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A STUDY TO ASSESS THE EFFECTIVENESS OF PLANNED TEACHING PROGRAMME ON KNOWLEDGE AND ATTITUDE TOWARDS BANKING OF STEM CELLS FROM THE UMBILICAL CORD BLOOD AMONG PREGNANT WOMEN ATTENDING SELECTED ANTENATAL CLINICS, BANGALORE

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Abstract

Cord blood stem cell research has been extensively explored worldwide to enhance human health in medical setting. Stem cells have tremendous promise to helping us to understand and treat a range of various diseases, injuries and other health related conditions. Their potential is evident in the use of cord blood stem cells to treat diseases of the blood, A cord blood stem cell therapy has saved the lives of thousands of children with leukemia; and can be seen in the use of stem cells for tissue grafts to treat diseases or injury to the bone, skin and surface of the eye. Important clinical trials involving stem cells are underway for many other conditions and researchers continue to explore new avenues using stem cells in medicine. Genetic disorder rate in India 64.4 % (per 1000 live births),Rao and Ghose (2005) report that 1 out of 20 children admitted to hospital has a genetic disorder that ultimately account for about 1 out of 10 childhood deaths. In India ultimately urban area are affected with congenital malformation and genetic disorder are the third most common cause of mortality in newborns. There are an estimated 60-80 million people in the world who carry the beta thalassemia trait. People who carry thalassemia in India alone number approximately 30 million. The main objective of the study is to assess effectiveness of structured teaching programme on knowledge and attitude regarding stem cell therapy among antenatal mothers in selected private hospitals at Bangalore district. One group pretest and posttest design was used for this study. The independent variable in this study is planned teaching program on banking of cord blood from umbilical cord. Thus planned teaching on banking of stem cell from umbilical cord was an effective intervention in the enhancement of knowledge and attitude among antenatal mothers. The present study conducted by the investigator, mainly focused on the planned teaching programme to improve the knowledge and attitude on stem cell therapy and was found effective and also the researcher insisted the antenatal mothers should improve the knowledge of banking of stem cell from umbilical cord.

Keywords: *Teaching, Knowledge, Attitude, Banking, Umbilical Cord, Pregnant Women*

INTRODUCTION

"Preserve Cord blood, Cure diseases and save life"

"Learn from yesterday, live for today, Hope for tomorrow"- (Albert Einstein)

Cell is the structural and the functional unit of all the organisms on the earth and Cell Science is a scientific discipline that studies the structure and the physiological characters of these cells. Human beings are multi-cellular organisms with an estimated 100,000,000,000,000 cells[1].

Cord blood stem cell research has the potential to teach us more about how birth defectsoccur and how these can be prevented or possibly reversed. An understanding of the regulation and chemical

triggers of stem cell proliferation and differentiation are key to addressing birth defects[2].

A cord blood stem cell therapy has saved the lives of thousands of children with leukemia; and can be seen in the use of stem cells for tissue grafts to treat diseases or injury to the bone, skin and surface of the eye. Important clinical trials involving stem cells are underway for many other conditions and researchers continue to explore new avenues using stem cells in medicine[3].

A cord blood bank is a facility which stores umbilical cord blood for future. Both Private and Public cord bank have developed since mid to late 1990's .The first successful cord blood transplantation was done in 1989 in a child with fanconi anemia. Approximately 14,000 unrelated cord blood transplantations have been performed and 100 autologous transplantation have been performed[4].

Cord blood stem cells are the foundation for every organ and tissue in our body. There are many different types of stem cells that comes from different places in the body are formedat different times in our lives. These include 1. Embryonic stem cells. 2. Tissue-specific stem cells 3.Mesenchymal stem cells–Bone Marrow 4. Induced pluripotent stem cells – Skin Cellsto embroyonic 5.Haematopoietic stem cells found in umbilical cord[5].

The umbilical cord blood contains haematopoietic stem cells - similar to those found in the bone marrow - and which can be used to generate red blood cells and cells of the immune system. Cord blood stem cells are currently used to treat a range of blood disorders and immunesystem conditions such as leukaemia, anaemia and autoimmune diseases. These stem cells are used largely in the treatment of children but have also started being used in adults following chemotherapy treatment[6].

