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An evaluative study to assess the effectiveness of planned teaching programme on knowledge regarding umbilical cord stem cell banking among nurses in selected hospital of Jammu, J&K

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Abstract

Introduction: An umbilical cord is the life line between mother and the child. It feeds the unborn baby while it is still in womb. In most cases, the umbilical cord and placenta are discarded after birth without a second thought. But during the 1970s, researchers discovered that umbilical cord blood is the same kind of blood forming stem cells as a bone marrow. The present study undertaken to assess the effectiveness of planned teaching programme on knowledge regarding umbilical cord stem cell banking among nurses in selected hospital of Jammu, J&K. The sample consisted of 58 nurses. **Methods:** Purposive sampling technique was used to select the sample. Socio-demographic profile included items like age (in years), qualification, experience, current job, residential area and previous source of information. Self structured questionnaire was prepared to assess the knowledge of nurses. **Result:** The result revealed that in pre-test, maximum 60.4% of nurses were having below average knowledge followed by 36.2% were having average knowledge and only 3.4% were having good knowledge regarding umbilical cord stem cell banking. After giving planned teaching programme, in post-test, majority 81% of nurses were having good knowledge followed by 12.4% were having average knowledge and only 6.6% were having below average knowledge regarding umbilical cord stem cell banking. The comparison of pre-test and post-test knowledge regarding umbilical cord stem cell banking showed that post-test mean value (27.31) is higher than pre-test mean (10.66) value. **Conclusion:** Hence, it is concluded that structure teaching programme was found to be effective in enhancing the knowledge of nurses regarding umbilical cord stem cell banking.

Keywords: *Umbilical card, stem cells, knowledge, banking*

1. Introduction

An umbilical cord is the life line between the mother and the child. It feeds the unborn baby while it is still in the womb. It can grow to 50 cm[1]. The umbilical cord is made up of one vein and two arteries[2].

In most cases the umbilical cord and placenta are discarded after birth without a second thought. But during the 1970s researchers discovered that umbilical cord blood is the same kind of blood forming stem cells as a bone marrow. Cord blood can also be used for family members in some treatments. There is 50% chance of a perfect match for a parent and 25% chance for a perfect match for siblings. And so, umbilical cord blood began to be collected and stored.[3]

Blood should be universally collected from both vessels, arterial and venous blood, before placental delivery by umbilical vein puncture or after delivery of the placenta.[4] For the past 25 years cord blood has been used as an alternative to bone marrow for treatment of blood, immune system and metabolic disorders because of its rich source of hematopoietic stem cells.[5]

Cord blood contains all the normal elements of red blood cells, white blood cells, platelets and plasma but rich in hematopoietic stem cells, similar to those found in bone marrow. Collecting bag should be held at lower level to allow drainage of blood into bag. Stem cells are then harvested from cord blood and stored in cryowak at 196^{o}C in liquid Nitrogen. Collecting bag also contain anti-coagulant to prevent clotting.

Life cells is the first private cord bank in India which is located in Chennai and began its operation in 2004. Jeevan stem cell bank, India's only public bank for stem cells is the not for profit sector launched in Chennai.

A Quasi-Experimental study was conducted to assess the knowledge and attitude of antenatal mothers regarding umbilical cord stem cells banking in different hospitals of Pune and results shows that in pre-test 75% of antenatal mothers had average knowledge followed by 13% had poor knowledge respectively. 70% had neutral attitude regarding umbilical cord stem cell banking. After the intervention, 50% of antenatal mothers had average and 50% of them had good knowledge. Average knowledge and attitude score increased after the post test.[8]

A descriptive study conducted to assess the nurses' knowledge about umbilical cord blood banking and its barriers. All nurses who work in obstetrics and Gynaecological department of Women's Health Hospital Assiut university Egypt, were included in the study. Data was collected by using interview method developed by the researcher. Results showed that knowledge of the nurses about umbilical cord blood baking was lacking, 79.7% represented inadequate knowledge and they identified that the costs of the umbilical cord blood banks, policies and procedures are barriers of conducting such new technology in hospitals.[10]

