

Effect of Structured Teaching Programme regarding Collection of Cord Blood for Stem Cell Therapy in terms of Knowledge among Staff Nurses in Selected Hospitals of Bangalore

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Abstract

In the present study evaluating the effectiveness of structured teaching programme (STP) regarding collection of cord blood for stem cell therapy in terms of knowledge among staff nurses in selected hospitals of Bangalore, a pre-experimental design, with convenient sampling method was used. Information was collected from 50 staff nurses regarding collection of cord blood for stem cell therapy using the structured knowledge questionnaire. STP was implemented and post-test was conducted after 7 days to find the effectiveness. The pre-test knowledge scores were found to be 43.05 percent and after STP the post-test knowledge scores of staff nurses was found to be 77.45 percent which enhanced by 34.4 percent with the t-test value 25.96 and Chi-square value 80.18 which is significant at 5 percent level. The result proved that STP was effective in improving the knowledge of staff nurses on collection of cord blood for stem cell therapy.

Good health is not only about not being ill, it is about being happy and feeling whole from a physical, mental and spiritual points of view. The study of human body and related health issues helps to understand how humans function, and the application of that knowledge to improve health and to prevent and cure diseases.

Umbilical cord blood is rich in stem cells, which are the building blocks of the blood and the immune system. These biologically unique cells have the ability to develop into other cell types within the body. Stem cells collected from the umbilical cord have the ability to replace bone marrow and to produce various blood and immune cells.

Stem cells have the remarkable potential to develop into many different cell types in the body during early life and growth. In addition, in many tissues they serve as a sort of internal repair system, dividing essentially without limit to replenish other cells as long as the person or animal is still alive.

As it is a new approach in medical science most of the patients and their relatives are unaware about this clinical entity (Katz et al, 2011; Dinc & Sahin). The nurses also lack adequate knowledge about this

new innovative approach (Walker et al, 2012). In most of the situations nurses at duty find it difficult to provide such information to the patients who come to seek guidance. It has been established that patients tend to trust the nurses and follow their instruction. There is lack of accurate and detailed information about collection of cord blood for stem cell therapy among nurses and only few studies have been conducted on the knowledge of nurses on collection of cord blood for stem cell therapy which implies that there is lack of knowledge regarding the same. Hence the investigator felt the need to assess the knowledge and provide a structured teaching programme for nurses regarding collection of cord blood for stem cell therapy.

Objectives

The study sought to (i) assess the knowledge of staff nurses regarding collection of cord blood for stem cell therapy before and after conducting structured teaching programme regarding collection of cord blood for stem cell therapy, and (ii) find an association between post-test levels of knowledge of staff nurses regarding collection of cord blood for stem cell therapy and their selected personal variables.

Hypotheses

H₁: There will be a significant increase in the mean post-test knowledge scores of staff nurses working

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in selected hospitals at Bangalore regarding collection of cord blood for stem cell therapy.

H₂: There will be a significant association between post-test knowledge scores regarding collection of cord blood for stem cell therapy and the selected personal variables among staff nurses working in selected hospitals at Bangalore.

Review of Literature

In a descriptive study on awareness and acceptance of public cord blood banking among practicing obstetricians in United States in 2009, 80 percent of affiliated obstetricians feel confident discussing cord blood options with their patients. However 49 percent indicated that they had insufficient knowledge of cord

Table 2: Over all pre-test and post-test mean knowledge on collection of cord blood for stem cell therapy (n=50)

Aspects	Max. score	Respondents knowledge			Paired 't' test
		Mean	SD	Mean (%)	
Pre-test	40	17.22	2.65	43.05	25.96*
Post-test	40	30.98	2.70	77.45	
Enhancement	40	13.76	0.046	34.4	

* Significant at 5% level, $t(0.05, 49 df) = 1.96$

blood donation to effectively answer patients' questions about donation. The study concluded that obstetricians are generally familiar with the utility of donated cord blood in transplantation, but could benefit from additional information regarding how cord

blood is used in transplantation. Further, obstetricians play an important role in encouraging women to donate their baby's cord blood to a public CBB, are willing to do so, and indicate a desire for more information so they can effectively educate their patients.

A cross-sectional survey was conducted to assess the knowledge on commercial cord blood banking for their offspring (CCBB) among 2,000 pregnant women in antenatal clinics of two major public maternity units in Hong Kong. The survey explored knowledge about the use of self-stored umbilical cord blood (UCB) stem cells and attitude towards CCBB. The majority (78.2%) had no idea that there was the chance of using self-stored stem cells. Only 20.3 percent of women knew that stem cells are available from the Red Cross in case their children need hematopoietic cell transplantation. The study revealed inadequate knowledge on UCB stem cell banking and its applications among most of pregnant women. The government and clinicians should combine efforts to provide accurate information on utilisation of UCB stem cells during antenatal care.

Methodology

The conceptual framework of the study parameter is based on Imogene King's goal attainment model shown in Figure 1.

