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A study to assess the effectiveness of structured teaching program on knowledge regarding cord blood bank among third year diploma in general nursing and midwifery students at selected institute of nursing at vadnagar, Gujarat

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Abstract

“The effort of science in today is the construction of technology of tomorrow. Cord blood banking is also quoted as biological insurance since it is the one of new option expecting their parents can select to have an extra assurance focusing on the health of their child. A baby can be bestowed with love, money virtually anything, but storing its cord blood is a once in lifetime opportunity in its real sense it knocks just once when the baby is born as life insurance policy. It explains that obstetric and gynecological nurses must know about the value of cord blood storage, who are in contact with the pregnant mother and her family. Umbilical cord blood is a readily available source of hematopoietic stem cells that treat a variety of malignant and non- malignant diseases in children and adult. Nurses as frontline health care professionals need to understand umbilical cord stem cells and their application in medicine.

Statement of the problem: “A Study to assess the effectiveness of structured teaching programme on knowledge regarding cord blood bank among third Year Diploma in General Nursing and Midwifery students at selected Institute of Nursing, Vadnagar, Gujarat.”

Objectives of the study: To assess the pre-test level of knowledge regarding cord blood bank among third year Diploma in general Nursing and midwifery students.

To assess the effectiveness of structured teaching programme on knowledge regarding cord blood bank among third year Diploma in general Nursing and Midwifery students.

To find out the association between the post-test level of knowledge regarding cord blood bank with their demographic variables.

Methods and Materials: This study was conducted with 90 (Diploma in Nursing and Midwifery third year Year Students) samples in quantitative approach, pre - experimental design, one group pre-test and post-test design, sampling selection was done by convenient sampling technique. The study was conducted in Ratnaprabha Institute of Nursing and Manav institute of Nursing, Vadnagar, Gujarat. Pre-existing knowledge was assessed by using semi structured questionnaires. After the pre-test, structured teaching program was given regarding cord blood bank using PPT and after 7 days post test was conducted using the same tool.

Results: According to the pre-test 44.4% considered as inadequate, 52.2% considered as moderate, 3.4% considered as adequate. According to the post-test 86.7% considered as adequate and 13.3% considered as moderate and 0% is considered as in -adequate. From the post-test evaluation third year diploma in general and midwifery students are having 86,7% of adequate level of knowledge and 13.3% having moderate level of knowledge and none of the above have inadequate level of knowledge. Considering overall knowledge score, the mean pre-test score of Midwifery students are having 15.44 score and in post-test mean score are having 24.80 score, so the difference is 9.36. This difference is large and statistically significant difference.

Conclusion: Hence, structured teaching programme was effective, appropriate and feasible to impart knowledge to nursing students. It would help the students to acquire knowledge and they will disseminate the importance of cord blood bank to the parents and build disease free generation.

Keywords: Science, technology, cord blood banking

Introduction Background

“The effort of science of today is the construction of technology for tomorrow“-Edward

Teller 2017

During antenatal period a single life line that act as the binding bridge between the placenta and the fetus is called umbilical cord. It does not only aid as the fetal life supporter but further holds the ability to support life even after the baby is born.

The blood present in the umbilical cord just after the delivery of a child is abundant in stem cells. It also contains a different variety of stem cells which serves as the building blocks. The damaged cells throughout the body can be replaced or repaired through stem cells and it can also be used as medical treatment in the future.

The stems cells are body’s raw material from which all other cells with special functions are generated. More than 80+ diseases including leukemia, lymphoma etc can be treated by using stored umbilical cord blood.

The procedure for collection of blood from the umbilical cord for banking is done within 10 minutes after the baby is born by cutting the cord and by using aseptic technique the blood is drained through gravitational force and blood of more than 75 ml from the cord of the fetal end is collected into a blood bag and it is then stored after bar-coding.

Dr. Joanne kutzberg who established world’s largest cord blood transplant program.

In June 1992, laboratory established the first cord bank in the world.