NEED FOR THE STUDY

Cord blood banking is a revolutionary method that preserves stem cells from the umbilical cord, so banking cord blood cells at birth is like storing potential medication for usein future if and when needed. It is like securing the baby with biological insurance[7].

This study aimed to assess the level of stem cell knowledge, attitude toward stem cell application in medicine. Now-a-days prenatal mothers may have inadequate knowledge and attitude regarding Cord blood stem cell banking. 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[8].

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[9].

The Cord blood stem cell therapy is needed to treat children with cancerous blood disorders such as leukemia, 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[10].

Literatures are available on various educational methods and media for practice in nursing. Planned teaching programme was found to be effective in improving attitude and knowledge on practice of mother's regarding banking of cord blood as shown by the post-test scores of experimental group. The findings revealed that there was increase in the knowledge level of mother after planned education trials. As the researcher felt there is lack of knowledge and awareness among people regarding cord blood banking and stem cell therapy, it was important to educate the public about the potential uses and advantages[11].

STATEMENT OF THE PROBLEM

A study to assess the effectiveness of planned teaching programme on knowledge and attitude towards banking of stem cells from the umbilical cord blood among pregnant women attending selected antenatal clinics, Bangalore.

OBJECTIVES OF THE STUDY

1. To assess the pre-test knowledge and attitude regarding banking of stem cells from theumbilical cord blood among pregnant women
2. To assess the effectiveness of planned teaching programme on banking of stem cells fromthe umbilical cord blood among pregnant women
3. To correlate knowledge and attitude regarding banking of stem cells from the umbilicalcord blood among pregnant women.
4. To find the association between pre-test knowledge and attitude regarding banking of stemcells from the umbilical cord blood among pregnant women with demographic variables.

HYPOTHESES

H^1- There is a significant difference between pre-test and post-test scores on knowledge and attitude regarding banking of stem cells from the umbilical cord blood among pregnant women after receiving PTP (Planned teaching programme).

H^2-There will be relationship between post-test knowledge and attitude with selected demographic variables.

H^3- There is a significant association between the pre-test knowledge and attitude scores with selected demographic variables.

METHODOLOGY

The research study selected for the study this is pre experimental design i.e. one group pre-test post-test design. The conceptual framework adopted for the study is modified pender's health promotion model (1980), which is reframed by S.Saddle River, N.J prentile hall in 2002" and it provided the comprehensive framework for achieving the objective of the study. The researcher adopted pre experimental pre-test –post-test study design to assess the effectiveness of planned teaching programme on knowledge regarding banking of stem cells from the umbilical cord blood among pregnant women in Antenatal clinic, Bangalore.

Convenient sampling technique was adopted. The sample consisted of 30 pregnant women from in Antenatal clinic, Bangalore.

The tool developed and used for data collection was consisting of section A and section B. Section A consisted of 12 items related to demographic variables. Section B consisted of 40 item structured questionnaires related to knowledge of banking of stem cells from the umbilical cord blood. Section C consisted of 20 item likert scale to assess the attitude related to banking of stem cells from the umbilical cord blood.

After obtaining the content validity from the experts, the pilot study was conducted to establish the reliability of tool using Karl Pearson's method. The pilot study was conducted in Mathryshree hospital, Bengaluru, to ascertain its feasibility and practicability. The ethical aspect of research was maintained throughout the period of the study, by getting permission from the authorities as well as from the subjects. The information collected from the pregnant women has kept confidential and was used only for research purpose.

The main study was conducted in the month of December 2019 and January 2020 in Mathrushree hospital,Bengaluru.The data was collected and analyzed by descriptive and inferential statistics, and interpreted and discussed based on the objectives of the study, hypothesis, theoretical framework and relevant studies from the literatures reviewed. The data gathered were analyzed and interpreted in terms of objectives of the study. Descriptive and inferential statistics were used for data analysis.

RESULTS

The results of the data analysis is organizes and presented under the following broad headings;

PART I: Description of demographic variables of the pregnant women.

