

Original Research Article

Knowledge Regarding Umbilical Cord Stem Cell Therapy among Staff Nurses with the View to Develop Self-Instructional Module

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ABSTRACT

Background of the study: Stem cell research has been broadly explored worldwide to enhance human health in medical setting. As stem cell therapy is a new approach in medical science, most of the clients and their relatives are unaware about this clinical entity. The health care professionals including staff nurses also lack adequate knowledge about this new innovative approach. Nurses' knowledge on umbilical cord blood stem cell therapy is very important as these could affect the decision on providing appropriate stem cell-based treatments for clients with many life threatening diseases.

Objectives: The objective of the study is to determine the level of knowledge regarding umbilical cord blood stem cell therapy.

Methodology: Data was derived from 100 staff nurses in selected hospital at Mangaluru. Non-probability convenience sampling technique was used. The knowledge level was assessed using structured knowledge questionnaire. Data analysis was done by descriptive and inferential statistics.

Results: The assessment of knowledge regarding umbilical cord stem cell therapy among staff nurses showed that majority (90%) had poor knowledge and only 10% had average knowledge. The study results also depicted the association between knowledge scores and few selected variables like previous knowledge and source of information at 0.05 level of significance.

Conclusion: Hence the researcher concluded that the staff nurses' have poor knowledge on umbilical cord stem cell therapy and there is a need to educate the staff nurses on the same aspect through in-service education.

Key words: Umbilical cord blood, stem cell, stem cell therapy, staff nurses.

INTRODUCTION

The moment of birth not only means the delivery of new life into the world but also presents a onetime opportunity to save another person's life. Umbilical cord is the vital direct link between mother and foetus. When mother gives birth, the blood that remains in the placenta and umbilical cord is referred as cord blood. This particular blood contains numerous haematopoietic stem cells that have the ability to

differentiate into other cells and the ability to self-degenerate. ^[1]

Stem cells are found in all multi cellular organisms, and are characterized by the ability to renew through mitotic cell division and differentiate into a diverse range of specialized cell types. ^[1] Cord blood stem cells are pluripotent, which has the ability to differentiate into not only different blood cell types, but potentially into different types of tissues including

bone, cartilage, hepatic, pancreatic, neurologic, muscle, epithelial, endothelial, and skin. [2]

In 1989 Dr. Hal Broxmeyer, a member of the American society of hematology, and his colleagues discovered the presence of stem cells in the umbilical cord blood; and in 1993 the first successful blood stem transplant utilizing stem cells collected from umbilical cord blood was performed. Since then it is estimated that approximately 3500 stem cell transplants using umbilical cord blood stem cells have been performed. [3]

Stem cells therapy is the most advanced technology available globally to repair the body's failing system. Umbilical cord blood is increasingly being used as a source of stem cells in the treatment of over 85 diseases and has been used in more than 20,000 transplants worldwide, including leukaemia, myelomas, lymphomas, genetic disorders/ diseases, immune system deficiencies, and blood cell disorders. [4]

Umbilical cord blood collection is primarily carried out by obstetricians, midwives and nurses who have received training in this area. Cord blood is collected by a non-invasive and painless technique after cutting the umbilical cord from the new-born. The two methods of cord blood collection in practice are in-utero and ex-utero method. The in-utero method involves the collection of cord blood after the new-born's delivery but before the delivery of placenta, whereas in the ex-utero method, it is collected after the delivery of the placenta. Immediately after the new-born's delivery, the umbilical cord is clamped from the new-born and a needle attached to a collection bag pre-coated with anticoagulant is inserted in the umbilical vein. Cord blood is collected using sterile technique, drawing the blood from the umbilical vein into a collection bag, using a closed system collection kit. Total collected volume averages about 110 ml. In some cases, cord blood may be collected into tubes rather than a collection bag, also using sterile technique. In both cases, an anticoagulant is

added in the container. Cord blood collection is done within 10 minutes of birth. [5]

Nurses and midwives are part of health care in all the stages of our lives. Their role in this aspect is collection of cord blood, tube labelling, and packaging. Thus, nurses must be knowledgeable and aware of recent trends in diagnosis and treatment. Therefore, nurses need to be educated regarding the value of collecting and preserving umbilical cord blood stem cells for future use in treating illnesses.

