge of oocyte cryopreservation, the nature, reasons for embarking on it among female lecturers in universities in Enugu State.

Female lecturers in universities in Enugu State are female academic staff in universities in the state who must have put in a minimum of two academic semesters as at the time of carrying out this investigation. Therefore, a female lecturer naturally has career or educational ambitions and may want to delay childbirth in order to achieve her desire for mother hood may eventually need to understand ways to protect and extend her fertility. Interestingly, a study of obstetricians and gynecologists revealed that, although they believe discussions of reproductive aging should be discussed with all reproductive aged patients, a majority reported a lack of time or knowledge to counsel patients on fertility preservation [16]. That is why this study focused on finding out their level of knowledge of oocyte technology. This may provide the necessary platform to sensitize and assist them protect and preserve their future productive endeavours during their career years hence the need for this study.

Problem Statement

A woman's reproductive biological clock is framed within a particular period of years before she reaches menopause when she can no longer procreate because of age and fertility decline. Female fertility declines with age and as such the number of women who pursue fertility at an advanced age is increasingly common in the recent time. Additionally, there is pressure of fecundity panic emanating from the view that the area under study is a highly patriarchal society, where men dominate all spheres of women's lives, which places women at the sphere of playing a second fiddle at all times. Consequently, men purposefully would like to direct their partners to conclude child birth before career quest and this may either delay the woman's career ambitions or halt it completely.

Nevertheless, there is this recent trend of women in public work place choosing to have their first child at an older age. However, it could be possible for such women not to realize such ambition at such a ripe age in which case the hope of giving birth may completely elude them and calls for interventions. This however, may depend on the available information regarding reproductive technology. This raises some pertinent questions as to the level of knowledge of oocyte cryopreservation among female lecturers in universities in Enugu State? and specifically, what is their level of knowledge of its nature, reasons why some women embark on it as well as the procedures involved?

However, oocyte cryopreservation gives female lecturers who have not given birth or given birth to one or two children the opportunity to extend the fertility (place her fertility and child bearing on hold) as well as pursue the academic ambition and career plan devoid of infertility panic. Therefore, this study investigated the level of knowledge of oocyte cryopreservation among female lecturers in universities in Enugu State.

Purpose of the Study

The main purpose of this study was to investigate level of knowledge of oocyte cryopreservation among female lecturers in

universities in Enugu State. The study

1. Ascertained the level of knowledge of oocyte cryopreservation among female lecturers in universities in Enugu State.
2. Found out the level of knowledge regarding nature of human oocyte among female lecturers in universities in Enugu State.
3. Identified the level of knowledge regarding reasons for oocyte cryopreservation among female lecturers in universities in Enugu State.
4. Determined the level of knowledge of procedures for oocyte cryopreservation among female lecturers in universities in Enugu State.

Research Questions

The following research questions guided the study;

1. What was the level of knowledge of oocyte cryopreservation among female lecturers in universities in Enugu State?
2. What was the level of knowledge regarding the nature of human oocyte among female lecturers in universities in Enugu State?
3. What was the level of knowledge of reasons for oocyte cryopreservation among the female lecturers in universities in Enugu State?
4. What was the level of knowledge of procedures for oocyte cryopreservation?

Method

The design adopted was cross-sectional survey research design involving 171 female lecturers from six universities in Enugu State, South East Nigeria. The study was carried out in Enugu State, South East, Geopolitical Zone of Nigeria. Enugu State lies partly within the semi-tropical rainforest belt of the South and has an area of about 7.161km². It has a population of 3,267,837 from 2006 Census. The choice of Enugu State for this study was based on the fact that women from this area including female lecturers have career ambition which tend to delay their marital life hence an awareness of oocyte technology may sensitize them and possibly cushion their anxiety of late procreation. Besides, the inhabitants of the State are generally cultural people which tend to negatively influence access to health information which also may

be influencing the female lecturers hence focusing a study of this nature in such an area becomes crucial.

The population for the study consisted of 398 female lecturers from six universities in Enugu. A total of 171 female lecturers consented and served as research respondents. Purposive and proportionate sampling procedures were used to sample six universities and 171 female lecturers used for the study. Self-administered questionnaire was used for data collection while data generated were analyzed using frequency counts and percentages.

Inclusion and Exclusion Criterion

Only the female lecturers of the institutions who gave consent for the study were sampled and those who did not consent were excluded.

Result

Tables 1-4 mentioned below.