PART II: knowledge status of pregnant women regarding banking of stem cells from theumbilical cord blood

a) Overall assessment of pre-test level of knowledge and attitude of pregnant women.
b) Aspect wise assessment of pre-test knowledge and attitude score of pregnant women.
c) Overall assessment of post-test level of knowledge and attitude of pregnant women.
d) Aspect wise assessment of post-test knowledge and attitudes score of pregnant women.

PART III: Effectiveness of planned teaching programme in terms of

a) Comparison of pre-test and post-test level of knowledge of pregnant women.
b) Comparison of pre-test and post-test level of attitude of pregnant women.
c) Knowledge enhancement and testing of hypothesis.
d) Attitude enhancement and testing of hypothesis.
e) Correlation between post-test knowledge and attitude scores regarding on banking of stemcells from the umbilical cord blood among pregnant women.

PART IV: Association of pre-test knowledge and attitude score with selected demographic variables of pregnant women.

PART I: Description of demographic variables of the pregnant women.

This section deals with the description of demographic variables. A sample of 30 pregnantwomen was drawn from the selected area based on sample criteria. The data on sample characteristics were analyzed using descriptive statistics, and presented in terms of percentageand diagram.

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Table 1: Frequency and percentage distribution of pregnant women according topersonal characteristics N=60

S.NO	Demographic Variables		No.	%
1	**Age of the mother**	21-25	10	33.33
		26 - 30	15	50.00
		31- 35	3	10.00
		36 – 40	2	6.67
2	**Religion**	Hindu	25	83.33
		Muslim	3	10.00
		Christian	2	6.67
		others	0	0.00
3	**Gravida of the mother**	Gravida one	16	53.33
		Gravida two	14	46.67
		Multigravida	0	0.00
4	**Education**	Secondary school education	1	3.33
		PUC	9	30.00
		Graduate	20	66.67
5	**Occupation**	Homemaker	5	16.67
		Government employee	6	20.00
		Private employee	13	43.33
		Self-employee business	6	20.00
6	**Type of family**	Nuclear family	13	43.33
		Joint family	17	56.67
7	**Previous knowledge**	Mass media	5	16.67
		Health workers	0	0.00
		Peer group	0	0.00
		None	25	83.33

Table 1: depicts that the total samples of 30 pregnant women:

According to distribution of samples as per the age, maximum i.e) 50.00 % of pregnantwomen are of between 26 -30 years and minimum i.e) 6.67% are between 36-40 years.

With respect to religion, among married women, maximum i.e) 83.3% are from Hinducommunity and minimum i.e) 10.00% are from Christian and6.67% are from Muslim community

In relation to gravida of the mother maximum i.e.) 53.33 are from belong to gravidaone and i.e) 46.67 are from belong to gravida two.

As per education qualification of pregnant women, 30.00% studied higher secondary education, 66.67% are graduate and 3.33% are completed secondary school education.

As per occupation of pregnant women, majority i.e) 43.33% of them are working as aprivate employee and minimum i.e) 16.67% are homemaker others 20.00% of them working as government employee.

In relation to type of family i.e) 56.67% are belong to joint family and 43.33% arebelong to nuclear family.

In relation to source of information about banking of cord blood i.e.) 83.33% of pregnant women have no

awareness, 16.67% got from mass media and minority 0%

PART II: knowledge status of pregnant women regarding banking of stem cellsfrom the umbilical cord blood.

a) Overall assessment of pre-test level of knowledge of pregnant women

This section deals with knowledge of banking of stem cells from the umbilical cordblood before the administration of planned teaching programme.

Table 2: Pre-test level of knowledge of pregnant women

N=30

KNOWLEDGE	PRE-TEST	
	Frequency	**%**
Inadequate	30	100
Moderately adequate	0	0
Adequate	0	0
	30	**100**

Table 2 reveals classification of pregnant women based on pre-test level of knowledge regarding banking of stem cells from the umbilical cord blood. In the pre-test maximum i.e 100% of pregnant women were having inadequate knowledge level and 0% werehaving moderately adequate and inadequate knowledge level.

b) Aspect wise assessment of pre-test knowledge score of pregnant women

This section deals with knowledge of pregnant women by aspect wise regarding bankingof stem cells from the umbilical cord blood before the administration of planned teaching programme.

