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A Pre-Experimental Study to Assess the Effectiveness of Planned Teaching Program on Knowledge Regarding Umbilical Cord Blood Stem Cell Banking among Antenatal Mothers in Selected Areas of Dehradun

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ABSTRACT

INTRRODUCTION

Cord blood also known as placental and umbilical cord blood is the left-over blood present in the placenta and a section of umbilical cord after it has been cut after the birth of the baby. Cord blood banking involves collecting blood left in newborn's umbilical cord and placenta and storing it for future medical use. Cord blood contains potentially lifesaving cells called Stem cell. Cord blood contains RBCs, WBCs, platelets and plasma along with blood hematopoietic (blood-forming) stem cells that are similar to the ones found in bone marrow.

The study was conducted to assess the effectiveness of planned teaching program regarding umbilical cord blood stem cell banking among antenatal mothers in selected areas of Dehradun.

OBJECTIVES:

- Assess the pretest level of knowledge of antenatal mothers regarding umbilical cord blood stem cell banking.
- To develop a planned health teaching program for umbilical stem cell banking.
- To assess the posttest level of knowledge of antenatal mothers regarding umbilical cord stem cell banking.
- To find out the association between level of knowledge regarding umbilical cord blood stem cell banking among antenatal mothers with their selected demographic variables.

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METHOD AND MATERIAL:

The study was adopted with quantitative approach, using Pre experimental, one group pretest post-test design. The study was carried out in Mehuwala area of Dehradun. Data was collected from Antenatal mothers using self -structured Questionnaires before and after planned teaching program. Used tool for demographic variables and self -structured questionnaires to assess the level of knowledge regarding umbilical cord blood stem cell banking. The data were calculated and analyzed by descriptive and inferential statistics.

RESULTS:

The study result shows, the study result showed, mean value of pre-test level of knowledge is 7.3, SD = 1.185 while mean value of post- test knowledge score is 18, SD= 1.3660 for the respective tool. There was a significant difference between the pre-test and post-test level of knowledge. The obtained t – value is 29.88 for was greater than the table value at 0.05 level of significance.

CONCLUSION:

The study concluded that after planned teaching program the level of knowledge of antenatal mothers regarding umbilical cord blood stem cell banking increased. Firstly majority 54 (90%) antenatal mothers were having poor knowledge and 6 (10%) antenatal mothers were having average knowledge and 0 (0%) of them having good level of knowledge. After planned teaching program it was observed that 0 (0%) antenatal mothers were having

poor knowledge, 2(3%) antenatal mothers were having average knowledge, and 58 (97%) antenatal mothers was having good level of knowledge. It indicates planned teaching program is an effective method.

KEYWORDS: *umblical cord , blood stem cell, antenatal mother.*

1. INTRODUCTION

Umbilical cord blood stem banking involves collecting and storing stem cells from the umbilical cord immediately after child birth. These stem cells used in medical treatments for various conditions, like blood disorders and immune system deficiencies.

Umbilical cord blood has been also involved in therapeutic applications, which was reported for the first time in 1972 by clinicians in the United state to treat a case with lymphoblastic leukemia. Umbilical cord blood is taken from the umbilical vein after the birth, when cord is cut and clamped. The stem cells initiative from the cord blood are called hematopoietic. These have immense potential including blood- related disorders like blood cancer, thalassemia, etc. (Reetu Hauglem 1970)

The cells collect from the cord tissue are called mesenchymal stem cells.

Umbilical cord blood collected from a neonates cannot be used to treat a genetic diseases or malignancy in that same individual (autologous transplant) because stored cord blood contains the same genetic variant or premalignant cells that led to the condition being treated. The routine collection and storage of umbilical cord blood with a private cord blood bank and public banks. (Varalakshmi 2019)

The private umbilical cord blood banking may be considered when there is knowledge of a family member with a medical condition (malignant or genetic) who could potentially benefit from cord blood transplantation. (Mandeep Kaur 2016)

Public umbilical cord blood banking is the recommended method of obtaining umbilical cord blood for use in transplantation, immune therapies or other medically validated indications. Research on stem cell transplantation began in the 1950s with successful bone marrow transplants occurring in the 1970s often to treat cancer patients whose own bone marrow was destroyed by chemotherapy and radiation.

There are several advantages of using umbilical cord blood stem cells for transplantation.

- Umbilical cord blood is relatively easy to collect and process.
- Umbilical cord blood stem cells the decreased risk of infectious disease. (Dr. S Kalabarathi)

Background of study

During childbirth, the single lifeline that acts as a connecting bridge between the placenta and the fetus is called the umbilical cord. It not only helps as a life support for the fetus but can also support life after the birth of the child. Immediately after birth, umbilical cord blood in stem cells.it also contain a variety of stem cells that acts as building blocks. Damaged cells anywhere in the body can be replaced or repaired with the help of stem cells, and it can also be used as a treatment in the future. Stem cells are the raw material of the body, from which all other cells with special tasks are made. Born more than 80 diseases, including leukemia, lymphoma, etc. can be treated with stored cord blood.

Cord blood is more affordable and is also considered more readily available compared to other types of stem cells derived from bone marrow and collected blood from other peripherals stem cells can be collected without harming the baby or the mother in all types of birth performed under appropriate conditions and by trained health workers.

Advantages of cord blood include less chance of viral infection, less chances of receiving human leukocyte antigen HLA – matched and HLA- mismatched stem cell transplants, ease of collection without risk to both mother and baby and easy availability. Collection of blood from the umbilical cord for packaging is done within 10 minutes after the birth of the baby cutting the umbilical cord and aseptic technique, the blood flows by gravity and more than 75 ml of blood from the umbilical cord, the fetal blood is collected in a blood bag and stored after a barcode.

According to WHO, more than 50,000 stem cells transplants are estimated to be performed each year in 2018, and transplants are said to be growing rapidly. More than 90% of blood – related disease can be cured by stem cell transplantation if the transplantation is done at an early stage. (Kalabarathi Selvaraj et.al, 2019)

Need for Study

- United State and Japan are using stem cells for the therapy of life - threatening diseases; umbilical cord banking is considered a major global initiative. In India after two decades stem cell banking still a new emerging idea because of lack of knowledge to the parents about stem cell. Stem cell Banking is becoming increasing popular for expecting parents as a unique form of insurance since it provides them the confirmation about their child's safety and healthy future. Thus, this study is all about the awareness, knowledge and acceptance of stem cell banking

as a future saver of life in metropolitan region. (Swati Chaudhary et.al, 2021)

- Calling regenerative medicine a wonderful emerging branch of science, especially using umbilical cord stem cells, Dr Hasan in his report highlighted that in a country like India with a high birth rate, where "cord tissues are discarded instead of obtaining stem cells and banking them, public stem cell banking can bring out immense possibilities towards therapeutic treatment and management." (Jayashree Narayanan,2023)
- A study conducted in year 2020 in Telangana shows that the current knowledge level of antenatal mothers on stem cells and cord blood banking portrays that 22(73.4%) had inadequate knowledge, 8(26.6%) had moderate and no antenatal mothers had adequate knowledge. (M Vegunrani)
- Umbilical cord blood has been approved for use by the food and drug administration (FDA) and other authorities since the late 1980's in USA. The first umbilical cord researchers took place in 1988 in French researchers transplanted it to the 5 years old sibling who had Fanconi's anemia a severe type of anemia that causes skeletal defects. The child engrafted without incidence, fully reconstituting his blood, bone marrow and immune system with Donar cells.
- The ultimate goal is to empower antenatal mothers with adequate knowledge about umbilical cord blood banking, enabling them to make informed decisions regarding whether to participate in cord blood banking programs. Increasing awareness and understanding of umbilical cord blood banking. The research contributes to the promotion of maternal and child health. It encourages expectant mothers to consider the families future medical needs. (Journal of Family Medicine and Primary Care 2018)
- Tomar Sonam et.al (2022), conducted a study to assess the level of knowledge and attitude regarding umbilical cord blood banking among 90 antenatal mothers at selected hospitals of Dehradun. The present study finding revealed that the majority of the antenatal mother's (64.4%) had poor knowledge, (35.5%) had average knowledge and remaining (0%) had good knowledge.

Statement of the problem

A study to assess the effectiveness of planned teaching program on knowledge regarding umbilical cord blood stem cell banking among antenatal mothers in selected areas of Dehradun.

Objectives

- Assess the pretest level of knowledge of antenatal mothers regarding umbilical cord blood stem cell banking.
- To develop a planned health teaching program for umbilical stem cell banking.
- To assess the posttest level of knowledge of antenatal mothers regarding umbilical cord stem cell banking.
- To find out the association between level of knowledge regarding umbilical cord blood stem cell banking among antenatal mothers with their selected demographic variables.

Hypothesis

- H1- There will be a significant difference between the pretest and posttest level of knowledge regarding umbilical cord blood stem cell banking.
- H2- There will be a significant association between pretest level of knowledge score with their selected demographic variables.

Operational definition

- Assess- In this study, assess mean to make a judgement about the nature or quality of somebody/ something.
- Effectiveness- In this research, effectiveness means the capability of producing a desired result or the ability to produce desired output.
- Planned teaching program- A system of organizing the group environment and matching educational practices to the way that people learn based on current topic.
- Knowledge- In this research knowledge means facts, information, and skills acquiring through experience or education, the theoretical or practical understanding of a subject.
- Umbilical cord blood stem banking- Cord blood Banking is when your baby's umbilical cord blood is collected and stored after delivery.
- Antenatal mothers- Antenatal mean, before birth, during or relating to pregnancy.

Assumption

- Antenatal mothers may have inadequate knowledge regarding stem cell and cord blood banking.
- The planned teaching program might increase the knowledge of antenatal mothers on stem cell and cord blood banking.

Delimitation

The study is delimited to antenatal mothers who will be:

- 60 samples only
- Who will be visiting private or government hospitals during data collection period

- Able to read and write Hindi and English
- Present during the data collection period

Conceptual framework

A conceptual framework is a structured representation of concepts, theories and relationship that provides a foundation for understanding a particular topic or field. It helps organize ideas and guide research or analysis by outlining key variables and their inter connections. The conceptual framework adopted for this study was derived from "The Transtheoretical model'' developed by James Prochaska and DiClemente.

The Transtheoretical Model (also called the stages of change Model), developed by Prochaska and DiClemente in the late 1979s. The Transtheoretical model (TTM) focuses on the decision making of the individual and is a model of intentional change. The TTM operates on the assumption that people do not change in behavior quickly and decisively.

The TTM posits that individual move through six stages of change, Precontemplation, Contemplation, preparation, action, maintenance and termination.

1. Precontemplation - In this stage, people do not intend to take action in the foreseeable future. People are often unaware that their behavior is problematic or produces negative consequences. People in this stage often underestimate the pros of changing behavior and place too much emphasis on the cons of changing behavior.

   In this research, the Antenatal mothers intend to take action in the forceable future. Antenatal mothers are unaware of umbilical cord blood stem cell banking and lack of knowledge about umbilical blood stem cell banking is problematic and produces negative consequences in future. Antenatal mothers in this stage often underestimate the pros of umbilical blood stem cell banking and place too much emphasis on the cons.