In India, the UCB banks are required to comply with the provisions specified under Part X-B and Part XII-D of Schedule F of Drugs and Cosmetics Act 1940 and Rules 1945 (Amendments 2016). The Indian rules define umbilical cord blood as “the whole blood including Hematopoietic Progenitor Cells collected from placental and/or Umbilical cord blood vessels after the umbilical cord has been clamped”. These rules define cord blood bank as “a place or organization or unit for carrying out and responsible for operations of collection, processing, testing, banking, selection and release of cord blood units”

According to WHO, 2018, the transplant of the stem cell which are done annually is estimated to be more than 50,000 and it is said that transplantation is speedily increasing. More than 80% of the blood related disorders can be treated by the transplantation of the stem cell if the transplantation is carried out in the early period. During the clinical experience the researcher had observed the need to create realization about umbilical cord blood banking also to improve the antenatal mother’s knowledge about its effectiveness when used as the treatment options if the blood taken out from umbilical cord is stored for banking. The mother must know about the issues that are involved in cord blood banking as mothers holds the greatest responsibility in taking care of the child.

Moreover mothers need to recognize about umbilical cord blood banking so that they can provide correct information to the people and prevent the child from various diseases. Nurses as frontline health care professionals need to understand umbilical cord stem cells and their application in medicine.

This motivated the investigator to explore the awareness among third year DGNM students as well as the staff Nurses.

It explains that obstetric and gynecological nurses must know about the value of cord blood storage, who are in contact with the pregnant mother and her family. Umbilical cord blood is a readily available source of hematopoietic stem cells that treat a variety of malignant and non-malignant diseases in children and adult.

Need for the study

According to WHO (2018) Umbilical cord blood banking is the revolutionary method that preserves stem cells from the umbilical cord, so it is like storing potential medication for the use in the future if and whenever needed. It is like securing the baby with biological insurance.

Current trends point out that a higher proportion of the disease is occurring at a younger age in Indian women, as compared to the West. The National Cancer Registry Program analyzed data from cancer registries for the period from 1988 to 2013 for changes in the incidence of cancer. All population-based cancer registries have shown a significant increase in the trend of BC. In India in 1990, the cervix was the leading site of cancer followed by BC in the registries of Bangalore (23.0% vs. 15.9%), Bhopal (23.2% vs. 21.4%), Chennai (28.9% vs. 17.7%) and Delhi (21.6% vs. 20.3%), while in Mumbai, the breast was the leading site of cancer (24.1% vs. 16.0%). By the years 2000-2003, the scenario had changed, and breast had overtaken as the leading site of cancer in all the registries except in the rural registry of Barshi (16.9% vs. 36.8%). In the case of BC, a significant increasing trend was observed in Bhopal, Chennai and Delhi registries. When it comes to the 5-year overall survival, a study reported it to be 95% for stage I patients, 92% for stage II, 70% for stage third year and only 21% for stage IV patients. The survival rate of patients with breast cancer is poor in India as compared to Western countries due to earlier age at onset, late stage of disease at presentation, delayed initiation of definitive management and inadequate/fragmented treatment. According to the World Cancer Report 2020, the most efficient intervention for BC control is early detection and rapid treatment. A 2018 systematic review of 20 studies reported that BC treatment costs increased with a higher stage of cancer at diagnosis. Consequently, earlier diagnosis of BC can lower treatment costs.

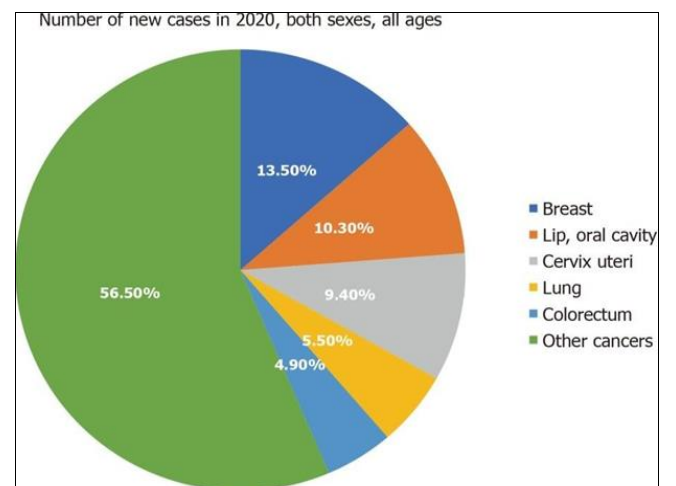


Fig 1: Incidence of Cancer in India (2020)

According to Hindu newspaper (2018) Cancer is the second biggest cause of death in India, growing at 11 percent annually. There are 2.5 million cancer cases and 7 lakhs death in a year in India and out of this cancer related deaths

is 3, 95, 400. Men - 2, 00, 100. Women - 1,95,300. 2000 new cases to be detected in each day in India and expected to be 17.3 lakh by 2020.