Table 3: Aspect wise assessment of pre-test knowledge score of pregnant women.

n=30

SL. NO	Area wise	No. of items	Mean	S.D	Mean%
1	Normal cell structure &division	6	3.50	1.789	35.00
2	Types & properties	7	3.35	1.527	37.86
3	Diseases treated by umbilical cord blood	5	3.10	1.400	42.95
4	Procedure to collect umbilical cord blood	17	5.21	2.258	45.50
5	Legal issues	5	3.35	1.517	40.01
	Overall knowledge	40	15.16	4.462	45.05

Table 3 and figure 20 : Reveals the aspect wise assessment of pre-test knowledge score of banking of stem cell from umbilical cord blood and depict that maximum mean scored was 45.50% in the area of procedure to collect umbilical cord blood and minimum mean 35% in the area of normal cell structure and cell division.

c) Overall assessment of post-test level of knowledge of pregnant women.

This section deals with knowledge of banking of stem cells from the umbilical cord bloodafter the administration of planned teaching programme.

Table 4: Post-test level of knowledge of pregnant women.

n= 30

KNOWLEDGE LEVEL	POST-TEST	
	Frequency	%
Inadequate	0	0
Moderately adequate	07	23.33
Adequate	23	76.67
Total	30	100

Table 4: shows that in post-test, maximum 76.67% were having adequate knowledge gainedand 23.33% of them had moderately adequate knowledge and none of them have inadequate knowledge.

a) Aspect wise assessment of post-test knowledge score of pregnant women.

Table 5: Aspect wise assessment of post-test knowledge score of pregnant women.

n=60

SL.NO	Area wise	No. ofitems	Mean	S.D	Mean%
1	Normal cell structure & division	6	9.28	.761	90.12
2	Types & properties	7	6.53	.562	92.33
3	Diseases treated by umbilical cord blood	5	6.58	.497	92.05
4	Procedure to collect umbilical cord blood	17	6.85	.593	94.67
5	Legal issues	5	10.23	.812	91.83
	Overall knowledge	40	32.53	1.523	92.95

Table 5 and figure 21: Reveals the aspect wise assessment of post-test knowledge score of banking of stem cells from the umbilical cord blood and depict that maximum mean percentage score was 94.67% in the area of procedure to collect umbilical cord blood and minimum mean percentage 90.12% in the area of normal cell structure and cell division.

PART III: Effectiveness of planned teaching programme in terms of:

d) Comparison of pre-test and post-test level of knowledge of banking of stem cellsfrom the umbilical cord blood.

The data summarized in this section deals with the comparison of pre-test and post-test knowledge level of pregnant women.

Table 6: Comparison of pre-test and post-test level of knowledge of pregnant women

n=30

KNOWLEDGELEVEL	PRE-TEST		POST-TEST	
	Frequency	%	Frequency	%
Inadequate	30	100	0	0
Moderately adequate	0	0	07	23.33
Adequate	0	0	23	76.67
Total	**30**	**100**	**30**	**100**

Table 6 and figure 22: data clearly depicts that, before planned teaching programme, majority i.e) 100% of pregnant women were having inadequate knowledge and minimum i.e) 0% of pregnant women were

moderately adequate and adequate knowledge whereas after planned teaching programme majority i.e) 76.67% of pregnant women have gained adequate knowledge. Hence hypothesis H^1 formed that there will be gain in post-test knowledge score at P≤0.05 level after the pregnant women attending planned teachingprogramme on banking of stem cells from the umbilical cord blood is accepted.

e) Comparison of pre-test and post-test level of attitude of banking of stem cellsfrom the umbilical cord blood.

The data summarized in this section deals with the comparison of pre-test and post-test attitude level of pregnant women.

Table 7: Frequency and percentage distribution of pre-test and post-test level of attituderegarding banking of stem cells from the umbilical cord blood among pregnant women.

Attitude	Unfavourable(<50%)		Moderately Favourable (50 –75%)		Favourable (>75%)	
	NO	%	NO	%	NO	%
Pre-test	25	83.33	5	16.67	0	0
Post test	3	10.0	6	20.0	21	70.0

The table 7 shows that in the pre-test, majority 5(16.67%) had moderately favourable attitude and 25(83.33%) had unfavourable attitude whereas in the post test after imparting planned teaching programme majority 21 (70%) had favourable attitude, 6(20%) moderately favourable attitude and only had unfavourable attitude regarding banking of stem cells from the umbilical cord blood among pregnant women

C) Knowledge enhancement and testing of hypothesis.