Discussion

From the findings of the study as presented in Table 1 on knowledge of oocyte cryopreservation, it shows that most of the female lecturers were not knowledgeable enough about oocyte cryopreservation. This finding is in agreement with similar finding in a study which found that majority of the unmarried of reproductive age in Korea have low knowledge of oocyte cryopreservation [17]. The finding also agrees favourably with a study that revealed that majority of the women participants in their study had poor knowledge of fertility including oocyte cryopreservation [18], and that which found less than half of the physicians in Germany having a feeling that fertility preservation was an important issue with half of them reporting a thorough knowledge and understanding of oocyte technology while less than half admitted having discussed it with their patients routinely during clinic meetings [19]. However, the finding is in variance to that which observed that medical students possess good knowledge of age-related fertility decline and elective fertility preservation [20]. The observation in the current study also disagrees with that which found that women in

Table1: Percentage Responses of the Respondents on Level of Knowledge of Oocyte Cryopreservation. n=171

SN	ITEM	TRUE T	TRUE %	FALSE F	FALSE %	Decision
1	Fertility does not decline with age	98	57	73	43	MK
2	Oocyte cryopreservation can be used to preserve fertility in women	20	11.7	151	88.3	LK
3	Decision making with respect to elective/social oocyte cryopreservation is not exclusive to the woman	77	45.03	94	54.97	MK
4	Women prioritize OC on account of medical reasons	48	28.07	123	71.93	LK
5	Centers that offers oocyte cryopreservation services does not exist in Enugu State	94	54.97	77	45.03	MK
6	Getting the services of OC can only be gotten from fertility driven centers	30	17.54	141	82.46	LK
7	Women are recommended to freeze up 15 to 20 mature eggs	71	41.52	100	58.48	MK
8	Retrieved eggs from the ovaries are frozen fertilized	60	35.09	111	64.91	LK
9	The fertilization rate of thaw eggs is not established	70	40.94	101	59.06	MK
10	The successful pregnancy rates per thaw eggs is established	56	32.75	115	67.25	LK
	Percentage Grand		36.49		63.51	LK

Key: MK-Moderate Knowledge. LK-Low Knowledge. OC-Oocyte cryopreservation

Table 2: Percentage Responses of the Respondents on Level of Knowledge of the nature of Human Oocyte.

n=171

SN	ITEM	TRUE T	TRUE %	FALSE F	FALSE %	Decision
11	Women are born with about 1-2 million eggs	153	89.47	18	10.53	VHK
12	Women have progressive loss of eggs by mid-to late-30s and 40s	88	51.46	83	48.54	MK
33	Every egg can produce a viable pregnancy	75	43.86	96	56.14	MK
14	Quantity of eggs depends highly on the age of the woman	137	80.12	34	19.88	HK
15	Biologically, it is easier to get pregnant before age 30	86	50.29	85	49.71	MK
16	The egg becomes less productive within the age of 30-45 years	103	60.23	68	39.77	HK
17	Majority of miscarriages occur within the range of 40 and above in women due to ageing.	132	77.19	39	22.81	HK
18	Women's chromosomes are abnormal as they age	85	49.71	86	50.29	MK
19	As a woman's eggs age, there is a tendency of having babies with birth defects	76	44.44	95	55.56	MK
20	As the eggs of a woman get old, she has more health consequences conceiving.	124	72.51	47	27.49	HK
	Average		61.93		38.07	HK

Key: HK-Very High Knowledge. MK- Moderate Knowledge.

Table 3: Percentage Responses of the Respondents on Level of Knowledge of Reasons for Oocyte Cryopreservation.

n=171

SN	ITEM	TRUE T	TRUE %	FALSE F	FALSE %	Decision
21	Career planning	25	14.62	146	85.38	LK
22	Prioritizing education	37	21.64	134	78.36	LK
23	Due to unstable partner	64	37.43	107	62.57	LK
24	To stop biological clock	56	32.75	115	67.25	LK
25	Mainly for promotion strategy	78	45.61	93	54.39	MK
26	Work place flexibility	47	27.49	124	72.51	LK
27	Against future fertility	72	42.11	99	57.89	MK
28	Increased ovarian reserve	95	55.56	76	44.44	MK
29	To achieve single motherhood	93	54.39	78	45.61	MK
30	To be free from labour pains associated with child delivery	89	52.05	82	47.95	MK
	Average		38.36		61.64	LK

Key: MK-Moderate Knowledge. LK-Low Knowledge.