As per Estimated population January (2020) More than 70 diseases have now been treated using cord blood cells. These include malignant diseases like leukaemia, neuroblastoma and retinoblastoma, and several other non-malignant diseases as well. Non - malignant diseases are primarily inherited disorders of the blood and immune systems.

Objectives of the study

- To assess the pre-test and post-test level of knowledge regarding cord blood bank among Diploma in general Nursing and Midwifery students.
- To assess the effectiveness of structured teaching programme on knowledge regarding cord blood bank among Diploma in General nursing and Midwifery Students.
- To find out the association between the post-test level of knowledge regarding cord blood bank with their selected demographic variables.

Operational Definition

Effectiveness

It refers to the extent to which the structured teaching programme regarding cord blood bank achieved the desired effect in improving the knowledge of third year Diploma in General Nursing and Midwifery students as evidenced from a difference in knowledge score before and after intervention.

Structured Teaching Programme

It refers to systematically planned teaching strategy which is prepared and presented to improve knowledge of third year Diploma in general Nursing and Midwifery students. It includes 3 components such as Umbilical cord blood and Banking methods.

- Collection and Storage.
- Preservation.

Knowledge

It refers to correct response by the third year Diploma in General nursing and Midwifery students regarding cord blood banking which is measured by the knowledge structured questionnaire.

Research Methodology

This chapter deals with the methodology adopted for the study and includes the description of research design, setting, population and sample size and sampling technique, criteria for the sample selection and instrument for data collection, pilot study, data collection process and plan for

data analysis. The study was conducted to assess the effectiveness of structured teaching program on knowledge regarding cord blood bank among third year DGNM students at selected institute of Nursing, Vadnagar.

Research Approach

The research approach used for this study was quantitative research approach to evaluate the effectiveness of Structured Teaching Programme regarding cord blood banking on knowledge among third year DGNM students at selected institute of Nursing, vadnagar, Gujarat.

Research Design

The research design adopted was pre -experimental study design with one group pre-test and post-test design

Table 1: Description of the study design

Group	Pre test	Intervention	Post test
Third year DGNM students	O1	X	O2

Key Notes

O1 - Knowledge level in pretest.

X - Structured teaching programme on cord blood bank O2 - knowledge level in post-test.

Analysis and Interpretation

Analysis is the process of organizing and synthesizing the data in such a way that research questions can be answered and hypotheses tested. The purpose of analysis is to reduce the data in an intelligible and interpretable form, so that relation of research problem can be studied and tested. Analysis and interpretation of data collected from 90 students is done based on the objectives and hypotheses of the study using descriptive and inferential statistics.

This chapter deals with the analysis and interpretation of the data obtained from the Ratnaprabha and Manav Nursing Institute of Nursing, Vadnagar, Gujarat. The analysis and interpretation is derived under sections as given below.

- **Section-A:** Description of frequency and percentage distribution of Socio - demographic variables of Study participants
- **Section-B:** Assessment of pre-test level of knowledge regarding cord blood bank among third year DGNM students
- **Section-C:** Assessment of post-test level of knowledge regarding cord blood bank among third year DGNM students
- **Section-D:** Comparison of pre-test and post-test level of knowledge among third year DGNM students
- **Section-F:** Association between the post-test level of knowledge with their demographic variables of third year DGNM Students

Section A: Description of demographic variables of the study participants

Table 2: Reveals distribution of demographic variables of third Year DGNM students

