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RESEARCH ARTICLE

A DESCRIPTIVE STUDY TO ASSESS THE KNOWLEDGE REGARDING THE IMPORTANCE OF UMBILICAL CORD CARE AMONG THE ANTENATAL WOMEN OF THE SELECTED COMMUNITY AREA OF SAHASPUR, DEHRADUN

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ABSTRACT

Introduction: The umbilical cord is a vital structure in the development of a fetus, serving as the lifeline between the mother and the developing baby during pregnancy. It is a flexible, tube-like structure that connects the fetus to the placenta, facilitating the exchange of nutrients, oxygen, and waste products. The umbilical cord typically develops by the fifth week of pregnancy and continues to grow throughout gestation, reaching an average length of about 50-60 centimeters at full term. It is usually clamped and cut after birth, leaving a small stump that eventually falls off, leaving the belly button as a permanent reminder.

Statement of Problem: A descriptive study to assess the knowledge regarding the importance of Umbilical Cord Care among antenatal women's of selected community area of Sahaspur, Dehradun.

Objectives of the study:

1.To assess the knowledge of antenatal women in selected community area regarding umbilical cord care.

2.To determine the association between the level of knowledge and umbilical cord care among the antenatal women with selected demographic variables.

Methodology: Quantitative research approach with descriptive research design was used in the study. The study was conducted in the community areas of Dehradun, Uttarakhand. Total enumeration sampling was to collect data from 60 subjects by using Demographic profile, Self-structured questionnaire.

Result: The demographic analysis of the study participants (N=60) revealed that the majority of mothers (41.7%) were in the 26–35 years age group, followed by 33.3% in the 18–25 years category, and 25.0% in the 36–45 years group. This indicates that most participants were of reproductive age, with a predominance in the young adult category. Regarding education levels, 33.3% of the participants had completed secondary education, 25.0% had attained higher education, another

25.0% had only primary school education, and 16.7% had no formal education. The variation in educational background suggests a need for tailored maternalhealth education programs, particularly for mothers with lower literacy levels.

Conclusion: The study concluded that education level and source of knowledge significantly impact maternal knowledge of umbilical cord care. While general awareness was present, gaps in knowledge still exist, particularly concerning infection signs and proper care practices. The findings emphasize the importance of healthcare professionals in educating mothers and the necessity of structured health education interventions.

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INTRODUCTION

The umbilical cord is a vital structure in the development of a fetus, serving as the lifeline between the mother and the developing baby during pregnancy. It is a flexible, tube-like structure that connects the fetus to the placenta, facilitating the exchange of nutrients, oxygen, and waste products. The umbilical cord typically develops by the fifth week of pregnancy and continues to grow throughout gestation, reaching an average length of about 50-60 centimeters at full

term. It is usually clamped and cut after birth, leaving a small stump that eventually falls off, leaving the belly button as a permanent reminder. The umbilical cord is a critical component of prenatal development, ensuring the fetus receives the necessary resources for growth and development while maintaining a safe environment within the womb. The umbilical cord plays an important role in fetal development by connecting the growing fetus with placenta report by Great Ormond Hospital (2014). It supplies nutrients andoxygen needed for growth and carries away umbilical waste and carbon dioxide (Coyne, 2010).(Lawn *et al*., 2005). Moreover, a considerable percentage of neonatal deaths from infection are

NEED OF STUDY

Nearly 7.5 million neonates die in the first month of life worldwide, with developing countries accounting for 98% of these deaths. A significant proportion of death of neonates from infection are traceable to initial cord infection. Contamination of umbilical cord can lead to omphalitis which may have as incidence as high as 77 per 1000 hospital – born infants. The objective of this research was to evaluate the knowledge of mothers regarding umbilical cord care in newborn. The outcomes will be utilized to provide guidance for the management of umbilical cords, to reduce morbidity and mortality rate in newborn and to establish a scientific foundation for enhancing the quality of umbilical cord care for mothers. Understanding the role of maternal health –The health of umbilical cord is often influenced by maternal health condition or health condition. By studying infection in the umbilical cord, researchers can gain insight into maternal-fetal transmission of infection and the impact of maternal health on newborn outcomes. Education and Awareness – Research into umbilical cord infections highlights the importance of hygiene in neonatal care. This awareness can lead to better practices among caregivers and healthcare providers, reducing infection rates and associated complications.

