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Effectiveness of Organized Educational Programme on Knowledge regarding Fertility Cryopreservation among First Year B. Sc. Nursing Students at selected Nursing Institute, Kanpur

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ABSTRACT

Background: Fertility preservation offers a crucial opportunity for cancer patients and others to secure the chance to build families with their unique genetic heritage. Informed decisions now can empower individuals to safeguard their fertility for the future**. Objectives:** To evaluate the pre-test level of knowledge regarding fertility cryopreservation among first Year B. Sc. Nursing Students, to determine the effectiveness of Organized Educational Programme on knowledge regarding Fertility Cryopreservation among First Year B. Sc. Nursing Students, to find out the significant association between the pre-test knowledge score of First Year B. Sc. Nursing Students with their selected demographic variables. **Methodology:** A quasi experimental one group pre-test post-test design was adopted by the researcher and 60 first year students were selected by non-probability purposive sampling technique. A self-structured knowledge questionnaire was used to collect the data.

Results: The mean score and standard deviation of pre-test knowledge score was 8.3 and 0.43 respectively whereas that of post-test was 18 and 0.26 respectively. The paired "t" value was 32.06 at p value of 0.05 level which clearly shows that the Organized Educational Programme was very effective in increasing the knowledge regarding Fertility Cryopreservation. The Chi-Square values showed there were no significant association between knowledge scores with selected demographic variables except for sources of information.

Conclusion: The overall study revealed that there is need for educational programme on increasing knowledge regarding fertility cryopreservation among first year nursing students.

Keywords: Organized Educational Programme, Fertility Cryopreservation, Cancer patients, Transgender, Postponement of parenthood.

INTRODUCTION

Fertility cryopreservation is a vital and expanding area in reproductive health, driven by technological advancements and a range of clinical scenarios beyond oncology. In recent decades, various innovative techniques have emerged, offering hope for those looking to preserve their reproductive options. Choosing the right method depends on factors like age, pubertal status, medical conditions, treatment urgency, and

whether a partner is involved.[1] Some of the current indications includes people who are about to undergo chemo therapy and/or radiation therapy to treat cancer, people with other severe non-malignant diseases requiring medical treatments that may affect their future fertility, people with genetic diseases that will affect their future fertility, women who need to undergo surgery which will inevitably affect their ovarian tissue, transgender people who are planning to initiate hormonal therapy or are planning to have genital reconstructive surgery, women who want to delay having children and wish to lessen the negative effects of ageing on the number and quality of their oocytes, and men whose jobs might compromise their fertility, or who decide to have a vasectomy for contraceptive purposes.[2]

The most effective methods for fertility preservation are embryo cryopreservation and sperm cryopreservation for women and men respectively. Advances in assisted reproductive technique like vitro fertilization and intracytoplasmic sperm injection have improved success rates for both sperm and oocyte cryopreservation. Although the cryopreservation and transplantation of gonadal tissue in males and females remain experimental, they are still under evaluation where pregnancy without medical intervention can frequently be achieved after transplantation.[3]

Oocyte cryopreservation through vitrification is the preferred method for women experiencing age-related fertility decline, as well as for most women seeking fertility preservation for medical reasons. However, this procedure is only available to women who have reached puberty and requires ovarian stimulation followed by transvaginal oocyte retrieval.[4] For post pubertal males, the primary method of preserving fertility is sperm cryopreservation, which should be done before undergoing any gonadotoxic therapy. If a male in post puberty is unable or unwilling to provide a semen sample for cryopreservation, procedures such as testicular sperm aspiration or testicular sperm extraction can be performed under local anaesthesia. For prepubertal males, cryopreservation of testicular tissue may be considered, but this option is only available under approved clinical trials. It is essential to obtain informed consent by explaining that, currently, there are no established clinical care pathways for the use of prepubertal testicular tissue.[5-6]

Fertility preservation is essential for transgender individuals, as they face unique challenges during their gender transition. Transgender men assigned female at birth can preserve their fertility by freezing oocytes (eggs) or embryos before surgeries like the removal of the uterus or ovaries. This allows them the possibility of becoming biological parents through assisted reproductive technology (ART) or gestational surrogacy. Transgender women assigned male at birth may experience challenges due to irreversible hormone therapy effects on sperm production. However, they can preserve fertility through sperm cryopreservation before starting hormone therapy, enabling biological parenthood via intrauterine insemination (IUI) or gestational carriers. In summary, fertility preservation empowers transgender individuals with reproductive autonomy and offers psychological benefits by providing control over future reproductive options.[7]

