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Pre-Experimental Study to Assess the Effectiveness of Structured Teaching Programme on Knowledge Regarding Stem cells and Umbilical Cord Blood Banking among Staff Nurses Working at Selected Hospitals of Ludhiana, Punjab

Neha Thakur[1], Timsy[2]

Abstract: ***Stem cells are undifferentiated biological cells that differentiate into specialized cells and can divide to produce more stem cells. Study Design and setting: Pre-experimental research design (Non-randomized research design) was used for conducting study in selected hospitals of Ludhiana, Punjab. Subject comprising of 60 staff nurses, selected by non- probability convenient sampling technique. Results: The Mean±SD of post-test knowledge score of staff nurses (16.93±2.94) was higher than the Mean±SD of pre-test knowledge score of staff nurses (9.5±1.46). The computed paired t value (18.12) was found statistically significant. Conclusion: It was concluded that structured teaching programme was effective as evidenced by the result of post-test knowledge regarding stem cells and umbilical cord blood banking among staff nurses. There was no significant association of demographic variables with knowledge regarding Stem cells and Umbilical cord Blood banking. So the STP was effective in enhancing the knowledge of staff nurses and the teaching programme had played a role in improving the knowledge of the staff nurses.***

Keywords: Structured teaching programme, stem cells and umbilical cord blood banking

1. Introduction

The cell (from Latin cella, meaning "small room") is the basic structural, functional, and biological unit of all known living organisms. The term stem cells appear in the scientific literature as early as 1868 in the works of the eminent German biologist Ernst Haeckel **(Haeckel, 1868).** In mammals, there are two broad types of stem cells: embryonic stem cells, which are isolated from the inner cell mass of blastocysts and adult stem cells, which are found in various tissues. In adult organisms, stem cells and progenitor cells act as a repair system for the body, replenishing adult tissues. It can also be taken from umbilical cord blood just after birth. Cord blood usually is discarded along with the umbilical cord and placenta but it is a rich source of stem cells. These include platelets, which are needed for blood clotting; red blood cells, which transport oxygen to the cells; white blood cells, which help fight disease. Cord blood banking includes the collection, processing and storage of umbilical cord blood and has a history that spans about twenty-five years.

2. Objectives

The main aim of the study was to evaluate the knowledge of the staff nurses after administering the structured teaching programme by comparing pre-test and post-test knowledge scores regarding stem cells and umbilical cord blood banking among staff nurses.

3. Methodology

The study was conducted in selected hospitals of Ludhiana, Punjab by using pre-experimental research design comprising of 60 staff nurses. Non-probability convenient sampling technique was used to select 60 staff nurses out of which 30 were selected from the Sidhu hospital Pvt Ltd Doraha and 30 from the IVY hospital Khanna, Ludhiana. After a thorough review of literature related to the topic the tool was developed. Ethical approval was taken from the ethical committee of the hospitals. The reliability of tool was established by Karl Pearson's formula i.e. test-retest method.

The tool was found to be reliable (r=0.8). Purpose of the study was explained and verbal consent was taken from the subjects. Data was collected in the month of March 2017 by using self- structured knowledge questionnaire and pre-test was taken followed by structured teaching programme was administered. After that post-test was taken on 7th day only.

4. Results

Table 1: Frequency and percentage Distribution of Socio-Demographic characteristics of staff nurses regarding Stem cells and Umbilical cord Blood Banking, N=60

Sr. No	Demographic characteristics	Frequency (f)	Percentage (%age)
1	**Age in years**		
a.	22-25	20	33.5
b.	26-29	21	35
c.	30-33	13	21.5
d.	Above 34	6	10
2	**Gender**		
a.	Male	8	13
b.	Female	52	87
3	**Education**		
a.	ANM	-	-
b.	GNM	21	35
c.	B.Sc Nursing	21	35
d.	Post Basic B.Sc Nursing	18	30
e.	M.Sc. Nursing	-	-
4	**Working Experience**		

a.	0-1 years	20	33
b.	2-3 years	21	35
c.	4-5 years	9	15
d.	More than 5 years	10	17
5	**Working area or department**		
a.	Emergency	10	17
b.	General	11	18.3
c.	Gynae	11	18.3
d.	Pediatrics	11	18.3
e.	Any other, specify...	17	28.1
6	**Source of information**		
a.	Mass media	28	47
b.	Friends and family	14	23.3
c.	Newspaper or magazines	14	23.3
d.	Any other, specify...	4	6.4

Table 1 depicted that maximum number of staff nurses (35%) in the age group of 26-29 years, (87%) were females and (13%) were male, (35%) staff nurses were from GNM and (35%) B.Sc, maximum staff nurses (35%) had 2-3 years of experience, (47%) staff nurses had gained information from Mass media.