Studying umbilical cord infection is vital for improving neonatal health outcomes, preventing severe complications, and understanding the broader implications of newborn care and maternal health on infant survival. Annually about 3.3 million neonatal deaths occur around the world (Oestergaard *et al*., 2011); of these, more than 30% are caused by infections (Lawn *et al*., 2005; Mullany *et al*., 2009). Some of these infections start as umbilical cord infection. Infections are a major contributor to newborn deaths in developing countries with majority of themoccurring at home without receiving medical attention (Thaver *et al*., 2009). Infections account for approximately 36 percent of neonatal mortality worldwide and ninety nine per cent (99%) of them occurring in the low income and developing countries generally in sub Saharan Africa (Lawn *et al*., 2005). Estimated 30-40% of infections resulting in neonatal sepsis deaths are transmitted at the time of childbirth and during early postnatal period (Blencowel *et al*., 2011). Neonatal sepsis may stem from local umbilical cord infections that become systemic (WHO, 1998). In developing countries, little is known about risk factors for umbilical cord infection because previous work focused mainly on neonatal tetanus infection, but even where tetanus toxoid coverage rates are high, umbilical cord infections are likely to continue if practices at delivery and during the postnatal period do not reduce exposure of the umbilical cord stump to dangerous pathogens (Mullany *et al*., 2006).

STATEMENT OF PROBLEM

"A descriptive study to assess the knowledge regarding the importance of Umbilical Cord Care among antenatal women of selected community area of Sahaspur, Dehradun."

OBJECTIVES OF THE STUDY

- To assess the knowledge of antenatal women in selected community area regarding umbilical cord care.
- To determine the association between the level of knowledge and umbilical cord care among the antenatal women with selected demographic variables.

HYPOTHESIS

- **H1 -** There will be significant knowledge of umbilical cord care among antenatal women.
- **H2 –**There is a significant association between demographic variables and knowledge among antenatal women.

ASSUMPTIONS

- Mothers have knowledge regarding importance of umbilical cord care.
- Planned teaching will be effective to improve knowledge regarding umbilical cord care.
- Mothers who practice correct umbilical cord care, their babies are less prone to infection.

LIMITATION

- The study is limited only among antenatal women'sof particular area at Sahaspur.

RESEARCHMETHODOLOGY

Research methodology is the specific procedure or techniques used to identify, select, process, and inquiry information about a topic. In a research paper, the methodology section allows the reader to critically evaluate a study's overall validity and reliability.

RESEARCH APPROACH- Quantitative Research approach.

RESEARCH DESIGN-Descriptive research design.

VARIABLES: Research variable can be defined as the qualities, attributes, properties or characteristics that are observed or measured in a natural setting without manipulating and establishing and effect relationships.

INDEPENDENT VARIABLE: Independent variables are presumed to cause affect, influence or stimulate to outcome. Independent variables are manipulated by research. In this study, independent variables of the study are age, education and knowledge.

DEPENDENT VARIABLE: It refers to outcome or response variable. Dependent variables are the response outcome etc. That measure by the researcher. In this study dependent variable is –knowledge regarding umbilical cord infection.

RESEARCH SETTING –Selected area of Sahaspur of Dehradun.

POPULATION- In this study the population was mothers.

SAMPLE AND SAMPLE SIZE- The total sample size for the present study consists of 60 antenatal women.

Target Population: Antenatal women

SAMPLE TECHNIQUE- convenient sampling technique

DESCRIPTION OF THE TOOL

The tool consists of 2 Section

Section 1: It consists of an interview schedule to assess demographic characteristics such as age, gender, type of family, educational status, family income, no. of children and occupation.

Section 2: Multiple choice question to assess the level of knowledge regarding umbilical cord care.

SAMPLING CRITERIA

Inclusion Criteria: Pregnant women attending antenatal care, women willing to participate and provide consent, women who can understand the language used in the study.

Exclusion Criteria: Women with severe pregnancy complications requiring intensive care. Women who have already received extensive education on umbilical cord care (e.g., healthcare professionals).

CRITERIA FOR SCORING

Section 1: No scoring.

