



# “Effectiveness of Information Booklet on Knowledge Regarding Cord Stem Cell Banking Among Antenatal Mothers from Selected Hospitals of The City.

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## ABSTRACT

**Introduction:** The umbilical cord is one of the richest source of pure young stem cells in the human body. Stem cells are the very foundation of the human body. Every part of body including blood, bone, skin and muscles are formed from master cells known as stem cells.

**Objectives of the study:** To assess effectiveness of information booklet on knowledge regarding cord stem cell banking among antenatal mothers. To assess the pretest level of knowledge regarding cord stem cell banking among antenatal mothers. To assess the post-test level of knowledge regarding cord stem cell banking among antenatal mothers. To assess the effectiveness of information booklet on cord stem cell banking.

**Methodology:** methodology adopted for assessing the knowledge towards cord stem cell banking among antenatal mothers from selected hospitals of city. The research approach adopted was quantitative research approach. This study aims at assessing the effectiveness of information booklet on knowledge regarding cord stem cell banking among antenatal mothers. This study has adopted pre-experimental One group pre-test and post- test design.

**Result:** Average knowledge score in pretest was 10.6 which increased to 15.5 in post-test. t-value for this test was 15.9 with 59 degrees of freedom. It was evident that the knowledge among antenatal mothers improved significantly after information booklet regarding cord stem cell banking

**Conclusion:** there was significant change in the knowledge of the antenatal mothers after the administration of the information booklet and hence it was concluded that information booklet was effective.

## INTRODUCTION

The umbilical cord is one of the richest source of pure young stem cells in the human body. Stem cells are the very foundation of the human body. Every part of our body including blood, bone, skin and muscles are formed from master cells known as stem cells. These stem cells are very unique cells that have the potential to repair and regenerate in the body and save many lives. Cord stem cell banking is also known as biological insurance as the cells are preserved for future use.[1]

According to a report in India Today, Dr Matapurkar was inspired by the Mahabharata on research about stem cell . When Gandhari, who had not been able to conceive for two years, learnt of this, she underwent an abortion. From her womb, a huge mass of flesh came out. (Rishi) Dwaipayana Vyas was called. He observed this hard mass of flesh and then he preserved it in a cold tank with specific medicines. He then divided the mass of flesh into 100 parts and kept them separately in 100 tanks full of ghee for two years. After two years, 100 Kauravas were born of it. On reading this, Dr.Matapurkar realised that stem cell research was found in India thousands of years ago.[2]

Stem cells are left in the umbilical cord and placenta after birth, it contains a special cells and this cell is used to treat more than 80 types of diseases and can make up 200 types of human tissues because the cells have the potential to be used in field of regenerative medicine. A stem cell has the ability to renew itself for long periods. Cord stem cells are taken from the umbilical cord to be used in stem cell therapy are supposed to be preserved under appropriate conditions.[3]

Prenatal mothers may have inadequate knowledge regarding cord stem cell and banking. This study aims to assess the level of knowledge on stem cell banking and its benefits to improve the knowledge through information booklet.[4]

The umbilical cord stem cell banking consists of the collection, processing and cryopreservation of the remaining blood within the umbilical cord and placental circulation following birth of the child typically prior to the placental delivery. Umbilical cord stem cells when preserve under cryogenic conditions have no expiration date, thereby providing life time benefit.[5]

To assess effectiveness of information booklet on knowledge regarding cord stem cell banking among antenatal mothers from selected hospitals of the city. To assess the pretest level of knowledge regarding cord stem cell banking among antenatal mothers. To assess the post-test level of knowledge regarding cord stem cell banking among antenatal mothers. To assess the effectiveness of information booklet on cord stem cell banking. To find association of demographic variable with pre-test knowledge on cord stem cell banking

## RESEARCH METHODS

“A research methodology defines what the activity of research is, how to proceed, how to measure progress and what constitutes success. The methodological decisions have crucial implications for validity and credibility of the study findings, methodology of research indicates the general pattern of organizing the procedure for the empirical study together with the method of obtaining valid and reliable data for an investigation.[6]

Research methodology deals with the description of methodology and different steps which were undertaken for gathering and organizing data. It includes the description of the research approach, research design, setting of the study, sample and sampling techniques, development of the data collection, tools and checklist, procedure for the data collection and the plan for data analysis.[7]

This study has adopted pre-experimental One group pre-test and post-test design. In this study the subjects were selected according to the inclusion criteria. A pre-test knowledge was assessed on the samples. After that information booklet was provided as an intervention and later post-test knowledge score was assessed.