NEED OF THE STUDY

Around 10% of cancers occur in women under 45. Treatments like chemotherapy, radiotherapy, and bone marrow transplantation cure over 90% of cases but may cause premature ovarian insufficiency, influenced by age, follicular reserve, and the drugs used.[8] Patients of all ages, not of cancer only but, genetic diseases, metabolic diseases, transgender, and those who wants to postpone parenthood can be counselled for fertility preservation.[9] The incidence of cancer among children, adolescents, and young adults is on the rise and around 80% survive. Fertility preservation is not practiced due to lack of knowledge and

awareness of effects of cancer and its treatment on fertility and the availability of fertility preservation methods.[10]

An increasing number of women are postponing childbirth, despite evidence of a decrease in fertility with advancing age. Although there are many factors that affect the level of fertility among men and women, including delay age of marriage[11], there is little attention to level of awareness of the effects of ovarian aging on fertility and reproductive planning, as well as the medical options available and knowledge of the various aspects of fertility preservation.[12] Therefore, it is important to inform about fertility preservation at an early age. Therefore, the current study was conducted to determine the effectiveness of Organized Educational Programme on Knowledge regarding Fertility Cryopreservation among First Year B. Sc. Nursing Students.

STATEMENT OF THE PROBLEM

A study to determine the effectiveness of Organized Educational Programme on Knowledge regarding Fertility Cryopreservation among First Year B. Sc. Nursing Students at selected Nursing Institute, Kanpur.

OBJECTIVES

- To evaluate the pre-test level of knowledge regarding fertility cryopreservation among first Year B. Sc. Nursing Students.
- To determine the effectiveness of Organized Educational Programme on knowledge regarding Fertility Cryopreservation among First Year B. Sc. Nursing Students.
- To find out the significant association between the pre-test knowledge score of First Year B. Sc. Nursing Students with their selected demographic variables.

HYPOTHESIS

Null Hypothesis-

1. **H_{01}**-There is no significant difference in pre-test and post-test knowledge scores regarding Fertility Cryopreservation among First Year B. Sc. Nursing Students.
2. **H_{02}**- There is no significant association between pre-test knowledge score regarding Fertility Cryopreservation among First Year B. Sc. Nursing Students with their selected demographic variables.

Positive Hypothesis-

1. **H_1**-There is a significant difference in pre-test and post-test knowledge scores regarding Fertility Cryopreservation among First Year B. Sc. Nursing Students.
2. **H_2**- There is a significant association between pre-test knowledge score regarding Fertility Cryopreservation among First Year B. Sc. Nursing Students with their selected demographic variables.

METHODS

A quantitative evaluative research approach was adopted and quasi-experimental one group pre-test post-test design was opted by the researcher to determine the effectiveness of Organized Educational Programme on knowledge regarding Fertility Cryopreservation among First Year B. Sc. Nursing Students. The study was conducted at Regency Institute of Nursing, Kanpur with a total sample size of 60 First Year B. Sc. Nursing Students, who were selected by non-probability purposive sampling technique. Students who were available and willing to participate were included in the study. A self-structured knowledge questionnaire was used to evaluate the level of knowledge regarding Fertility Cryopreservation.

RESULTS

Out of 60 students, none belonged to age group of <18 years, 36 were between 18 to < 20 years, 21 were between 20 to <22 years, and 3 were above 22 years. 10 were male, and 40 were female. 34 of them had a previous knowledge whereas 26 had no previous knowledge regarding Fertility Cryopreservation. Out of 34 students, 1 obtained knowledge through parents/relatives, 24 through teachers, 4 through conferences/journals, and 5 from other sources.

In the pre-test, out of 60 students, 25 (41.67%) had inadequate knowledge, 35 (58.33%) had moderate knowledge, and none of them had adequate knowledge regarding Fertility Cryopreservation whereas in the post-test, none of them had inadequate knowledge, 3 (5%) had moderate knowledge, and 57 (95%) had adequate knowledge regarding Fertility Cryopreservation. The data showed the proportion of students with an adequate knowledge increase from 0% to 95% [Table 1].