Section 2: The awareness questionnaire consists of 20 questions in total. Each question with the correct answer carries one mark and an incorrect answer carries no mark. The total scoring for overall awareness was twenty.

To interpret the knowledge of umbilical cord care, the scores were converted to percentage and were classified as follows.

Level of knowledge

Adequate	>76%to100%
Moderate	>51% to 75%
Poor	<50%

DATA COLLECTION TOOL

In the present research study, the subsequent tools were used for datacollection.

STUDY TOOL

Section 1 - Self structured questionnaire to collect socio demographic data of eligible couples.

Section 2 - Self structured questionnaire to assess the knowledge regarding umbilical cord care.

STUDY TOOL

Section 1: Self structured questionnaire to collect socio demographic data of eligible couples.

This tool was developed to collect personal information from subjects. It includes Age, Educational qualification, Occupation, Family type, Number of children, Monthly income, source of information.

Section 2: Self structured questionnaire to assess the knowledge related to umbilical cord care among antenatal women.

This tool was developed for knowledge assessment of antenatal women regarding umbilical cord care. It consists of 20 items.

SCORE INTERPRETION

In each item there were multiple options, and the subject had to tick on the one which seemed to be correct according to their correct answer score was 1 and incorrect answer score was 0.

DATA ANALYSIS AND RESULTS

This section presents the findings of the study on knowledge regarding umbilical cord care among mothers. The results are structured into four categories: demographic characteristics, knowledge scores, comparison of knowledge levels, and statistical analysis.

Problem Statement: A descriptive study to assess the knowledge regarding the importance of umbilical cord care among the antenatal women of selected community area of Sahaspur Dehradun

Objectives of the Study

- To assess the knowledge level of mothers regarding umbilical cord care.
- To determine the relationship between maternal demographic characteristics and their knowledge of umbilical cord care.
- To identify the key sources of knowledge and their influence on maternal awareness.
- To provide recommendations for improving maternal education on umbilical cord care practices.

Plan of Analysis

The collected data were analyzed using both descriptive and inferential statistical methods: Chi-square tests were conducted to examine associations between knowledge scores and demographic factors such as age, education level, and source of knowledge. The level of significance chosen was at $p \leq 0.05$.

Organization of Analyzed Data

The data analyzed are presented in the following sections:

Demographic Characteristics: Table 1 presents the demographic distribution of the study participants.

Table 1. Demographic Characteristics of Participants (N=60)

Variable	Frequency (n)	Percentage (%)
Age (years)		
18–25	20	33.3
26–35	25	41.7
36–45	15	25.0
Education Level		
No Formal Education	10	16.7
Primary School	15	25.0
Secondary School	20	33.3
Higher Education	15	25.0
Source of Knowledge		
Healthcare Workers	30	50.0
Family & Friends	15	25.0
Internet/Media	10	16.7
Others	5	8.3

INTREPRETATION: The demographic analysis of the study participants (N=60) revealed that many mothers (41.7%) were in the 26–35 years age group, followed by 33.3% in the 18–25 years category, and 25.0% in the 36–45 years group. This indicates that most participants were of reproductive age, with a predominance in the young adult category. Regarding education levels, 33.3% of the participants completed secondary education, 25.0% had attained higher education, another 25.0% had only primary school education, and 16.7% had no formal education. The variation in educational background suggests a need for tailored maternal health education programs, particularly for mothers with lower literacy levels.

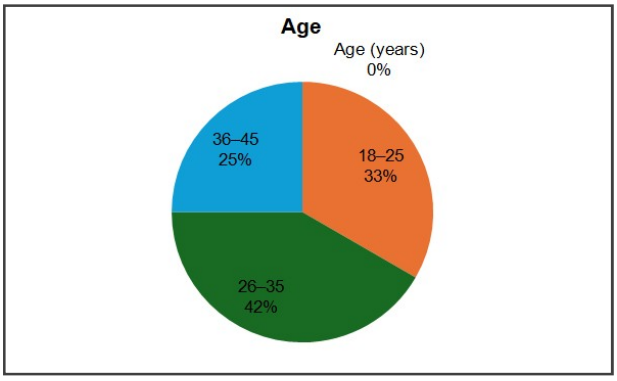

Fig. 1 The demographic profile of the participants provides valuable insights into their age distribution, education levels, and sources of knowledge regarding umbilical cord care. The majority of mothers (41.7%) were in the 26–35 years age group