A quasi-experimental study was conducted to assess knowledge and attitude of maternity nurses regarding cord blood collection and stem cells. The study was conducted at two settings in two different hospitals. Data was collected by using structured interviewing questionnaire. and nurses attitude towards cord blood collection and results shows that 88.7% of nurses had poor knowledge before intervention. However 90.6% and 81.25% of them had good knowledge immediately and after three months of intervention respectively as well as 1.9% of the nurses had positive attitude toward cord blood collection and stem cells before intervention and it was changed to 66.0% and 69.8% respectively after intervention.[11]

OBJECTIVES

- To assess the pre-test knowledge of nurses regarding umbilical cord stem cell banking.
- To assess the post-test knowledge of nurses regarding umbilical cord stem cell banking.
- To compare the pre-test and post-test knowledge of nurses regarding umbilical cord stem cell banking.

2. Methodology

For the present study, **Quantitative experimental research approach** was used. One group pre test-post test design was used to achieve the objectives of study. The research setting was Govt. SMGS hospital, Jammu. The sample consisted of 58 subjects. Purposive sampling technique was used to select the sample. Prior to the data collection procedure the formal permission was obtained from the Medical Superintendent of the hospital. Socio-demographic profile, a structured knowledge questionnaire was used to collect personal information. Socio-demographic profile included items like age (in years), Qualification, Experience, current job, residential area and previous source of information. Self structured questionnaire was prepared to assess the knowledge of nurses. The review of literature, expert's opinions and investigator's own experience provided the basis for construction of tool. Data collection was done in December 2020. Prior to interview the questionnaire, investigator gave self introduction to the subjects and explained the purpose of gathering information. A good rapport was established with the subjects. They were assured that their responses will be used kept confidential and the information will be used only for research purpose. Formal consent was taken from subjects. The time taken by each respondent for filling the tool was average for 15-20 minutes. Then planned teaching was given to the subjects and after 10 days, post test was taken from them. The data gathered was analyzed and calculated by percentage, mean, standard deviation and chi-square.

3. ANALYSIS AND INTERPRETATION

SECTION-I

SAMPLE CHARACTERISTICS

Table 1

Frequency and percentage distribution of sample characteristics

N=58

Demographic Variables	Frequency (n)	Percentage (%)
Age (in years)		
25-30	21	36.3
30-35	16	27.6
35-40	10	17.2
>40	11	18.9
Qualification		
ANM	13	22.4
GNM	29	50.0
B.Sc Nursing	15	25.8
M.Sc Nursing	01	1.8
Experience (in Years)		
1-5	08	13.7
5-10	13	22.5
10-15	12	20.6
>15	25	43.2
Current Job		
Staff Nurse	46	79.4
In charge	08	13.7
Supervisor	04	6.9

Residential Area		
Urban	39	67.2
Rural	19	32.8
Previous source of knowledge		
Parents or family	01	1.4
Mass Media	25	43.1
Peer group	25	43.1
School education	07	12.4

Table 1 reveals the frequency and percentage distribution of sample characteristics of 58 maternity nurses which reveals that maximum nurses were in the age group of 25-30 years having GNM as Qualification, having more than 15 years experience currently working as staff nurses, residing in urban areas and were having mass media and peer group as previous source of knowledge

SECTION-II

Objective 1:- To assess the pre-test knowledge of nurses regarding umbilical cord stem cell banking.

Table-2

Frequency and percentage distribution of nurses according to pre-test knowledge regarding umbilical cord stem cell banking.

N=58

Knowledge	**Pre-test knowledge score**	
	n	**(%)**
Good (21-30)	02	3.4
Average (11-20)	21	36.2
Below Average (0-10)	35	60.4

Maximum score=30

Minimum score=0

Table 2 Figure 3 depicts the frequency and percentage distribution of nurses according to pre-test knowledge regarding umbilical cord stem cell banking which reveals that maximum 60.4% of nurses were having below average knowledge followed by 36.2% were having average knowledge and only 3.4% were having good knowledge regarding umbilical cord stem cell banking.

Objective 2:- To assess post-test knowledge of nurses regarding umbilical cord stem cell banking.