Demographic variables	No. of DGNM Students	%	
Age	18-19 years	86	95.56%
	20-21 years	4	4.44%
	Above 22 years	0	0.00%
Religion	Hindu	86	95.56%
	Christian	0	0.00%
	Muslim	4	4.44%
Educational status of the father	Illiterate	9	10.00%
	Primary education	38	42.22%

	Secondary education	13	14.44%
	High school	12	13.34%
	Intermediate or Diploma	4	4.44%
	Graduate	14	15.56%
Occupational status of the father	Unemployed	10	11.11%
	Unskilled worker	21	23.33%
	Semiskilled worker	29	32.22%
	Skilled worker	16	17.78%
	Clerk, shop owner	3	3.33%
	Semi profession	5	5.56%
	Profession	6	6.67%
Education status of the mother	Illiterate	6	6.67%
	Primary education	35	38.89%
	Secondary education	19	21.11%
	High school	12	13.33%
	Intermediate or diploma	6	6.67%
	Graduate	12	13.33%

Demographic variables		No. of DGNM students	%
Occupational status of the Mother	Unemployed	48	53.33%
	Unskilled worker	11	12.22%
	Semiskilled worker	11	12.22%
	Skilled worker	14	15.57%
	Clerk, shop owner	2	2.22%
	Semi profession	2	2.22%
	Profession	2	2.22%
Resident of the student	Rural	46	51.11%
	Sub urban	11	12.22%
	Urban	33	36.67%
	Slum	0	0.00%
Type of family	Nuclear family	74	82.22%
	Joint family	13	14.45%
	Extended family	3	3.33%
Family monthly income	< Rs 2091	18	20.00%
	Rs 2092 -6,213	31	34.44%
	Rs 6,214 -10356	21	23.33%
	Rs10,357-15,536	12	13.33%
	Rs15,536-20,714	5	5.57%
	Rs20,715-41,429	3	3.33%
	> Rs 41,430	0	0.00%
Availability of mass media	Internet	16	17.78%
	Newspaper	18	20.00%
	Television	56	62.22%
Have you received any information about cord blood bank?	No	90	100%
	Yes	00	00

Table 2 shows the demographic information of third DGNM students those who had participated in this study on "A study to assess the Effectiveness of structured teaching programme on knowledge regarding Cord blood bank among Third Year Diploma in General nursing and Midwifery students at selected Institute of Nursing, Vadnagar, Gujarat.

Age distribution of Third year DGNM students

Out of the total participants in the study 86 (95.56%) belongs to the age group 18 -19 years and 4 (4, 44%) belongs to 20-21 years and none of the age group is above 21 years of age.

Religion of Third year DGNM students

Out of total participants in the study 86 (95.6%) belongs to Hindu and 4 (4.44%) belongs to Muslims.

Educational status of the father

Out of total participants 9 (10%) belongs to il literate and 38 (42%) belongs to primary education and 13 (14.44%)

belongs to secondary education, 4 (4.44%) belongs to high school, intermediate, or diploma graduate and 14 (15.56%) belongs to graduate.

Occupational status of the father

Out of total participants 29 (32, 22%) belongs to semi-skilled worker and 21 (23.33%) belongs to unskilled worker and 16 (17.78%) belongs to skilled worker, 10 (11.11%) belongs to unemployed and 6 (6.67%) belongs to profession and 5 (5.56%) belongs to semi - profession and 3 (3.33%) belongs to clerk, shopkeeper.

Educational status of the mother

Out of total participants 6.67 (6.67%) belongs to illiterate and 38.89 (38.89%) belongs to primary education 21.11 (21.11%) belongs to secondary education 13.33 (13.33%) belongs to high school 6.67 (6.67%) belongs to intermediate education and 13.33 (13.33%) belongs to graduate group.

Occupational status of the mother

Out of total participants 53.33 (53.33%) belongs to unemployed 12.22 (12.22%) belongs to unskilled worker

12.22 (12.22%) belongs to semiskilled worker and 15.57 (15.57%) belongs to skilled worker 2.22 (2.22%) belongs to semi profession and 2.22 (2, 22%) belongs to profession.