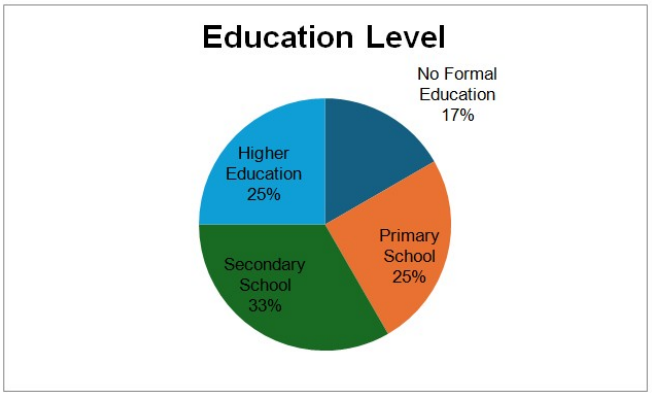

Fig. 2 In terms of education levels, 33.3% of participants had completed secondary education, and 25.0% had attained higher education. However, 16.7% of mothers had no formal education, which could hinder their ability to access and comprehend essential healthcare information. Additionally, 25.0% had only primary school education, indicating a potential gap in health literacy that may impact their knowledge and practices related to newborn care.

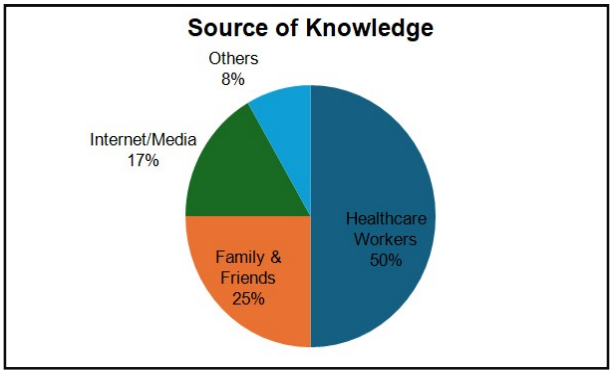

Fig. 3 The study also explored sources of knowledge on umbilical cord care. Healthcare workers emerged as the most prominent source, with 50.0% of mothers acquiring information from medical professionals, highlighting their crucial role in educating new mothers. Family and friends accounted for 25.0%, emphasizing the influence of traditional knowledge-sharing. Meanwhile, 16.7% of participants relied on internet and media sources, reflecting the increasing importance of digital information in maternal health. A small proportion (8.3%) received knowledge from other sources, pointing to the need for structured and reliable health education programs.

Table 2. Frequency & Percentage Distribution of Knowledge Levels (N = 100)

Criteria Measure of Knowledge Score	Percentage (%)	Frequency (n)
Adequate Knowledge (≥75% score)	30.0%	30
Moderate Knowledge (50–74% score)	45.0%	45
Inadequate Knowledge (<50% score)	25.0%	25
Maximum Score	15.0	-
Minimum Score	0.0	-

Adequate Knowledge (30%)

- Only 30 out of 100 mothers demonstrated high knowledge levels (≥75% of total score).
- This suggests that a minority of mothers have strong awareness of umbilical cord care.

Moderate Knowledge (45%)

- The largest group (45 mothers) scored between 50–74%, indicating **partial understanding** but gaps in knowledge.

Inadequate Knowledge (25%)

- A **significant proportion (25%) of mothers had low knowledge**, scoring below 50%.
- This highlights a need for **improved health education programs**.

Knowledge Score Range

- The **maximum score recorded was 15** (full knowledge).
- The **minimum score recorded was 0**, indicating that some mothers had no knowledge of umbilical cord care.

Fig. 4 The findings reveal significant variations in the knowledge levels of mothers regarding umbilical cord care. Among the 100 participants, 30% demonstrated adequate

knowledge, achieving a score of 75% or higher, indicating a strong understanding of proper umbilical cord care practices. However, 45% of mothers exhibited only moderate knowledge, scoring between 50–74%, suggesting that while they possess some awareness, there are notable gaps in their understanding that may affect neonatal care practices. Alarmingly, 25% of mothers had inadequate knowledge, scoring below 50%, which raises concerns about their ability to implement appropriate umbilical cord care measures effectively.