Table 3

Frequency and percentage distribution of nurses according to post-test knowledge regarding umbilical cord and stem-cell banking

N=58

Knowledge	Post-test knowledge score	
	n	(%)
Good (21-30)	47	81.0
Average (11-20)	07	12.4
Below Average (0-10)	04	6.6

Maximum score=30

Minimum score=0

Table 3 and figure 4 depicts the frequency and percentage distribution of nurses according to post-test knowledge regarding umbilical cord stem cell banking which reveals that majority 81.0% of nurses were having good knowledge followed by 12.4% were having average knowledge and only 6.6% were having below average knowledge regarding umbilical cord stem cell banking.

Hence, it is concluded that planned teaching programme was effective in increasing the knowledge of nurses regarding umbilical cord stem cell banking.

Objective 3:- To compare pre-test and post-test knowledge of nurses regarding umbilical cord stem cell banking.

Table 4

Comparison of pre-test and post-test knowledge score of nurses regarding umbilical cord stem cell banking.

N=58

Knowledge	Mean	SD	df	t
Pre-test	10.66	2.613	57	33.218
Post-test	27.31	1.984		

Maximum score = 30

Minimum score = 0

Table 4 and figure 5 depicts the comparison of pre-test and post-test knowledge regarding among nurses regarding umbilical cord stem cell banking. It shows that post-test mean value (27.31) is higher than pre-test mean (10.66) value.

Hence, it is concluded that structure teaching programme was found to be effective in enhancing the knowledge of nurses regarding umbilical cord stem cell banking.

DISCUSSION

Objective 1: To assess the pre-test knowledge of nurses regarding umbilical cord stem cell banking

The analysis of pre-test knowledge regarding umbilical cord stem cell banking among nurses revealed that that maximum 60.4% of nurses were having below average knowledge followed by 36.2% were having average knowledge and only 3.4% were having good knowledge regarding umbilical cord stem cell banking. Similar study was conducted to assess the knowledge of stem cell therapy among staff nurses of Bangalore 50 subjects were selected by convenient sampling. Results showed that 74% of subject had below average knowledge followed by 26% of the subjects had average knowledge and none of them had good knowledge regarding stem cell therapy.

Objective 2: To assess the post-test knowledge of nurses regarding umbilical cord stem cell banking

The analysis of post test knowledge regarding umbilical cord stem cell banking revealed that majority 81.0% of nurses were having good knowledge followed by 12.4% were having average knowledge and only 6.6% were having below average knowledge regarding umbilical cord stem cell banking. A similar study was conducted at Mogapair, Chennai aimed to certain level of knowledge of antenatal mothers regarding knowledge of stem cell and coral Blood banking a using structured teaching Programme. Level of knowledge on umbilical cord stem cell banking is 44% average knowledge. After structured teaching programme 72.0% mothers were having good knowledge regarding knowledge of umbilical cord stem cell banking.

Objective 3: To compare the pre-test and post test knowledge of nurses regarding umbilical cord stem cell banking.

The findings of present study revealed that post test knowledge level with mean score (27.31) is more than pre-test mean score (10.66). There was beneficial effect of structured teaching programme on knowledge among nurses. Similar study was conducted to assess the structured teaching programme or umbilical cord stem cell banking among staff nurses. The study reveals that mean score (22.07) is more than the pre-test score (11.47). There is a beneficial effect of structured teaching programme on knowledge level staff nurses.

CONCLUSION

The study concluded that planned teaching programme was very effective in increasing the knowledge regarding umbilical cord stem cell banking among nurses but still there is need to improve the knowledge of nurses related to new techniques and procedures in obstetrics. Good knowledge of such techniques can improve better patient care and raise the standard of profession.

RECOMMENDATIONS

1. Similar study can be undertaken on a large sample for making generalisation.
2. A comparative study can be done to find out the knowledge differences between urban and rural areas.
3. A study can be carried out using other teaching strategies like video programme and computer assisted instructions umbilical cord stem cell banking.
4. Similar study can be undertaken on different population eg. Antenatal mothers, nursing students.

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