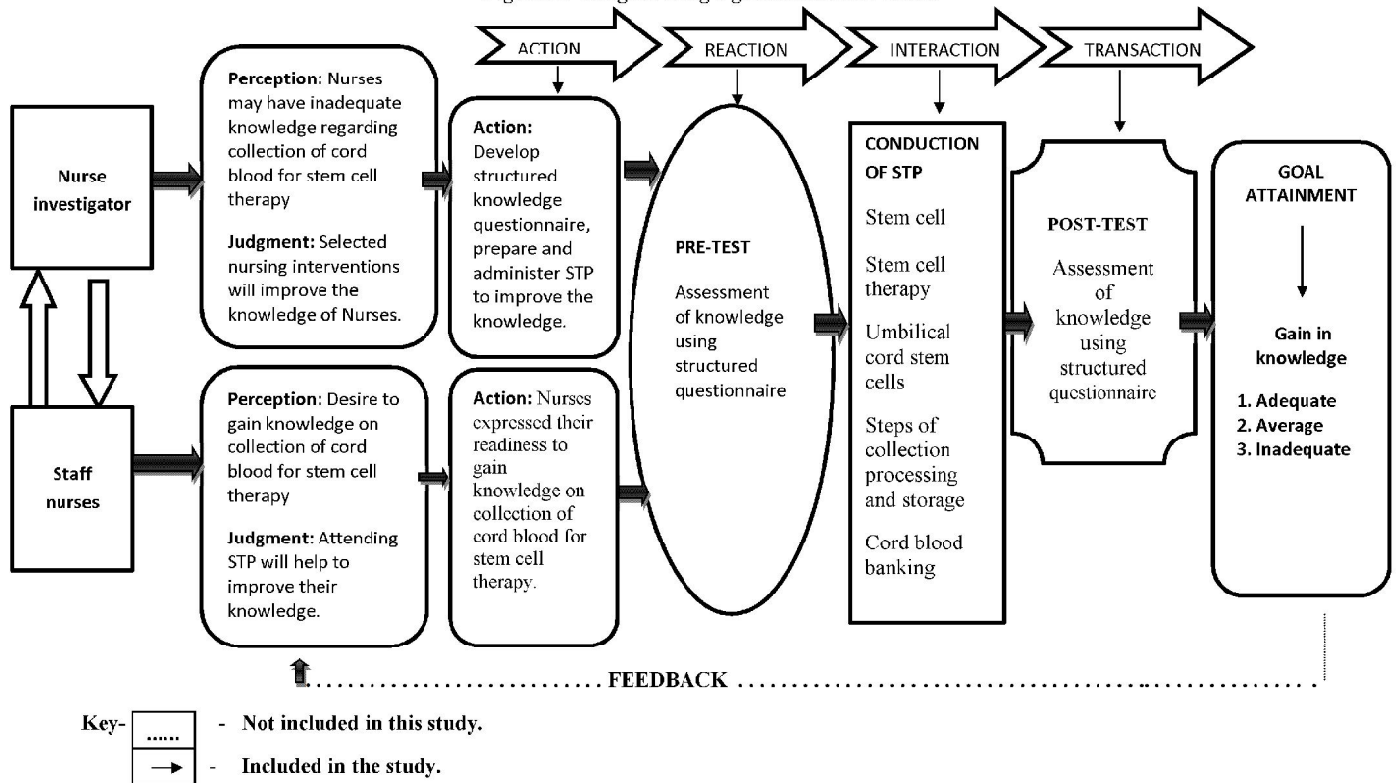
Structured Teaching Programme regarding collection of cord blood for stem cell therapy was developed based on review of literature. The initial draft of

Table 1: Association between demographic variables and post-test knowledge level

S. No.	Characteristics	Category	Total	Respondents				χ^2	p-value
				Moderate		Adequate			
				N	%	N	%		
1	Age (years)	21-30	24	6	25	18	75	0.5837	0.9001 <0.05
		15-40	13	3	23.07	10	76.92		
		41-50	8	2	25	6	75		
		51 and above	5	2	40	3	60		
2	Gender	Male	6	2	33.33	4	66.66	0.1906	0.6624 <0.05
		Female	44	11	25	33	75		
3	Religion	Hindu	44	9	20.45	35	79.55	6.2937*	0.0430 <0.05
		Christian	4	3	75	1	25		
		Muslim	2	1	50	1	50		
		Others	0	0	0	0	0		
4	Professional qualification	Diploma	17	1	5.88	16	94.11	5.4182*	0.0199 <0.05
		Graduation	33	12	36.36	21	63.64		
		Post-graduation	0	0	0	0	0		
		Others	0	0	0	0	0		
5	Experience in years	0-5	25	6	24	19	76	2.0864	0.5547 <0.05
		6-10	11	2	18.18	9	81.82		
		11-15	5	1	20	4	80		
		15 and above	9	4	44.44	5	55.56		
6	Area of working	Medical surgical ward	0	0	0	0	0	5.4257*	0.0198 <0.05
		Paediatric ward	4	3	75	1	25		
		OBG ward	46	10	21.74	36	78.26		
		Any other	0	0	0	0	0		
7	Pre exposure to collection of cord blood	Yes	10	0	0	10	100	4.3919*	0.0361 <0.05
		No	40	13	32.5	27	67.5		
8	In-service training	Yes	3	0	0	3	100	1.1213	0.2896 <0.05
		No	47	13	27.65	34	72.34		
9	Source of information	Mass media	25	3	12	22	88	6.3929*	0.0409 <0.05
		Health personnel	20	7	35	13	65		
		Peer group	5	3	60	2	40		
		Any others	0	0	0	0	0		

