ORIGINAL RESEARCH PAPER

Medical Surgical Nursing

EFFECTIVENESS OF STRUCTURED TEACHING PROGRAMME (STP) ON KNOWLEDGE REGARDING STEM CELL THERAPY AND ITS IMPORTANCE AMONG NURSING STUDENTS IN SELECTED COLLEGES, BENGALURU

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ABSTRACT

Stem cells therapy is one of the most challenging areas in the medical research. The goal of the stem cells therapy studies is to improve the human enhancement and to reduce some of the medical problems and diseases by using stem cells as a treatment. Stem cells have the ability to build every tissue in the human body. Hence, they have great potential for future therapeutic uses in tissue regeneration and repair. The discovery of stem cells has led to a revolution in modern medicine. Stem cells from umbilical cord blood are known to treat nearly 80 diseases, and have been used in more than 20,000 transplants worldwide. This study was set out to assess effectiveness of structured teaching programme on stem cell therapy and its importance in experimental group by Quasi-experimental, Non-equivalent or Non-randomized control group design non probability, purposive sampling. STP was developed to assess the effectiveness. The results of the study revealed that there was a significant difference between pre-test and post-test knowledge on stem cell and cord blood banking among antenatal mothers at $p = 0.001$ level.

INTRODUCTION

Stem cells have the ability to build every tis sue in the human body; hence, they have great potential for future therapeutic uses in tissue regeneration and repair. All of the blood cells in your body start out as young (immature) cells called hematopoietic stem cells (haematopoietic means blood-forming.) Even though they may be called stem cells for short, these cells are not the same as stem cells from embryos that are studied in cloning and other types of research. Here, we will use stem cells to mean haematopoietic stem cells[1]. Around 30 percent of unrelated haematopoietic stem cell transplants now come from cord blood. A large number of stem cells are normally found in the blood of newborn babies. After birth, the blood that is left behind in the placenta and umbilical cord (known as cord blood) can be taken and stored for later use in a stem cell transplant[2].

The incident rate of infertility is 30 to 50%. Culture of human embryonic stem cells in mitotically inactivated porcine ovarian fibroblasts (POF) causes differentiation into germ cells (precursor cells of oocytes and spermatozoa), as evidenced by gene expression analysis. Human embryonic stem cells have been stimulated to form Spermatozoon- like cells, yet still slightly damaged or malformed. It could potentially treat azoospermia. Stem cell treatments are a type of intervention strategy that introduces new cells into damaged tissue in order to treat disease or injury. Many medical researchers believe that stem cell treatments have the potential to change the face of human disease and alleviate suffering. The ability of stem cells to self-renew and give rise to subsequent generations with variable degrees of differentiation capacities, offers significant potential for generation of tissues that can potentially replace diseased and damaged areas in the body, with minimal risk of rejection and side effects[3].

Need For The Study:

This study aimed to assess the level of stem cell knowledge, toward stem cell application in medicine. Inadequate knowledge regarding Cord blood stem cell therapy. Umbilical cord blood supplies are not sufficient to meet the high transfusion needs. This study was designed to determine opinion about preservation of umbilical cord blood, identify the reasons for the lack of motivation to donate umbilical cord blood and allow experts to establish better recruitment campaigns to enrich the donor pool.[4]

As Cord blood stem cells have an ability to grow and differentiate, they are being considered as the treatment option to replace the diseased cells, tissue repairs so as to improve the efficiency and working of a failing organ and organ system e.g., failing heart to function due to damage to the cardiac tissues and muscles. Thus, stem cells offer the possibility of a renewable source for replacement of the affected cells and tissues to treat variety of diseases, trauma and injuries. Stem-cell banks help to preserve the embryonic stem cells that can be used to treat diseases in adult-life and this practice of preservation is the boon for the mankind.[5]

Objectives
This study endeavored to:

(1) Assess the pre-test and post-test knowledge scores of stem cell therapy and its importance among nursing students in experimental group.
(2) Assess the pre-test and post-test knowledge scores of stem cell therapy and its importance among nursing students in control group.
(3) Assess the effectiveness of structured teaching program me on stem cell therapy and its importance in experimental group.
(4) Compare the knowledge scores regarding stem cell therapy and its importance in experimental group and control group.
(5) Determine the association of the post-test knowledge scores with selected demographic variables.

MATERIALS AND METHODS

Evaluative research approach was found to be most appropriate. Quasi-experimental, Non-equivalent or Non-randomized control group design was selected as the research design for the present study. The design chosen for the study is as follows.