Increased level of awareness regarding umbilical cord stem cell therapy among the healthcare providers, especially the staff nurses will help in making stem cell banking an integral part of Indian healthcare. Hence, the investigator felt the need to assess the knowledge of staff nurses regarding stem cell therapy and develop self-instructional module to improve the knowledge of staff nurses regarding umbilical cord blood stem cell collection, preservation and utilization.

Objectives of the Study

The objectives of the study are to:

- Determine the level of knowledge regarding umbilical cord blood stem cell therapy.
- Find the association between knowledge scores on umbilical cord blood stem cell therapy among staff nurses and selected demographic variables.

MATERIALS AND METHODS

Methods:

A quantitative survey approach and descriptive design was used in this study. Non probability convenience sampling technique was adopted for selecting 100 staff nurses working in selected hospital at Mangaluru.

Materials:

The data collection was done by using demographic proforma and structured knowledge questionnaire. Data analysis was done by descriptive and inferential statistics.

Validity, reliability of the tool and pilot Study:

Content validity of the tool was established with the help of experts from related field. Pre-testing of the tool revealed that the tool was clear, feasible and there was no ambiguity in the language. Reliability coefficient computed using split half method and Karl Pearson’s correlation followed by Spearman Brown Prophecy formula, was 0.94 which indicated the tool is highly reliable. Pilot study was conducted on 10 samples and found that the tool was feasible and researchable. Data obtained were analyzed in terms of the objectives using descriptive and inferential statistics.

Inclusion Criteria for sampling:

Staff nurses who

- Were willing to be the part of the study sample.
- Had undergone ANM, GNM, P.B.B. Sc and B. Sc Nursing courses.
- Were available at the time of data collection.

Exclusion criteria for sampling:

- Staff nurses who were exposed to training or teaching programme regarding umbilical cord blood stem cell therapy.

Data collection:

Data was collected from 10th September to 20th September 2015. Ethical clearance was obtained from ethics committee of Yenepoya University. Permission was obtained from the

concerned authority of selected hospital. The investigator herself collected the data using structured knowledge questionnaire among 100 staff nurses at selected hospital, Mangaluru.

Data analysis:

Data was analysed using descriptive and inferential statistics. Demographic data was analysed in terms of frequency and percentage. Knowledge score was analysed by computing frequency, percentage, minimum score, maximum score, mean, median and standard deviation. Chi-square test was used to find association between pre-test knowledge score and selected variables.

RESULTS

Section 1: Description of demographic characteristics of nurses

The study revealed that 48% of staff nurses were of age group 26-30 years and most of the staff nurses were females (82%) and only 18% were male nurses. The maximum of staff nurses participated in the study were GNM’s (58%). Results also showed that majority of staff nurses (61%) belongs to Christian religion with maximum of 1-5 years of clinical experience. Most of the staff nurses (89%) had no previous information regarding stem cell therapy. Most (11%) of them had media as their source of information.

Section 2: Description of analysis of level of knowledge among staff nurses

Table 1: Mean, median, maximum scores and standard deviation of knowledge score of staff nurses regarding umbilical cord blood stem cell therapy. n=100

Total score	Obtained score				Standard Deviation
	Maximum	Minimum	Mean	Median	
22	14	4	8.70	8.00	2.134

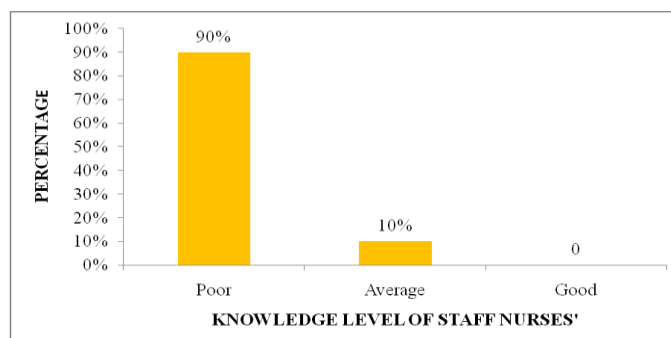


Figure 1: Assessment of staff nurses’ level of knowledge regarding umbilical cord stem cell therapy

Table 1 revealed that the total knowledge score is 22, maximum knowledge score was 14 and the minimum score of staff nurses was 4. The mean and median knowledge score is 8.70 and 8.00 respectively with standard deviation 2.134.

