A Descriptive Study to Assess the Knowledge Regarding Stem Cells Banking among Staff Nurses in Veerangana Avanti Bai Mahila Chiktsalaya at Lucknow, With a View to Develop an Information Booklet

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ABSTRACT

A Descriptive study to assess the knowledge regarding Stem Cells Banking among staff nurses in Veerangana Avanti Bai Mahila Chiktsalaya Hospital at Lucknow, with a view to develop an Information Booklet. Objective- The main objective was to assess the existing knowledge regarding stem cells banking among staff nurses in Veerangana Avanti Bai Mahila Chiktsalaya Lucknow. Method:- A quantitative research approach, and a descriptive research design was used. The sample size of 60 staff nurses were selected by using purposive sampling technique. Initially the investigator got permission from concerned authority of Veerangana Avanti Bai Mahila Chiktsalaya Lucknow. The written consent was obtained from samples. The tool used were, Performa of demographical variables, self- structured knowledge questionnaire. Assessment of pre- existing level of knowledge done by administering knowledge questionnaire after that on same day information booklet was distributed. Result- The result of the study revealed that there was majority (58.33%) of sample subjects had inadequate level of knowledge, (41.66%) had moderate level of knowledge and none of the sample subjects had adequate knowledge regarding stem cells banking. Conclusion- The study concluded that the staff nurses had inadequate knowledge regarding stem cells banking and there is a strong need to improve the knowledge level of staff nurses.

KEYWORDS: *Stem cells banking, Information booklet, Leukemia, umbilical cord blood banking, mesenchymal stem cells, pluripotent stem cells*

INTRODUCTION

In a lifetime of a human being, there are some important phases. Pregnancy is one of the most exciting and important events in each woman's life involving many factors that should be considered in advance such as changes in diet, habits and lifestyle. On the day of birth of baby, parents will probably be overcome with visions of the future with their child`s first smiles, steps and life milestones. Their child ever becoming seriously ill will probably be the last thing on their mind. But some parents do consider the possibility that a serious illness might someday affect their child and they make a choice on the day their baby is born, that might impact the future health of that child or even their other children by deciding to bank their newborn's cord blood stem cells.[1] Cord blood stem cells are pluripotent, which is the ability to differentiate into not only different blood cell types, but potentially into different types of tissue including bone, cartilage, hepatic, pancreatic, neurologic, muscle, epithelial, endothelial, and skin. Redefining health in its endeavour to bring a leading edge healing concept is proud to introduce stem cells

therapy .[2] 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.[1]

In worldwide the first cord blood transplantation was in 1988, two option for cord blood banking was introduce, private and public cord blood banking. More than 780,000 cord blood units are stored in over 130 private cord blood bank world. The first cord blood repository in India was established by the company Reliance Life Science (RLS), which incorporated in 2001; their programmed is primarily oriented towards public banking. [3]

India has a population of over one billion people with about 5% being able to afford the very best treatment, 25% in the middle class with increasing income and 70% who cannot afford a transplant unless aided by the government. The rate of haemoglobinopathies in India is high with nearly 12,000 infants being born every year with a severe disorder. These numbers imply that every hour 1 child is born who will suffer with this genetic disorder. The carrier rate for β – thalassemia varies from 1-17 % in India with an average of 3.2 % which indicates that on an average 1 in every 25 Indians is a carrier of thalassemia. This eventually, shoots up the demand of stem cell therapy which is one of the effective treatment option. [4] Stem cell therapy in the coming decades may provide solution to incurable ailments and sever injuries. Further stem cell break through is expected to promote effective low cost treatment for diseases like diabetes, stroke, spinal cord damage etc. The Indian Council of Medical Research has estimated that some 50 million patients with heart diseases, 5 million with Parkinson's disease and 5 million with Alzheimer's disease in India are 'potential beneficiaries' of stem cell therapy. First generation therapy is already being offered in South Korea for spinal injuries.[5]