The data summarized in this section deals with the overall knowledge of pregnant women as compared with pre-test and post-test knowledge levels. This section confirms the effectiveness of planned teaching programme in improving knowledge of pregnant women on banking of stem cells from the umbilical cord.

Table 8: Comparison of pre-test and post-test knowledge scores (paired t test) of pregnant women.

Knowledge	Mean	S.D	Paired 't' Value
Pre-test	11.50	2.70	t = 57.742
Post Test	33.06	3.93	p = 0.000, S***

***p<0.001, S – Significant

The table 8 shows that in the pre-test, the mean score of knowledge was 11.50 with S.D 2.70 whereas in the post test the mean score of knowledge was 33.06 with S.D 3.93. The calculated paired't' value of t = 57.742 was found to statistically significant at p≤0.001 level. This clearly shows that the administration of planned teaching programme to pregnant women had significant improvement in the post test level of knowledge regarding banking of stem cells from the umbilical cord among pregnant women.

D) Attitude enhancement and testing of hypothesis.

The data summarized in this section deals with the overall attitude of pregnant women ascompared with pre-test and post-test attitude levels.

This section confirms the effectiveness of planned teaching programme in improving attitudeof pregnant women on banking of stem cells from the umbilical cord.

Table 9: Comparison of pre-test and post-test attitude scores (paired t test) of married women

Attitude	Mean	S.D	Paired 't' Value
Pre- test	40.26	11.98	t = 18.758
Post-test	78.40	14.31	p = 0.000, S***

***p≤0.001, S – Significant

The table 5 shows that in the pre-test, the mean score of attitude was 40.26 with S.D 11.98 whereas in the post test the mean score of attitude was 78.40 with S.D 14.31. The calculated paired't' value of t = 18.758 was found to statistically significant at p≤0.001 level. This clearly shows that the administration of planned teaching programme to pregnant women between had significant improvement in the post test level of attitude regarding banking of stem cells from the umbilical cord among pregnant women.

E) Correlation between post-test knowledge and attitude scores

The data summarized in this section deals with the correlation between post-test knowledge and attitude scores regarding banking of stem cells from the umbilical cord among pregnant women.

Table 10: Correlation between post-test knowledge and attitude scores regarding banking of stem cells from the umbilical cord among pregnant women.

Variables	Mean	S.D	'r' Value
Knowledge	33.06	3.93	r = 0.715
Attitude	78.40	14.31	p = 0.000, S**

**p≤ 0.01, S – Significant

The table 6 shows that the post mean score of knowledge was 33.06 with S.D 3.93 and the post-test attitude score was 78.40 with S.D 14.31. The calculated Karl Pearson's Correlation value of r = 0.715 shows a positive correlation and it was found tobe statistically significant at p ≤0.01 level. This clearly indicates that when the knowledge regarding banking of stem cells from the umbilical cord among pregnant women increases their attitude level also increases.

PART IV

a) Association of pre-test knowledge score with selected demographic variables ofpregnant women.

Table 11: Association of pre- test level of knowledge regarding banking of stem cells from the umbilical cord among pregnant women with selected demographic variables.

N=30

Socio-Demographic variables		Overall Knowledge score				Significant
		Median&Below (0 -50%)		AboveMedian (above 50%)		Chi square
Demographic	**Personal**	**N**	**%**	**N**	**%**	□2