Key

01: Assessment of knowledge by pre-test.
X : Structured teaching programme on stem cell therapy and its importance.
02: Assessment of knowledge by post-test.

Table 1:

Group	Pre-test (day-1)	Intervention	Post-test (day 7)
Experimental	0_1	X	0_7
Control	0_2	–	0_7

Vlidity and Reliability:

Content validity was done based on criterion checklist which was submitted to five experts in the field of medical surgical nursing and medicine for content validity. The selection of experts was done based on their experience and clinical expertise. The method adopted for the present study was Test-retest method using Split Half Method's formula. The reliability score was $r = 0.86$ which shows that tool was highly reliable.

Split Half Method $r = 2r/1 + r$

Data Collection & Analysis:
A quasi-experimental design with evaluative approach was adopted in order to evaluate the effectiveness of structured teaching programme regarding stem cell therapy and its importance among Nursing students studying in BSc Nursing 2nd year at Diana College of Nursing, Bengaluru. Open ended questions were used to assess the pre-test and post knowledge score regarding stem cell therapy and its importance and implemented the STP. Data was collected from the sample after obtaining permission from the concerned authority. A structured questionnaire was administered to nursing students from bsc Nursing 2nd year (18–25 years) studying at Diana college of nursing, Bengaluru. On the day 1, the group was divided into experimental and control group and a pre-test was conducted for both, following that a structured teaching programme on stem cell therapy and its importance was delivered only to experimental group. Post-test was conducted for the group on day 7 to assess the effectiveness of structured teaching programme. This study was conducted in Diana college of nursing, Bengaluru. Diana College of nursing was selected for the study on the basis of feasibility of conducting study and the availability of the sample. 60 nursing students studying at Dina college of nursing was selected.

RESULTS AND DISCUSSION
Socio Demographic Profile
Socio demographic profile of nursing students frequency and percentage distribution of Nursing Students for both the experimental and control group according to age, gender, type of family, religion, marital status, source of information, educational status. Among the experimental group (30), the majority of nursing students were in the age group of 18-20 years, i.e. 25 (83.33%) were 20–22 years, i.e. 5 (16.66%) and 22–25 years, i.e. 0 (0%). For the control group (30), the majority of nursing students were in the age group of 18–20 years,i.e. 22 (73.33%) were 20–22 years, i.e. 8 (26.66%) and 22–25 years, i.e. 0 (0%). In relation to Gender, the experimental group had majority of nursing students were female, i.e. 20 (66.66%) and male nursing students, i.e. 10 (33.33%). For the control group (30 in all), the majority of nursing students were female 17 (56.66%) and male nursing students,i.e. 13 (43.33%). Regarding the type of family, the experimental group had majority from nuclear family 22 (73.33%) and joint family, i.e. 8 (26.66%) were extended family, i.e. 0 (0%). For the control group had majority from nuclear family 22 (73.33%) and joint family, i.e. 8 (26.66%) were extended, i.e. 0 (0%). With regard to the religion, the experimental group had majority of nursing students being Hindu 24 (80%), Muslim 2 (6.66%) and Christian 4 (13.33%). For the control group, the majority of nursing students were again from Hindu 21 (70%), Muslim 2 (6.66%) and Christian 7 (23.33%). With regard to source of information, the experimental group had majority of nursing students were getting knowledge from newspaper 14 (46.66%),10 (33.33%) were getting knowledge from TV, 6 (20%) were getting knowledge from Magazine. In control group had majority of nursing students were getting knowledge from TV 20 (66.66%), 6 (20%) were getting knowledge from Newspaper, 4 (13.33%) were getting knowledge from Magazine. In relation Marital status, both the experimental group and control group nursing students were unmarried, i.e. 60 (100%). In relation to Educational status, both the experimental group and control group nursing students were BSC Nursing.

Knowledge Of Nursing Students Regarding Stem Cell Therapy And Its Importance In Pre-test And Post- Test For The Experimental Group
Table 2 showed distribution of respondents according to pre-test and post-test knowledge scores is given for the experimental group. The pre-test was conducted before administration of structured teaching to the nursing students. Among which 17 (56.66%) nursing students were having

good knowledge, 13 (43.33%) were having Average knowledge. The above data clearly indicates the need for a teaching programme to be imparted for improving the knowledge level of nursing students. The post-test was conducted after administration of the structured teaching programme. The post-test knowledge scores shows a significant difference from that of pre-test, i.e. 2 (6.66%) were having very good knowledge, 26 (86.66%) gained good knowledge and only 2 (6.66%) of them were average knowledge.