2. contemplation- In this stage, people are intending to start the healthy behavior in the foreseeable future. People recognize that their behavior may be problematic, and a more thought full and practical consideration of the pros and cons of changing the behavior takes place, with equal emphasis placed on both. Even with this recognition people may still feel ambivalent toward changing their behavior.

   In this stage, the researches assess knowledge of Antenatal mothers for umbilical card blood stem banking. and the researcher assess that the Antenatal mothers have lack of knowledge for umbilical cord blood stem banking.

3. Preparation (Determination) - In this stage, people are ready to take action within the next 30 days. People start to take small steps towards the behavior change, and they believe changing their behavior can lead to a healthier life.

   In this stage, researcher assess the pretest knowledge on umbilical cord blood banking by Questionnaire.

4. Action - In this stage people have recently changed their behavior (defined as within the next last 6 months) and intend to keep moving forward with that behavior change. People may exhibit this by modifying their problem behavior or acquiring now healthy behaviors.

   In this study, action refers to implementation of structured teaching program to increase the level of knowledge of antenatal mothers about umbilical cord blood stem cell banking.

5. Maintenance - In this stage, people have sustained their behavior change for a while (defined as more than 6 months) and intend to maintain the behavior change going forward. People in this stage work to prevent relapse to earlier stages.

   In this study, maintenance refers to assessment of past test knowledge of antenatal mothers on umbilical cord blood stem cell banking after introducing structured teaching program. The researcher assessed the post-test knowledge by using questionnaire.

6. Termination - In this stage, people have no desire to return to their unhealthy behaviors and unhealthy behaviors and are sure they will not relapse. Since this is rarely reached, and people tend to stay in the maintenance stage, this stage is often not considered in health promotion programs.

   In this stage, termination refers to assessment of knowledge whether it is adequate or inadequate. In this research, the researcher assessed the adequacy of knowledge by comparing pre -test score level and post-test Score level of the ante-natal mother.

7. Feedback- In this stage, feedback is a regulatory mechanism where the effect of an action is feedback to modify and improve further action.

   In this stage, feedback refers level to the post test score level of the antenatal mother. If the post test score level is more than the pre-test score, the feedback is positive if the post-test score is less than the pre-test score, then the researcher has to apply the structured teaching programme again.

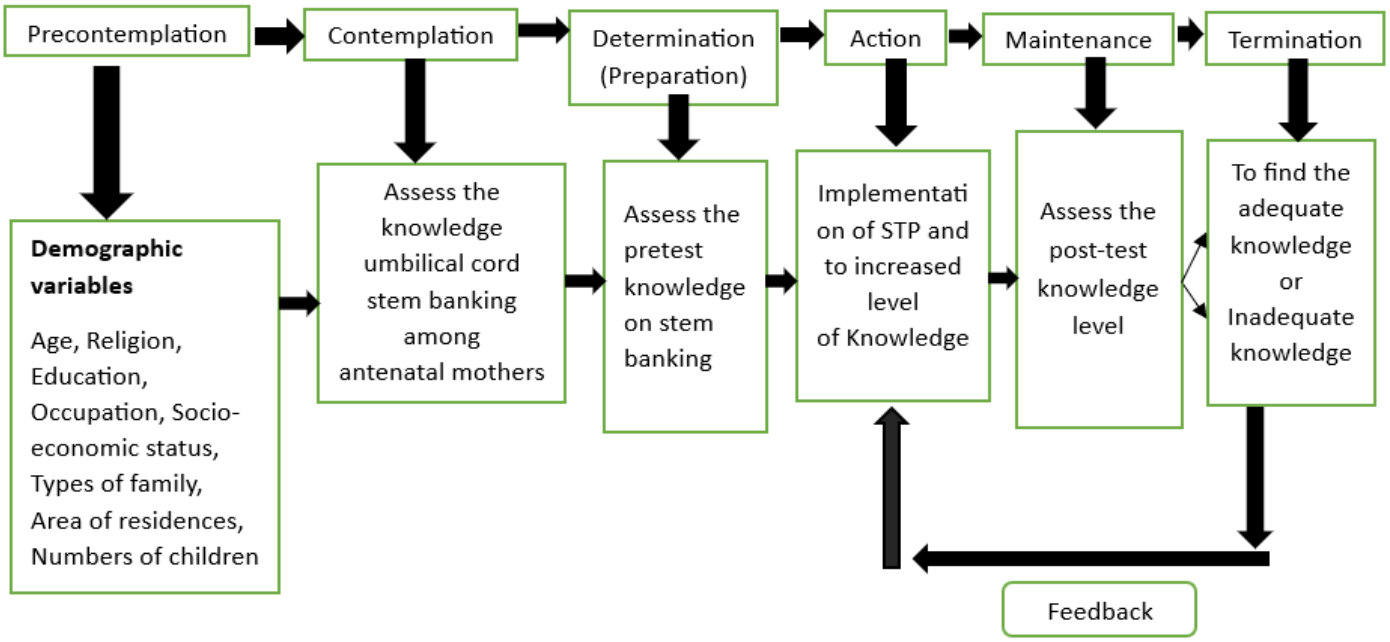


Fig1: Conceptual framework based on Transtheoretical Model by Prochaska and Diclomerde (1970).

2. Review of literature

A literature review is a written summary of the state existing knowledge on a research problem. The talk of reviewing research literature involves the identification, selection, critical analysis and written description of existing information on a topic.

(Polit and Hungler,2003)

➢ **Reviews of literature is divided under the three headings -**

1-Reviews related to knowledge of antenatal mothers regarding cord blood banking.
2-Reviews related to storage of cord blood.
3-Reviews related to the benefits of umbilical cord blood.

➢ **Review related to knowledge of antenatal mothers regarding cord blood banking.**

1-**Tomar Sonam et.al (2022),** conducted a study to assess the level of knowledge and attitude regarding umbilical cord blood banking among 90 antenatal mothers at selected hospitals of Dehradun. The present study finding revealed that the majority of the antenatal mothers (64.4%) had poor knowledge, (35.5%) had average knowledge and remaining (0%) had good knowledge.

2- **Shaheen Shaheen Hassal et. al (2007**) conducted a study to evaluate the knowledge of women towards cord blood donation and transfusion. Data were collected from 180 women's who attended the maternity clinic in Mombasa. By using questionnaire. In this study the donation and transfusion of cord blood were acceptable to 81%and 78%of women respectively. This study the concluded that the donation of umbilical cord blood and its transfusion are acceptable to the majority of women. et.al (2021), conducted regarding umbilical cord stem cell banking among 104 staff nurses at selected hospitals of Haridwar Uttarakhand. The study concludes that majority of the staff nurses had inadequate knowledge regarding umbilical cord stem cell banking. The mean knowledge score was found to be 16.5 +6.16.

3-**Hari Mohan Singh et.al (2021)**, conducted a study to assess the effectiveness of planned teaching program regarding stem cells among 40 eligible couples at selected areas of Ahmedabad. The study revealed that the pre-test was 5.725 and 1.3957, whereas the post- test was 16.25 and 1.1036. The result shows that when planned teaching program was given to eligible couples age group people, they achieve the best scores.

4-**Louiza et.al (2014)** conducted a study on knowledge about umbilical cord blood banking among Greek citizens. Study included Individuals aged between 18 and 42 years. The individuals were asked whether or not they were in Favor of UCB storage of 1,019 represents the majority 74% answered positively. Since 34% of these people did not know anything about umbilical cord blood transfusion. Respondents aged between 18 and 27 years old seemed to be less informed out of 1,019 respondents 292 (28.8%) were parents of whom 81.5% knew about umbilical cord blood transfusion.

5-**Savita et.al (2015)** conducted a study on knowledge of antenatal mothers regarding cord blood banking. It is an exploratory study which was conducted in Punjab where 200 antenatal mothers were selected by purposive

sampling technique. Data is collected by a questionnaire revealed that majority 55% of mothers had average knowledge regarding cord blood banking 26.5% had below average knowledge mean % score was highest 45.63% in advantages and disadvantages and least in general information. Hence, it is conducted that there is a need to enhance the knowledge of antenatal mothers by means of pamphlet.

6- **Tang Her et.al (2010)** a study conducted on "transplantation of unrelated donor umbilical cord blood for nonmalignant diseases" in Taiwan among 45 patients with median age of 4.5 years between October 2003 and February 2009 and evaluated on May 2009, Incidences of graft versus host disease 42%, 5 years overall survival 88% and disease-free survival 77.1%. Incidence of treatment related mortality at 2 years 12% and identified the unrelated cord blood transplantation is a promising approach for curative therapy of non-malignant disease.

7- **Lopez M et.al (2009)** conducted a study to analyze the umbilical cord blood characteristics of umbilical cord blood units from preterm deliveries and compare them to full term deliveries. A comparative study was conducted between preterm deliveries and full-term deliveries. The sample size was 194 patients. The study concluded that umbilical cord from preterm deliveries contain higher CD34 cell content than umbilical cord blood units from full term deliveries.

8-**Perlow JH et.al (2006)** conducted a study in phoenix to determine patient's knowledge of umbilical cord blood banking (4CBB),425 patients were taken, 37% has no knowledge of umbilical cord blood banking, 71% of patients were not planned for umbilical cord blood banking because of expense, 2.6 were extremely knowledgeable and same wise 75% were evaluated about umbilical cord blood banking by their nurse or obstetrician to answer their questions. The study concluded that patients have lack of knowledge and expense remains a barrier to umbilical cord blood banking.

9-**Lopez M et.al (2009)** conducted a study to analyze the umbilical cord blood characteristics of umbilical cord blood units from preterm deliveries and compare them to full term deliveries. A comparative study was conducted between preterm deliveries and full-term deliveries. The sample size was 194 patients. The study concluded that umbilical cord from preterm deliveries contain higher CD34 cell content than umbilical cord blood units from full term deliveries.

10-**Deeksha et.al (2010)** conducted a study on banking umbilical cord blood stem cells. Awareness attitude and expectations of potential donors from one of the largest potential repository (India). A total of 300 women were recruited for the study out of these 13 refused to participate 287 women filled questionnaire. Only 26.5% women knew exactly what is umbilical cord blood is meant 31% knew private cord blood banking. Only 18.1% of the women knew the likelihood of needing to use stored umbilical cord blood for self and family.

11-**Stephen sik hung sken et.al (2011)** conducted in hongkong to assess the knowledge on commercial cord blood banking among pregnant women. 2000 women were taken 1866(93.3%) The majority 78.2% had no idea that there chance of using self-stored cells only 20.3% women knew that stem cells are available from red cross in case their children need hematopoietic cells transplantation. The result of the study revealed inadequate knowledge on umbilical cord blood stem banking and its application.

12-**Gregory Katz et.al (2011)** conducted a study to assess the knowledge and attitude of pregnant women towards cord banking in 5 European countries 79% of pregnant women had little awareness of cord blood banking, 58%of women had heard of the therapeutic benefits of cord blood. 21% received information from midwives and obstetricians 72% choose to donate to public bank 12% choose private bank, 92% would their child's cord blood research when it not suitable for transplantation. The study concluded that pregnant women has lack of knowledge on cord blood banking and attitude of pregnant women are not an obstacle to the rapid expansion.