* Significant at 5% level, NS: Non-Significant

Figure 1: Imogene King's goal attainment model



STP was given to 10 experts in the field along with the tool. To assess the content validity of STP, a criteria checklist was used, which consisted of criteria for two areas. Against each criterion four responses were given and a column was provided for their remarks. The suggestions were incorporated in the STP.

After validation, the tool was subjected to test for its reliability. The structured knowledge questionnaire was administered to 5 samples. The reliability of the tool was computed by using split half Karl Pearson's correlation formula (raw score method). The reliability of Split Half test was found by using Karl Pearson correlation by deviation method. Spearman Brown's Prophecy formula was used to find out the reliability of the full test.

The reliability co-efficient of structured knowledge questionnaire was found to be 0.96 and validity co-efficient worked to be 0.97 for knowledge questionnaire revealing that the tool was feasible for the main study, since the knowledge reliability co-efficient for the scale was $r > 0.70$. The tool was found to be reliable and feasible.

Pre-experimental one group pre-test and post-test design was used to conduct the study in Vanivilas Hospital, Bangalore with the permission of authority. The sample of this study comprised of 50 staff nurses working in Vanivilas Hospital, Bangalore who were attending continuing nursing education classes employing convenient sampling method (Polit & Hungler, 1999).

The pre-test was conducted to by using structured knowledge questionnaire; approximately 45 minutes were spent for collecting data. The investigator gathered staff nurses in a comfortable room and conducted STP. After 7 days post-test was given with the same structured knowledge questionnaire.

Results & Discussion

Majority (48%) of the respondents fell between the age of 21-30 years; majority (88%) were female. Majority of the respondents (88%) were Hindu, the professional qualification of 66 percent of the respondents was graduation; majority (50%) of respondents fell between 0-5 years of experience; majority (92%) were working in OBG ward. Majority of the respondents (80%) were not exposed to collection of cord blood procedure. An overwhelming majority (94%) of subjects had no in-service education regarding collection of cord blood for stem cell therapy, half of respondents (50%) got information regarding collection of cord blood for stem cell therapy from mass media (Table 1).

Pre-test knowledge scores were found to be 43.05 percent and after STP the post-test knowledge scores of staff nurses was found to be 77.45 percent which was enhanced by 34.4 percent, with the t-test value 25.96 and chi square value 80.18 which is significant at 5% level (p significant at 5% level) (Table 2).

The present study confirms that the overall knowledge in pre-test is 43.05 percent, which is less. This

shows that there is lack of information among staff nurses regarding collection of cord blood for stem cell therapy. Yet some staff nurses had moderate knowledge (26%), and majority of them had inadequate knowledge (74%) regarding collection of cord blood for stem cell therapy. There was a considerable improvement of knowledge after the STP on collection of cord blood for stem cell therapy and is statistically established as significant. The overall post-test score was 77.45 percent with 34.4 percent mean percentage knowledge enhancement.

This study was supported by similar study conducted to assess the health professionals' knowledge of umbilical cord stem cell, collection, preservation and utilisation at selected maternity hospitals in Coimbatore. The study results showed that post-test score (mean: 39.6%, 2.57) was higher than that of pre-test score (mean: 13.23%, 3.88) and concluded that the STP was effective in enhancing the knowledge of health professionals regarding umbilical cord blood stem cells collection, preservation and utilisation and the teaching programme had a role in improving the knowledge of the health professionals (Kumaraswamy & Muthulakshmi, 2010).

Implications

Nursing education: This study can be utilised by nursing professionals to educate staff nurses as well as their family members regarding collection of cord blood for stem cell therapy.

Nursing practice: Updating the knowledge of staff nurses is a very important task which helps the staff nurses to impart their knowledge and motivate the pregnant women and their family to store the cord blood of their babies for future use.

Nursing administration: The nurse administrator should arrange continuing education programme for nursing personnel as it helps to encourage the nurse

to use proper techniques of collection of cord blood for stem cell therapy

Nursing research: The study will motivate the new researchers to conduct same study with different variables on a large scale.

Recommendations

1. The present study can be replicated with a larger population.
2. A similar study can be conducted on pregnant women.
3. Manuals and information booklets may be developed to enhance knowledge on collection of cord blood for stem cell therapy.

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