



## Oocyte Cryopreservation and its Relationship with Marital Status of Female Lectures in Enugu State Universities

Sylvester Onuegbunam Nweze<sup>1\*</sup>, Ifeoma Loveth Iheanacho<sup>2</sup> and Emmanuel Ikechukwu Okolie<sup>1</sup>

<sup>1</sup>Department of Obstetrics and Gynecology, Enugu State University of Science and Technology (ESUT) Teaching Hospital Parklane, Enugu State, Nigeria

<sup>2</sup>Department of Human Kinetics and Health Education, Enugu State University of Science and Technology, Enugu, Nigeria

**\*Corresponding Author:** Sylvester Onuegbunam Nweze, Department of Obstetrics and Gynecology, Enugu State University of Science and Technology (ESUT) Teaching Hospital Parklane, Enugu State, Nigeria.

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### Abstract

**Background:** In oocyte cryopreservation, a woman's mature eggs are harvested from her ovaries, frozen unfertilized, and stored for later use when she is ready to become pregnant. Marital status tends to influence health promotion activities such as oocytes cryopreservation. There is a dearth of studies evaluating the relationship between marital status and oocyte cryopreservation among women.

**Objective:** This study investigated the relationship between marital status and oocyte cryopreservation among women in academic circles in Enugu State universities.

**Methods:** A cross-sectional design was employed. Out of 398 female lecturers, 171 were selected through proportional and purposive sampling from six (6) universities in Enugu State. Validated by three health education experts, the questionnaire used achieved a reliability coefficient of 0.94 via the Cronbach Alpha method. Hypotheses were tested using Chi-square and ANOVA at a 0.05 significance level.

**Result:** The study showed no significant difference between the mean ratings of single, married, divorced and widowed women in academic circles in universities in Enugu State based on their knowledge of oocyte cryopreservation and the reasons for oocyte cryopreservation, while a significance difference was found between the mean ratings of single, married, divorced and widowed female lecturers in universities in Enugu State based on their attitude towards oocyte cryopreservation as well as their attitude towards the procedures involved in oocyte preservation.

**Conclusion:** This suggests that while awareness and understanding of oocyte cryopreservation as well as the attitude towards the reasons behind it are relatively uniform across the marital status categories, attitudes towards the procedure and the processes involved therein vary significantly depending on marital status.

**Keywords:** Oocyte Cryopreservation; Egg Freezing; Marital Status; Female Lecturers; Universities

## Background

Human oocyte cryopreservation is a procedure to preserve a woman's eggs for future use and the technique has been used to enable women to postpone pregnancy to a later date either for medical reasons such as cancer treatment or for social reasons such as employment or studying [1]. Hence, it is a significant advancement in Assisted Reproductive Technology (ART) and has the potential to have a monumental impact on the field of infertility as well as society in general [1]. Oocyte cryopreservation is basically done for medical and non-medical (social or elective) reasons. Oocyte cryopreservation offers women who have some medical condition (e.g. cancer patients undergoing chemotherapy) that can hinder child birth the ability to freeze and store their eggs for future use [2]. Apart from health-related issues, women also select oocyte cryopreservation for social reasons such as career planning, lack of stable partner and part of family planning. Some studies have demonstrated that those who opt for oocyte cryopreservation for social reasons often do so as a form of an insurance policy or to stop the biological clock in order to give themselves more time to establish themselves and find a suitable partner before having children [3-6]. Other factors common in the profiles of women who pursue oocyte cryopreservation for social reasons include concerns about the impact of mothering on their career progress, lack of readiness to become a parent, and a history of fertility concerns [7,8].

Marital status may possibly determine female lecturer's knowledge and attitude towards oocyte cryopreservation. This is because a study by de Groot, *et al.* alluded that in a Dutch university medical center, interviewed women who were on the waiting list for oocyte banking said that they opted for oocyte banking because they wished to share parenthood with a future partner rather than becoming single parents [9]. Furthermore, Ikhenaa-Abel, *et al.* revealed that potential freezers were more likely to be single [10]. However, it was also shown that family formation and being married negatively affects women but not men's academic careers such that for men, having children is a career advantage while for women, it is a career killer. Also, women who do advance through the faculty ranks do so at a high price as they are far less likely to be married with children because they prefer to defer childbirth [11]. Hence, if potential freezers are singles as revealed in the studies reviewed, it then means single women may have more knowledge and optimistic attitude towards oocyte cryopreservation than

their counterparts. However, this has not been established among women in academic circles and need to be investigated. Hence, in this study marital status will be categorized in to single, married, divorced and widowed.

Oocyte cryopreservation as a means to contrive and reschedule the hand of reproductive biological clock to women's advantage has been in practice for several years. Thus, many countries in the western world have accepted and legalized the use of oocyte cryopreservation for future planning of parenthood. 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 [12,13].

On the contrary, egg freezing or oocyte cryopreservation is still developing in Nigeria practiced only in few fertility hospitals in the major cities like Enugu. As a result, few couples, and singles are yet to key into it. Due to how tremendously fertility preservation is untapped in Nigeria which the study area is among, it then becomes imperative to verify the disposition of women in academic circles (being women in time intensive job) towards oocyte cryopreservation.