- **Reviews related to storage of cord blood**

13- **Shalinimaria Rose et.al (2019)**, conducted a study to assess the knowledge regarding cord blood storage among 70 antenatal mothers at selected hospitals of Telangana. The study revealed that 22 mothers (73.3%) had inadequate knowledge,8 mothers have (26.6%) have moderate knowledge and none of the mother had adequate knowledge. The study concludes that most of the antenatal mothers had inadequate knowledge regarding cord blood storage and had inadequate knowledge on cord banking system therefore It is important to create an awareness among antenatal mothers about cord blood storage system.

14-**Dinc et.al (2009)** conducted a study to determine the knowledge and attitudes about stem cells and cord blood banking among of 334 pregnant women in two antenatal clinics. Data were collected by interviews. The

study result showed the majority(86.6%) of the participants lacked knowledge about stem cells and cord blood banking. The study conducted the antenatal mothers had inadequate knowledge and those giving antenatal and prenatal care need to offer accurate and scientific counseling services on this object to parents who need to be informed.

15-**Hassal et.al (2007)** conducted a study to evaluate the knowledge of women towards cord blood donation and transfusion. Data were collected from 180 women's who attended the maternity clinic in Mombasa. By using questionnaire. In this study the donation and transfusion of cord blood were acceptable to 81%and 78%of women respectively. This study the concluded that the donation of umbilical cord blood and its transfusion are acceptable to the majority of women.

16-**Bincy Thomas (2012)** conducted a study to assess the knowledge and preference among 1,000 cord blood donors and 300 pregnant women regarding donating umbilical cord blood to a public bank or storing it in a private bank in Italy. The study results show that, most blood donors as well as the majority of pregnant women had some general knowledge about umbilical cord blood (UCB) 89% and 93% respectively and were aware of the possibility of donating it (82% and 95%) however the level of knowledge regarding current therapeutic use is generally low, only 91(10%) among informed blood donors and 69(31%) among informed pregnant women gone a correct answer. The study conclusion that, preference for voluntary donating both among blood donors (76%) and among pregnant women (55%).

17- **Kaitelidou et.al (2014)** conducted a study on health professionals ' knowledge and attitude towards the umbilical cord blood donation. The sample consisted of 109 health professionals from 3 provincial hospitals and 2 hospitals in Thessaloniki. Results shows that of those who participated to the research, 23.9% were physicians, 34.9% were midwives ' and 34.8% were nurses, as far as the health professional's knowledge on the participants declared to be quite or well informed on the collection methods and the usage of umbilical cord blood. The vast majority of the participants (89%), declared that a well - organized program on a continual training is very essential.

18- **Manal Farouk Moustafa 1 and Entisar Mohammad youness (2015).** Conducted a study on nurses' knowledge about umbilical cord blood banking and its barriers. Aim of the study was researchers sought to assess nurses' knowledge regarding umbilical cord blood banking. Results shows that nurse's knowledge about UCBB are lacking, inadequate knowledge represented 79.9% and they identity from their point of view that the costs of the umbilical cord blood banks, policies and procedures are barriers of conducting such new technology in their hospitals.

19-**Deeksha Pandey et.al (2016)** conducted a study on banking umbilical cord blood, awareness, attitude, and expectations of potential donor from one of the largest potential repositories. The study included 254 pregnant women only 26.5%women in the study knew what exactly is meant by umbilical cord blood. A large proportion (55.1%) was undecided whether they want to bank umbilical cord blood or not so the study was concluded with a note that obstetricians should pay a more active role in explaining the patients regarding pros and cons of umbilical cord banking.

- **Reviews related to benefits of umbilical cord blood**

20-**Kalabarathi Selvaraj et.al (2019)**, conducted a study to assess the level of knowledge among 60 antenatal mothers concerning umbilical cord blood banking at selected hospitals of Chennai. The current knowledge level of antenatal mother on umbilical cord blood banking portrays that 46(77%) had inadequate knowledge, 12(20%) had moderate knowledge and the antenatal mothers with adequate knowledge were found to be 2(3%).

21-**Sibel et.al (2017)** conducted a study on knowledge and attitude about cord blood and cord blood banking. The study was a scross-sectional study with 322 mothers between ages of 18 and 49 years in health Centre of turkey. It was found out that 29.8% of mothers knew about cord blood and stem cells 75.4% of mothers do not know about cord blood banks and 21.1% learned about these issues from internet and other mass media. It was also found that knowledge level of mothers increased and their attitudes got better in accordance with their educational.

22-**Hend S. Mohammed and Hend A. EL Sayed (2015)** conducted a study on Knowledge and attitude of maternity nurses regarding cord blood collection and stem cells: An educational intervention. Quasi-experimental design (pre and post intervention) was utilized. A total sample of 53 staff nurses were recruited in the study. The study was conducted at two settings. The results revealed that 88.7% of nurses had poor knowledge before intervention. However, 90.6% and 81.2% of them had good knowledge immediately and after

three months of intervention respectively. As well as, only 1.9% of the studied nurses had positive attitude toward cord blood collection and stem cells before intervention. Meanwhile, immediately and after three months of intervention the positive attitude changed to 66.0% and 69.8% respectively.

23-**Patricia Palten et.al (2010)** conducted a study among 300 German speaking pregnant women in Berlin to know whether a correlation between women's knowledge about stem cell banking and level of education. The data collected by using anonymous questionnaire. Among them 3 quarters of the population heard of stem cell banking. Most had no further knowledge about the method. Only one third of the interviewed women were informed about whether certain diseases had been treated with stem cell banking by the time the survey was being conducted, whereas 50-60% did not know how to answer these questions.

24-**Mc kernna D et.al (2011)** a study was conducted to assess the umbilical cord blood, current status and promise for the future in India. The study results show that, umbilical cord blood (UCB) have been shown to be a suitable source of hematopoietic stem cells (HSCs) for hematopoietic reconstitution. UCB banking has improved with time largely due to involvement of professional organization and their published standards. The study conducted that UCB banking.

3. RESEARCH METHODOLOGY

Research methodology is the systematic process used by researcher to plan, execute and analyze studies in a structured and reliable manner.

The chapter includes research approach, design of the study, identifying variable under study, the setting of the study, population, sample and sample technique sampling criteria, development and description of tool, validity and reliability of tool, description of pilot study, data collection procedure and plan for data analysis.

3.1. RESEARCH APPROACH

Research approach is the chosen strategy guiding how researchers investigate a subject.

The research approach adopted in this study was quantitative pre- experimental approach as the researcher aimed to assess the effectiveness of planned teaching program teaching program on knowledge regarding umbilical cord blood stem cells banking among antenatal mothers in selected areas of Dehradun.

3.2. RESEARCH DESIGN

Research design is the plan that outlines how a study will be conducted guiding the collection.

The research design refers to the overall strategy that you choose integrate the different components of the study in a coherent and logical way, thereby, ensuring you will effectively address the research problem, it constitutes the blueprint for the collection, measurement and analysis of data. (Devaus D.A 2006)

The research design selected for the present study is pre-experimental, one group pretest and posttest design.

GROUP	PRETEST	INTERVENTION	POSTTEST
Antenatal mothers	01	Planned teaching program	02

01 - Pretest level of knowledge on umbilical cord blood stem cells banking among antenatal mothers.

X - Planned teaching program regarding umbilical cord blood stem cells banking among Antenatal mothers.

01 - Posttest level of knowledge on umbilical cord blood stem cells banking among antenatal mothers.

3.3. VARIABLES

Independent Variables

An independent variable is a variable that is not affected by other variables in the study and is often manipulated by the researcher.

The independent variable for the present study is planned teaching program regarding umbilical cord blood stem cells banking among Antenatal mothers.

Dependent Variables

A dependent variable is the variables that changes as a result of the independent variable manipulation.

The dependent variable in the present study is knowledge of Antenatal mothers regarding umbilical cord blood stem cell banking.

Demographic Variables

A demographic variable is a variable that is collected by researchers to describe the nature and distribution of the sample used with inferential statistics.

The demographic variables in the study were age, religion, educational status, occupation, socio-economic status, types of family, type of residence, number of children, any type of history related to stem cells banking in family.

3.4. SETTING OF THE STUDY

The research setting refers to the place where the data is collected. This study sample will be selected from the areas of Dehradun.

3.5. POPULATION OF THE STUDY

The population as an aggregate or totality of all the objects, subjects or members that conform to set of specification. (Polit and Hungler, 1999)

The population consists of Antenatal mothers of selected areas of Dehradun.

3.6. SAMPLE

The sample is a subset of a population that is used to represent the entire group as whole.

(Kendra cherry, 2015)

The study sample is Antenatal mothers of selected areas of Dehradun.

3.7. SAMPLE SIZE

The number of study population or patient, or other investigated units required that will be included in a study and required to answer the research hypothesis in the study or an estimate in a population.

The researcher selected 60 Antenatal mothers in selected areas are included in the study.

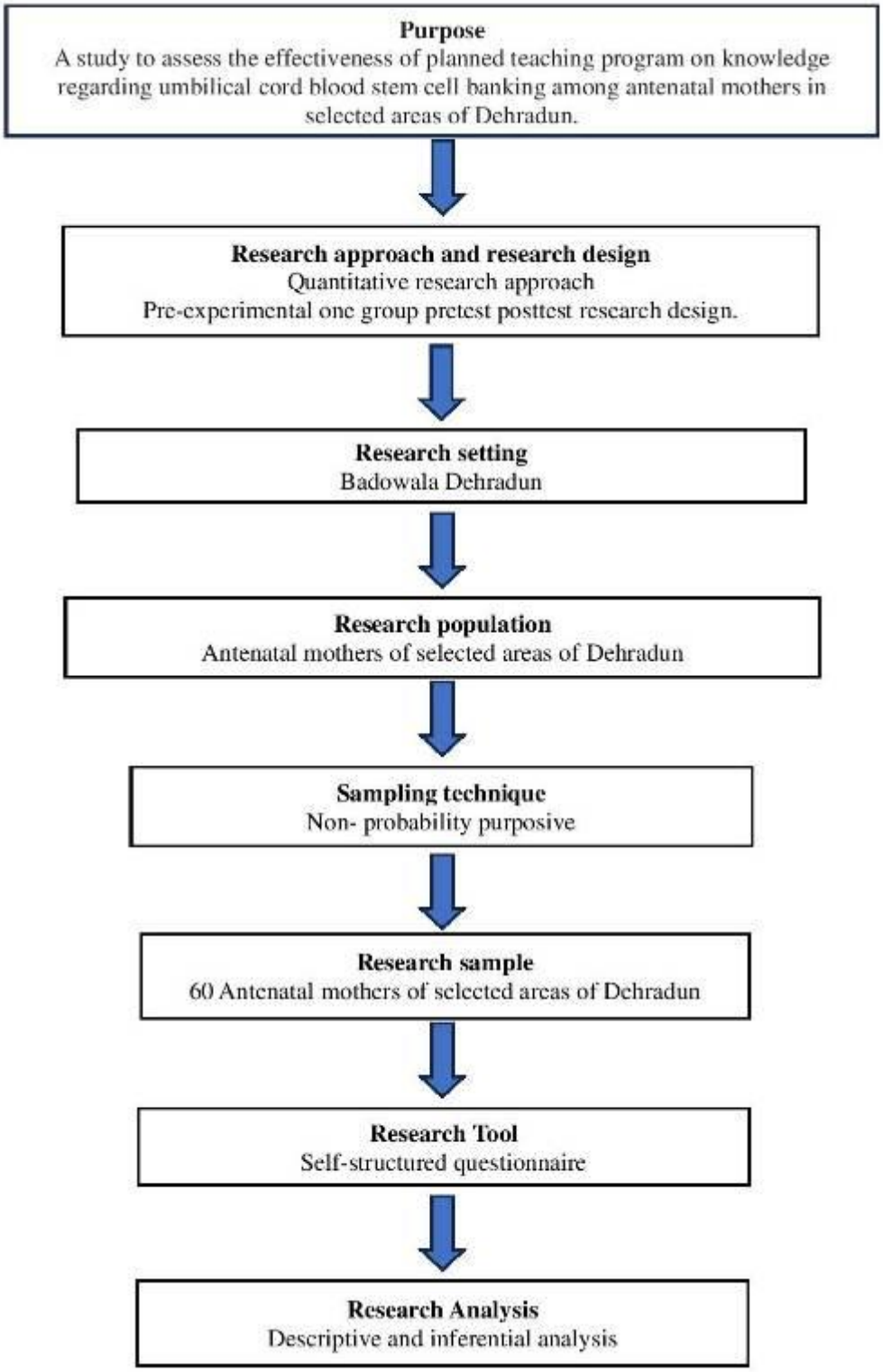
3.8. CRITERIA FOR SAMPLE COLLECTION

Inclusive criteria

- Antenatal mothers who are present at the time of data collection.
- Antenatal mothers who are willing to participate in the study.