Resident of the student

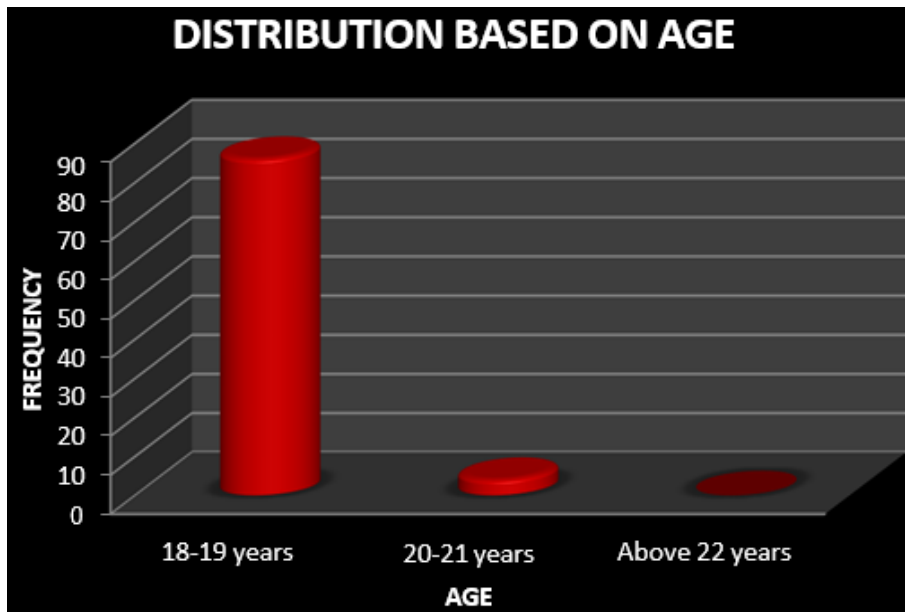


Fig 2: Multiple Bar Diagram Showing the Distribution of Samples Based On the Demographic Variable - Age

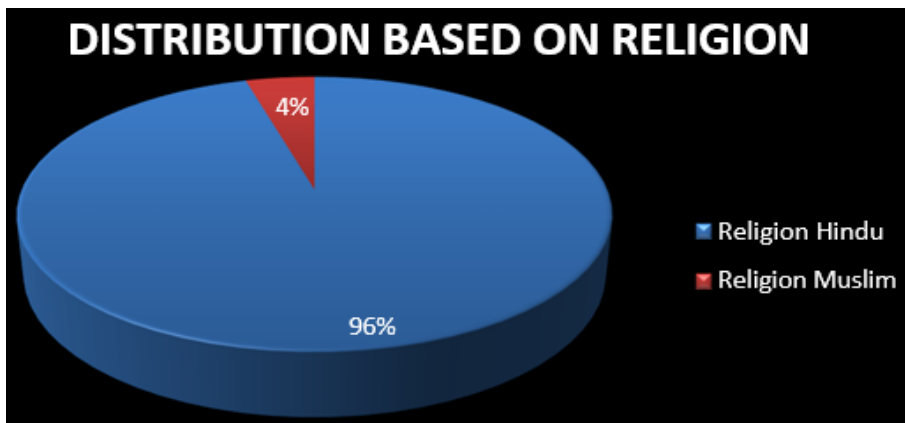


Fig 3: Pie diagram showing the distribution of samples based on the demographic variable – Religion