Table 4: Percentage Responses of the Respondents on Level of Knowledge of Procedures for Oocyte Cryopreservation.

n=171

SN	ITEM	TRUE T	TRUE %	FALSE F	FALSE %	Decision
31	There are different methods of oocyte cryopreservation available	21	12.28	150	87.72	LK
32	Vitrification is not faster than slow cooling	36	21.05	135	78.95	LK
33	Ovarian reserve testing is not required prior to oocyte cryopreservation process	46	26.90	125	73.10	LK
34	Ovarian stimulation is required prior to egg retrieval	70	40.94	101	59.06	MK
35	Hormone injection is not used during ovarian stimulation	26	15.20	145	84.80	LK
36	There are no stipulated number of eggs required to be retrieved per cycle	47	27.49	124	72.51	LK
37	There is a maximum period required to resume normal activities after the egg retrieval process	68	39.77	103	60.23	LK
38	Consumer rights are not necessary for oocyte cryopreservation	90	52.63	81	47.37	MK
39	There is no need to contact the care provider if there are any physical health difficulties within 24 hours after the process	45	26.32	126	73.68	LK
40	Oocyte cryopreservation is a cost-effective procedure	69	40.35	102	59.65	MK
	Average		30.29		69.71	LK

Key: MK-Moderate Knowledge. LK-Low Knowledge.

the Northern Nigeria have high awareness of assisted conception treatment while their knowledge on specifics of treatment was low and perception on some of the practices was unfavorable which however, remains consistent with this findings of the study [21].

The agreement with the previous findings could be because in some of the studies, unmarried female respondents were used just as some of the female lecturers may be single. In that regard, they may not be taking interest in reading about reproductive technology hence some of them may rather prefer to read about it when they get married. The disagreement with the previous finding may be because in some of the studies medical personnel were used as respondents and as true professionals they probably take plenty of time reading through the oocyte modern technology unlike the female lecturers used as participants in this present study.

One of the findings of the study as presented in Table 2 on knowledge of the nature of oocyte cryopreservation shows that majority of the respondents were knowledgeable about the nature of human oocyte. This finding agrees with a study finding which pointed out that the nature of oocyte is such that a woman is born with the maximum number of eggs that she will ever have but could be lost going through the processes of aging adding that the quantity of eggs produced may depend on the age of the woman hence the greater rate of conception before the age of 30 years [21].

The female lecturers being knowledgeable about oocyte nature could be because some of them are experienced mothers who may have experienced high conception rates during their early years and probably halted procreation to position their career. It could also be on the account of being elites who may be devoting some time to read about reproductive technology either in books, journals or through the social media or just attitudinal in nature or some other reasons yet to be verified.

The finding of the study as presented in Table 3 on knowledge of reasons for oocyte cryopreservation shows that the female lectures in universities in Enugu State have low knowledge of the reasons for oocyte cryopreservation. This is anticipated since the respondents have low knowledge on oocyte cryopreservation. This finding agrees with a study, which demonstrated that forty-seven percent of students would consider oocyte cryopreservation for career and medical reasons while only thirty-four percent would consider it for social reasons [23]. This finding is also in agreement with a finding, which stated that most women considered freezing eggs for medical reasons, particularly in circumstances such as cancer treatment seventy-eight percent sand surgery on the ovaries eighty-two percent [24].

The agreement with previous findings could be due to the fact that in those studies, the respondents were educated and may have the knowhow to assess the benefits of egg freezing just like the female lectures used as respondents in this study. It could also be that some of them may have read about the experiences of other women with respect to oocyte technology and may have drawn

some inferences from it.

The study finding as presented in Table 4 also show that the female lecturers have low level of knowledge of procedures involved in oocyte cryopreservation. This is anticipated going by the respondents' low level of knowledge of oocyte cryopreservation which was low. This finding falls in line with similar observation in literature where it was noted that only 25% of women respondents consistently underestimating ovarian test while only twenty-five percent of women selected the correct number of eggs to be retrieved per cycle [23]. Nevertheless, the respondents in this present study lack knowledge on procedures involved in oocyte cryopreservation meaning they might not optimize and make informed decision regarding oocyte cryopreservation. The finding also agrees with literature which documented that majority of women having a feeling that, for the procedure to be acceptable, there should be over fifty percent chance of conceiving a child from a frozen egg cycle whereas seventy-nine percent of women would consider about eight nine percent success ratio [24].

Conclusion

It was concluded that there is generally low level of knowledge of oocyte cryopreservation among female lecturers in universities in Enugu State, a trend that ought to be reversed.

Recommendations

1. Based on the findings of the study, it is recommended that Education mangers need to incorporate reproductive health issues discussion in universities with a focus on reproductive technology for women of childbearing age using Public Health Educators.
2. Clinicians should endeavor to discuss the possibility of oocyte cryopreservation for medical and elective purposes during clinical meetings especially for single women of childbearing age who may wish to delaying procreation.
3. There is the need to set up counseling centres in major cities and towns in Enugu State for women in order to allay women's fears about possible unfavourable outcomes of the procedures
4. Secondary and tertiary health communication strategies such as use of posters, hand bills, bill boards, electronic and print media need to be deployed by health care workers in order to sensitize and inform women about the modern reproductive technology for possible improvement of their knowledge and dispositions towards it.

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