Table 2: Knowledge And Percentage Distribution Of Respondents For Experimental Group

Level of knowledge	Pretest		Posttest	
	F	%	F	%
V Good (31–40)	–	–	02	6.66
Good (21–30)	17	56.66	26	86.66
Average(11–20)	13	43.33	02	6.66
Poor (0–10)	–	–	–	–
Total	30	100.00	30	100.00

Knowledge of nursing students regarding stem cell therapy and its importance in pre-test and post- test for the control group
Table 3 showed distribution of respondents according to pre-test and post-test knowledge scores is given for the control group. There was no administration of structured teaching to the nursing students. For the pre-test, majority of 25 (83%) nursing students were having average knowledge, 5 (17%) were having good knowledge. The post- test was conducted without any administration of the structured teaching programme. The post-test knowledge scores shows no significant difference from pre-test score, i.e. 26 (86.66%) were having average knowledge, 2 (6.66%) were having poor knowledge and only 2 (6.66%) were having good knowledge.

Table 3: Knowledge And Percentage Distribution Of Respondents For Control Group

Level of knowledge	Pretest		Postest	
	F	%	F	%
V Good (31–40)	–	–	–	–
Good (21–30)	5	17	2	6.66
Average(11–20)	25	83	26	86.66
Poor (0–10)	–	–	02	6.66
Total	30	100	30	100.00

Effectiveness of STP
This table 4 shows that in the experimental group,
- The pre-test score was minimum 14 and maximum 25, Mean and SD was 20.33 and 3.18 respectively.
- The post-test score was minimum 17 and maximum 33, Mean and SD was 26.53 and 3.44 respectively.
- The obtained 't' value 7.38 is statistically at 0.05 level.

Table 4: Analysis Of Observational Scores In Experimental Group (n = 30)

Group	Minimum	Maximum	Mean	SD	t-value	p-value
Pre-test	14	25	20.33	3.18		p-value
Post-test	17	33	26.53	3.44	7.38	<0.001
df = 29						

Level of significant at 0.05 is 2.05

Analysis of observational scores in control group
Table 5 shows that in the control group, The pre- test score was minimum 12 and maximum 27, Mean and SD was 17.53 and 3.48 respectively. The post-test score was minimum 9 and maximum 27, Mean and SD was 16.83 and 3.55 respectively.

Obtained t-value 0.77 is not statistically significant at 0.05 level. Hence H$_1$, i.e. the research hypothesis is accepted and H$_{01}$ the null hypotheses is rejected because calculated t-value

for the experimental group is greater than tabulated t-value.

Table 5: Analysis Of Observational Scores In Control Group (n = 30)

Group	Minimum	Maximum	Mean	SD	t-value	p-value
Pre-test	12	27	17.53	3.48		
Post-test	9	27	16.83	3.55	0.77	0.4475(NS)
df = 29						

Level of significant at 0.05 is 2.05

Comparison Of Knowledge Scores Regarding Stem Cell Therapy And Its Importance In Experimental Group And Control Group.

The pre-test and post-test mean knowledge scores of respondent regarding stem cell therapy and its importance for the experimental group and control group. For experimental group, the total enhancement of the respondent in Section: A was 10.63% and for Section: B was 17.24%. the overall enhancement was 15.5% from pre-test to post-test.

For the control group, the total enhancement of the respondent in Section: A was 4.5% and for Section: B was 0.68%. the overall enhancement was only 1.75% from pre-test to post-test. Hence, it was concluded that there was significant difference between the knowledge scores of experimental group and control group.

Association of post-test knowledge scores of nursing students with selected demographic variable

The knowledge is not associated and is not significant with almost all the demographic variables like age, gender, type of family, religion, source of information, marital status, educational status at 0.05 level for the experimental group. Thus the null hypotheses H_{02} is accepted and research hypotheses H_2 is rejected.

CONCLUSION

The study and research of human body and related health issues, helps to understand how human function, and the application of that knowledge to improve health and to prevent and cure diseases. The investigator, analyzed the data and came to the conclusion that the effectiveness of structured teaching programme (STP) brought an impact on knowledge regarding stem cell therapy and its importance among nursing students in experimental group and those in control group who did not received STP, showed no change in their knowledge level.

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