### Population and Sample

The population for the study is described as being composed of two groups; the target population and the accessible population. The target population which is also called as the universe is composed of the entire group of peoples or subjects to whom the researcher wishes to generalize the findings of the study. The total group of individual people or things meeting the designated criteria of interest to the researcher. The population for the study was antenatal mothers. “Sample refers to a representative part or a single item from a larger whole or group especially when presented for inspection or shown as evidence of quality.” The samples used in this study was antenatal mothers from selected hospital.

### Sampling technique

In this study nonprobability convenient sampling technique was used for the collection of samples.

## RESULT

The study tool had demographic variables based on Age, Religion, Education, Occupation, Number of children, Source of information, Would you like to preserve cord blood, Like to have information related to cord blood with the level of pre-test knowledge of antenatal mothers regarding stem blood cell banking. 43.3% of antenatal mothers were in age of 28-38 years and 38.3% of antenatal mothers had secondary education, Findings further show that 58.3% of antenatal mothers were working whereas 81.7% of antenatal mothers were Hindu. 58.3% of antenatal mothers did not have children. In relation to source of information 33.3% antenatal mothers receive information about cord stem banking from doctors and media whereas 53.3% antenatal mothers shows that they would like to preserve cord blood, further findings revealed that 86.7% of them had information related to cord stem cell banking. Majority of antenatal mothers 83.3% of them had an average knowledge whereas 1.7% of antenatal mothers had good knowledge about cord stem cell banking.

Results showed that 75% antenatal mothers had average knowledge, whereas 25% had good knowledge. Above analysis credit that post knowledge of antenatal mothers was improved as compared to pre-test knowledge. Mean knowledge score about cord stem cell banking in pre-test was 10.6 and mean post-test was 15.5. This difference was statistically significant at  $p < 0.05$  level, which  $t$  value 15.9 that indicates antenatal mothers received information booklet on cord stem cell banking had higher mean knowledge score in post-test than pre-test, it can be concluded that the information booklet was proved to be effective in delivering knowledge of cord stem cell banking among antenatal mothers. Fisher's test shows that there was no significant association between the knowledge score with selected demographic variables.

**Table 1: Description of samples (antenatal mothers) based on their demographic characteristics in terms of frequency and percentage. N=60**

Demographic variable	Freq	%
Age		
18-28	25	41.7%
28-38	26	43.3%
38-48	9	15.0%
Education		
Graduate	12	20.0%
Postgraduate	5	8.3%
Primary Education	20	33.3%
Secondary Education	23	38.3%
Occupation		
Housewife	25	41.7%
Working	35	58.3%
Religion		
Christian	1	1.7%
Hindu	49	81.7%
Muslim	9	15.0%
Other	1	1.7%
Number of children		
1,2	20	33.3%
3 or more	5	8.3%
None	35	58.3%
Source of information		
Doctors	20	33.3%
Mass media	20	33.3%

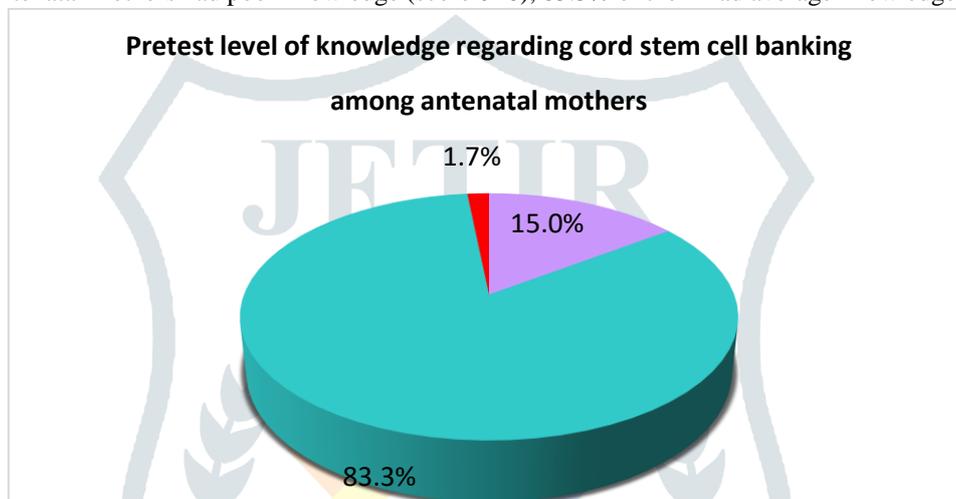
Nurses	15	25.0%
Other	5	8.3%
Would you like to preserve cord blood		
No	28	46.7%
Yes	32	53.3%
Like to have information related to cord blood		
No	8	13.3%
Yes	52	86.7%