Variables	characteristics						
Age	21 – 25 years	1	10	9	90	1.118 df= 3	P = 0.773N.S
	26 - 30 years	11	73	4	27		
	31 - 35 years	2	67	1	33		
	36 - 40 years	2	100	0	0		
Religion	Hindu	20	80	5	20	0.783 df=2	P = 0.783N.S
	Muslim	3	100	0	0		
	Christian	2	67	1	33		
	Others	_	_	_	_		
Gravida of the mother	Gravida one	14	88	2	12	0.932 df=1	P= 0.001N.S
	Gravida two	14	100	0	0		
	Multi gravida	0	0	0	0		
Education	Secondary school education	1	100	0	0	0.932 df=2	P=0.167NS
	PUC	5	56	4	44		
	Graduate	15	75	5	25		
Occupation	Homemaker	5	100	0	0	3.578 df=3	P = 0.020 S*
	Governmentemployee	4	67	2	33		
	Private employee	8	62	5	38		
	self-employee	6	100	0	0		
Type of family	Nuclear family	9	69	4	31	0.783 df=1	P=0.381NS
	Joint family	12	71	5	29		
Source of information	Mass media	4	80	1	20	1.118	P= 0.783N.S
	Health workers	0	0	0	0		
	Peer group	0	0	0	0		
	None	20	75	5	25		

*p≤0 05, S – Significant, N.S – Not Significant

INTERPRETATION AND CONCLUSION

Table 9: shows that there is significant association between pre-test knowledge score and the selected demographic variables i.e) to occupation status of pregnant women as the computed chi square value 3.578is more than the table value 0.020 at P≤0.05 level. Hence

H2 stating that there will be a significant association between the mean pre-test knowledge score of pregnant women with their selected demographic variable at P≤0.05 is accepted.

ASSOCIATION OF PRE-TEST ATTITUDE SCORE WITH SELECTED DEMOGRAPHIC VARIABLES OF PREGNANT WOMEN.

Table 12: Association of pre- test level of attitude regarding banking of stem cells fromthe umbilical cord among pregnant women with selected demographic variables.

N = 30

Demographic variables	Unfavourable (≤50%)		Moderately Favourable (50 – 75%)		Favourable (>75%)		Chi-square □2	placevalue
Age of the mother	N	%	N					

21 -25	1	10	3	30	6	60	2.595 df=3	P=0.858 N.S
26 -30	2	13.3	2	13.3	11	73.3		
31 -35	0	0	1	33.3	2	66.6		
36 -40	0	0	0	0	2	100		
Religion							1.543 df=2	P=0.819 N.S
Hindu	3	12	5	20	17	68		
Muslim	0	0	1	33.3	2	66.6		
Christian	0	0	0	0	2	100		
Gravida of the mother							1.452 df=2	P=1.118 N.S
Gravida one	2	12.5	2	12.5	12	75		
Gravida two	0	0	4	28.6	10	71.4		
Multi gravida	–	–	–	–	–			
Education								
secondary school education	0	0	0	0	1	100	11.432	P=0.010*S
PUC	1	11.1	2	22.22	6	66.67		
graduate	2	10	4	20	14	70		
Occupation							7.436 df=4	p= 0.282 N.S
Homemaker	1	20	2	40	2	40		
Governmentemployee	1	16.7	0	0	5	83.3		
Private employee	0	0	4	30.8	9	69.2		
Self - employee business	1	16.7	0	0	5	83.3		
Type of family							1.008 df=2	p= 0.604 N.S
Nuclear family	2	15.4	3	23.1	8	61.5		
Joint family	1	5.9	3	17.6	13	76.4		
Source of information							1.886 df=2	p=0.390 N.S
Mass media	0	0	2	40	3	60		
None	3	12	4	16	18	72		

INTERPRETATION AND CONCLUSION

Table 9: shows that there is significant association between pre-test knowledge score and the selected demographic variables i.e) base on education of pregnant women as the computed chi square value 11.432 is more than the table value 0.010 at P≤0.05 level. Hence H^3 stating that there will be a significant association between the mean pre-test knowledge score of pregnant women with their selected demographic variable at P≤0.05 is accepted.

DISCUSSION

The findings of the study were discussed in reference to the objectives, hypothesis and the findings of the

supporting studies.

This study conducted to assess the effectiveness of computer structured teaching programme on knowledge of polycystic ovarian syndrome & it's prevention among adolescent girls at Bangalore. Among 60 adolescent girls of age group 16-18 years, majority i.e) 70% of adolescent girls were 17 years of age, and minimum i.e) 5% were of 18 years of age group.