Exclusive criteria

- Antenatal mothers who are not willing to participate in the study.
- People other than Antenatal mothers.



3.9. SAMPLING TECHNIQUE

Sampling technique refers to method of selecting portion of the population and sample to represent the entire population. (Pilot and Hungler, 1991)

Non probability convenient sampling technique is used in the study for Antenatal mothers.

3.10. DATA COLLECTION TOOL

The tool is use for this study is self -structured multiple-choice questionnaire on knowledge regarding umbilical cord blood stem cells banking.

3.11. DEVELOPMENTAL AND DESCRIPTION OF THE TOOL

The tool is developed by the researcher after obtaining of experts from obstetrics and gynecology and community health nursing experts from Graphic era college of nursing after content validity.

The data collection tool consists of Two Section.

Section I-: Socio-demographic variables for antenatal mothers.

The socio-demographic variables consist of 09 multiple choice questions.

1. Age
2. Religion
3. Education status
4. Occupation
5. Socio-economic status
6. Type of family
7. Area of residence
8. Number of children
9. Any history of stem cell banking in family

Section II-: Self-structured Questionnaire

This part consists of 25 self-structured questions on knowledge regarding umbilical cord blood stem cell banking among antenatal mothers.

Scoring Key-

Level of knowledge	Scoring	Percentage
Poor	0-8	<50%
Average	9-16	50%-70%
Good	17-25	>74%

3.12. VALIDITY

Validity refers to an instrument or test actually testing what it supposed to be testing.

(Treece and Treece)

After construction of Self structured questionnaires, it was given for content validity comprises statement of the problem, objectives of the study. The tool and evaluation criteria check list and teaching plan was submitted to 4 experts who included 1obstetric and gynecology nursing, 1 child health nursing, 1 mental health nursing, 1 community health nursing expert. Modification was made on the basis of recommendation and suggestion of experts. After consultation with the guide and the statistician, final tool was reframed.

3.13. RELIABILITY OF THE STUDY

It is degree of consistency and accuracy with which an instrument measures the attributes for which it is design to measure. Reliability is the degree to which an assessment tool produces stable and consistent results. A test is considered reliable if researcher frequently gets the same reading at different time interval**.** The correlation coefficient of knowledge score reliability is 0.83.

3.14. ETHICAL CONSIDERATION

After approval of the research committee in the graphic era college of Nursing Dehradun. A formal permission was obtained from Parsad of Badowala Dehradun. The researcher has taken permission from the postnatal mothers prior to the data collection. The sample was ensuring they have the rights to withdraw from the study if they found any difficulties during the study. The researcher first introduces to the respondents and explain the purpose of gathering information they were assured that their response would be kept confidential and used only for research purpose.

3.15. PILOT STUDY

A pilot study is designed to test the feasibility of, and to support refinements of, the protocols, methods and procedures to be used in large scale trial of an intervention.

(Thabane and colleagues,2010)

The pilot study is conducted on a small-scale basis to ascertain the feasibility of the proposed larger study. The pilot study is conducted for the non-study group with 6 antenatal mothers of selected area Mehuwala using non probability convenient sampling method who fulfill the inclusion criteria is selected as samples. Verbal consent is obtained from the 6 subjects. On the first day a pretest is given to the subjects using the validated tool.

The pilot study was conducted in Mehuwala Dehradun. It was conducted in April 20- 04-24 from morning 9 am to 1 pm. After obtaining formal permission from parshad, the investigator selected 6 samples who fulfilled the inclusive criteria by using non probability convenient sampling technique. Data includes 9 demographic variables and 25 questionnaires.

A short introduction about the study was given and informed consent was obtained from selected antenatal mother. The pretest was conducted by using self -structured questionnaires to assess the effectiveness of planned teaching programs on knowledge of the antenatal mother regarding umbilical cord blood stem cell banking, and the same day Self teaching program was given by using Chart and booklets.

The post test was conducted after the 1th day. The findings were accepted by the experts. There was no modification in self- structured questionnaires. The researcher identifies the feasibility of conducting the main study.

The investigator assessed the knowledge of 60 antenatal mother. The antenatal mothers were interested and cooperated well. The necessary data was collected, analyzed, and interpreted. There are no modifications was made in the tools.

3.16. DATA COLLECTION PROCEDURE

The data was collected from antenatal mothers of Badowala area Dehradun. A self -introduction was given by the investigator 60 Antenatal mothers who fulfilled the inclusion criteria are selected using non-probability purposive sampling technique, before collect the data I had taken permission from Parsad of Badowala Dehradun. Each Antenatal mothers took 30 minutes to fill up the questionnaire. The investigator will obtain verbal consent from the subjects prior to the study. The pre-test with the help of tool, pre-test was conducted by interview method self -structured questionnaire. Each antenatal mothers took 30 minutes to answer the demographic data and retort the questionnaire. Planned teaching program was given to the Antenatal mothers regarding umbilical cord blood stem cells banking. Post-test was conducted on 3rd day after giving Intervention.it was conducted by using same self -structured questionnaire.

3.17. PLAN FOR DATA ANALYSIS

Data analysis is a process of. inspecting, cleansing, transforming, and modeling data. with the goal of discovering useful information, suggesting conclusions, and supporting decision-making. Patton, 1990)

The data is planned to be analyzed in term of the objective of the study using descriptive and inferential statistics.

- Frequency and percentage distribution used to analyze the socio demographic variable.
- Mean and standard deviation used to analyze the level of knowledge among the antenatal mothers regarding umbilical cord blood stem cell banking of selected areas of Dehradun.
- Paired t-test was used to find out the effectiveness of planned teaching programme on knowledge regarding umbilical cord blood stem banking.
- Chi-square test was used to determine the association between the level of knowledge and selected socio economic among antenatal mothers regarding umbilical cord blood stem cell banking of selected areas of Dehradun.

4. Data Analysis and Interpretation

"Analysis is the process of organizing and synthesizing the data so as to answer research questions and test hypothesis". The purpose of data analysis to organized, provide structure to and elicit meaning from the research data.

Data collected for data analysis and interpretation in the present study from Antenatal mothers to assess the knowledge regarding umbilical cord blood stem cells banking in selected areas of Dehradun. The data collected was organized, tabulated, analyzed and interpreted by using descriptive and inferential statistics and is described with help of graphs and tables.

Quantitative pre- experimental research approach is adopted in the present as the investigation is aimed at evaluating the effectiveness of planned teaching program regarding umbilical cord blood stem cells banking among Antenatal mothers in selected areas of Dehradun.

Hypothesis

H1- There will be a significant difference between the pretest and posttest level of knowledge regarding umbilical cord blood stem cell banking.

H2- There will be a significant association between pretest level of knowledge score with their selected demographic variables.

The Data analysis and interpretation are presented under sections as given below:

SECTION A:

- **Section I**

Description of demographic variables for the Antenatal mothers.

SECTION B:

- **Section I**

Assess the level of knowledge of group before implementing self- structured questionnaire.

- **Section II**

Assess the level of knowledge in group after implementing self- structured questionnaire.

- **Section III**

Comparison between pretest and post-test level of knowledge among antenatal mothers.

SECTION C:

- **Section I**

Deals with association between selected demographics variables and pre-test level of knowledge regarding umbilical stem blood cell banking.

SECTION-A

Table:4.1.1 frequency and percentage wise distribution of Antenatal mothers according to their demographic variables.

demographic variables		Number of antenatal mothers	%
Age	20-25years	25	41.66%
	26-30years	34	56.66%
	31-35years	0	0
	35above	1	1.66%
Religion	Hindu	36	60%
	Muslim	22	36.66%
	Christian	2	3.33%
	Sikh	0	0
Educational status	10th pass	37	61.66%
	12th pass	14	23.33%
	graduate	9	15%
	illiterate	0	0
Occupation	housewife	48	80%
	private job	9	13.33%
	government job	2	3.33%
	business women	2	3.33%
Socio-economic status	high	6	10%
	mid	47	78.30%
	low	7	12%
Type of family	joint	24	40%
	nuclear	34	56.66%
	extended	2	3.33%
Area of residence	urban	28	46.66%
	rural	32	53.33%
Number of children	0	28	46.66%
	1	20	33.33%
	2	9	15%
	3	3	5%
	4	0	0
Any history of stem cells banking in family	yes	26	43.33%
	no	34	56.66%

Antenatal mothers according to their age show that 41.66% of sample mothers were in the age group of 20-25years, 56.66% in the age group of 26-30 years, none of them in age group of 31-35 years, 1.66% in age group of 35 above.

Antenatal mothers in the group in their religion shows the majority percentage (60%) in group were Hindu, and (36.6%) in group were Muslim, (3.33%) in group were Christian, none of in group were Sikh.

Antenatal mothers in group in relation with their educational status shows that (61.66%) of antenatal mothers were 10^{th} pass, (23.33%) of the antenatal mothers were 12^{th} pass, (15%) of them have graduate and none of the antenatal mothers have illiterate.

Antenatal mothers of group in relation to their occupation shows that majority percentage (80%) mothers in group of Housewife. (13%) mothers were in Private job. (3.33%) mothers were in Government job. (3.33%) mothers were business women.

Antenatal mothers according to their socio- economic status (10%) mothers have high socio- economic status, (78.30%) mothers have middle socio- economic status, (12%) mothers have low socio -economic status.

Antenatal mothers in relation to their type of family (40%) mothers were from joint family. In the nuclear family there were (56.66%) of mothers. (3.33%) mothers were from extended families.

Antenatal mothers in relation to area of residence show that (46.66%) mothers were from urban area and (53.33%) mothers were from rural area.

Antenatal mothers in relation to number of children show that (46.66%) mothers have 0 children, (33.33%) mothers have1 children, (15%), mothers have 2 children, (5%) mothers have 3 children, none of them have 4 children.

Antenatal mother of a group in relation to their any history of stem cells banking in family show that (43%) mothers have history of stem cells banking in family, (56%) mothers have no history of stem cells banking in family.