Kaur Amandeep and Garg Archna (2017) Conducted a descriptive research to assess knowledge and attitude regarding stem cells and umbilical cord blood banking among antenatal women attending antenatal OPD of selected hospitals, hoshiarpur, Punjab. Researcher selected 100 antenatal women selected by non-probability convenient sampling technique. Data was collected by using self-structured questionnaire to assess knowledge and likert rating scale to assess attitude of antenatal women. The study findings showed that 49% of antenatal women had average knowledge, 47% had poor knowledge and

4% had good knowledge regarding stem cells and umbilical cord blood banking. In terms of attitude 75% antenatal women had positive attitude and 25% had neutral attitude regarding stem cells and umbilical cord blood banking. There was weak positive correlation between knowledge and attitude regarding stem cells and umbilical cord blood banking. The study concluded that antenatal women had average knowledge and positive attitude regarding stem cells and umbilical cord blood banking. Hence assumption proved wrong as antenatal women had average knowledge and positive attitude regarding stem cells and umbilical cord blood banking.[6]

Objective of the study-
1. To assess the existing knowledge regarding stem cells banking among staff nurses.
2. To find out the association of knowledge scores among staff nurses regarding stem cells banking with their selected demographic variables.
3. To develop and distribute an information booklet regarding stem cells banking.

RESEARCH HYPOTHESIS
H_1: There will be a significant association between knowledge scores with their selected demographic variable

MATERIAL AND METHODS:
Research Design:
The non- experimental descriptive research design.

Setting:
The study was conducted in Veerangana Avanti Bai Mahila Chiktsalaya Lucknow.

Population:
Accessible population for this study includes staff nurses in Veerangana Avanti Bai Mahila Chiktsalaya Lucknow.

Sample:
Selected 60 samples.

Sampling Technique:
The samples were selected for this study by non-probability purposive sampling technique.

Data analysis:
The demographic variables were organized by using descriptive measures (frequency and percentage). The data from the structured knowledge questionnaire before and after distribution of information booklet will be analyzed using mean, standard deviation (SD). The association between the level of knowledge and the selected demographic variables were assessed by Chi-square test.

RESULT:

Section:-I Distribution of samples subjects according to their demographic variables-Demographic variables include age in year, educational qualification, religion, marital status, monthly income, type of family, Working experience, Working area, Residential area, Any history of stem cells banking in family, Any witness or assisted case of cord blood sampling, Previous knowledge and source of knowledge regarding stem cells banking.

Section II:- Knowledge of staff nurses regarding stem cells banking.
A. Percentage wise distribution of sample subjects according to the level of knowledge.
B. Mean, standard deviation and mean percentage level of knowledge regarding stem cells banking.

Section III:- Testing hypothesis.
A. Association between the level of knowledge scores with their selected demographic variables.

Distribution of Sample Subjects according to their Demographic Variables
Table 1 Frequency and Percentage of staff nurses according to their demographic variables.

n=60

S. No.	Demographic Variables		Frequency	Percentage%
1	Age in years	a. 21-25 years	14	23.30
		b. 26-30 years	24	40.00
		c. 31- 35 years	7	11.70
		d. 36 years and above	15	25.00
2	Educational qualification	a. GNM	43	71.70
		b. B.Sc. Nursing(Honurs)	05	08.30
		c. P.B.B.Sc. Nursing	12	20.00
		d. M.Sc. Nursing	00	00.00
3	Religion	a. Hindu	46	76.70
		b. Muslim	05	08.30
		c. Christian	09	15.00
		d. Sikh	00	00.00
		e. Others	00	00.00
4	Marital Status	a. Married	42	70.00
		b. Unmarried	18	30.00
5	Monthly income	a. 5,000- 10,000	06	10.00
		b. 11,000- 15,000	02	03.30
		c. 16,000- 20, 000	24	40.00
		d. 21,000- 25,000	12	20.00
		e. 25,000 and above	16	26.70
6	Type of family	a. Joint family	40	66.70
		b. Nuclear family	20	33.33
		c. Extended family	00	00.00
7	Working experience	a. ≤1- 2 years experience	19	31.70
		b. 3- 4 years experience	19	31.70
		c. 5-6 years experience	06	10.00
		d. ≥ 6 years experience	16	26.60
8	Working area	a. Private hospital	00	00.00
		b. Government hospital	60	100.00