Figure 1 shows that majority of staff nurses (90%) had poor knowledge and only 10% had average knowledge regarding umbilical cord stem cell therapy.

Section 3: Association between level of knowledge and selected demographic variables.

Table 2: Association of knowledge scores with selected demographic variables. n=100

Demographic variables	Chi square value	df	Level of significance	Remarks
Age	0.74	2	0.69	NS
Gender	0.12	1	0.55	NS
Religion	1.67	3	0.70	NS
Educational status	2.59	3	0.15	NS
Year of experience	0.74	2	0.51	NS
Area of experience	4.44	4	0.90	NS
Previous knowledge	4.44	1	0.001	S
Source of knowledge	4.44	1	0.001	S

$t_{(1)}= 3.84$, $t_{(2)}= 5.99$, $t_{(3)}= 7.82$; $p < 0.05$, $t_{(4)}=9.48$, S-Significant, NS-Not Significant

As shown in the table 2, there was no association found between knowledge score and the selected demographic variables like age, gender, religion, educational status, year of experience and area of experience since the calculated value was lesser than the table value at 0.05 level of significance. There was association between the knowledge score and selected demographic variables like previous knowledge and source of information as their calculated value was greater than the table value at 0.05 level of significance.

religion with maximum (67%) of 1-5 years of clinical experience. Most of the staff nurses (89%) had no previous information regarding stem cell therapy. Nearly (11%) of them had media as their source of information.

A similar study was conducted among 125 health professionals in Egypt showed that majority of participants were female (80.7%), 34.9% were ANM's, 19.1% had 1-5 years of experience. [7]

Section 2: Description of analysis of level of knowledge among staff nurses.

The study revealed that majority of staff nurses (90%) had poor knowledge and only 10% had average knowledge regarding umbilical cord stem cell therapy.

A descriptive study conducted among 334 staff nurses at Istanbul revealed that the majority (86.6%) of the participants had a lack of knowledge about cord blood stem cells and placental stem cell banking. [8]

Section 3: Association between level of knowledge and selected demographic variables.

The present study revealed that, there was no association found between knowledge score and the selected demographic variables like age, gender, religion, educational status, year of experience, area of experience. There was association between the knowledge score and selected demographic variables like

DISCUSSION

The incidence of malignant and non-malignant diseases are been increasing worldwide. Umbilical cord stem cell therapy is very effective in treating these diseases and disorders. A stem cell is a cell that can regenerate tissue with functional damage. It appears to be as effective as bone marrow, when a Human Leukocyte Antigen matched adult donor is not available. [6]

Section 1: Description of demographic characteristics of nurses:

The study revealed that majority (48%) of staff nurses were of age group 26-30 years and most of the staff nurses were females (82%) and only 18% were male nurses. The maximum of staff nurses participated in the study were GNM's (58%). Results also showed that majority of staff nurses (61%) belongs to Christian

previous knowledge and source of information.

A similar study conducted among 120 staff nurses at Egypt revealed that there was no association between knowledge score and selected demographic variables like age, gender, qualification and year of experience.^[9]

CONCLUSION

The present study was aimed to assess the knowledge regarding umbilical cord blood stem cell therapy among staff nurses in selected hospitals at Mangaluru with the view to develop self-instructional module. Results showed that, majority of staff nurses are having poor knowledge regarding umbilical cord stem cell therapy. Thus there is a great need to educate staff nurses regarding umbilical cord stem cell therapy.

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