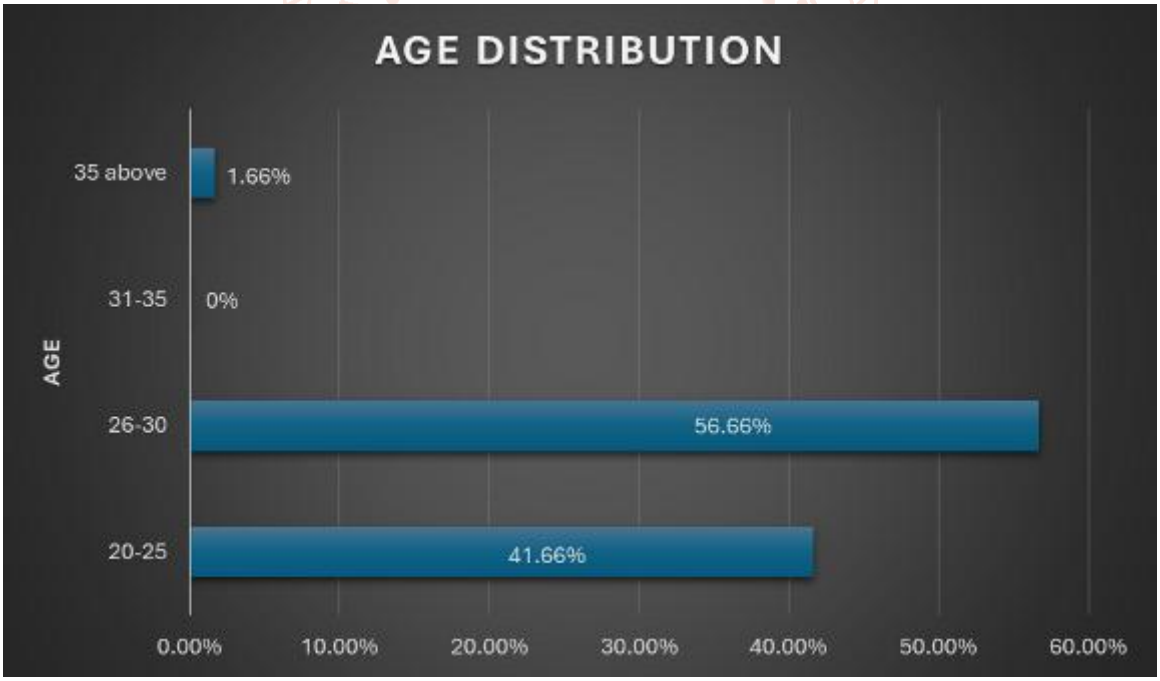


Table 4.1.1 bar diagram showing percentage wise distribution of antenatal mothers according to their age.

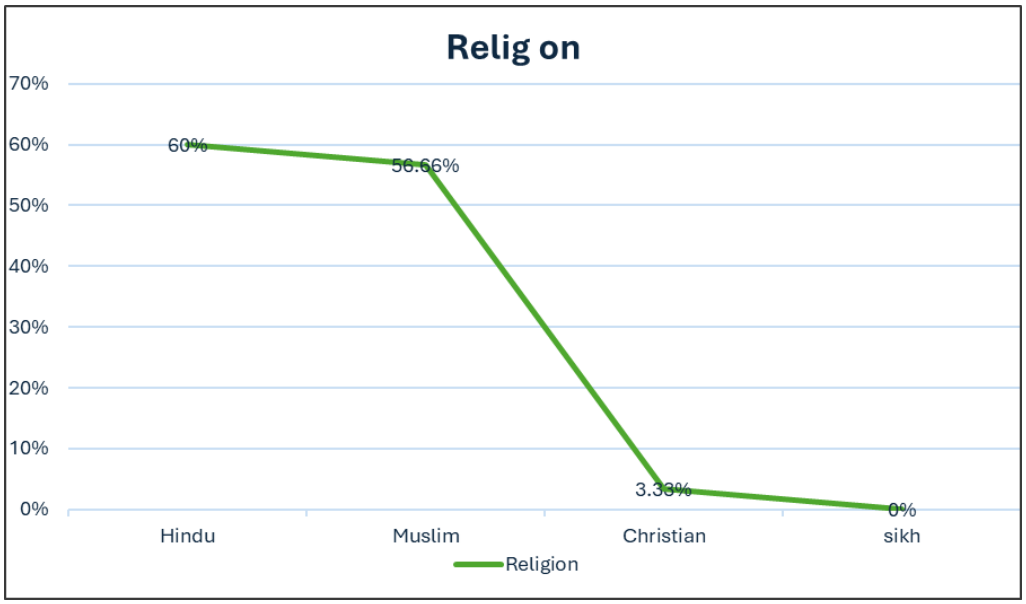


Table 4.1.2 Bar diagram showing percentage wise distribution of antenatal mothers according to their religion.

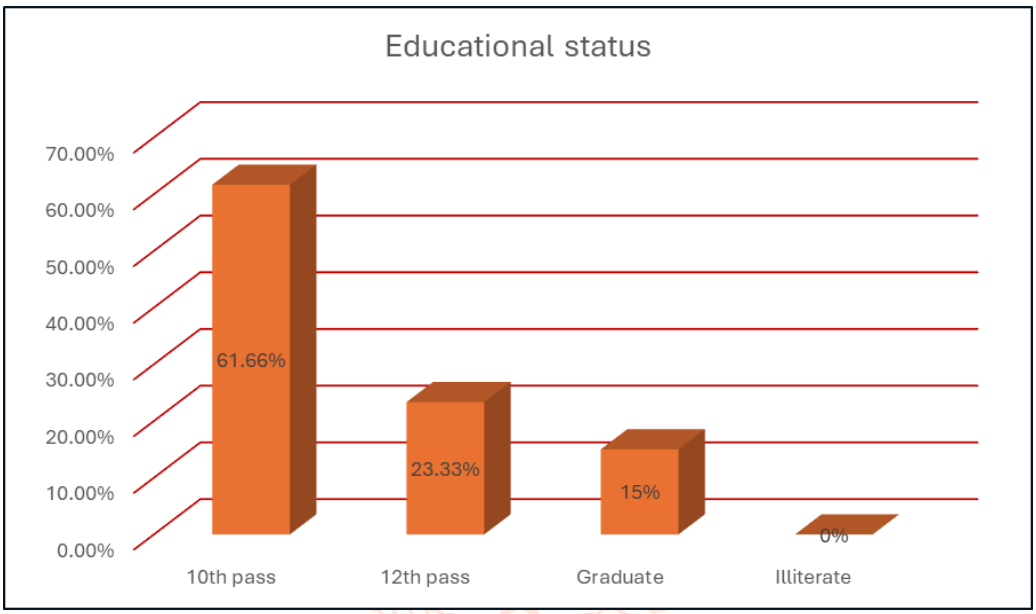


Table4.1.3 bar diagram showing percentage wise distribution of Antenatal mothers according to their education.

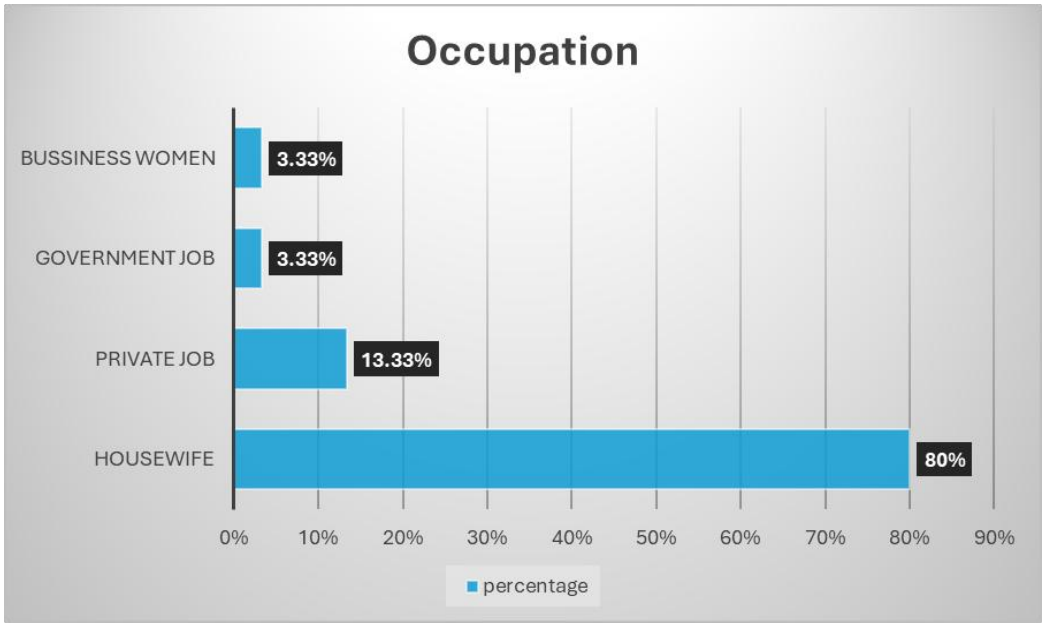


Table 4.1.4 Bar diagram showing percentage wise distribution of Antenatal mothers according to their Occupation.

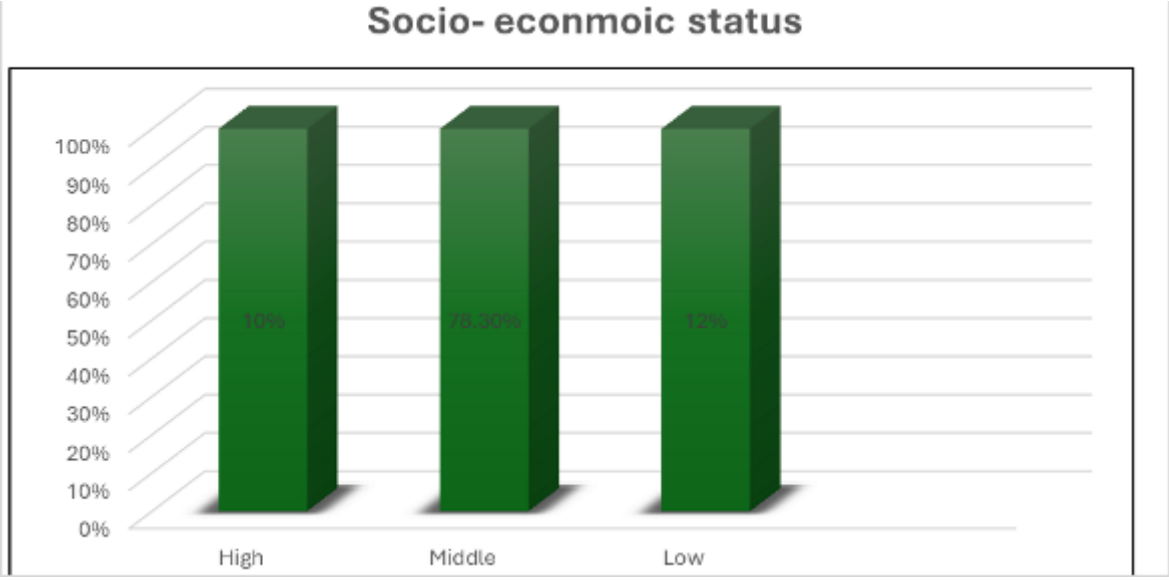


Table 4.1.5 Bar diagram showing percentage wise distribution of Antenatal mothers to their socio-economic status.