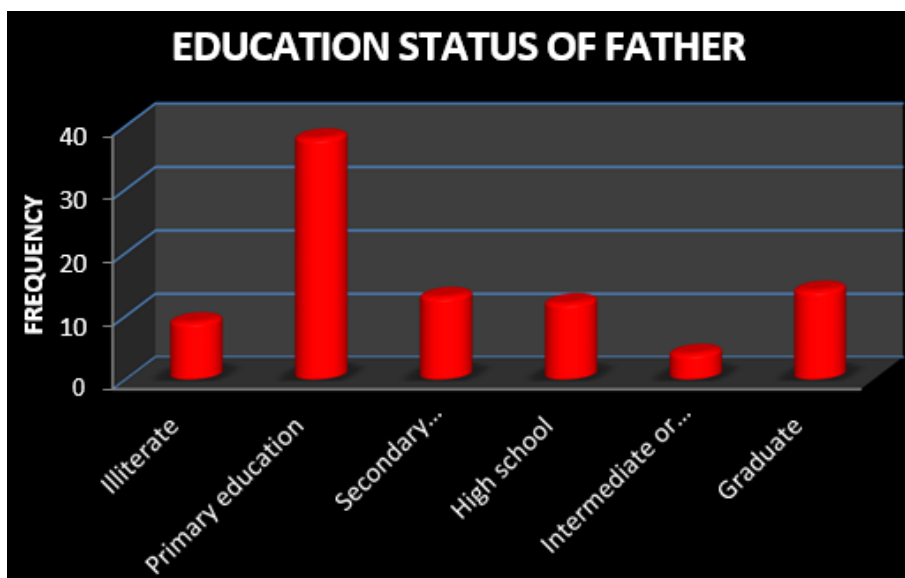


Fig 4: Bar diagram showing the distribution of samples based on the demographic variable - Educational status of the Father

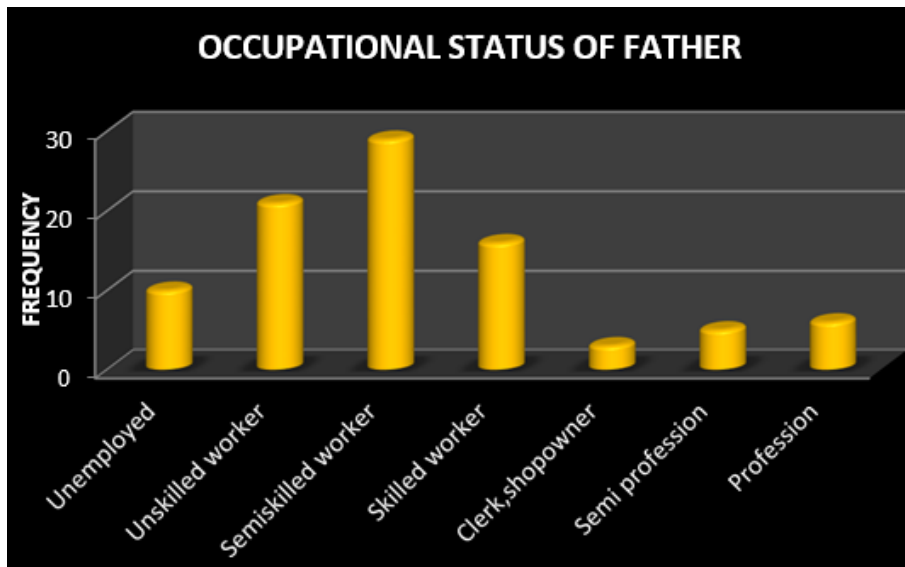


Fig 5: Bar diagram showing the distribution of samples based on the demographic variable - Occupational status of the Father

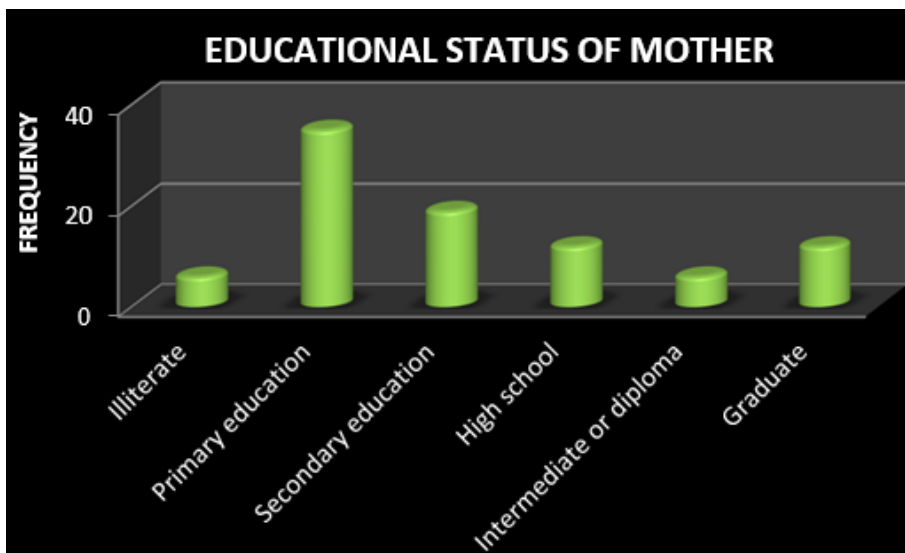


Fig 6: Bar diagram showing the distribution of samples based on the demographic variable - Educational status of the Mother

