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"A study to assess the effectiveness of structured teaching programme on knowledge regarding umbilical cord blood banking among antenatal mothers in selected hospitals at Bengaluru."

Radhika S[1], Sujatha M[2]

[1]II year MSc Nursing, Obstetrics & Gynecology, Sri Sharada College of Nursing, Bangalore, Karnataka, India
[2]Professor cum Principal, Sri Sharada College of Nursing, Bangalore, Karnataka, India

Corresponding email ID: radhikasnaik17@gmail.com

ABSTRCT

Introduction: The maternal bond between human female and her biological child usually begin to develop during pregnancy. 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. And with the advancement of the technologies, she is not just bound to care for her baby at the present but she can now gift her baby witha gift of health, through stem cell and cord blood banking.

Methodology: A quasi-experimental one group pre-test post test design with of 60 antenatal mothers selected by non-probability purposive sampling technique to assess the effectiveness of structured teaching programme on knowledge regarding umbilical cord blood banking among antenatal mothers in selected hospitals at Bengaluru.

Results: In the present study 63.3% of respondents had inadequate knowledge regarding umbilical cord blood banking before the implementation of structured teaching programme. But after the implementation of structured teaching programme 100% of them had adequate knowledge. The findings of the study revealed that the mean post test knowledge (89.37) of antenatal mothers exposed to structured teaching programme was higher than the mean pre-test knowledge (29.25) which is significant at P- value of 0.107 levels, which indicatesthe structured teaching programme was effective.

Discussion: The study results revealed that there was a significant improvement in the knowledge scores after the administration of structured teaching programme. Hence it can be concluded that structured teaching programme was effective in improving the knowledge of antenatal mothers on umbilical cord blood banking.

Key Words: Structured teaching programme, antenatal mothers, effectiveness, knowledge, stem cell therapy, cord blood, cord blood banking.

INTRODUCTION

Mother and baby share a perfect bond from the period of conception and it is she who nurtures and gives the best of everything to her child. Becoming mother is a beautiful and exciting experience for women in her life [1]. The maternal bond between human female and her biological child usually begin to develop during pregnancy. A critical link that supports and nourishes the baby in the womb for 9 months is the umbilical cord [2].

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. And with the advancement of the technologies, she is not just bound to care for her baby at the present but she can now gift her baby with a gift of health, through stem cell and cord blood banking [3]. 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 [4]. 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 [5]. For the past 25 years cord blood has been used as an alternative to bone marrow for treatment of blood, immune system & metabolic disorders because of its rich source of hematopoietic stem cells [6].

More than 45 diseases have now been treated using cord blood cells. These include malignant and other non-inflammatory diseases such as leukaemia, lymphoma, neuroblastoma and retinoblastoma. Malignant diseases are primarily inherited disorders ofthe blood and immune system, or genetic diseases that affect metabolism [7].

In Vitro studies have shown that enough stem cells appear to be present in 60-100ml of cord blood obtained after delivery of the newborn. For this purpose, umbilical cord blood is collected after delivery of the baby, from the residual blood in placental cord unit. The blood volume of term baby is about 70ml/kg while the placenta contains 45ml of blood per kg of foetal weight [8]. The amazing speed of research and clinical trials using umbilical cord stem cells has led to diseases being treated that no one could have predicted. Many of these new treatments usethe patient's own stem cells [9].

NEED FOR THE STUDY

Stem cell from umbilical cord is said to treat about 80 diseases, and have been used in more than 20,000 transplants worldwide [10]. In India approximately 42,434 births occur daily, which results in discarding 42,434 umbilical cords a day. So, the storage of stem cells derived from umbilical cord can prove to be best possible insurance against life threatening diseases.