| 9	Residential area	a. Urban area	49	81.70
		b. Suburban area	05	08.30
		c. Rural area	06	10.00
10	Any history of stem cells banking in family	a. Yes	08	13.30
		b. No	52	86.7
11	Any witness or assisted case of cord blood sampling	a. Yes	14	23.3
		1. i Only 1 time	11	18.30
		2. ii 1-2 times	03	05.00
		3. iii 3-4 times	00	00.00
		4. iv More than 5 times	00	00.00
		b. No	46	76.70
12	Previous knowledge regarding stem cells banking	a. Yes	29	48.30
		1. Books, journals, articles	07	11.70
		2. Workshop, conferences, seminar	00	00.00
		3. iii Doctors/ obstetricians	09	15.00
		4. iv Colleagues	04	06.60
		5. v.Newspaper or magazines	03	05.00
		6. vi. Mass media	06	10.00
		b. No	31	51.70

SECTION II
Knowledge of Staff Nurses regarding Stem Cells Banking

This section describes the frequency percentage distribution of sample subjects according to the level of knowledge regarding stem cells banking. The knowledge scores obtained through structured knowledge questionnaire are analyzed using descriptive statistics.

TABLE 2 Frequency Percentage distribution of sample subjects according to the level of knowledge

S. No	Level of knowledge	Frequency	Percentage
1	Inadequate knowledge (≤50%)	35	58.333%
2	Moderate knowledge (51-70%)	25	41.667%
3	Adequate knowledge (≥71%)	0	00%
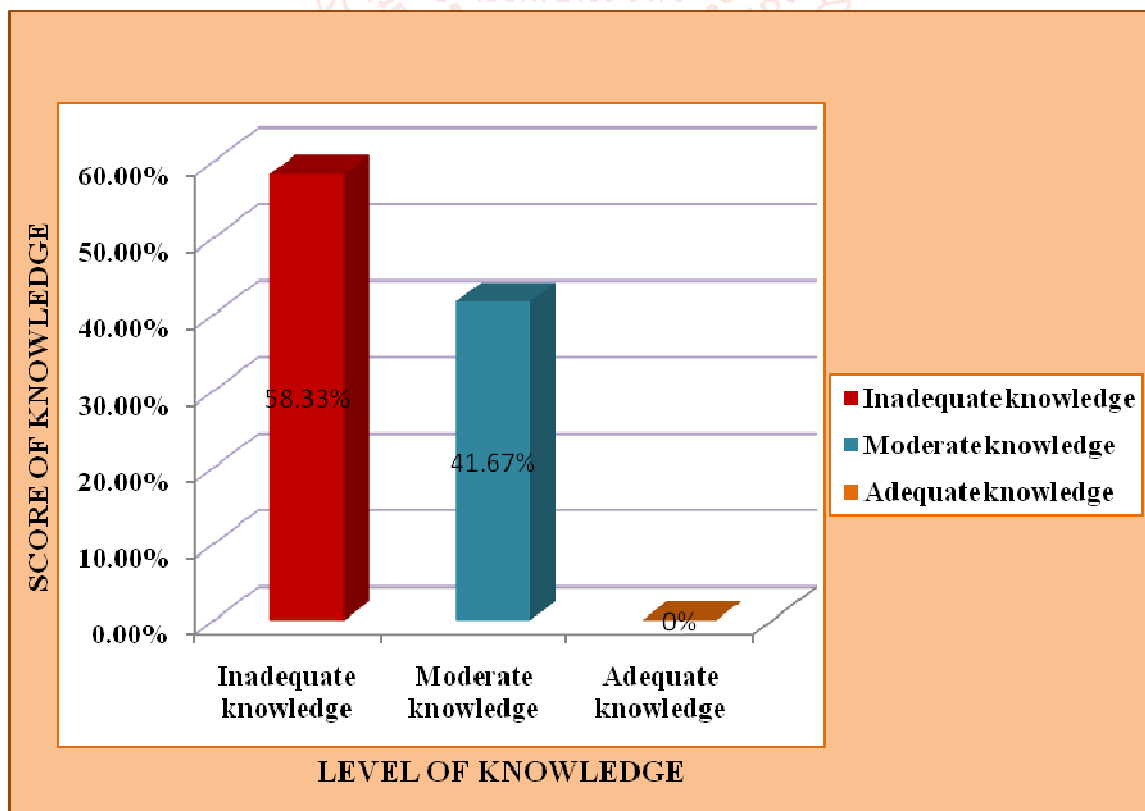
Figure- (a) Bar diagram showing percentage distribution of sample subjects according to their knowledge regarding stem cells banking.