- The present study finding shows as per education qualification of pregnant women, 30.00% studied higher secondary education, 66.67% are graduate and 3.33% are completed secondary school education.
- The present study finding shows as per education qualification of pregnant women, 30.00% studied higher secondary education, 66.67% are graduate and 3.33% are completed secondary school education.
- Present study finding shows with respect to religion, among married women, The maximum i.e) 83.3% are from Hindu community and minimum i.e) 10.00% are fromChristian and6.67% are from Muslim community
- The present study findings show in relation to type of family i.e) 56.67% are belongto joint family and 43.33% are belong to nuclear family.
- In relation to source of information about banking of cord blood i.e.) 83.33% of pregnant women have no awareness, 16.67% got from mass media and minority 0%.
- In relation to gravida of the mother maximum i.e.) 53.33 are from belong to gravidaone and i.e) 46.67 are from belong to gravida two.
- As per education qualification of pregnant women, 30.00% studied higher secondary education, 66.67% are graduate and 3.33% are completed secondary school education.
- As per occupation of pregnant women, majority i.e) 43.33% of them are working as aprivate employee and minimum i.e) 16.67% are homemaker others 20.00% of them working as government employee.

The first objective was to assess the pre-test level of knowledge and attitude regarding banking of stem cells from the umbilical cord blood among pregnant women.

The present study findings reveals that reveals classification of pregnant women based onpre-test level of knowledge regarding banking of stem cells from the umbilical cord blood.In the pre-test maximum i.e) 100% of pregnant women were having inadequate knowledge level and 0% were having moderately adequate and inadequate knowledge level.

The Findings also revealed that in the pre-test, majority 5 (16.67%) had moderately favorable attitude and 25 (83.33%) had unfavorable attitude whereas in the post test after imparting structured teaching programme majority 21 (70%) had favorable attitude and only 6(20%) had moderately favorable attitude regarding banking of stem cells from the umbilical cord blood among pregnant women.

The second objective was to find the effectiveness of planned teaching programme on knowledge regarding banking of stem cells from the umbilical cord blood among pregnant women.

The comparison table shows that in the pre-test, the mean score of knowledge was 11.50 + 2.70 whereas in the post test the mean score of knowledge was 33.06 +3.93. The calculated paired 't' value of t = 57.742 was found to statistically significant at p≤0.001 This clearly shows that the administration of planned teaching programme to pregnant women between had significant improvement in the post test

level of knowledge regarding banking of stem cells from the umbilical cord among pregnant women. The table 5 shows that in the pre- test, the mean score of attitude was 40.26 + 11.98 whereas in the post test the mean score of attitude was 78.40 + 14.31. The calculated paired't' value of t = 20.322 was found to statistically significant at p≤0.001 level. This clearly shows that the administration of planned teaching programme to pregnant women had significant improvement in the post test level of attitude regarding banking of stem cells from the umbilical cord among pregnant women.Hence the hypothesis H^1 stated earlier that "There may be a significant improvement in the post test level of knowledge and attitude regarding banking of stem cells from the umbilical cord among pregnant women" is accepted.

The third objective was to correlate the post-test knowledge and attitude scores regarding banking of stem cells from the umbilical cord among pregnant women

The table 6 shows that the post mean score of knowledge was 33.06 +3.93andthe post-test attitude score was 78.40 + 14.31. The calculated Karl Pearson's Correlation value of r = 0.871 shows a positive correlation and it was found to be statistically significant at p≤0.01 level. This clearly indicates that when the knowledge regarding banking of stem cell from umbilical cord blood among pregnant women increases their attitude level also increases.

Hence the hypothesis H^2 stated earlier that "there will be significant relationship between post-test knowledge and attitude regarding banking of stem cells from the umbilical cord among pregnant women between is accepted.

The fourth objective was to associate the pre-test level of knowledge and attitude regarding banking of stem cells from the umbilical cord among pregnant women with their selected demographic variables.

The table 7 shows that none of the demographic variable other than the occupation had shown statistically significant association with pre-test level of knowledge regarding bankingof stem cells from the umbilical cord among pregnant women at p ≤0.05 level.

Hence the hypothesis H^3 stated earlier that there will be significant association of pre- test level of knowledge score regarding banking of stem cells from the umbilical cord among pregnant women.

The table 8 The association between pre-test level of attitude shows that demographic variables education of pregnant women had shown statistically significant association with pre-test level of attitude regarding banking of stem cells from the umbilical cord amongpregnant women between at p≤ 0.05 level.