Table 1: Frequency and percentage distribution of the pre-test and post-test level of knowledge score regarding Fertility Cryopreservation among First Year B. Sc. Nursing Students

Level of Knowledge	**Pre-test** Frequency, n (%)	**Post-test** Frequency, n (%)
Inadequate	25 (41.67%)	0 (0%)
Moderate	35 (58.33%)	3 (5%)
Adequate	0 (0%)	57 (95%)
Total	**60 (100%)**	**60 (100%)**

The mean score and standard deviation of pre-test knowledge score was 8.3 and 0.43 respectively whereas that of post-test was 18 and 0.26 respectively. It was seen that the paired "t" value was 32.06 and p value was 0.05 level which clearly shows that the Organized Educational Programme was very effective in increasing the knowledge regarding Fertility Cryopreservation. Therefore, H_1, i.e., there is a significant difference in pre-test and post-test knowledge scores regarding Fertility Cryopreservation among First Year B. Sc. Nursing Students is accepted [Table 2].

Table 2: Pre-test and post-test level of knowledge regarding Fertility Cryopreservation among First Year B. Sc. Nursing Students

Level of knowledge	**Mean**	**SD**	**P**
Pre-test	8.3	0.43	Significant
Post-test	18	0.26	At 0.05 level

-Note: SD- Standard Deviation

There was no significant association between the pre-test knowledge scores and their selected demographic variables, i.e., Age in Years, Gender, and Previous Knowledge regarding Fertility Cryopreservation. However, there was a significant association with Source of Information at 0.05 level of significance. Therefore, H_{02} i.e. there is no significant association between pre-test knowledge score regarding Fertility Cryopreservation among First Year B. Sc. Nursing Students with their selected demographic variables was accepted [Table 3].

Table 3: Association between the level of pre-test knowledge score of First Year B. Sc. Nursing Students regarding Fertility Cryopreservation with their selected demographic variables.

Demographic variables	Knowledge Scores		Chi-Square value (χ^2)	Significance at 0.05 level
	Inadequate	Moderate		
AGE IN YEARS				
Below 18 years	0	0	χ^2=1.14	
18t o <20 years	17	19	df=3	NS
20 to <22 years	7	14	T=7.82	
Above 22 years	1	2		
GENDER			χ^2=0.01	
Male	4	6	df=1	NS
Female	21	29	T=3.84	
PREVIOUS KNOWLEDGE REGARDING FERTILITY CRYOPRESERVATION			χ^2=2.06	NS
Yes	12	22	df=1	
No	14	12	T=3.84	
SOURCE OF INFORMATION				
Parents/Relatives	1	0	χ^2=17.71	S
Teachers	7	17	df=3	
Conferences/Journals	2	2	T=7.82	
Others	3	2		

Note: NS-Not Significant; S- Significant

DISCUSSION

In the current study, the pre-test score showed that none of the participants had adequate knowledge regarding Fertility Cryopreservation whereas in the post-test, 57 of them had adequate knowledge. The study findings were supported by a study conducted by Harshit D J, Dasari Papa, and Dubashi, Bishwajit, who assessed the effectiveness of health education on knowledge, attitude, and practice of fertility preservation among parents of adolescents, young adults and among young adults and found out that the post-test score (93.8%) was increased than the pre-test score (16.4%) after the health education.[10]

The current study revealed that the t-value 32.06 was significant at 0.05 level of significance between the pre-test and post-test knowledge scores wherein the difference was due to the instillation of organized educational programme on Fertility Cryopreservation. A congruent study was done by Suzan El-Said Mansour and Samia I Hassan to assess the effectiveness of educational package for Oncology Nurses Regarding Fertility Preservation among Female Cancer Patients wherein the result showed that there was significant improvement in the knowledge scores from 8.2 to 12.3.[13]

In the present study, it was found that there was no significant association between pre-test knowledge score among First Year B. Sc. Nursing Students with their selected demographic variables. In support, there was a study conducted by Ursula Balthazar and Jennifer E. on Fertility preservation: a pilot study to assess previsit patient knowledge quantitatively in which the study findings showed that there is no correlation between knowledge score and demographic variables.[14]

CONCLUSION

Organized Educational Programme was effective on enhancing the knowledge of First Year Nursing Students regarding Fertility Cryopreservation. Regular training and educational programmes are needed to improve the knowledge of Nursing Students.

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