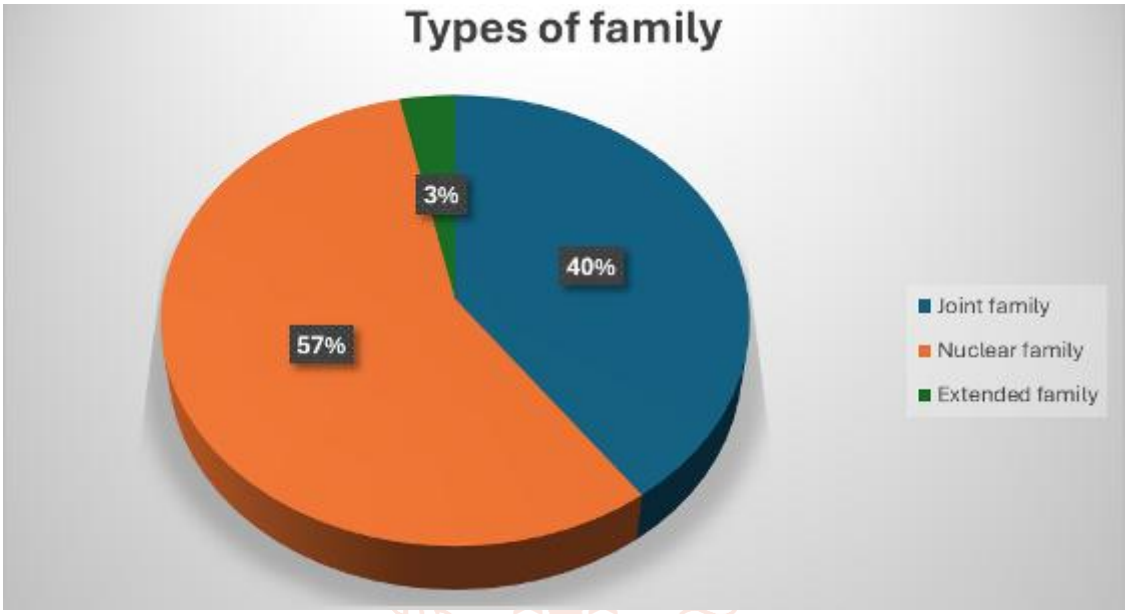


Table 4.1.6 Pie chart showing percentage wise distribution of Antenatal mothers to their types of family.

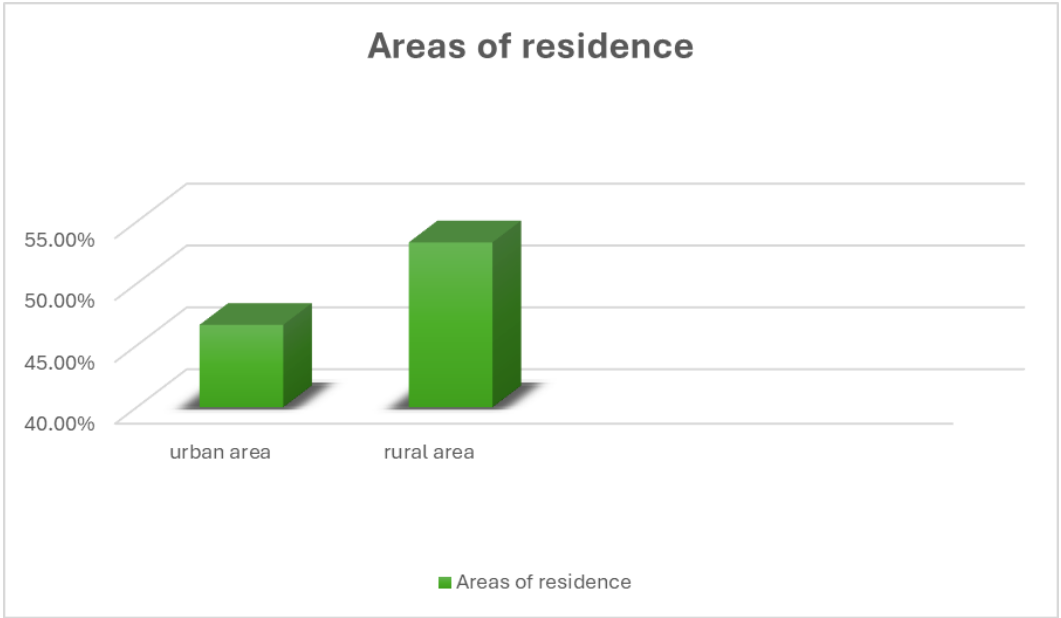


Table 4.1.7 Bar diagram showing percentage wise distribution of Antenatal mothers to their Areas of residence.

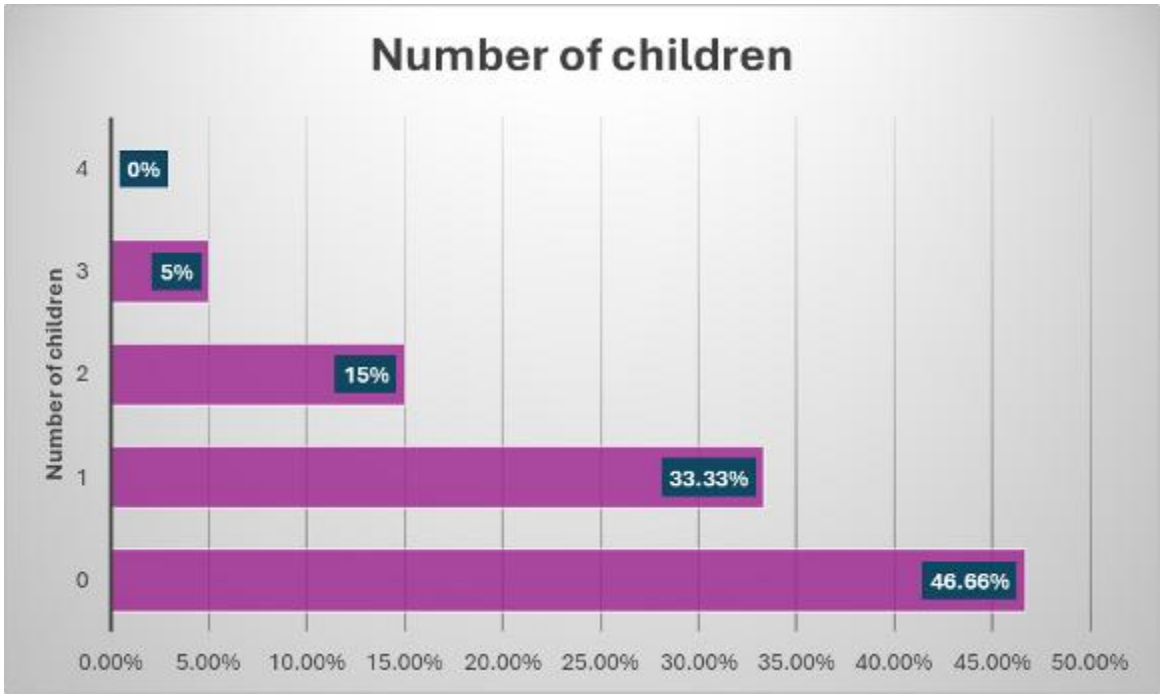


Table 4.1.8 Bar diagram showing percentage wise distribution of Antenatal mothers to their number of children.

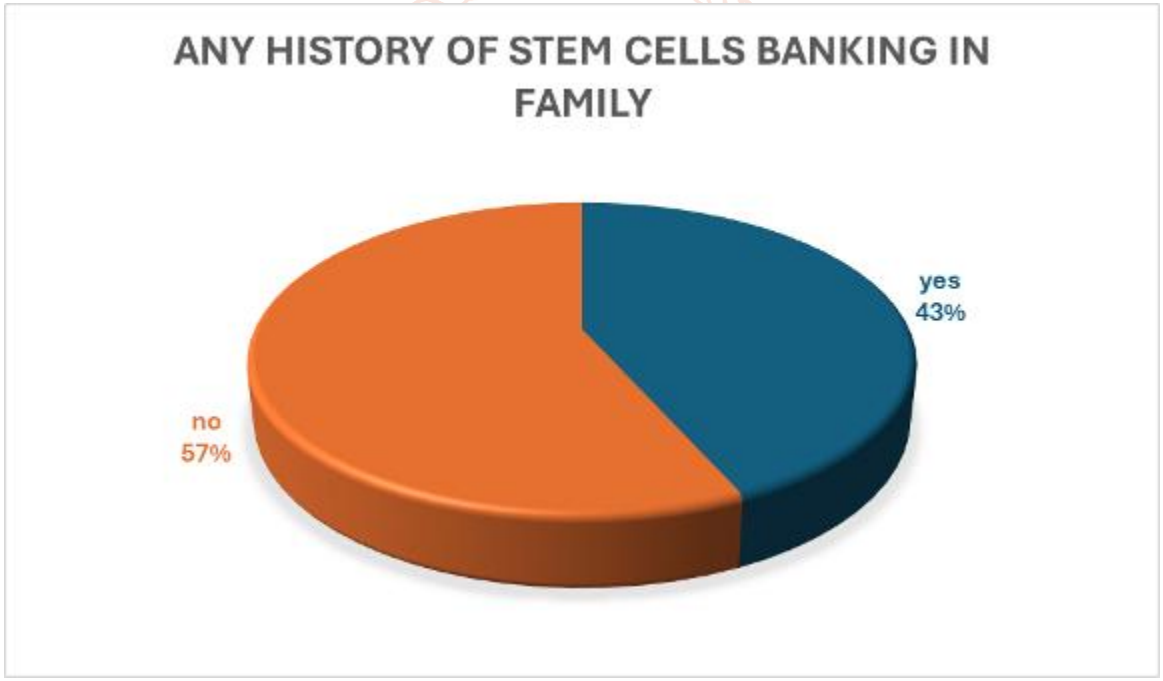


Table 4.1.9 Pie chart showing percentage wise distribution of Antenatal mothers to their any history of stem cells banking in family.

Section-B

Assess the level knowledge of group before implementing self -structured questionnaire.

Table 4.2.1 Pretest level of knowledge score(N-60)

Level of knowledge	No. of Antenatal mothers	%
Poor	54	90%
Average	06	10%
Good	0	0
Total	60	100%

Table 4.2.1 shows the level of pre-test percentage of knowledge among antenatal mothers. 90% of the Antenatal mothers are having poor level of knowledge, 10% of them having average level of knowledge score and 0 of them are having good level of knowledge score.