Table 2: To assess the pre-test knowledge regarding Stem cells and Umbilical cord Blood banking among staff nurses working at selected hospitals of Ludhiana, Punjab, N=60

Sample	Mean	SD
Staff nurses	9.5	1.46

Table 2 revealed that the mean knowledge score of staff nurses was (9.5) and standard deviation was 1.46.

Table 3: Frequency and percentage distribution of Pre-test knowledge regarding Stem cells and Umbilical cord blood banking among staff nurses, N=60

Level of knowledge score regarding Stem cells and Umbilical cord Blood banking	Frequency (f)	Percentage (%age)
Good (21-30)	-	-
Average (11-20)	13	22%
Poor (0-10)	47	78%

Maximum score -30
Minimum score-0

Table 3 depicted that majority of staff nurses 47(78%) had poor level of knowledge regarding Stem cells and Umbilical cord blood banking followed by 13 (22%) had average level of knowledge regarding Stem cells and Umbilical cord blood banking.

Table 4: To assess the post-test knowledge regarding Stem cells and Umbilical cord Blood banking among staff nurses working at selected hospitals of Ludhiana, Punjab, N=60

Sample	Mean	SD
Staff nurses	16.93	2.94

Table 4 revealed that the mean knowledge score of staff nurses was (16.93) and standard deviation was 2.94.

Table 5: Frequency and percentage distribution of Post-test knowledge regarding Stem cells and Umbilical cord blood banking among staff nurses, N=60

Level of knowledge score regarding Stem cells and Umbilical cord Blood banking	Frequency (f)	Percentage (%age)
Good (21-30)	11	18%
Average (11-20)	48	80%
Poor (0-10)	1	2%

Maximum score -30
Minimum score-0

Table 5 shows that majority of staff nurses 48 (80%) had average level of knowledge regarding Stem cells and Umbilical cord Blood banking followed by 11 (18%) had good level of knowledge, and 1 (2%) had poor level of knowledge regarding Stem cells and Umbilical cord Blood banking.

Table 6: To evaluate the effectiveness of structured teaching programme by comparing pre-test and post-test knowledge scores regarding Stem cells and Umbilical cord Blood banking among staff nurses

H_1: There will be significant difference between mean pre-test and post-test knowledge scores regarding Stem cells and Umbilical cord Blood banking among staff nurses.

N=60

Test	Mean±SD	Paired t-value
Pre-test	9.5±1.46	18.12
Post-test	16.93±2.94	

(Significant $p<0.05$)
($t_{59}=2.00$)

Table 6 revealed that the Mean±SD of post-test knowledge score of staff nurses (16.93±2.94) was higher than the Mean±SD of pre-test knowledge score of staff nurses (9.5±1.46). The computed paired t-value (18.12) which was found statistically significant. Hence it was inferred that H_1 research hypothesis was accepted which showed the effectiveness of structured teaching programme by comparing pre-test and post-test knowledge score regarding Stem cells and Umbilical cord Blood banking among staff nurses.

Table 7: To determine the association between pre-test knowledge regarding Stem cells and Umbilical cord Blood banking with their selected demographic variables among staff nurses

H_2: There will be significant association between pre-test knowledge regarding Stem cells and Umbilical cord Blood banking with their selected demographic variables among staff nurses.