Table- 5.2 and figure-5.2a shows majority (58.33%) had inadequate level of knowledge, (41.66%) had moderate level of knowledge and none of the sample subjects had adequate knowledge regarding stem cells banking.
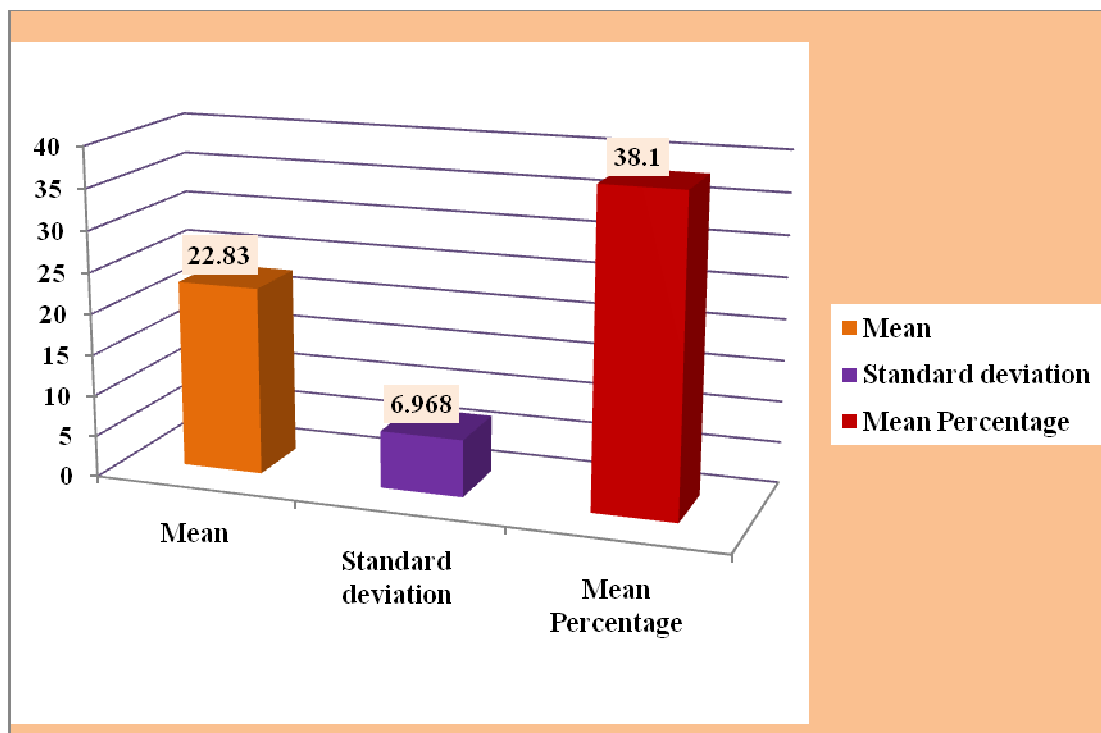
Mean, standard deviation, mean percentage of knowledge scores were calculated & are presented in table- TABLE 3
Table 3:- Mean, Standard Deviation and mean percentage on level of knowledge regarding stem cells banking among staff nurses.