According to WHO since 2002, tens of thousands of patients from all over the world have safely used MFII cell therapy to treat many degenerative diseases such as ALS (amyotrophic lateral sclerosis), Alzheimer's disease, cardiovascular disease, stroke, osteoarthritis, muscular degeneration, cerebral palsy etc. studies have proved that siblings have up to 75% chances of compatibility and the cord blood can also be proved to be a match for 22 parents and grandparents up to 50%. India's first public cord blood bank is Jeevan blood bank and research in Chennai [11].

A Descriptive study was conducted on Knowledge and Attitude Among 244 Lebanese Pregnant Women Toward Cord Blood Stem Cell Storage and Donation at antenatal clinics in Beirut. The study results shows that less than half of the women (46%) reported knowledge about cord blood banking. The study concluded that the Respondents who had an existing knowledge about UCB stem cells banking in general were more likely to consider storing UCB in blood banks if affordable (45.9%). Therefore, it is necessary to inform pregnant women about stem cell banking so that they can make the appropriate decisions for themselves [12].

A pre-experimental study was conducted to assess the effectiveness of self- instructional module on knowledge regarding cord blood banking among 50 staff nurses working in selected hospitals, Tumkur. The study results shows that the mean score in the post test is 31.78 and the mean score in the pre-test is 14.54. The calculated value of t is 72.35 which is highly significant. The result undoubtedly confirms that the SIM significantly was effective in improving the knowledge on Cord Blood Banking among the staff nurses [13]. The Cord blood stem cell therapy is needed to treat children with cancerous blood disorders such as leukaemia, or genetic blood diseases like Fanconi anaemia. The cord blood is transplanted into the patient, where the (HSCs) Haematopoietic stem cells can make new, healthy blood cells to replace those damaged by the patient's disease or by a medical treatment such as chemotherapy for cancer [14].

As a researcher, I felt that there is a lack of knowledge and awareness among antenatal mothers regarding cord blood banking and it was important to educate the antenatal mothers about the potential uses and advantages. Hence the investigator decided to conduct the study to assess the effectiveness of structured teaching program on knowledge regarding cord blood banking among antenatal mothers in selected hospitals atBengaluru.

Objectives Of The Study

- To assess the pretest level of knowledge regarding cord blood banking among theantenatal mothers.
- To assess the effectiveness of structured teaching programme on cord blood bankingamong the antenatal mothers.
- To compare the pretest and post test level of knowledge regarding cord blood bankingamong the antenatal mothers.
- To find the association with pre-test and post-test level of knowledge regarding cord blood banking with selected demographic variables.

Hypothesis

H1: There is a significant difference between the pre-test and post-test level of knowledge score on Umbilical cord blood banking.

H2: There is a significant association of pre-test and post-test level of knowledge score with selected demographic variables.

METHODOLOGY

A quantitative research approach with one group pre- test, post-test research design was used in the current study. The present study was conducted among 60 antenatal mothers who were visited in Rajshekar Multi Speciality hospital, J.P. Nagar, Bengaluru. Non-probability purposive sampling technique was used to select 60 antenatal mothers as the sample for the present study. The variables in this study are independent variable, dependent variable and demographic variables. The independent variable is the structured teaching programme regarding umbilical cord blood banking among antenatal mothers. The dependent variable is the knowledge of antenatal mothers regarding umbilical cord blood banking. Demographic variables selected for the present study are Age (in years), gravida, education, occupation, type of family, family monthly income and source of information. The data collection tool contains items on the following aspects: **Part 1:** It includes items of demographic variables - Age (in years), gravida, education, occupation, type of family, family monthly income and source of information. **Part 2:** It includes 35 knowledge questions of which 08 items were related to General information about umbilical cord, 5 items were related to umbilical cord blood, 8 items were related to umbilical cord blood and its banking and 14 items were related to collection and storage of umbilical cord blood. The constructed tool along with objectives, blueprint and criterion checklist was submitted to 8 experts in the field of obstetric nursing and medicine for content validity. The tool was checked by Karl Pearson and Spearman Brown Prophecy formula and found to be statistically reliable for the main study

RESULTS

Table 1: Distribution Of The Antenatal MothersAccording To The Demographic Variables N=60