The data further highlights a significant disparity in knowledge levels, with some mothers scoring the maximum of 15 points, demonstrating comprehensive knowledge, while others scored as low as 0 points, indicating a complete lack of awareness. This wide range suggests that factors such as education level, access to healthcare resources, and sources of information may influence maternal knowledge.

Table5. Representing Item-Wise Analysis level of knowledge Scores

Area	Question No.	Correct (%)	Incorrect (%)
PART - B – KNOWLEDGE	Qno.1	65.0	35.0
	Qno.2	72.0	28.0
	Qno.3	50.0	50.0
	Qno.4	58.0	42.0
	Qno.5	40.0	60.0
	Qno.6	85.0	15.0
	Qno.7	62.0	38.0
	Qno.8	48.0	52.0
	Qno.9	75.0	25.0
	Qno.10	55.0	45.0
	Qno.11	68.0	32.0
	Qno.12	80.0	20.0
	Qno.13	42.0	58.0
	Qno.14	59.0	41.0
	Qno.15	47.0	53.0
	Qno.16	71.0	29.0
	Qno.17	66.0	34.0
	Qno.18	45.0	55.0
	Qno.19	53.0	47.0
	Qno.20	38.0	62.0
	Qno.21	79.0	21.0
	Qno.22	60.0	40.0
	Qno.23	49.0	51.0
	Qno.24	56.0	44.0
	Qno.25	67.0	33.0

Knowledge Scores on Umbilical Cord Care: The knowledge scores of mothers were analyzed, and their distribution is shown in Table 2.

Table 3. Knowledge Score Distribution

DESCRIPTIVE STATISTICS	Mean	Median	S.D.	Maximum	Minimum	Range
Knowledge Score Range	7.83	8.00	5.27	15.00	0.0	15.00

Table 4. Table Showing Association of Scores and Demographic Variables

Variables	Adequate Knowledge	Moderate Knowledge	Inadequate Knowledge	Chi-Square Value	p-Value	df	Table Value	Result
Age (years)				**4.07**	0.397	4	9.49	Not Significant
18–25	5	8	7					
26–35	10	12	3					
36–45	4	6	5					
Education Level				**14.17**	0.028	6	12.59	Significant
No Formal Education	1	3	6					
Primary School	3	5	7					
Secondary School	8	9	3					
Higher Education	7	9	1					
Sourceof Knowledge				**3.36**	0.763	6	12.59	Not Significant
Healthcare Workers	12	15	3					
Family & Friends	5	7	3					
Internet/Media	4	4	2					
Others	1	2	2					

Interpretation: The findings indicate that the average knowledge score among mothers was **7.83 out of 15**, translating to **52.22%** of the maximum possible score. The **median score of 8** suggests that half of the participants scored below this value, while the other half scored above it.

A **high standard deviation (5.27)** highlights considerable variability in the knowledge levels among participants, suggesting differences in exposure to information and understanding of umbilical cord care practices. The minimum score of 0 indicates that some mothers had no knowledge about umbilical cord care, whereas the maximum score of 15 signifies that a few participants had complete knowledge. The wide range (15 points) further emphasizes the disparity in knowledge levels, which may be influenced by factors such as education level, access to healthcare resources, and sources of information. These results suggest the need for improved health education programs to enhance maternal knowledge and ensure the adoption of proper umbilical cord care practices.

Interpretation

Age and Knowledge

- The association between age and knowledge scores was not statistically significant (p=0.397p = 0.397p=0.397).
- This indicates that knowledge levels did not significantly differ across age groups.

Education and Knowledge

- The association between education level and knowledge was statistically significant (p=0.028p = 0.028p=0.028).
- Mothers with higher education had more adequate knowledge, while those with no formal education had more inadequate knowledge.
- This highlights the role of education in improving maternal knowledge of umbilical cord care.

Source of Knowledge and Knowledge Scores

- The association between source of knowledge and knowledge scores was not statistically significant (p=0.763p = 0.763p=0.763).

- This suggests that whether a mother learned from healthcare workers, family, media, or other sources, it did not significantly affect her knowledge level.

