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A Pre-Experimental Study to Assess the Effectiveness of Structured Teaching Programme on Knowledge, Awareness and Preference Regarding Stem Cells and Umbilical Cord Blood Banking Among Pregnant Women

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ABSTRACT

Introduction: Cord blood collection is a simple, safe and painless procedure that usually takes less than 5 minutes in which the cord is clamped and cut and blood is drawn from umbilical cord in a specialized bar coded bag. Stem cells rich blood can prove to be the best possible insurance against life threatening diseases.
Methodology: The research approach adopted for the study was a quantitative approach. The study was conducted on 30 pregnant women visiting antenatal OPDs with convenient sampling. Data analysis was done using descriptive and inferential statistics.
Results: Result shows that in the pre-test, the mean score of knowledge 2.766, awareness 3.766, preference 2.833 whereas in the post-test, the mean score of knowledge 1.166, awareness 1.366 and preference 2.833. The 't' (cal) value was found to statistically significant at $p < 0.05$. This clearly shows that the STP imparted to pregnant women had significant improvement in the post-test level of knowledge, awareness and preference regarding stem cells and umbilical cord blood banking.
Conclusion: This study concluded that there was a significant difference in the level of knowledge, awareness and preference regarding stem cells and umbilical cord blood banking among pregnant women.

Keywords: Structured teaching programme, Knowledge, Awareness, Preference, Stem cells, Umbilical cord blood banking.

INTRODUCTION

Health is the fundamental right of every individual and health care is considered as a very delicate issue globally. The study and research of human body and related health issues, helps us to understand, how human functions and the application of that knowledge to improve health and to prevent and cure diseases.

Umbilical cord blood is the blood that remains in the placenta and in the attached umbilical cord after childbirth[1]. Cord blood collection is a simple, safe and painless procedure that usually takes less than 5 minutes in which the cord is clamped and cut and blood is drawn from umbilical cord in a specialized bar coded bag. The collection are further harvested for stem cells, which are then stored in Cryo-vials at -196 °C in liquid nitrogen. [2]

The practice of collecting cord blood stem cells is a part of the birthing process. It is a procedure that has been in existence since the year 1988 and after that more than 400,000 umbilical cord blood units have been collected worldwide and 20,000 umbilical cord blood transplants have taken

place. Today, thousands of parents are using this once in a lifetime opportunity of collecting cord blood stem cells to be available later for possibly treating health problems.[3]

Banking a baby's cord blood stem cells in a cord blood bank is a type of insurance. Cord blood banking includes the collection, processing and storage of umbilical cord blood for future needs that are related to the treatment of family or others.[4] Cord blood banking is once in a lifetime opportunity to save babies cord blood stem cells for potential medical uses. Saved cord blood of baby can be lifesaving for baby or other family members and insure that these cells are immediately available if ever needed.[3]

Cord blood preservation is still a new concept in India and a lot of people are unaware about this concept. Due to unawareness many people loss once in a life time opportunity to bio-insure their child's future. In India, there are approximately 72000 births daily, which results in discarding 72000 umbilical cords a day.[2]

In India, umbilical cord cell research was initiated at the Cancer Research Institute, Tata Memorial Centre at Mumbai in 1990. India's first and largest private Stem Cell bank (Life Cell) started in 2004 in collaboration with CRYO-CELL International.

CRYO-CELL International is the world's largest and oldest stem cell bank.[5]

In spite of good advancements for diagnosis and treatment, Cancer is still a big threat to our society. This is the second most common disease for maximum deaths in the world. It accounts for about 23% and 7% deaths in USA and India, respectively. About 3 million Indians are diagnosed with cancer, between 5% and 10 % of them with blood cancers. Approximately 10,000 children are born every year with thalassemia in India[6]. Various studies have shown that there is a greater prevalence and incidence of β thalassemia and haemoglobinopathies disorders in northern India and in people of Punjabi origin.[7]

But thanks to revolutionary development in the stem cell industry, due to which, there are several life threatening diseases like thalassemia, leukaemia etc can now be treated completely.

