

KNOWLEDGE, ATTITUDE, AND PRACTICE OF MOTHERS REGARDING MANAGEMENT OF DIARRHOEA IN CHILDREN IN NORTH KARNATAKA

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**ABSTRACT**

Background: Diarrheal diseases remain one of the leading causes of morbidity and mortality among children under five years of age, particularly in low- and middle-income countries. This study aimed to assess the knowledge, attitudes, and practices (KAP) of mothers regarding the management of childhood diarrhea, a leading cause of morbidity and mortality in children worldwide. **Materials and Methods:** A cross-sectional descriptive study was conducted at Koppal Institute of Medical Sciences, Koppal, Karnataka with 150 mothers of children aged 6 months to 5 years in North Karnataka. Data were collected through structured face-to-face interviews using a pre-tested questionnaire that assessed knowledge of diarrhea symptoms and causes, attitudes toward treatment, and practices related to breastfeeding, bottle feeding, hand hygiene, and medical care seeking. **Result:** The study found that 78% of mothers had accurate knowledge of diarrhea symptoms, while only 56% knew the causes of diarrhea. Knowledge of oral rehydration salts (ORS) was high (82%), but only 46% of mothers knew how to prepare ORS correctly. Despite recognizing the seriousness of diarrhea (85%), 41.3% of mothers preferred self-treatment with home remedies, and 29.3% did not seek medical care for diarrhea. The majority (59.3%) continued breastfeeding during diarrhea episodes, and 74.7% washed their hands before preparing ORS. Significant associations were found between maternal education level and knowledge of diarrhea symptoms ($p = 0.001$), as well as between handwashing practices and knowledge of ORS ($p = 2.35e-06$). **Conclusion:** It is concluded that maternal knowledge, attitudes, and practices regarding the management of childhood diarrhea play a crucial role in shaping health outcomes for children.

INTRODUCTION

Diarrheal diseases continue to be one of the most common and preventable causes of morbidity and mortality in children under five years of age globally.^[1] According to the World Health Organization (WHO), diarrhea is responsible for approximately 1.7 million deaths annually among children under five years old, particularly in low- and middle-income countries. In these regions, the lack of adequate healthcare infrastructure, clean water, sanitation, and proper nutrition exacerbates the impact of diarrheal diseases.^[2] The condition is often caused by infectious agents such as bacteria, viruses, and parasites, and while it is usually self-limiting, it can lead to severe dehydration, malnutrition, and even death if not properly managed. The role of caregivers, especially mothers, in ensuring timely treatment and prevention of

dehydration is crucial to improving health outcomes for children suffering from diarrhea.^[3] Mothers, as primary caregivers, are generally responsible for the initial care and management of their children's health.^[4] The knowledge they possess regarding diarrheal diseases, their attitudes toward the management practices, and the way they implement preventive measures can have a significant effect on the severity and outcomes of the condition.^[5] Despite the availability of simple, effective treatment methods such as oral rehydration salts (ORS), zinc supplementation, and continued feeding, many mothers still lack the proper knowledge and understanding to manage diarrhea effectively.^[6] Furthermore, misconceptions about the causes of diarrhea, the role of antibiotics, and traditional remedies can hinder optimal management, leading to increased morbidity and mortality.^[7]

The importance of assessing the knowledge, attitude, and practices (KAP) of mothers regarding diarrhea management cannot be overstated. Previous studies have demonstrated that when mothers possess adequate knowledge about the signs and symptoms of dehydration and the benefits of ORS, they are more likely to seek appropriate care and adopt recommended treatments.^[8] For instance, the timely use of ORS can prevent the majority of diarrhea-related deaths by replenishing lost fluids and electrolytes. However, knowledge gaps remain, with many mothers unaware of the importance of continued breastfeeding or the need for appropriate dietary adjustments during episodes of diarrhea.^[9] Additionally, some mothers rely on home remedies, which may be ineffective or harmful, rather than seeking evidence-based medical treatment.^[10] A mother's attitude towards diarrhea management is also influenced by cultural beliefs, socioeconomic status, and accessibility to healthcare services. In certain communities, there may be a strong reliance on traditional medicine or a stigma attached to seeking formal healthcare for conditions like diarrhea.^[11] These attitudes, combined with inadequate healthcare infrastructure in some areas, can delay access to proper treatment and worsen the child's condition. On the other hand, a positive attitude toward seeking timely medical advice and following proper management protocols can lead to better health outcomes.^[12] Furthermore, the level of maternal education, awareness campaigns, and health interventions in a given region significantly shape the attitude and practices of mothers toward childhood diarrhea.^[13]

Objective: This study aimed to assess the knowledge, attitudes, and practices (KAP) of mothers regarding the management of childhood diarrhea, a leading cause of morbidity and mortality in children worldwide.

MATERIALS AND METHODS

A cross-sectional descriptive study was conducted at Koppal Institute of Medical Sciences, Koppal, Karnataka with 150 mothers of children aged 6 months to 5 years in North Karnataka. The sample size was determined based on the estimated prevalence of childhood diarrhea and the expected response rate, ensuring adequate statistical power for analyzing the data. Mothers of children aged 6 months to 5 years were included in the study, as this age group is particularly susceptible to diarrheal diseases.