**Table 2: Pre-test level of knowledge regarding cord stem cell banking among antenatal mothers. N=60**

Knowledge	Pretest	
	Freq	%
Poor (score 0-8)	9	15.0%
Average (score 9-16)	50	83.3%
Good (score 17-25)	1	1.7%

**Fig no:1 Pie diagram showing pre-test knowledge regarding cord stem cell banking among antenatal mothers.**

In pretest, 15% of the antenatal mothers had poor knowledge (score 0- 8), 83.3% of them had average knowledge (score 9-16) and 1.7%



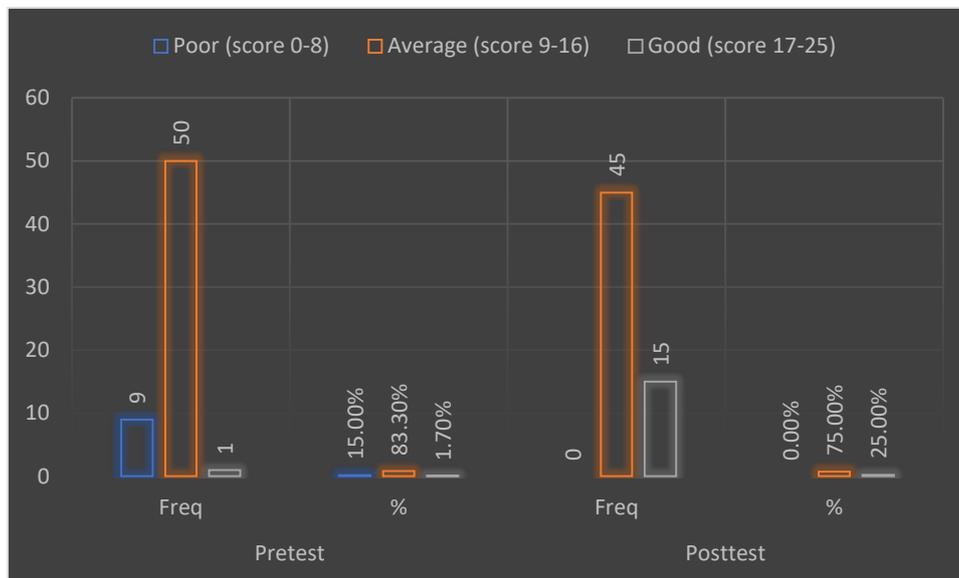
of them had good knowledge regarding cord stem cell banking.

**Table 3: Post-test level of knowledge regarding cord stem cell banking among antenatal mothers. N=60**

Knowledge	Pretest		Post-test	
	Freq.	%	Freq.	%
Poor (score 0-8)	9	15.0%	0	0.0%
Average (score 9-16)	50	83.3%	45	75.0%
Good (score 17-25)	1	1.7%	15	25.0%

In pretest, 15% of the antenatal mothers had poor knowledge (score 0-8), 83.3% of them had average knowledge (score 9-16) and 1.7% of them had good knowledge regarding cord stem cell banking. In post-test, 75% of the antenatal mothers had average knowledge (score 9-16) and 1.7% of them had good knowledge regarding cord stem cell banking. This indicates that there was 0 antenatal mothers had poor knowledge. This shows that knowledge of antenatal mothers was improved, remarkably after information booklet.