DEMOGRAPHIC CHARACTER	VARIABLE	FREQUENCY	PERCENTAGE (%)
AGE (in years)	21-25	37	61.6
	26-30	16	26.7
	>30	07	11.7
Occupation	Home maker	18	30
	Government Employee	05	8.3
	Private Employee	29	48.3
	Self –employee/ Business	08	13.4
Family type	Nuclear	56	93.3
	Joint	04	6.7
Monthly income	Rs. 20,000 & above	35	58.3
	Rs. 10,000-19,999	14	23.3
	Below Rs.10,000	11	18.4
Source of information	Mass media	05	8.3
	Health workers	19	31.6
	Family & Peer groups	26	43.3
	No information	10	16.8

Table 2: Results On Comparision Of Pre And Post-TestKnowledge Scores N=60

Results	Max score	Pre-test score			Post-test score			Percentage of enhancement
		Mean	SD	Mean%	Mean	SD	Mean%	
General information regarding umbilical cord	08	3.06	1.42	38.25	7.56	0.66	94.5	**56.25**
Umbilicalcord blood	05	1.3	0.80	26	4.26	0.54	85.33	**59.33**
Utilization of Umbilical cord blood and its banking	08	1.95	0.82	24.37	7.2	0.6	90	**65.63**
Collection and storage of Umbilicalcord blood	14	3.93	1.64	28.07	12.26	1.57	87.6	**59.53**
Overall knowledgescore	**35**	**10.24**	**2.0**	**29.25**	**31.28**	**6.10**	**89.37**	**60.12**

Table 3: Overall Comparision Of Mean, Standard Deviation AndMean % Of Pre And Post-Test Knowledge Scores N=60

Overall knowledge score	Max. score	Range	Median	Mean	SD	Mean %
Pre-test	35	3-18	10	10.24	2	29.25
Post-test	35	26-35	31	31.28	6.10	89.37

Table 4: Paired 'T' Test Showing The Significant Difference Between Mean Pre-Test And Post-Test Scores Of Antenatal Mothers. N=60

Area wise knowledgescore	Pre-test score		Post-test score		t-value	P-value	Inference
	Mean	SD	Mean	SD			
General information regarding umbilical cord	3.06	1.42	7.56	0.66	23.5746	0.170	Highly Significant
Umbilicalcord blood	1.3	0.80	4.26	0.54	24.9824	0.122	Highly Significant
Utilization of Umbilical cord blood and its banking	1.95	0.82	7.2	0.6	37.5133	-0.114	Not Significant
Collection and storage of Umbilicalcord blood	3.93	1.64	12.26	1.57	29.7743	0.109	Highly Significant
Overall knowledgescore	**10.24**	**2.0**	**31.28**	**6.10**	**49.2455**	**0.107**	**Highly Significant**

p<0.05

Table 5: Association Between Pre-Test Knowledge Scores WithSelected Demographic Variables N=60

Demographic variables	Categories of responses	Overall pre-test knowledge score		Chi – square value	df	P - value	Inference
		Below median	Above median				
Age (inyears)	21-25	17	20	2.57	2	0.913	NS
	26-30	12	14				
	>30	04	03				
Gravida	Primi gravida	20	14	0.462	1	0.984	NS
	Multi gravida	13	13				
Education	Secondary	06	12	5.845	2	0.811	NS
	Higher Secon	17	07				
	Graduate	10	08				
Occupation	Home maker	10	08	0.126	3	0.998	NS
	Government	03	02				
	Private	16	13				
	Business	04	04				
Type offamily	Nuclear	30	26	0.690	1	0.998	NS
	Joint	03	01				
Family monthly income	Rs.20K & above	17	18	2.109	2	0.953	NS
	Rs.10K - 19,999	10	04				
	Below Rs.10K	06	05				
Previous knowledgesource	Mass media	05	06	6.795	3	0.901	NS
	Health worker	07	12				
	Family &Peers	15	11				
	No information	06	04				

*NS- Not Significant *df- degrees of freedom

DISCUSSION

The study results were discussed under the following sections:

Objective I: Knowledge of antenatal mothers regarding umbilical cord blood banking.