n= 60

Groups	Mean	Standard Deviation	Mean Percentage
Level of Knowledge	22.83	6.968	38.10

Maximum possible scores – 36

The data presented in table- 3 and figure (b) indicates that the Mean, Standard Deviation and mean percentage on level of knowledge regarding stem cells banking among staff nurses. The mean knowledge score is 22.83, standard deviation is 6.968 and mean percentage of knowledge score is 38.10 %. while maximum knowledge score is 3

SECTION III This section is related to testing of hypothesis i.e. association between the level of knowledge scores with their selected demographic variables.

Table 4 Association between level of knowledge scores regarding stem cells banking with their demographic variables among staff nurses.

n= 60

S. No	Variables	Level of Knowledge				Statistical Significance		
		Inadequate (n=35)		Moderate (n=25)		Chi Square χ^2	df	P – Value
		Number	Percentage	Number	Percentage			
1-	**Age (Years)**							
	21-25 years	07	20.00	07	28.00	1.690	3	0.639
	26-30 years	15	42.90	09	36.00			
	31- 35 years	03	08.60	04	16.00			
	36 years and above	10	28.50	05	20.00			
2-	**Educational qualification**							
	GNM	27	77.10	16	64.00	1.386	2	0.500
	B.Sc. Nursing(Honurs)	02	05.80	03	12.00			
	P.B.B.Sc. Nursing	06	17.10	06	24.00			
	M.Sc. Nursing	00	00.00	00	00.00			

3-	Religion							
	Hindu	26	74.30	20	80.00			
	Muslim	04	11.40	01	04.00			
	Christian	05	14.30	04	16.00	1.056	2	0.590
	Sikh	00	00.00	00	00.00			
	Others	00	00.00	00	00.00			
4-	Marital Status							
	Married	26	74.30	16	64.00	0.735	1	0.391
	Unmarried	09	25.70	09	36.00			
5-	Monthly income							
	5,000- 10,000	02	05.70	04	16.00			
	11,000- 15,000	02	05.70	00	00.00			
	16,000- 20, 000	15	42.90	09	36.00	3.171	4	0.530
	21,000- 25,000	07	20.00	05	20.00			
	25,000 and above	09	25.70	07	28.00			
6-	Type of family							
	Joint family	20	57.10	20	80.00			
	Nuclear family	15	42.90	05	20.00	3.429	1	0.064
	Extended family							
7-	Working experience							
	≤1- 2 years experience	09	25.70	10	40.00			
	3- 4 years experience	13	37.10	06	24.00			
	5-6 years experience	02	05.70	04	16.00	3.992	3	0.262
	≥ 6 years experience	11	31.40	05	20.00			
8-	Working area							
	Private hospital	00	00.00	00	00.00	-	-	-
	Government hospital	35	100.00	25	100.00			
9-	Residential area							
	Urban area	29	82.90	20	80.00			
	Suburban area	03	08.60	02	08.00	0.192	2	0.909
	Rural area	03	08.60	03	12.00			
10-	Any history of stem cells banking in family							
	Yes	02	05.70	06	24.00	4.220	1	**0.040***
	No	33	94.30	19	76.00			
11-	Any witness or assisted case of cord blood sampling							
	Yes	06	17.10	08	32.00			
	Only 1 time	04	11.40	07	28.00			
	1-2 times	02	05.70	01	04.00	1.799	1	0.180
	3-4 times	00	00.00	00	00.00			
	More than 5 times	00	00.00	00	00.00			
	No	29	82.90	17	68.00			
12-	Previous information regarding stem cells banking							
	Yes	08	34.30	17	68.00			
	Books, journals, articles	03	08.60	04	16.00			
	Workshop, conferences, seminar	00	00.00	00	00.00			
	Doctors/ obstetricians	04	11.40	05	20.00	6.638	1	**0.010***
	Colleagues	01	02.90	03	12.00			
	Newspaper or magazines	00	00.00	03	12.00			
	Mass media	04	11.40	02	08.00			
	No	23	65.70	08	32.00			