Table 7: Chi Square Values Showing the Association between pre-test knowledge regarding Stem cells and Umbilical cord Blood banking with their selected demographic variables among staff nurses, N=60

Demographic Variables	Level of knowledge			df	χ^2	Table value
	Poor	Average	Good			
Age in years						
a. 22-25	16	4	0	6	3.53^{NS}	12.59
b. 26-29	18	3	0			
c. 30-33	10	3	0			
d. Above 34	3	3	0			
Gender						
a. Male	7	1	0	2	0.44^{NS}	5.99
b. Female	40	12	0			
Education						
a. ANM	0	0	0	8	0.39^{NS}	15.51
b. GNM	17	6	0			
c. B.Sc Nursing	17	4	0			
d. Post Basic B.Sc Nursing	13	3	0			
e. M.Sc. Nursing	0	0	0			
Working Experience						
a. 0-1 year	15	4	0	6	2.80^{NS}	12.59
b. 2-3 year	19	3	0			
c. 4-5 years	7	2	0			
d. More than 5 years	6	4	0			
Working area or department						
a. Emergency	9	1	0	8	3.17^{NS}	15.51
b. General	7	3	0			
c. Gynae	8	4	0			
d. Pediatrics	10	1	0			
e. Any other, specify	13	4	0			
Source of information						
a. Mass media	19	9	0	6	2.92^{NS}	12.59
b. Friends and family	13	1	0			
c. Newspaper or magazines	11	3	0			
d. Any other, specify…	4	0	0			

(NS=Non significant)

Table 7 depicted that the association between pre-test knowledge regarding Stem cells and Umbilical cord Blood banking among staff nurses with their selected demographic variables. Hence it was concluded that the H_2 Hypothesis was rejected and that there was no association between the pre-test knowledge regarding Stem cells and Umbilical cord Blood banking among staff nurses with their selected demographic variables.

Table 8: To determine the association between post-test knowledge regarding Stem cells and Umbilical cord Blood banking with their selected demographic variables among staff nurses.

H_3: There will be significant association between post-test knowledge regarding Stem cells and Umbilical cord Blood banking with their selected demographic variables among staff nurses.

Table 8: Chi Square Values Showing the association between post-test knowledge regarding Stem cells and Umbilical cord Blood banking with their selected demographic variables among staff nurses, N=60

Demographic Variables	Level of knowledge			df	χ^2	Table value
	Poor	Average	Good			
Age in years						
a. 22-25	0	19	1	6	7.74^{NS}	12.59
b. 26-29	0	16	5			
c. 30-33	1	9	3			
d. Above 34	0	4	2			
Gender						
a. Male	0	8	0	2	2.14^{NS}	5.99
b. Female	1	40	11			
Education						
a. ANM	0	0	0	8	9.33^{NS}	15.51
b. GNM	0	15	8			
c. B.Sc Nursing	0	19	2			
d. Post Basic B.Sc Nursing	1	14	1			
e. M.Sc. Nursing	0	0	0			
Working Experience						
a. 0-1 year	0	18	1	6	10.48^{NS}	12.59
b. 2-3 year	0	18	4			
c. 4-5 years	1	5	3			
d. More than 5 years	0	7	3			
Working area or department						
a. Emergency	0	9	1	8	5.39^{NS}	15.51
b. General	0	8	2			
c. Gynae	0	9	3			
d. Pediatrics	1	8	2			
e. Any other, specify	0	14	3			
Source of information						
a. Mass media	0	22	6	6	4.12^{NS}	12.59
b. Friends and family	1	10	3			
c. Newspaper or magazines	0	12	2			
d. Any other, specify…	0	4	0			

(NS=Non significant)

Table 8 depicted that the association between post-test knowledge regarding Stem cells and Umbilical cord Blood banking among staff nurses with their selected demographic variables. Hence it was concluded from the table that the H_3 Hypothesis was rejected and that there was no association between the post-test knowledge regarding Stem cells and Umbilical cord Blood banking among staff nurses with their selected demographic variables.

5. Discussion

Findings from the present study support the effectiveness of structured teaching programme on knowledge regarding stem cell and umbilical cord blood banking. These findings are consistent with the study conducted by **Dink H.** a study on effectiveness of self-instructional module on the knowledge regarding placental cord blood banking among staff nurses in selected hospitals in Athen, by approaching one group pre-test post-test design. The sample consisted 60 staff nurses selected by convenient sampling and data was collected by using structured knowledge questionnaire. The result showed that self-instructional module was effective in increasing the knowledge of staff nurses (t=15.35). The mean post-test knowledge (x_2=44.18) higher than the mean

pre-test knowledge(x_1=29.40). Hence, it was evident that self-instructional module were effective to enhance the knowledge of staff nurse.

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