Lecturing job is one of the most demanding careers for women as career progression is likely dependent on academic development and numerous research works. However, it is obvious that the height of career period is in competition with the period of high fertility in women. This means that women in academic circles will have to favour one against the other, and if their careers continue to be favoured, there is possibility of increase in infertility among women in academic circles. It is an important starting point to understand how these educationally inclined women's attitude are towards oocyte cryopreservation as they embark on a demanding career as well as navigate their reproductive lives. Therefore, this research examined oocyte cryopreservation, marital status and its relationship with women in academic circle in universities In Enugu State.

## Purpose of the Study

This study evaluated the relationship between marital status and oocyte cryopreservation among female lecturers in Enugu State universities.

**Hypotheses**

The following hypotheses were formulated to guide the study:

- **HO<sub>1</sub>**: There is no significant association between level of knowledge on oocyte cryopreservation and marital status of female lecturers in Universities in Enugu state.
- **HO<sub>2</sub>**: Significant difference does not exist among the mean ratings of single, married, divorced and widowed female lecturers in universities in Enugu State based on the attitude exhibited towards oocyte cryopreservation
- **HO<sub>3</sub>**: A significant difference does not exist among the mean ratings of single, married, divorced and widowed female lecturers in universities in Enugu State based on the reasons for oocyte cryopreservation
- **HO<sub>4</sub>**: A significant difference does not exist among the mean ratings of single, married, divorced and widowed female lecturers in universities in Enugu State based on the attitude exhibited towards the procedure for oocyte cryopreservation

**Research Method**

The study adopted the use of descriptive research method while the population of the study comprises of all the female lectures in 6 universities in Enugu state. The sample consist of 171 respondents

who were proportionately and purposively selected out of a total population of 398 women in academic circles in six (6) universities in Enugu state viz-a-viz Enugu State University of Science and Technology, Coal City University, Caritas University, Godfrey Okoye University, Renaissance University and Madonna University Agbani campus.

The instrument used for this study was a self-structured questionnaire with two sections, namely section A and B. Section A sought information on biographic information while B was on variables of the study. The questionnaire was validated by 3 experts from the health education. A reliability coefficient of 0.94 was obtained through Crobach Alpha method. Data was collected by the researchers and with the help of three trained research assistants. Chi square and ANOVA were used to test the hypotheses formulated at 0.05 level of significance.

**Results**

**HO<sub>1</sub>**

There is no significant association between the female lecturers in universities in Enugu State on the level of knowledge of oocyte cryopreservation by marital status.

Variables	TRUE	FALSE	N	Chi-sq	Df	P-value	Dec.
	Response	Response					
Single	58 (84.1%)	11 (15.9%)	69	1.805	3	0.614	not rejected
Married	71 (88.8%)	9 (11.3%)	80				
Divorced	7 (100%)	0 (0%)	7				
Widowed	13 (86.7%)	2 (13.3%)	15				

**Table 1:** Chi square analysis of the responses of single, married, divorced and widowed female lecturers in universities in Enugu State on the level of knowledge of oocyte cryopreservation.

Table 1 shows that the chi-square calculated value of 1.805, not significant at 0.614 level of significance, which is greater than 0.05 level of significance set for the study. Therefore, the null hypothesis is not rejected as stated. This means that there is no significant association between the responses of single, married, divorced and widowed female lecturers in universities in Enugu State on the level of knowledge of oocyte cryopreservation.

**HO<sub>2</sub>**

A significant difference does not exist among the mean ratings of single, married, divorced and widowed female lecturers in universities in Enugu State based on the attitude exhibited towards oocyte cryopreservation.

Groups	Sum of Squares	Df	Mean Square	F	P-value	Dec
Between Groups	2.629	3	0.876	3.136	0.027	S
Within Groups	46.663	167	0.279			
Total	49.292	170				

**Table 2:** One-way ANOVA Analysis result of on the mean ratings of single, married, divorced and widowed female lecturers in universities in Enugu State based on the attitude exhibited towards oocyte cryopreservation.

Key: F = ANOVA test, S = Significant.

Table 2 shows that the F-calculated value of 3.136, is significant at 0.027 level of significance, which is less than 0.05 level of significance set for the study. Therefore, the null hypothesis is rejected as stated. This means that significant difference exist between the mean ratings of single, married, divorced and widowed female lecturers in universities in Enugu State based on the attitude exhibited towards oocyte cryopreservation.

**H0<sub>3</sub>**

A significant difference does not exist among the mean ratings of single, married, divorced and widowed female lecturers in universities in Enugu State based on the attitude exhibited towards the reasons for oocyte cryopreservation.

	Sum of Squares	Df	Mean Square	F	P-value	Dec
Between Groups	1.852	3	0.617	2.379	0.072	NS
Within Groups	43.326	167	0.259			
Total	45.178	170				

**Table 3:** One-way ANOVA analysis result of on the mean ratings of single, married, divorced and widowed female lecturers in universities in Enugu State based on the attitude exhibited towards the reasons for oocyte cryopreservation.