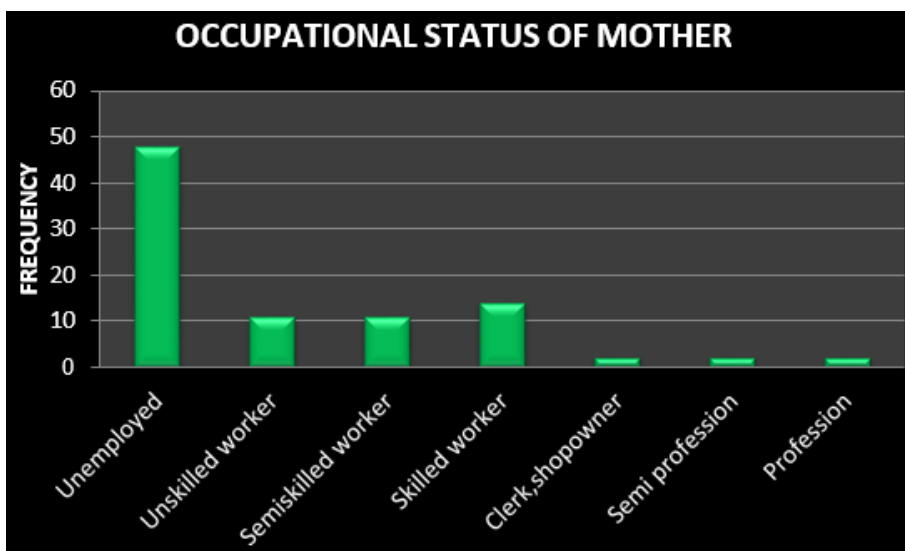


Fig 7: Shows the Distribution of Samples Based On the Demographic Variable- Occupational Status of Mother

Section-B: Assessment of pre-test level of knowledge among third year DGNM students.

Table 3: Domain wise percentage of pre-test level of Knowledge score third year DGNM students

S. No	Domains	Maximum score	Mean score	SD	% of mean score
1.	Umbilicalcord blood banking	7	4.56	1.30	65.14%
2.	Umbilicalcord blood and its Storage	15	7.22	2.50	48.13%
3.	Umbilicalcord blood Preservation	8	3.67	1.67	45.88%
	Total	30	15.44	3.94	51.47%

Table 3 shows the each domain wise cord blood bank score among third year DGNM students. They are having maximum score in the domain Umbilical cord blood

banking (65.14%) They are having minimum score in the domain Umbilical cord blood preservation (45.88%) Overall percentage of cord blood bank score is 51.47%.

Table 4: Pre-test level of knowledge score among third year DGNM students

Level of knowledge	No. of students	%
Inadequate	40	44.4%
Moderate	47	52.2%
Adequate	3	3.4%
Total	90	100.0%

Table 4 shows 44.4% of the third year DGNM students are having inadequate level of knowledge score, 52,2% of the third year DGNM students are having moderate knowledge

score and 3.4% of the third year re.

Knowledge score interpretation

Table 5: Min=0 Max=1 Total questions=30 Maximum marks= 30

S. No.	Grade	Percentage	Marks
1.	Inadequate knowledge	0 - 50%	0.0-15.0
2.	Moderate knowledge	51 - 75%	16.0-22.0
3.	Adequate knowledge	76 - 100%	23.0-30.0

