

# A Study to Assess the Effectiveness of Health Teaching Programme on Knowledge Regarding Stem Cell Collection, Preservation & its Benefits among Student Nurses of Selected Nursing Colleges of Vadodara

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## Abstract

**Background of the Study:** Stem cell transplantation is a life saving procedure for a number of malignant and non- malignant life threatening diseases. They are characterized by the ability to renew themselves through mitotic cell division and differentiate into a diverse range of specialized cell types. It is beneficial for later stage in life. In this study an evaluative research approach with pre-experimental research design was used, data was collected from 100 student nurses belongs to selected colleges of Vadodara city.

**Objectives of the Study:** 1. Assess the existing knowledge regarding stem cell collection, preservation & its benefits among student. 2. Determine effectiveness of health teaching on stem collection, preservation & its benefits. 3. Find out the association between pre-test knowledge scores and selected demographic variables.

**Material and Method:** In this research study an evaluative research approach with pre-experimental one group pre-test-post-test design is used. The sampling techniques was non probability convenience sampling is used to collect the 100 samples of student nurses and data collection done by administering the structured questionnaire. Data was analyzed by using descriptive and inferential statistics.

**Result:** With regards to the pre test assessment, the score of (41%) student nurses having moderate level of knowledge and (59%) student nurses having inadequate knowledge while in post test (18%) of student nurses having moderate level of knowledge and (82%) having adequate level of knowledge nobody was found at the inadequate level. The obtained “t” test value 43.10 is greater than table value, at the DF=99 which is significant at 0.05 level. It indicates that there is increased in the level of knowledge regarding stem cell collection, preservation & its benefits after providing HTP. Hence, Hypothesis H<sub>1</sub> accepted. The association of pretest knowledge score was only associated with the age, education level, gender and source of information others are not associated. Hence, H<sub>2</sub> is rejected and conclude that the pretest knowledge score is not associated with the demographic variable of the samples in this study.

**Discussion and Conclusion:** The findings of the study concluded that majority of student nurses were having inadequate level of knowledge & the health teaching programme was effective among student nurses regarding stem cell collection, preservation & its benefits.

**Keywords:** Effectiveness, Health Teaching Programme, Knowledge, student nurses, stem cell collection, preservation & its benefits.

## Introduction

*The only gift is a portion of self.” “Be a blood and organ donor. All it costs is a little love,”* —Emerson

*“Donate Cord Blood – You Can Save a Life”*

Health is the important aspects of life which needs to be maintained at any time in person's life at any cost. Stem cells are young, primitive and undifferentiated

cells with remarkable potential to renew differentiate and develop in the body. Stem cells have ability to regenerate & stored in the different tissues. Umbilical cord is direct connection between mother & fetus, which is always show that emotional bonding between mother & fetus.<sup>1</sup>

Mother gives birth to the baby that times the blood store in the umbilical cord it is called as cord blood. This blood contains more number of haemopoietic stem cells & these cells have ability to self degenerate.<sup>1</sup> there are mainly two types of stem cells: Embryonic stem cells originate from the inner cell mass of the blastocyte & adult cells originate from adult tissue.<sup>1</sup>

Cord blood contains blood producing hematopoietic stem cells as well as mesenchymal cells. Hematopoietic stem cells are ability to develop brain cells, cardiac muscles, and liver cells. The mesenchymal cells have an ability to develop cartilage, bone, joints, ligament, and fat. Cord blood cells may be useful for the siblings, parents, cousins if there is an adequate Human leukocyte Antigen (HLA).<sup>2</sup> same as a cord blood connective tissue from an umbilical cord also can be preserved for the future medical need & further research. More than cord blood, whartshon jelly, connective tissue is specific source of stem cells & it is called as mesenchymal cells.<sup>2</sup>

Constantly growing attempts are being made to spread awareness of the phenomenon of umbilical cord blood banking that has created a sensation in the scientific community. Research on stem cell therapy has shown that advanced stem cell therapy could be used to treat more than 75 life threatening diseases. Currently research in the use of stem cells to treat more than 85 diseases such as diabetes, heart attack, stroke, spinal cord injuries etc, is being undertaken. There has been a completely new wave of research trials involving umbilical stem research that has swept through the nation.<sup>3</sup>

Although a relatively new concept, cord blood storage is fast gaining momentum as a less traumatic alternative to waiting lists, as a way to treat neurological illness, and as an insurance for the family against a host diseases. So, it increases the need of the participation of health care providers in cord blood storage and the first step in this process is awareness about the cord blood banking. Hence educational programme are in great demand especially for health care providers who in turn aware the public about cord blood storage.<sup>3</sup> The Nurses

most important role in the cord blood transfusion is that preparation, labeling & packaging.<sup>4</sup>