The data given in Table no- 4 shows that the Chi square test was used to find out significant association between knowledge level and their selected demographic variables. The findings of chi square test shows that there is no association between the knowledge scores with demographic variables like:- **Age, Educational qualification, Religion, Marital Status, Monthly income, Type of family, Working experience, Working area, Residential area, and witness or assisted case of cord blood sampling**. Here the p- value is in each case is greater than 0.05 (level of significance).

The findings of the research study also shows that there is a significant association between knowledge level and "history of stem cells banking in family" (p=0.040). There is a significant association between knowledge and staff nurses 'previous information regarding stem cells banking" (p=0.010) at p= 0.05 level of significance.

Thus it can be concluded that the research hypothesis accepted and null hypothesis rejected, which means there is an association between these two variables.

DISCUSSION
The discussion of the study is based on the objectives of the study.

The First objective of the study was to assess the existing knowledge regarding stem cells banking among staff nurses.

In the present study the level of knowledge were categorized into inadequate, moderate and adequate knowledge level. Knowledge scores among staff nurses depicts that majority (58.33%) had inadequate level of knowledge, (41.66%) had moderate level of knowledge and none of the sample subjects had adequate knowledge regarding stem cells banking.

While comparing the study findings of the other published researches, findings of this study is akin to the findings of **Farouk Moustafa Manal and Mohammad Youness Entisar (2015),** revealed that Nurses' Knowledge about UCBB are less, 79.7% represent inadequate knowledge and they also identified that the costs of the umbilical cord blood banks, policies and procedures are barriers of conducting such new technology in their hospitals.[7]

The findings of the present study were also similar to the study done by **Ms. Peter Aksa et al (2017)**, where it revealed that 76% of student nurses having moderate knowledge, 23% of student nurses having poor knowledge about umbilical cord stem cell banking. There was no significant association found between their knowledge scores and selected demographic variables. The study stresses on student nurses requiring more information regarding umbilical cord stem cell banking.[8]

The second objective of the study was to find out the association of knowledge scores among staff nurses regarding stem cells banking with their selected demographic variables.

In the present study association was found between the knowledge scores with selected demographic variables like any history of stem cells banking in family in which most of staff nurses that is (86.7%)

had no history of stem cells banking in family. Majority of sample subjects (51.70%) of them had no previous information regarding stem cells banking and (48.30%) were having previous knowledge regarding stem cells banking. Among (48.30%) samples subjects (15%) have knowledge through doctors/obstetrics, followed by (11.70%) from books, journals, articles. (10%) from mass media, (6.60%) from colleagues and only (5%) from newspaper or magazines.

Association of knowledge scores was found only with history of stem cells banking in family and previous information of staff nurses i.e. more than the table value (χ^2=4.220) and (χ^2= 6.638).

This result is contradicted by a similar study of **Joshi Ujala, et al (2017)** the study on Umbilical Cord Stem Cell Collection, Preservation and Utilization among Nurses, the result of study revealed that in demographic variables more than half (53.3%) of nurses were in age group of 21-25 years and all (100%) nurses were females. Most of the nurses had done General Nursing Midwifery (91.7%). According to clinical experiences it was revealed that (31.7%) had more than 8 years experience in context of previous experiences. nurses (47.7%) had maternity ward and (40%) had labour ward and remaining (18.3%) had operation theatre experience. Most of the nurses previous information (61.7%) was from mass media exposure i.e. magazines and newspapers.[9]

CONCLUSIONS:
The overall findings of the study clearly shows that there was an inadequate level of knowledge regarding stem cells banking among staff nurses. Thus, a strong need is to improve the level of knowledge of the staff nurses. Therefore the investigator distributed information booklet without any post intervention so as to disseminate the information regarding stem cells banking.

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