**Fig no: 2: Bar diagram showing distribution of knowledge regarding cord stem banking among antenatal mothers in pre-test and post-test**

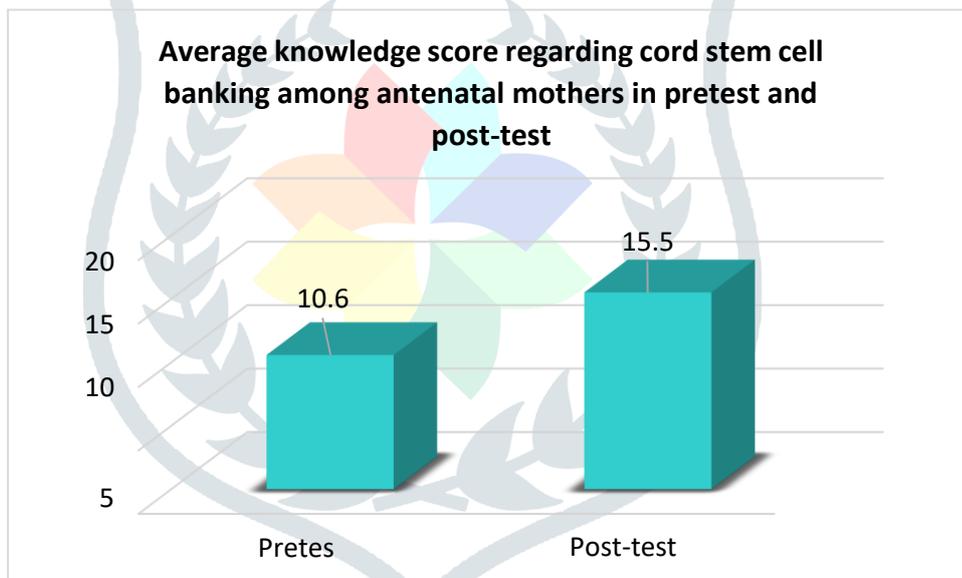


**Table 4: Paired t-test for the effectiveness of information booklet on cord stem cell banking N=60**

	Mean	SD	T	df	p-value
Pretest	10.6	2.3	15.9	59	0.000
Post-test	15.5	2.0			

Researcher applied paired t-test for the effectiveness of information booklet on knowledge among antenatal mothers regarding cord stem cell banking. Average knowledge score in pretest was 10.6 which increased to 15.5 in post-test. t-value for this test was 15.9 with 59 degrees of freedom. It was evident that the knowledge among antenatal mothers improved significantly after information booklet regarding cord stem cell banking

**Fig no:3 Bar diagram showing distribution of average knowledge score regarding cord stem cell banking among antenatal mothers in pre-test and post-test**



**Table 5: Fisher’s exact test for the association of demographic variable with pre-test knowledge on cord stem cell banking**

Demographic variable		Knowledge			p- value
		Average	Good	Poor	
Age	18-28	22	0	3	0.863
	28-38	20	1	5	
	38-48	8	0	1	
Education	Graduate	9	1	2	0.621
	Postgraduate	5	0	0	
	Primary Education	16	0	4	
	Secondary Education	20	0	3	
Occupation	Housewife	21	0	4	1.000

Religion	Working	29	1	5	0.431
	Christian	0	0	1	
	Hindu	41	1	7	
	Muslim	8	0	1	
Number of children	Other	1	0	0	0.055
	1,2	17	0	3	
	3 or more	2	0	3	
Source of information	None	31	1	3	0.671
	Doctors	18	0	2	
	Mass media	17	0	3	
	Nurses	11	1	3	
Would you like to preserve cord blood	Other	4	0	1	0.380
	No	24	1	3	
Like to have information related to cord blood	Yes	26	0	6	0.425
	No	8	0	0	
	Yes	42	1	9	

Since all the p-values are large (greater than 0.05), none of the demographic variable was found to have significant association with the knowledge among antenatal mothers regarding stem blood cell banking.