**Need for the Study:** Different research studies have shown that cord blood has various benefits over bone marrow transplantation, mostly in children, and can be life-saving in rare cases where a same bone marrow donor cannot be found. Approximately 50% of patients requiring a bone marrow transplant will not find a suitable donor within a critical period. In certain cases, there may be some medical issues around using one's own cord blood cells as well as availability of cells which will requires treatments done using cells from another donor, with the vast majority being unrelated donors. However, studies have proved that cord blood cells can also be used for siblings and other members of your family who have a matching tissue type. Siblings have up to a 75% chance of match and the cord blood may even be a match for parents & grandparents.<sup>5</sup>

According to WHO more than 70 malignant & nonmalignant disease are cured with stem cell transplantation, so this intervention have more useful for other disease specially in leukemia & lymphoma patients. At present there are at least 3 public and 7 private cord blood banks in India.<sup>6</sup> The Hindu (September, 2010) Newspaper reported that 1500 stem cells are received every month in India.

**Statement of Problem:** "A study to assess the effectiveness of health teaching programme on knowledge regarding stem cell collection, preservation & its benefits among student nurses of Selected Nursing colleges of Vadodara."

### Objectives:

- Assess the existing knowledge regarding stem cell collection, preservation & its benefits among student.
- Determine effectiveness of health teaching on stem collection, preservation & its benefits.
- Find out the association between pre-test knowledge scores and selected demographic variables.

### Hypothesis:

H<sub>1</sub>: There will be significant difference between pre-test & post test knowledge score regarding stem cell collection, preservation & its benefits

H<sub>2</sub>: There will be significance association between

knowledge of student nurses regarding stem cell collection, preservation & its benefits and selected demographic variable.

## Methodology

**Research Design:** The research design used for the study was Pre-experimental research design

**Setting:** The main research project was conducted at selected nursing colleges of vadodara city.

**Sample:** The 100 participants included in this study. The sample for the study was selected by non-probability sampling technique according inclusion criteria as availability of sample. Inclusion criteria:

- Students who are able to speak & write in Gujarati & English.
- Students who are willing to participate in the study.
- Students Nurses from G.N.M, B.Sc. or PB B.Sc

### Exclusion criteria for sampling:

- A.N.M students are excluded

### Tool for data collection

#### This consists of two parts:

Section 1: Demographic variables such as age, educational status, gender, previous exposure regarding stem cell collection, preservation & its benefits.

Section 2: Structured knowledge questionnaire will be used to assess knowledge Regarding stem cell collection, preservation & its benefits.

### Scoring interpretation of knowledge:

- Adequate knowledge - >67%
- Moderately adequate knowledge - 34-66%
- Inadequate knowledge - < 33%

**Data Collection Procedure:** The formal permission was obtained for the approval of the study from different colleges of Vadoara city. The data collection done within a given period of 1 week. The investigator selected the subject and established the rapport by explaining purpose of the study, the co-operation required and the anonymity assured before obtaining verbal consent. Initially the demographic tool, self structured questionnaire, administered to the sample to know existing level of knowledge regarding stem

cell collection, preservation, its benefits then the health teaching plan was given to the samples of the study. After 7 days post test was administered to assess the effectiveness of the health teaching programme among student nurses.

**Ethical Clearance:** The ethical approval was taken from ethical committee of university of Sumandeepvidhyapeeth. Ethical clearance was obtained from the SVIEC.

**Statistical Design:** Data were verified prior to computerized entry. The Statistical Package for Social Sciences (SPSS version 20.0) was used. Descriptive statistics were applied (e.g., mean, standard deviation, frequency and percentages). Test of significance (chi square and paired t test) was applied to test the study hypothesis

### Analysis:

**Section:** A description of the samples according their

#### Demographic Characteristics:

**Section 1:** Frequency and percentages distribution of samples, according to their demographic characteristic

Majority of student nurses (71%) from 21-23 age group & minimum student nurses (29%) were in the group of 18-20 year.

Majority of student nurses (94%) were Female and (6%) were male.

The highest percentage (50%) of student nurses (50%) was from B.sc nursing, (32%) from G.N.M & only (18%) from P.P.B.Sc.

Majority of student (92%) were not having previous exposure regarding stem cell collection procedure & only (8%) students having exposure to stem cell collection procedure.

Majority of student nurses (57%) were used news paper for source of information, (21%) were used internet, (14%) were used television and only 5% were having previous clinical exposure regarding stem cell collection..

Section 2: Analysis of pre-test & post test knowledgescore of student nurses regarding stem cell collection, preservation & its benefits.