The present study showed that the mean pre-test knowledge score of antenatal mothers were 29.25% of which 63.3% of antenatal mothers had inadequate knowledge, 36.6% had moderately adequate knowledge and none among the antenatal mothers had adequate knowledge regarding umbilical cord blood banking. A study was conducted by Conrad V Fernandez to find out the knowledge regard to collection, testing and banking of cord blood stem cells among antenatal mothers in antenatal assessment clinics at the IWK Health Centre, Halifax, NS. A structured questionnaire was used to assess the knowledge and attitude of antenatal mothers. The mean pre-test knowledge score obtained was 35. It was noted that 70% of mothers had inadequate knowledge regarding umbilical cord blood banking which concur with the findings of the present study that majority of the samples had inadequate knowledge [15].

Objective II: Effectiveness of the structured teaching programme on improving knowledge regarding umbilical cord blood banking among antenatal mothers.

The analysis result of the present study shows that the mean post-test knowledge score obtained by the antenatal mothers is improved to 89.37% from a mean pre-test Knowledge score of 29.25%. With the structured teaching, 100% of antenatal mothers were found to have adequate knowledge and none among the antenatal mothers had moderately adequate and inadequate knowledge regarding umbilical cord blood banking. This gives an inference that there was a significant gain in knowledge of 60.12% after the implementation of structured teaching programme.

Objective III: Association between knowledge score of antenatal mothers regarding umbilical cord blood banking and demographic variables.

In the present study, it is found that there is no significant association between pre and post-test knowledge scores of antenatal mothers regarding umbilical cord blood banking with selected demographic variables. A study conducted in Korea to assess the knowledge and attitude regard to cord blood of early postpartum women after donating cord blood. The study revealed that according to the source of education and the source of influence toward decision of using cord blood, the women who are educated or influenced by mass media showed difference in attitude. Job status, income, and attitude of cord blood were the predictors of the study results. Hence it reveals that there exist a significant association between study findings and demographic variables [16].

CONCLUSION

The following conclusions were drawn on the basis of findings of the study:

- The pre-test findings showed that knowledge of antenatal mothers regarding umbilical cord blood banking was inadequate.
- The administration of structured teaching programme helped the mothers to understand more about umbilical cord blood banking.
- Most of the mothers were having adequate level of knowledge after the structuredteaching programme.
- The structured teaching programme is proved to be very effective method oftransforming information.

IMPLICATIONS

The findings of the study have implications on the field of nursing education, nursing practice, nursing administration and nursing research.

Nursing education: In the present scenario, knowledge on umbilical cord blood banking is much deficient among the nursing students as well as the nursing staffs as this body of knowledge is not fully developed and is still on the path of expansion and discoveries. Hence, there is a direct need to include thesecomponents into present curriculum

Nursing administration: Nurse administrator's support should be necessary to conduct and evaluate health education programmes. They can help to improve the knowledge of the antenatal mothers as well as the co-workers by educating each other working among themby providing various teaching programmes with the help of various AV aids.

Nursing practice: Nurses can provide adequate teaching to both parents and family members so that they will come to know about the advantages of the vast developing field of umbilical cord blood banking.

Nursing research: The study provides a baseline data for conducting other research studies. The study will be a motivation for the budding researchers to conduct similarstudies in large scale.

RECOMMENDATIONS

On the basis of the findings of the study, the following recommendations have been made:

- A similar study can be replicated on a large scale to generalize the findings.
- A similar study can be conducted to find the differences in the knowledge level of the antenatal mothers on the basis of various institutional settings such as government and private institutions.
- A similar study can be conducted to find differences in the knowledge level of the nursing students as well as the nursing staffs.

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