As there is increasing number of options regarding collection and banking of umbilical cord blood, more pregnant women are likely to be asked to make decision about stem cell banking. A study found that, while feeling confident in making an anticipatory decision about cord blood banking, women expressed a clear desire to learn much more about collection, storage, and use of stem cell banking.[8]

Cord blood banking was an alien concept till a few years ago in India. So, people of India have lack of awareness regarding it. So, it increases the responsibility of health professionals to create awareness about cord blood banking and to motivate its utilization by pregnant women to move towards this bio health insurance.

RESEARCH HYPOTHESIS

H_1: There will be significant difference between mean pre and post-test knowledge, awareness and preference score regarding stem cells and umbilical cord blood banking among pregnant women.

H_2: There will be a significant association between post-test knowledge, awareness and preference score regarding stem cells and umbilical cord blood banking with their selected demographic variable among pregnant women.

NULL HYPOTHESIS

H0: There will be no significant difference in the effectiveness of Structured Teaching Programme on knowledge, awareness and preference regarding stem cells and umbilical cord blood banking among pregnant women at $p < 0.05$ level of significance.

H0: There will be no significant difference between post-test knowledge, awareness and preference score regarding stem cells and umbilical cord blood banking with their

selected demographic variable among pregnant women at $p < 0.05$ level of significance.

RESEARCH APPROACH

A quantitative approach was used in the present study assess the effectiveness of structured teaching programme on knowledge, awareness and preference regarding stem cells and umbilical cord blood banking among pregnant women

RESEARCH DESIGN

The research design is the master plan specifying the method and procedure for collecting and analysing the needed information in a research study. The selection of design depends upon the objectives of the study and variables to be studied. It determents how the study will be organized when data will be collected and what interventions are to be implemented. Research design selected for the present study was quasi experimental design.

Quasi-experimental research design involves the manipulation of independent variable to observe the effect on dependent variable; but it lacks at least one of the two characteristics of the true experimental design: randomization or a control group.

VARIABLES IN THE STUDY

Variables are qualities, properties or characteristics of person, things or situations that change or vary.

Independent Variables

An independent variable is a stimulus or activity that is manipulated or varied by the researcher to create an effect on the dependent variable. In this study the independent variable was structured teaching programme regarding stem cells and umbilical cord blood banking.

Dependent Variables

A dependent variable is the outcome of response due to the effect of the independent variable, which researcher wants to predict or explain. In this study the dependent variables were Knowledge, awareness and preference regarding stem cells and umbilical cord blood banking among pregnant women.

RESEARCH SETTING

Setting is the physical location and condition in which data collection takes place in a study. The present study was conducted in Antenatal OPD of hospitals of District Ludhiana, Punjab.

POPULATION

The term population refers to the entire set of individual or objects that possess specific characteristics that the researcher is interested in studying. The target population of the present study comprised of pregnant women.

SAMPLE

Sample size

Sample is a subject of the population selected to participate in a research study. Sample of the study consisted of 30 pregnant women visiting antenatal OPDs.

Sampling technique

Sampling defines the process of selecting a group of people or other elements with which to conduct a study. The sample was drawn using convenience sampling technique, which is a probability sampling technique, keeping in mind the inclusion and exclusion criteria.

SAMPLING CRITERIA

Inclusion criteria

- The study will include the pregnant women who
- are willing to participate.
- are visiting antenatal OPDs
- can understand Hindi and English

Exclusion criteria

- The study will exclude the pregnant women who
- are not willing to participate in the study.
- are not present at the time of data collection.

SELECTION AND DESCRIPTION OF TOOL

The most important and indispensable part of conducting research study is to collect the relevant data to answer the queries in research problem statement. Thus, a number of literatures related to stem cells and cord blood banking have been reviewed. Besides this expert from the field of medical and nursing were consulted to construct appropriate tool for the purpose of data collection.