CONCLUSION

The following conclusions were drawn on the basis of the data analysis:

- The present study findings reveals that reveals classification of pregnant women based on pre-test level of knowledge regarding banking of stem cells from the umbilical cord blood. In the pre-test maximum i.e.) 100% of pregnant women were having inadequate knowledge level and 0% were having moderately adequate and inadequate knowledge level.
- The Findings also revealed that in the pre-test, majority 5 (16.67%) had moderately favorable attitude and 25 (83.33%) had unfavorable attitude whereas in the post test after imparting structured teaching programme majority 21 (70%) had favorable attitude and only 6(20%) had moderately favorable attitude regarding banking of stem cells from the umbilical cord blood among pregnant women.

- The pre-test, the mean score of knowledge was 11.50 + 2.70 whereas in the post test the mean score of knowledge was 33.06 +3.93. The calculated paired 't' value of t = 57.742 was found to statistically significant at p≤0.001 This clearly shows that the administration of planned teaching programme to pregnant women between had significant improvement in the post test level of knowledge regarding banking of stem cells from the umbilical cord among pregnant women. The table 5 shows that in the pre-test, the mean score of attitude was 40.26 + 11.98 whereas in the post test the mean score of attitude was 78.40 + 14.31. The calculated paired't' value of t = 20.322 was found to statistically significant at p≤0.001 level. This clearly shows that the administration of planned teaching programme to pregnant women had significant improvement in the post test level of attitude regarding banking of stem cells from the umbilical cord among pregnant women. Hence the hypothesis H^1 stated earlier that "There may be a significant improvement in the post test level of knowledge and attitude regarding banking of stem cells from the umbilical cord among pregnant women" is accepted.
- In aspect of correlation the post-test knowledge and attitude scores regarding banking of stem cells from the umbilical cord among pregnant women post mean score of knowledge was 33.06 +3.93and the post-test attitude score was 78.40 + 14.31. The calculated Karl Pearson's Correlation value of r = 0.871 shows a positive correlation and it was found to be statistically significant at p≤0.01 level. This clearly indicates that when the knowledge regarding banking of stem cell from umbilical cord blood among pregnant women increases their attitude level also increases. Hence the hypothesis H^2 stated earlier that "there will be significant relationship between post-test knowledge and attitude regarding banking of stem cells from the umbilical cord among pregnant women between is accepted.
- In aspect of association the pre-test level of knowledge and attitude regarding banking of stem cells from the umbilical cord among pregnant women with their selected demographic variables. Other than the occupation had shown statistically significant association with pre-test level of knowledge regarding banking of stem cells from the umbilical cord among pregnant women at p ≤0.05 level. Hence the hypothesis H^3 stated earlier that there will be significant association of pre-test level of knowledge score regarding banking of stem cells from the umbilical cord among pregnant women.
- The association between pre-test level of attitude shows that demographic variables education of pregnant women had shown statistically significant association with pre- test level of attitude regarding banking of stem cells from the umbilical cord among pregnant women between at p≤ 0.01 level.

SUMMARY

Education enlightens the darkness. The current study was effective in terms of increased awareness after the planned teaching programme. There was a significant improvement of knowledge and attitude regarding banking of stem cells from umbilical cord among pregnant mothers at Mathurushree hospital after planned teaching as an intervention. Thus planned teaching on banking of stem cell from umbilical cord was an effective intervention in the enhancement of knowledge and attitude among antenatal mothers.

LIMITATIONS

- The study setting was limited to 30 samples only. Hence, possibility for wider generalization is limited.
- It was a tedious procedure for the investigator to get the permission for conducting the study.

RECOMMENDATIONS

On the basis of the study that had been conducted, certain suggestions are given for future studies.

- Replication of this study can be done with larger samples in different settings to validate and generalize the findings.
- A comparative study can be carried out to assess the factors leading to the development of cord blood stem cell therapy between rural and urban population.
- A video teaching program on cord blood stem cell therapy can be conducted in larger samples for better generalization.
- A comparative study can be conducted to compare the effect of structured teaching programme among experimental group and control group without intervention.

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