In summary, education is a crucial factor in improving maternal knowledge about umbilical cord care. Awareness programs should focus on mothers with lower education levels. Age does not significantly affect knowledge, so interventions should targ*et al*l age groups equally. Although healthcare workers are the main source of knowledge, its impact was not statistically significant, suggesting that improving the quality of health education may be more important than just the source of information.

Interpretation

1. **High Knowledge Areas:**
    - Questions **Q6 (85%), Q12 (80%), and Q21 (79%)** had the highest percentage of correct responses.
    - This suggests that most mothers were well-informed about these specific topics.
2. **Low Knowledge Areas:**
    - Questions Q20 (38%), Q5 (40%), and Q13 (42%) had the lowest correct response rates.
    - These areas may require improved health education and awareness programs.
3. **Moderate Knowledge Areas:**
    - Questions with correct responses ranging from 50% to 70% indicate an average understanding.
    - This suggests room for improvement, particularly in clarifying concepts related to umbilical cord care.
4. **Implications for Health Education Programs:**
    - **Reinforcement is needed** for areas where correct responses were below 50%.
    - **Healthcare professionals should focus on frequently misunderstood topics** during maternal education sessions.
    - **Visual aids and digital platforms** can be used to enhance understanding and retention of information.

Interpretation:

- **Age & Knowledge Scores:**
    - The **26–35 years age group** had the highest mean score (55.1%), indicating better knowledge.
    - The **18–25 years group scored lower (50.2%)**, suggesting less experience in neonatal care.
- **Education Level & Knowledge:**
    - Participants with **higher education (57.4%)** had the highest knowledge scores.
    - Those with **no formal education (42.3%)** had the lowest scores, indicating a need for targeted awareness campaigns.
- **Source of Knowledge & Knowledge Scores:**
    - **Healthcare workers (60.3%)** were the most effective source of knowledge.
    - **Internet/Media (48.5%)** and **other sources (43.7%)** had lower scores, suggesting potential misinformation.

A notable observation from this study was that the majority of mothers (41.7%) were in the 26–35 years age group, an age range commonly associated with higher health-seeking behavior and exposure to maternal health services. However, statistical analysis revealed no significant association between age and knowledge scores ($p = 0.397$), suggesting that age alone is not a determinant of umbilical cord care awareness. This finding aligns with previous research that has shown knowledge levels to be more influenced by education and access to healthcare resources rather than maternal age alone.

Education level, on the other hand, emerged as a significant factor influencing knowledge levels ($p = 0.028$). Mothers with higher education were more likely to have adequate knowledge regarding umbilical cord care, whereas those with little or no formal education exhibited lower awareness. This underscores the critical role of educational attainment in fostering maternal health literacy. Similar studies have reported a strong correlation between maternal education and adherence to proper neonatal care practices, reinforcing the necessity for targeted educational interventions for less-educated mothers.
The primary source of information for mothers in this study was healthcare workers (50.0%), followed by family and friends (25.0%), digital sources (16.7%), and other sources (8.3%). Although healthcare professionals were the most cited source of knowledge, the study found no significant association between the source of information and knowledge levels ($p = 0.763$). This suggests that while access to information is crucial, the effectiveness of communication and comprehension of health messages may play a more substantial role in improving maternal knowledge and practices. The knowledge assessment results revealed that only 30% of mothers had adequate knowledge (≥75% of the total score), whereas 45% demonstrated moderate knowledge (50–74%), and 25% had inadequate knowledge (<50%). The mean knowledge score of 7.83 out of 15 (52.22%) with a high standard deviation (5.27) highlights considerable variability among participants. This variability may be attributed to disparities in education, accessibility to healthcare services, and cultural beliefs surrounding neonatal care. Previous studies have also highlighted similar gaps in maternal knowledge, advocating for structured health education programs tailored to different literacy levels. Given these findings, there is a clear need for enhanced maternal health education programs focusing on umbilical cord care. Community-based interventions, including workshops, counseling sessions, and digital health campaigns, could serve as effective strategies to improve knowledge dissemination. Furthermore, integrating umbilical cord care education into routine antenatal and postnatal visits could ensure that all mothers, regardless of their educational background, receive essential guidance on newborn care practices.

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