Description of tool(s)

Research instruments or research tools are the devices used to collect data. The tools facilitate the observation and measurement of variables. The following tools are used for collecting data in this study. The tools have four parts

PART-1: (a) Socio-demographic profile and (b) Maternal profile.

PART-2: Structured questionnaire to assess the knowledge regarding stem cells cord blood banking.

PART-3: Structured questionnaire to assess the awareness regarding stem cells cord blood banking.

PART 4: Structured checklist to assess the preference regarding stem cells and cord blood banking.

DATA COLLECTION PROCESS

Data collection process is the gathering of information to address a research problem. The data is collected by using interview schedule.

The data collection comprised three phases:

- Pre-intervention phase
- Intervention phase
- Post-Intervention phase

PLAN FOR DATA ANALYSIS

Analysis is the method of organizing, shorting and structuring data in such a way that researcher can be answered or meaningful inferences can be drawn. The collected data were coded, entered in master sheet, compiling and categorizing the information to summarize and organize the data meaningfully. Analysis and interpretation of data are based on the objectives of the study are presented. It consists of both descriptive and inferential statistics.

Descriptive statistics:

a) Frequency and percentage distribution will be used to describe socio demographic variables, level of knowledge, awareness and preference.
b) Mean, mean percentage and standard deviation will be used to analyze level of Knowledge, awareness and preference of pregnant women.

Inferential statistics:

a) Paired‘t’ test will be used to determine the effectiveness of Structured Teaching Programme.
b) “Chi-square” test will be done to determine the association between level of knowledge, awareness and preference with selected socio demographic variables.

RESULTS

Table 1:- Comparison of pre test and post test knowledge scores regarding stem cells and umbilical cord blood banking among pregnant women. N = 30

Knowledge	Mean	SD	Paired ‘t’ Value
Pre Test	2.766	0.430	t = 17.58
Post Test	1.166	0.379	p = 0.000,S*

* p < 0.05, S – Significant

Table 2:- Comparison of pre test and post test awareness scores regarding stem cells and umbilical cord blood banking among pregnant women. N = 30

Awareness	Mean	SD	Paired ‘t’ Value
Pre Test	3.766	0.430	t = 18.15
Post Test	1.366	0.668	p = 0.000,S*

* p < 0.05, S – Significant

Table 3:- Comparison of pre test and post test preference scores regarding stem cells and umbilical cord blood banking among pregnant women. N = 30

Preference	Mean	SD	Paired ‘t’ Value
Pre Test	2.833	0.379	t = 21.10
Post Test	1.100	0.305	p = 0.000,S*

* p < 0.05, S – Significant

Table 4:- Correlation between post test knowledge and awareness scores regarding stem cells and umbilical cord blood banking among pregnant women. N = 30

Variables	Mean	SD	‘r’ Value
Knowledge	1.1667	0.379	r = 0.43
Awareness	1.3667	0.668	p = 0.0006, S*

* p < 0.05, S – Significant

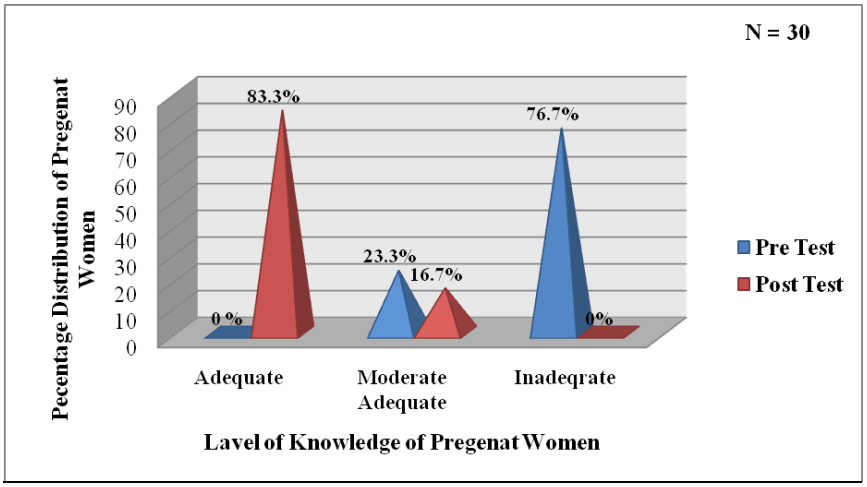

Figure 1 : Percentage distribution of pre test and post test level of knowledge regarding stem cells and umbilical cord blood banking among pregnant women.