Table 3 shows that the F-calculated value of 2.379, is not significant at 0.072 level of significance, which is greater than 0.05 level of significance set for the study. Therefore, the null hypothesis is not rejected as stated. This means that significant difference does not exist between the mean ratings of single, married, divorced and widowed female lecturers in universities in Enugu State based on the attitude exhibited towards the reasons for oocyte cryopreservation.

**H0<sub>4</sub>**

A significant difference does not exist among the mean ratings of single, married, divorced and widowed female lecturers in universities in Enugu State based on the attitude exhibited towards the procedure for oocyte cryopreservation.

Table 4 shows that the F-calculated value of 4.649, significant at 0.004 level of significance, which is less than 0.05 level of significance set for the study. Therefore, the null hypothesis is rejected as stated. This means that significant difference does exist

	Sum of Squares	Df	Mean Square	F	P-value	Dec
Between Groups	2.776	3	0.925	4.649	0.004	S
Within Groups	33.236	167	0.199			
Total	36.012	170				

**Table 4:** One-way ANOVA analysis result of the mean ratings of single, married, divorced and widowed female lecturers in universities in Enugu State based on the attitude exhibited towards the procedure for oocyte cryopreservation.

between the mean ratings of single, married, divorced and widowed female lecturers in universities in Enugu State based on the attitude exhibited towards the procedure for oocyte cryopreservation.

**Discussion**

From the study, it was discovered that being single, married, divorced or widowed had no significant difference among the female lecturers in universities in Enugu State on the level of knowledge of oocyte cryopreservation. This finding is closely related to those of O'Brien., *et al.* which showed that there was no significant difference in the numbers of single women compared to women in a relationship who would consider egg freezing to preserve fertility [14]. Another study also revealed that there was no significant difference in the proportion of health-workers who have heard of fertility preservation [15]. The authors further stated that the drift is probably because fertility preservation is a new concept and older health-workers or those who had been practicing for over forty years are fixed in their mind-set and may not be able to quite grasp the new technology involved in preserving fertility among cancer patients.

The assessment of disposition towards oocyte cryopreservation shows that significant difference exist between the mean ratings of single, married, divorced and widowed among female lecturers in universities in Enugu State based on their attitude towards oocyte cryopreservation. The finding is in line with another study which noted that marital status do have a significant influence on attitude towards oocyte cryopreservation [16]. The result appears convincing seeing as a female lecturer being married and not having a child may be more inclined towards fertility preservation considering how important child-bearing is to most. Also, in the study area, societal expectations and conditioning of considering

women that does not have their own biological children as not being complete may force women both single and married to do everything possible to bear their own biological children.

The result of table 3 shows that marital status has no significant influence on the attitude exhibited towards the reasons for oocyte cryopreservation among female lecturers in universities in Enugu State. There was no previous study to support this finding. However, Lallemand., *et al.* found in their study that the importance of not having a partner by age thirty-five or forty, and the potential harm to one’s career from stopping work to have children, was significantly higher in women interested in the procedure compared with the others [17]. This portrays the escalating drift of delayed marriage, and as a result, delaying childbearing until the 30s and 40s, because of the increased role of women in social participation and contribution to economic growth.

Findings from table 4 revealed that significant difference exist between the mean ratings of single, married, divorced and widowed female lecturers in universities in Enugu State based on the attitude exhibited towards the procedure for oocyte cryopreservation. The result of this finding is in keeping with the findings of Anderson., *et al.* where it was reported that there is a significant difference between the respondents who are in a professional employment and not in a relationship at the time of egg freezing and that the desire to have a baby when married will encourage them through the procedure [18]. However, in the recent times, some women no longer wait until they get married or for a suitable partner before having their biological children, hence, some financially accomplished women opt for oocyte cryopreservation and possible having their children once they reach their late 30’s without a partner.

## Conclusion

Based on the findings of the study, it was concluded that

- There is no significant difference in the responses of single, married, divorced and widowed female lecturers in universities in Enugu State on the level of knowledge of oocyte cryopreservation and attitude exhibited towards reasons for oocyte cryopreservation
- Significant difference existed between the responses of single, married, divorced and widowed female lecturers in universities in Enugu State on the attitude exhibited towards oocyte cryopreservation and attitude exhibited towards procedure involve in oocyte cryopreservation.

## Recommendations

- There is the need for the entire society to change their biased orientation towards discussion on reproductive issues. Women in academic circles and women generally should be encouraged to discuss fertility issues publicly and seek knowledge on fertility problem when the need arises. They should also be made to feel comfortable to discuss fertility needs as this will encourage positive attitude towards fertility preservation technology.
- Women in academic and professional careers who plan to delay childbirth should familiarize themselves with the human reproductive process and learn how to utilize advanced reproductive technologies, such as oocyte cryopreservation, to manage and extend their biological clock.

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