**Table 1: Distributions of pre test knowledge score of student nurses regarding Stem cell collection, preservation & its benefits. N=100**

Sr. No.	Knowledge Level	Frequency	Percentage
1	Inadequate	59	59%
2	Moderate	41	41%
3	Adequate	00	00
	Total	100	100%

**Table 2: Distributions of post test knowledge score of student nurses regarding Stem cell collection, preservation & its benefits. N=100**

Sr. No	Knowledge Level	Frequency	Percentage
1	Inadequate	00	0%
2	Moderate	18	18%
3	Adequate	82	82%
	Total	100	100

### Section 3: Effectiveness of health teaching programme

**Table 3: Comparison of pre test and post test knowledge score of student nurses N=100**

Variable		Mean	Mean Difference	Std. Deviation	t- Value
Knowledge regarding stem cell collection, preservation & its benefits	Pre-test	9.98	15.15	6.88	43.10
	Post-Test	25.13		5.22	

\*Significant at 0.05 level \*t (0.05, 99df) =2

### Section D: Association between pre test knowledge score with socio-demographic variables.

Association between pre test knowledge score and socio-demographic variables

This section shows the association between knowledge of student nurses and demographic variable. Significant demographic variable are age of student nurses with  $\chi^2$  value 8.94 (1df=3.94), gender of student nurses with  $\chi^2$  value 4.43 (1df=3.84) and educational status  $\chi^2$  value 6.76 (2df=5.99), for source of information of student nurses  $\chi^2$  value 9.46 (3df=7.82) so, for this variable hypothesis is accepted. The non significant demographic variable is previously any exposure regarding programme. Hence, research hypothesis  $H_2$  is failed to accept.

### Discussion

Stem cells have tremendous promise to help us understand and treat a range of diseases, injuries and other health-related conditions. Their potential is evident in the use of blood stem cells to treat diseases of the blood, a therapy that has saved the lives of thousands of children with leukaemia 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. When exploring the knowledge of the nurses about the stem

cells, an important element highlighted in this study is the lack nurse's knowledge in basic clinical information regarding stem cells.

The purpose of the study is to evaluate the effectiveness of the health teaching programme among 100 students nurses. The findings of the study concluded that majority of student were having inadequate level of knowledge. The health teaching programme was effective among student nurses in improving knowledge (t (99) =43.10) significant at 0.05 level regarding cell collection, preservation & its benefits. Finding reveals the health teaching programme is effective to increase the knowledge of respondent and another finding reveals there is association between pre test knowledge score with demographic variable of age, education, gender & source of information.

Different research studies have shown that cord blood has various benefits over bone marrow transplantation, mostly in children, and can be life-saving in rare cases where a same bone marrow donor cannot be found. Approximately 50% of patients requiring a bone marrow transplant will not find a suitable donor within a critical period. In certain cases, there may be some medical issues around using one's own cord blood cells as well as availability of cells which will require treatments done using cells from another donor, with the

vast majority being unrelated donors. However, studies have proved that cord blood cells can also be used for siblings and other members of your family who have a matching tissue type. Siblings have up to a 75% chance of match and the cord blood may even be a match for parents & grandparents.

Although a relatively new concept, cord blood storage is fast gaining momentum as a less traumatic alternative to waiting lists, as a way to treat neurological illness, and as an insurance for the family against a host diseases. So, it increases the need of the participation of health care providers in cord blood storage and the first step in this process is awareness about the cord blood banking. Hence educational programme are in great demand especially for health care providers who in turn aware the public about cord blood storage. The Nurses most important role in the cord blood transfusion is that preparation, labeling & packaging.

### Conclusion

In the light of the study findings, it can be concluded that there was a statistically significant improvement in nurses' knowledge mean scores after intervention. The implementation of an educational intervention was effective and significantly improved nurses' knowledge cord blood collection procedure. Furthermore, the above mentioned findings proved and supported the research hypothesis. The purpose of the study is to evaluate the effectiveness of the health teaching programme among 100 students nurses. The findings of the study concluded that majority of student were having inadequate level of knowledge. The health teaching programme was effective among student nurses in improving knowledge ( $t(99) = 43.10$ ) significant at 0.05 level regarding cell collection, preservation & its benefits. Finding reveals the health teaching programme is effective to increase the knowledge of respondent and another finding reveals there is association between pre test knowledge score with demographic variable of age, education, gender & source of information.

### Recommendations:

Based on the findings of the present study recommendation offered for the future study:

- The similar study can be conducted in different settings.

- The similar study can be conducted on staff nurses.
- The similar study can be conducted on mothers to assess the knowledge & attitude regarding cord blood banking.
- The similar study can be conducted in large sample.
- The similar study can be conducted in different cord blood bank.

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**Ethical Clearance:** The ethical approval was taken from ethical committee of university of sumandeepvidhyapeeth. Ethical clearance was obtained from the SVIEC.

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