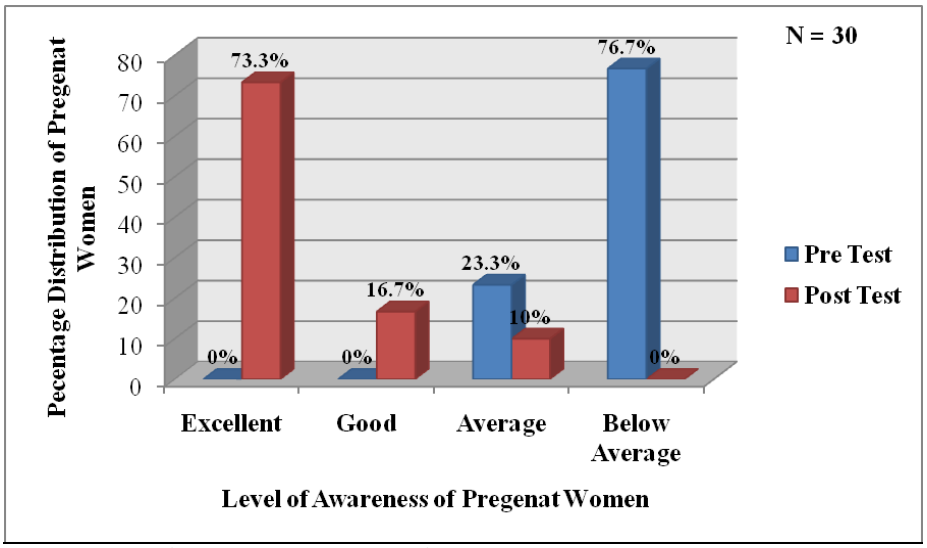

Figure 2: Percentage distribution of pre test and post test level of awareness regarding stem cells and umbilical cord blood banking among pregnant women.

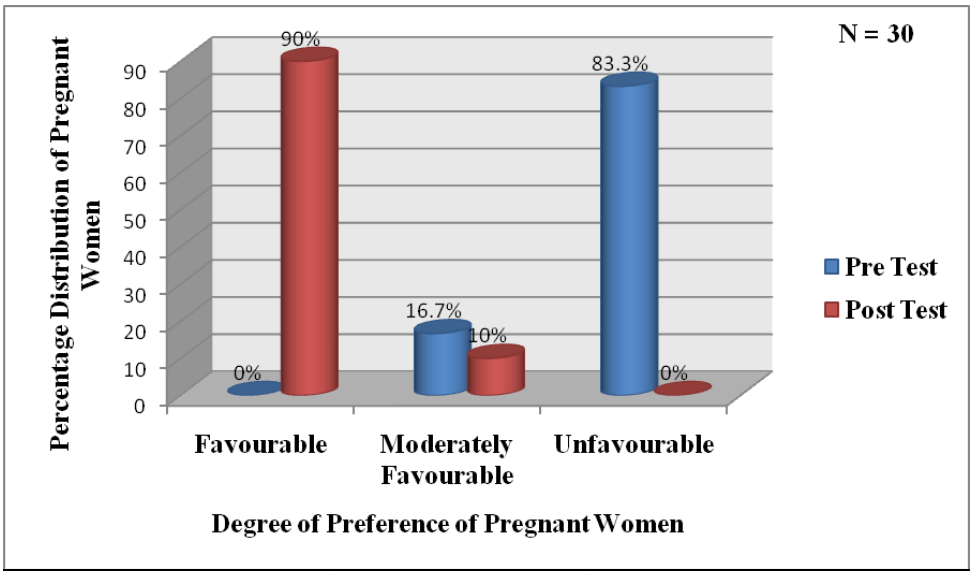

Figure 3: Frequency and percentage distribution of pre test and post test level of preference regarding stem cells and umbilical cord blood banking among pregnant women.