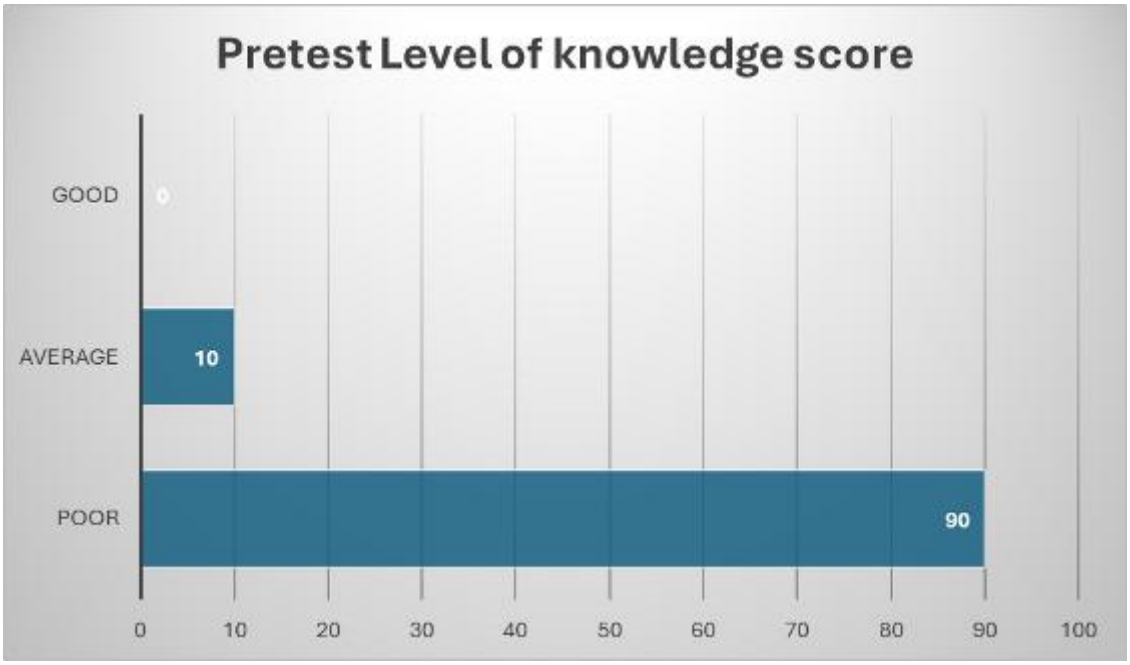


Table 4.2.2 Post test level of knowledge score(N-60)

Level of knowledge	No. of Antenatal mothers	%
Poor	0	0
Average	2	3%
Good	58	97%
Total	60	100%

Table 4.2.2 shows the level of post- test percentage of knowledge among antenatal mothers. 0 of the Antenatal mothers are having poor level of knowledge score, 3% of them having average level of knowledge score and 97% of them are having good level of knowledge score**.**

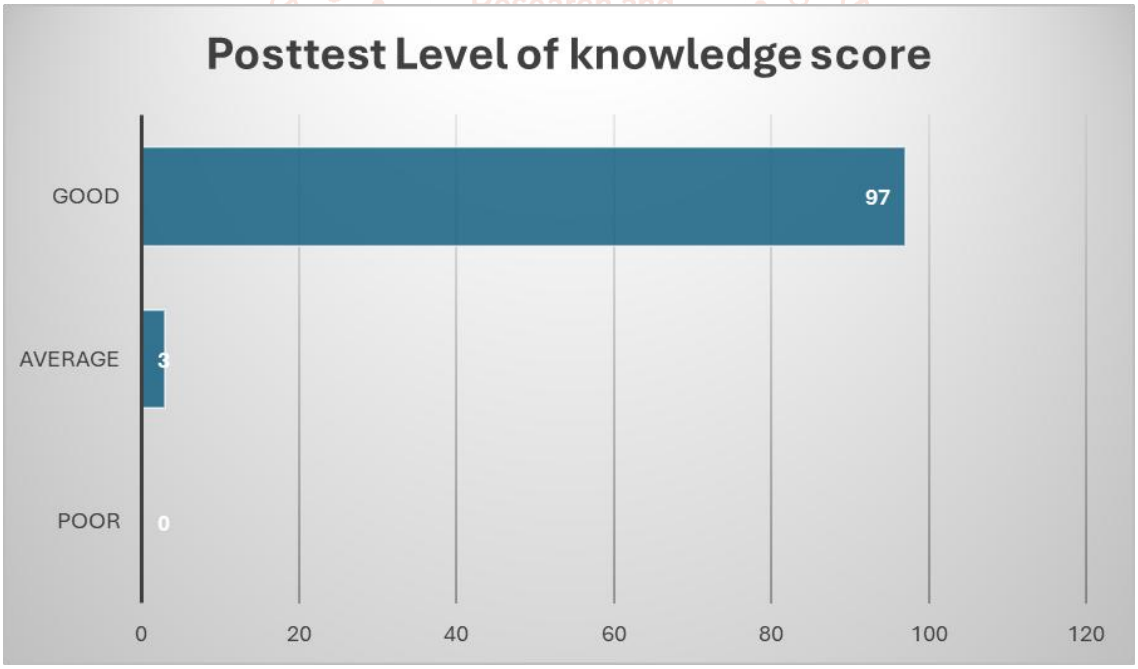


Table 4.2.3 Finding related to assess the effectiveness of planned teaching program regarding umbilical cord blood stem cells banking in terms of knowledge among antenatal mothers at selected areas of Dehradun. (N=60)

Content	Group	Mean	Mean%	Mean difference	Standard Deviation	't' value
Knowledge regarding umbilical cord blood stem cells banking among Antenatal mothers	Pretest	7.3	12.16	10.7	1.185	29.88
	Posttest	18	30		1.3660	

***Significant at 0.05 level.**

Above (4.2.3) represents the aspects wise mean of umbilical cord blood stem cells. The results showed the mean difference between pretest and posttest. The aspects wise 't' test value was observed and showed a significant in all the aspects of knowledge area. The combined 't' test value was extremely statistically i.e., at P<0.05 level.

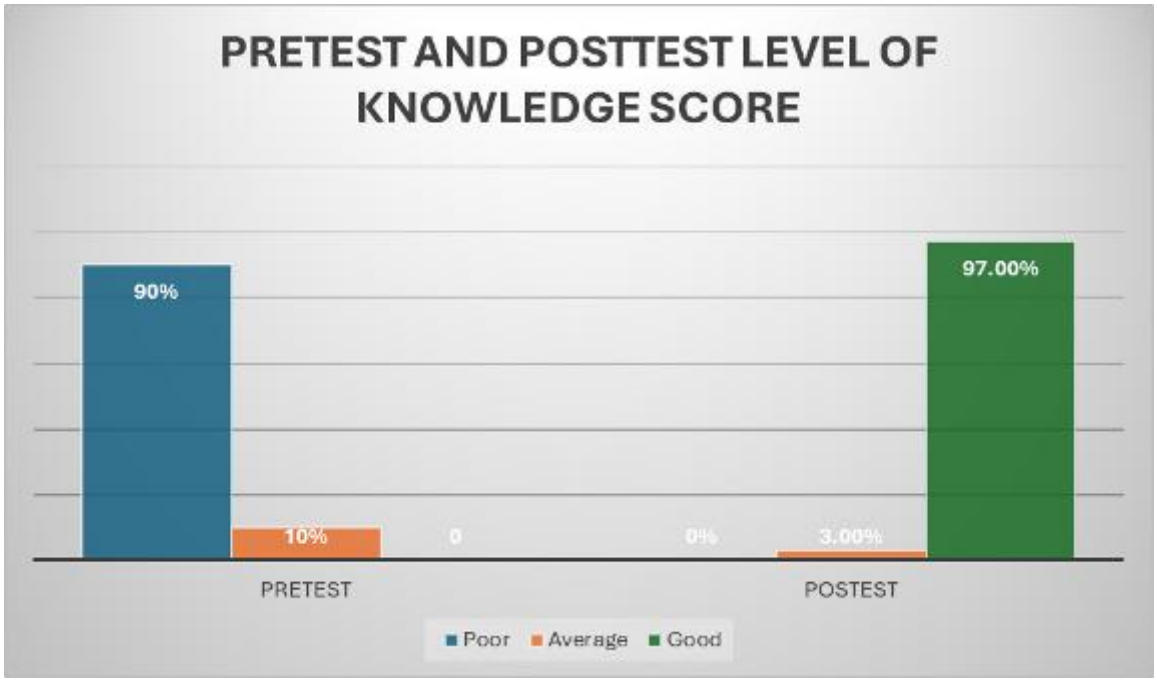
Which indicate planned teaching program was effective.

Comparison between pretest and post- test level of knowledge among Antenatal mothers.

Table 4.2.4 comparison of pretest and posttest level of knowledge score (N=60)

Level of knowledge	Pretest		Posttest	
	N	%	N	%
Poor	54	90%	0	0
Average	6	10%	2	3%
good	0	0	58	97%
Total	60	100%	60	100%

Comparison of the level of knowledge among Antenatal mothers in pretest shows around 90% of antenatal mothers had poor level of knowledge and around 0 antenatal mothers had poor knowledge in posttest. When compared average level of knowledge in pre test is 10% and 3% in post-test. Whereas good level of knowledge in pre test is 0 and 97% in posttest**.**



Section-C

(Tab.4.3.1) Deals with association between selected demographics variables and pre-test level of knowledge regrading umbilical cord blood stem cell banking among antenatal mothers. (N-60)

Variable	Poor	Average	Good	Total	DF	Chi-square value	P value	Inference
	Age							
20-30year	53	6	0	59	2	0.114	0.73	Non -significant
31-40year	1	0	0	1				
	54	6	0	60				
	Religion							
Hindu	32	4	0	36	2	0.364	0.86	Non -significant
Muslim	20	2	0	22				
Christian	2	0	0	2				
	54	6	0	60				
	Educational status							
12th pass	2	1	0	3	3	2.88	0.40	Non -significant
Graduate	2	1	0	3				
Illiterate	6	0	0	6				
	54	6	0	60				

	Occupation							
Housewife	45	3	0	48	3	7.916	0.04	significant
Private job	5	3	0	8				
Government job	2	0	0	2				
Businesswomen	2	0	0	2				
	54	6	0	60				
	Socio-economic status							
High	5	1	0	6	2	0.46	0.75	Non -significant
Middle	43	4	0	47				
Low	6	1	0	7				
	54	6	0	60				
	Type of family							
Joint family	20	3	0	23	2	0.6962	0.76	Non -significant
Nuclear family	32	3	0	35				
Extended family	2	0	0	2				
	54	6	0	60				
	Area of residence							
Urban area	11	3	0	14	1	2.633	0.10	Non -significant
Rural area	43	3	0	46				
	54	6	0	60				
	Number of children							
0	34	1	0	35	3	14.0	0.002	significant
1	13	1	0	14				
2	5	4	0	9				
3	2	0	0	2				
	54	6	0	60				
	Any history of stem cells banking in family							
Yes	7	3	0	10	1	5.32	0.02	significant
No	47	3	0	50				
	54	6	0	60				

Summary

The chapter deal with data analysis, systematic examination and evaluation of data or information of the study. It includes descriptive and inferential analysis of baseline data, dependent variables, correlation. i.e. - description of the Socio demographic variables of, finding related to knowledge score, findings related to assess the effectiveness of Planned teaching program regarding umbilical cord blood stem cell banking among antenatal mothers, deals with association between selected demographic variables and pre- test level of knowledge regarding umbilical cord blood stem cell banking among antenatal mothers.