**Table 6: Item analysis**

Knowledge item	Pretest		Posttest	
	Freq	%	Freq	%
The basic form of life is	42	70.0%	42	70.0%
Cord blood stem cells are	29	48.3%	42	70.0%
Cord stem cell banking means	27	45.0%	42	70.0%
Umbilical cord blood is rich source of	30	50.0%	26	43.3%
Cord stem cells can be collected	34	56.7%	25	41.7%
Important factors when choosing a cord stem cell bank	21	35.0%	44	73.3%
Diseases and conditions are currently FDA approved for routine treatment with cord blood stem cells	33	55.0%	29	48.3%
Types of bank available for storing stem cell banking	28	46.7%	56	93.3%
Hospital should intimate to the donors regarding cord blood collection	24	40.0%	25	41.7%
Following mothers are allow to do cord stem cell donation	28	46.7%	49	81.7%
Type of delivery in which cord blood collection can be performed	31	51.7%	17	28.3%
Umbilical cord blood is collected from	23	38.3%	52	86.7%
Storage of cord blood bank is known as	27	45.0%	51	85.0%
Public cord blood banks use for	16	26.7%	55	91.7%
Donor information communicated by the cord blood bank should be	29	48.3%	15	25.0%
The use of cord blood banking is approved by	33	55.0%	59	98.3%
Stored stem cells can be used for period	23	38.3%	50	83.3%
Screening tests to be done prior to selection of cord stem cell banking except	23	38.3%	48	80.0%
Cord blood collection requires at least blood	19	31.7%	41	68.3%
Collection of cord stem blood by	18	30.0%	31	51.7%
Consent required for Umbilical cord blood collection	22	36.7%	32	53.3%
Umbilical cord blood has been used successfully to treat children with	18	30.0%	19	31.7%
Beneficiary of the stored cord stem cell banking	16	26.7%	18	30.0%
Annual cost for stem cell banking	19	31.7%	22	36.7%
Type of patients must receiving stem cell transplants from donors	22	36.7%	41	68.3%

Table 4. deals the frequency and percentage of correct responses for each knowledge item by antenatal mothers. It shows that in post-test the correct responses improved remarkably after information booklet regarding cord stem cell banking.

## DISCUSSION

43.3% of antenatal mothers were in age of 28-38 years and 38.3% of antenatal mothers had secondary education, Findings further show that 58.3% of antenatal mothers were working whereas 81.7% of antenatal mothers were Hindu. 58.3% of antenatal mothers did not had children. In relation to source of information 33.3% antenatal mothers receive information about cord stem banking from doctors and media whereas 53.3% antenatal mothers shows that they would like to preserve cord blood, further findings revealed that 86.7% of them had information related to cord stem cell banking.

Majority of antenatal mothers 83.3% of them had an average knowledge where as 1.7% of antenatal mothers had good knowledge about cord stem cell banking. Similar results has been observed in another study done in 2021 by Goarya Trupti, to assess effectiveness on knowledge regarding cord stem cell therapy. The study shows that antenatal mothers were unaware and majority having inadequate knowledge regarding cord blood collection for stem cell therapy. Mean score of knowledge in pre-test was 13.2, post-test mean score of knowledge was 18.1 which was increased after administration of structured teaching. In this study pre-test mean score of knowledge was 10.6, post-test mean score of knowledge was 15.5 which was increased after administration of information booklet on knowledge regarding cord stem cell banking.

Majority of antenatal mothers 75% had average knowledge, whereas 0% of antenatal mothers had poor knowledge of cord stem cell banking and 25% had good knowledge. Above analysis credit that post knowledge of antenatal mothers was improved as compared to pre-test knowledge.

Mean knowledge score about cord stem cell banking in pre-test was 10.6 and mean post-test was 15.5. This difference was statistically significant at  $p < 0.05$  level, which T value 15.9 that indicates antenatal mothers received information booklet on cord stem cell banking had higher mean knowledge score in post-test than pre-test, it can be concluded that the information booklet was prove to be effective in delivering knowledge of cord stem cell banking among antenatal mothers. The findings of study shows that there was no association between demographic variables like i.e., Age, Religion, Education, occupation, Number of children, Source of information, would you like to preserve cord blood, like to have information related to cord blood with the level of pre- test knowledge of antenatal mothers regarding stem blood cell banking.

## CONCLUSION

The present study was conducted to assess the effectiveness of information booklet on knowledge regarding cord stem cell banking among antenatal mothers from selected hospitals of city. It was concluded that there were changes in mean of knowledge scores before and after implementation of cord stem cell banking among antenatal mothers from selected hospitals of city. The information booklet on cord stem cell banking was found to be effective in improving knowledge of antenatal mothers from selected hospitals of city.

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