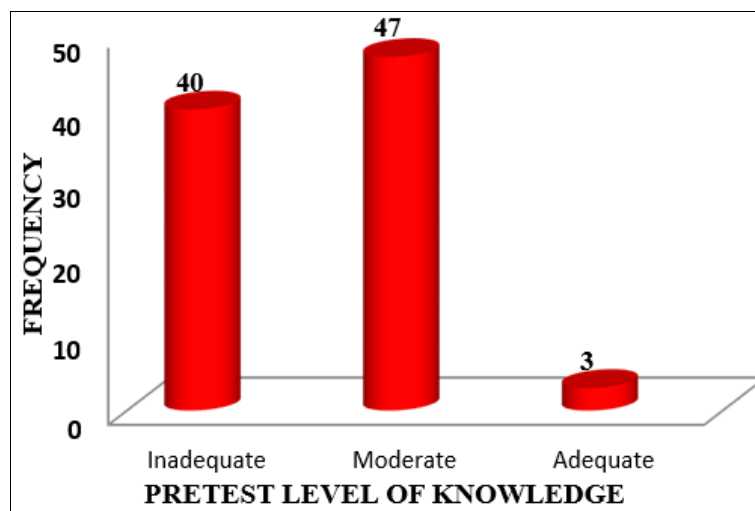


Fig 8: Pre-test level of knowledge score

Summary, implication, limitation, recommendations and conclusion

This chapter deals with the summary, implication, limitation, recommendation and conclusion of the study. It clarifies the limitations of the study and the implication; recommendations are given for the different areas like nursing education, administration and health care delivery system (Nursing practices) and nursing research.

Summary of the study

The study was to assess the effectiveness of structured teaching programme on knowledge regarding cord blood bank among Third year Diploma in General Nursing and Midwifery students at selected at selected school of nursing, Vadnagar.

The conceptual framework of the study was based on the Ernestine Wiedenbergs Nursing (1990). The study was pre-

experimental study with one group pretest and post-test design. The independent variable was structured teaching programme on cord blood bank. The dependent variable was third year Diploma in General nursing and Midwifery students.

The study period was 4 weeks. Non probability convenient sampling technique was used to select the samples. The study consists of 90 samples. The data was collected using socio-demographic questionnaire and the structured questionnaire. The structured teaching regarding cord blood banking was given to the students using PowerPoint presentation. Reliability of the tool was assessed by using Test retest method.

Knowledge score reliability correlation coefficient value is 0.77. This correlation coefficient is very high and it is good tool for assessing effectiveness of structured teaching programme on knowledge regarding Cord blood bank

among third Year Diploma in General nursing and Midwifery students at selected Institute of Nursing Vadnagar.

Major findings of the study

Based on the demographic variables

- **Age of the students:** 95.56% belongs to 18 -24 years in this study.
- **Religion of the students:** 80% belongs to the Hindu religion.
- **Education of the father:** 42.22% have undergone primary education.
- **Occupation of the father:** 32.22% were unskilled worker.
- **Educational status of the mother:** 38.89% have undergone primary education.
- **Occupational status of the mother:** 53.33% were unemployed.
- **Place of residence:** 51.11% living in the rural area.
- **Type of family system:** 82, 22% was from the nuclear family.
- **Family monthly income:** 20% were in the income group of 2092-6213.
- **Availability of mass media:** 62% was having the availability of newspaper.
- **Information regarding cord blood banking:** 95.56% have not received much of the information regarding cord blood banking.

The findings of the study revealed a highly statistical significance with the demographic variables such as educational status of the father, educational status of the mother, resident of the student and the family monthly income,

The study was focused on selected school of nursing and the results can be generalized only to those areas with similar makeup.

Only DGNM III year students were included in the study.

Recommendations

Based on the research findings, the following recommendations have been made for the further study.

- A similar study can be conducted to compare the knowledge and attitude of mothers towards cord blood banking.
- A similar study can be conducted to assess the knowledge regarding cord blood banking to the staff nurses,

A similar study can be made on knowledge regarding the banks of umbilical cord blood banking.

Conclusion

Researcher continue to evaluate the usefulness of cord blood cells in treating human diseases or the haematological disorders. Umbilical cord blood was once thought as waste product but now it's valued for its content of stem cells.so its nurse's role to give source of information on cord blood banking. The present study conducted the effectiveness of structured teaching programme on knowledge regarding the cord blood banking and advanced effective nursing in in - service education, communication, and management strategies to help in improving the nursing student's knowledge for the better health care system.

Conflict of Interest

Not available.

Financial Support

Not available.

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