5. DISCUSSION

A report of finding is never sufficient to convey their significance. The meaning that researcher giving results play a rightful and important role in the report. the discussion section is devoted to a thoughtful and insightful analysis of the finding, leading to a discussion of their clinical and theoretical utility. This chapter deals with discussion in accordance with the objectives of the study and hypothesis. The statement of the problem was a study and hypothesis. The statement of the problem was a study to assess the effectiveness of planned teaching program on knowledge regarding umbilical cord blood stem cell banking among antenatal mothers in selected areas of Dehradun. This section of the study provides an overview of the current research effort, a discussion of the findings, a conclusion, and implication and suggests other research studies for potential participants to take into account.

The Discussion is done under the following categories:

Section A

1. To assess the pretest level of knowledge of antenatal mothers regarding umbilical cord blood stem cell banking.
2. To develop a planned health teaching program for umbilical stem cell banking.
3. To assess the post-test level of knowledge of antenatal mothers regarding umbilical cord stem cell banking.

4. To find out the association between level pretest or post-test of knowledge regarding umbilical cord blood stem cell banking among antenatal mothers with their selected demographic variables.

Section B

- Antenatal mothers according to their age show that 41.66% of sample mothers were in the age group of 20-25years, 56.66% in the age group of 26-30 years, none of them in age group of 31-35 years, 1.66% in age group of 35 above.
- Antenatal mothers in the group in their religion shows the majority percentage (60%) in group were Hindu, and (36.6%) in group were Muslim, (3.33%) in group were Christian, none of in group were Sikh.
- Antenatal mothers in group in relation with their educational status shows that (61.66%) of antenatal mothers were 10th pass, (23.33%) of the antenatal mothers were 12th pass, (15%) of them have graduate and none of the antenatal mothers have illiterate.
- Antenatal mothers of group in relation to their occupation shows that majority percentage (80%) mothers in group of Housewife. (13%) mothers were in Private job. (3.33%) mothers were in Government job. (3.33%) mothers were business women.
- Antenatal mothers according to their socio-economic status (10%) mothers have high socio-economic status, (78.30%) mothers have middle socio- economic status, (12%) mothers have low socio -economic status.
- Antenatal mothers in relation to their type of family (40%) mothers were from joint family. In the nuclear family there were (56.66%) of mothers. (3.33%) mothers were from extended families.
- Antenatal mothers in relation to area of residence show that (46.66%) mothers were from urban area and (53.33%) mothers were from rural area.
- Antenatal mothers in relation to number of children show that (46.66%) mothers have 0 children, (33.33%) mothers have1 children, (15%), mothers have 2 children, (5%) mothers have 3 children, none of them have 4 children.
- Antenatal mother of a group in relation to their any history of stem cells banking in family show that (43%) mothers have history of stem cells banking in family, (56%) mothers have no history of stem cells banking in family.

- **Finding based on objectives**

Objective 1: To assess the pretest level of knowledge of antenatal mothers regarding umbilical cord blood stem cell banking.

The overall pre-test knowledge score of antenatal mothers regarding umbilical cord blood stem banking mean= 7.3 and SD = 1.185.

The level of pre-test percentage of knowledge among antenatal mothers 90% of the Antenatal mothers are having Poor level of knowledge score, 10% of them having average level of knowledge score and 0 of them are having good level of knowledge score. The score of antenatal mothers regarding Umbilical cord blood stem cell banking in terms of knowledge among antenatal mothers at selected areas of Dehradun.

Objective 2: To develop a planned health teaching program for umbilical stem cell banking.

The result shows that, pretest level of knowledge antenatal mother is having mean 7.3 score and in post-test level of know they are having mean score 18, so the mean difference between pre-test and post-test is 10.7. The aspect wise 't' test value was observed and showed significant in all the aspects of knowledge area. The combined 't' test value was significant i.e. 29.88 at $P<0.05$ level. Which indicate effectiveness of planned Teaching program regarding umbilical cord blood stem cells banking in terms of knowledge among antenatal mothers at selected areas of Dehradun.

Objective 3: To assess the post-test level of knowledge of antenatal mothers regarding umbilical cord stem cell banking.

post-test level of knowledge blood stem cell banking among antenatal mother, 0% of the antenatal mother are having poor level of knowledge score, 3%of them having average level of knowledge score and 97% of them are having good level of knowledge score. This is large and statistically significant difference which was calculated by using paired, t value was significant i.e.29.88 at $P<0.05$ level. Which indicate effectiveness of planned teaching program regarding umbilical cord blood stem banking in terms of knowledge among antenatal mothers at selected areas of Dehradun

Objective 4: To find out the association between level of knowledge regarding umbilical cord blood stem cell banking among antenatal mothers with their selected demographic variables.

The findings of the present study showed association between pre-test level of knowledge score and their demographic variables. In the study, the obtained p value for age, religion, educational status, socio-economic status, type of family, area of residence.

Statistical significance was calculated using chi square test. Data shows significant association only between occupation, number of children, any history of stem cells banking in family. Hence, the research hypothesis H2 is rejected, and null hypothesis is accepted.

6. SUMMARY

A study to assess the effectiveness of planned teaching program on knowledge regarding umbilical cord blood stem cell banking among antenatal mothers in selected areas of Dehradun.

This chapter death with the description of research approach, research design, selection and description of the setting, population, sample, sampling technique, development of tool, validity, reliability of the tool, pilot study, ethical consideration, data collection procedure, plan of analysis.

H1. There will be a significant difference between the pretest and post-test level of knowledge score regarding umbilical cord blood stem cell banking after implementation of planned teaching program among antenatal mothers.

H2. There will be a significant association between pretest level of knowledge score with their selected demographic variables.

The conceptual framework adopted for this study was derived from "The Transtheoretical model" developed by James Prochaska and DiClemente.

The researcher selected 60 Antenatal mothers in selected areas are included in the study.

The data collection tool consists of Two Section.

Section 1: Socio-demographic variables for antenatal mothers.

The socio-demographic variables consist of 09 multiple choice questions.

Section II: Self-structured Questionnaire

This part consists of 25 self-structured questions on knowledge regarding umbilical cord blood stem cell banking among antenatal mothers.

The steps involved in the development of instruments were preparation of hise prints, construction of items, pre-testing and testing for reliability and validity.

Pilot study was conducted on 06 randomly selected subjects by administering the schedule for pre and post-test study. A test is considered reliable if researcher frequently gets the same reading at different time interval. The correlation coefficient of knowledge score reliability is 0.83.

THE MAIN STUDY WAS CONDUCTED ON THREE PHASES

Phase l:

Pre-test was done by administering self-structured knowledge questionnaire and planned teaching program on the same day of the pre-test.

Phase2:

Post test was conducted on the 3rd day of the pre-test using the same self-structured knowledge questionnaire schedule.

Phase 3:

The data collected in the phase 1 and 2 were analyzed using descriptive and inferential statistics and interpreted in terms of the objectives and hypothesis of the study.

Antenatal mothers according to their age show that 41.66% of sample mothers were in the age group of 20-25years, 56.66% in the age group of 26-30 years, none of them in age group of 31- 35 years, 1.66% in age group of 35 above.

Antenatal mothers in the group in their religion shows the majority percentage (60%) in group were Hindu, and (36.6%) in group were Muslim, (3.33%) in group were Christian, none of in group were Sikh.

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Antenatal mothers according to their socio-economic status (10%) mothers have high socio- economic status, (78.30%) mothers have middle socio-economic status, (12%) mothers have low socio-economic status.

Antenatal mothers in relation to their type of family (40%) mothers were from joint family. In the nuclear family there were (56.66%) of mothers. (3.33%) mothers were from extended families.

Antenatal mothers in relation to area of residence show that (46.66%) mothers were from urban area and (53.33%) mothers were from rural area.

Antenatal mothers in relation to number of children show that (46.66%) mothers have 0 children, (33.33%) mothers have1 children, (15%), mothers have 2 children, (5%) mothers have 3 children, none of them have 4 children.

Antenatal mothers of a group in relation to their any history of stem cells banking in family show that (43%) mothers have history of stem cells banking in family, (56%) mothers have no history of stem cell banking in family.

7. CONCLUSION AND RECOMMEDATIONS

The chapter deals with brief account of the study undertaken including the conclusion drawn from finding implication of the study and recommendation for future research.

- The study was 60 sample of antenatal mothers.
- Nonprobability convenient sampling technique was used to select the sample.
- Questionnaire was used to collect information.
- Analysis and interpretation were done in accordance with objectives statically technique like t- test, co-efficient correlation, mean and standard deviation and mean percentage were used. Pie, bar diagram was useful to depict same findings.

NURSING IMPLICATION

- In the general hospitals the nurses give the health education, counselling and benefits of umbilical blood cord stem cell transplant is very essential to prevents blood related disorders like- blood cancers, thalassemia.
- Nurse's acts as an educator, organizer, leader, councillor, and motivator.
- Nurse can provide a family centralized approach to help family to overcome the stressful situation.
- The education role of midwives is integrated into every aspect of her work.

NURSING PRACTICE

1. Nursing is an art and science.
2. As a science, nursing is based upon a body of knowledge is always changing with new discoveries and innovations.
3. In service education program for the health worker and nursing personal must carried out to improve their knowledge and teach client umbilical cord blood stem cell banking.

NURSING EDUCATION

1. The nursing curriculum is concerned with the preparation of future nurse, who will play a major role in the preventive and promotive aspect of maternal child birth.
2. Nursing may be defined as a dynamic, therapeutic, and educative process in meeting health need of the society.
3. Continuing education should be provided to the antenatal mothers
4. As a nursing educator, there is opportunity, in ample measure, for the nursing profession to educate the antenatal mothers.

NURSING ADMINISTARTION

1. The nurse administration influences the quality of nursing care through the formulation of policies and protocols.
2. Nursing has become a complex and highly varied practices discipline with a rapidly graphic well developed and well documented scientific and humanistic knowledge base.
3. Nursing administration should evaluate the effectiveness of treatment administration support should be provided to conduct in services educational programme for the patients on the remedies and treatment regarding blood disorder, immune deficiencies and cancers problems and decreased transmission risk of infectious diseases.
4. Nursing care during umbilical cord blood stem cell transplantation is integral to ensuring the safety, comfort, and effective recovery of the patient. It involves a combination of clinical expertise, compassionate care, and meticulous attention to detail throughout the transplant process and beyond.

NURSING RESEARCH

1. Research on umbilical cord blood stem cell transplants in nursing involves studying various aspects of this procedure, including its efficacy, safety, patient outcomes, and nursing care considerations.
2. Nurses play a crucial role in the care of patients undergoing stem cell transplantation, including those using umbilical cord blood stem cells. They are involved in patient education, monitoring for complications, managing side effects, and supporting patients and families throughout the process.
3. Nursing research in this field aims to improve patient care, enhance outcomes, and contribute to the body of knowledge that guides clinical practice in stem cell transplantation using umbilical cord blood. Researching strategies to prevent and manage complications such as graft-versus-host disease, infections, and organ toxicity.

RECOMMENDATIONS

Based on the findings of the study the following recommendations have been for further study.

1. Experimental study can be conducted to assess the knowledge of self-instructional. This study can be replicated with different population on a large sample, there by generalizing the finding for a large population.
2. The study can be conducted in different parts of the country.
3. A comparative study can be conducted to assess the knowledge of patients regarding umbilical blood cord stem cell banking and its benefits.
4. A true experimental study can be conducted on the knowledge regarding umbilical blood cord stem cell banking and its benefits.

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