DISCUSSION

1. With regards to knowledge, in the pre test, almost 23(76.7%) had inadequate knowledge whereas in the post test after imparting structured teaching programme majority 25(83.3%) had adequate knowledge and only 5(16.7%) had moderately adequate knowledge regarding stem cells and umbilical cord blood banking among pregnant women.
2. With regards to awareness, in the pre test, almost 23(76.7%) pregnant women had below average awareness whereas in the post test after imparting structured teaching programme majority 22(73.3%) had excellent level of awareness and 5(16.7%) had good awareness level, only 3(10.0%) had average level of awareness regarding stem cells and umbilical cord blood banking.
3. With regards to preference, in the pre test, almost 25 (83.3%)pregnant women had unfavourable preference whereas in the post test after imparting structured teaching programme majority 27(90.0%) had favourable and only 3(10.0%) had moderate degree of preference regarding stem cells and umbilical cord blood banking.
4. Comparison of pre test and post test knowledge scores: In the pre test, the mean score of knowledge was 2.766 with SD 0.430 whereas in the post test the mean score of knowledge was 1.166 with SD 0.379. The calculated paired 't' value of t = 17.58 was found to statistically significant at $p < 0.05$ level. This clearly shows that the structured teaching programme imparted to pregnant women had significant improvement in the post test level of knowledge regarding stem cells and umbilical cord blood banking.
5. Comparison of pre test and post test awareness scores: In the pre test, the mean score of awareness was 3.766 with SD 0.430 whereas in the post test the mean score of awareness was 1.366 with SD 0.668. The calculated paired 't' value of t = 18.15 was found to statistically significant at $p < 0.05$ level. This clearly shows that the structured teaching programme imparted to pregnant women had significant improvement in the post test level of awareness regarding stem cells and umbilical cord blood banking.
6. Comparison of pre test and post test preference scores: In the pre test, the mean score of preference was 2.833 with SD 0.379 whereas in the post test the mean score of preference was 1.100 with SD 0.305. The calculated paired 't' value of t = 21.10 was found to statistically significant at $p < 0.05$ level. This clearly shows that the structured teaching programme imparted to pregnant women had significant improvement in the post test degree of preference regarding stem cells and umbilical cord blood banking.
7. Correlation between post test knowledge and awareness scores: The post test mean score of knowledge was 1.1667 with SD 0.379 and the post test awareness score was 1.3667 with SD 0.668. The calculated Karl Pearson's Correlation value of r = 0.43 shows a positive correlation and it was found to be statistically significant at $p < 0.05$ level.
8. The demographic variable habitat and the maternal variable gravid, still birth and period of gestation had shown statistically significant association with post test level of knowledge regarding stem cells and umbilical cord blood banking at $p < 0.05$ level.
9. The demographic variable occupation and religion and the maternal variable abortion, still birth and period of gestation had shown statistically significant association with post test degree of preference regarding stem cells and umbilical cord blood banking at $p < 0.05$ level.

CONCLUSION

This study concluded that there is a significant difference in the level of knowledge, awareness and preference regarding stem cells and umbilical cord blood banking among pregnant women before and after the administration of structured teaching programme. This showed that the STP was effective in level of knowledge, awareness and preference regarding stem cells and umbilical cord blood banking.

Recommendations

Keeping in view the findings of the present study, the following recommendations were made since the study was carried out on a small sample. The results can be used only as a guide for further studies.

- Similar studies with descriptive approach can be undertaken with large sample to generalize the findings.
- Similar research can be conducted among female health worker / ANMs who have more contact with the pregnant women
- A study can be conducted with other variables.
- A true experimental study may be carried out to standardize the self instructional module.
- A study can be carried out by using other teaching strategies to ensure the knowledge, awareness and preference regarding stem cells and umbilical cord blood banking.

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