Inclusion Criteria

- Mothers of children aged 6 months to 5 years.
- Mothers who are the primary caregivers of the child.
- Willingness to provide informed consent.

Exclusion Criteria

- Mothers of children with chronic medical conditions that predispose them to recurrent diarrhea (e.g., chronic gastrointestinal diseases).
- Mothers who were unable to provide consent or participate in the survey due to language barriers or other cognitive limitations.

Data Collection Tools: Data were collected through a structured questionnaire with mothers during their visits to local healthcare facilities or community health centers. After obtaining informed consent, trained enumerators administered the questionnaire to the participants. A structured, pre-tested questionnaire was developed to assess the knowledge, attitudes, and practices of mothers regarding the management of childhood diarrhea. The questionnaire was designed in English and then translated into the local language (e.g., Urdu or regional dialect) to ensure comprehensive understanding. The questionnaire consisted of three sections:

Knowledge Section: This section assessed the mother's understanding of the causes and symptoms of diarrhea, the importance of ORS (oral rehydration salts) and zinc supplementation, the role of breastfeeding during diarrhea, and the proper use of medications.

Attitude Section: This section explored the mother's beliefs and attitudes towards managing diarrhea, including her perceptions of the seriousness of diarrhea, the importance of seeking medical treatment, and preferences for traditional remedies or home-based care.

Practice Section: The practices section focused on the actual behaviors of mothers when their children experienced diarrhea. This included whether they used ORS, continued breastfeeding, sought medical care, and used any home remedies or over-the-counter medications.

Data Analysis: Data collected from the questionnaires were entered into a computer-based database using statistical software such as SPSS v26.0. Descriptive statistics, including frequencies, percentages, mean, and standard deviation, were used to summarize the maternal knowledge, attitudes, and practices. Inferential statistics such as Chi-square tests were used to examine the relationships between maternal demographics (e.g., education, socioeconomic status) and their KAP scores. A p-value of less than 0.05 was considered statistically significant.

RESULTS

Data were collected from 150 participants, mean age of participants was 29.31 years, ranging from 18 to 45 years, with the most frequently reported age being 25 years (14 participants). On average, mothers had 1.76 children (SD = 1.02), with the number of children ranging from 0 to 4. Regarding education, 32 mothers (21.3%) had secondary

education, 58 mothers (38.7%) had graduate-level education, and 60 mothers (40%) had other levels of education, including illiterate. Knowledge regarding diarrhea symptoms was reported as accurate by 78% of mothers, while 22% lacked accurate knowledge. When asked about the causes of diarrhea, 56% of mothers responded correctly, whereas 44% did not. In terms of feeding practices during diarrhea, 59.3% of mothers continued breastfeeding, while 40.7% did not. Bottle feeding was less common, with only

28% of mothers practicing it, and 72% refrained from bottle feeding. Cultural beliefs such as superstition (e.g., evil eye) were reported by 50.7% of mothers. Handwashing before ORS preparation was practiced by 74.7% of mothers, whereas 25.3% did not follow this practice. Awareness of ORS was high (82%), but only 46% knew how to prepare it correctly. Knowledge of home-based fluids for diarrhea management was reported by 64.7% of mothers.

Table 1: Demographic and Baseline Values of Participants

Variable	Value
Total Participants	150
Age	
- Mean Age	29.31 years
- Age Range	18 - 45 years
- Most Frequent Age (Mode)	25 years
- Frequency of Most Frequent Age (Mode)	14 participants
Number of Children	
- Mean Number of Children	1.76
- Standard Deviation	1.02
- Range	0 - 4 children
Education Level	
- Secondary Education	32 (21.3%)
- Graduate Education	58 (38.7%)
- Other Education (e.g., illiterate)	60 (40%)
Knowledge Regarding Diarrhea Symptoms	
- Correct Knowledge	78% (117)
- Incorrect Knowledge	22% (33)
Knowledge Regarding Diarrhea Causes	
- Correct Knowledge	56% (84)
- Incorrect Knowledge	44% (66)
Breastfeeding Practices During Diarrhea	
- Continue Breastfeeding	59.3% (89)
- Do Not Continue Breastfeeding	40.7% (61)
Bottle Feeding Practices	
- Bottle Feeding	28% (42)
- No Bottle Feeding	72% (108)
Superstition Belief (Evil Eye)	
- Believe in Superstition	50.7% (76)
- Do Not Believe in Superstition	49.3% (74)
Handwashing Before ORS Preparation	
- Wash Hands Before Preparation	74.7% (112)
- Do Not Wash Hands Before Preparation	25.3% (38)
Knowledge of ORS	
- Know About ORS	82% (123)
- Do Not Know About ORS	18% (27)
Knowledge of ORS Preparation	
- Know How to Prepare ORS	46% (69)
- Do Not Know How to Prepare ORS	54% (81)
Knowledge of Home-Based Fluids	
- Know About Home-Based Fluids	64.7% (97)
- Do Not Know About Home-Based Fluids	35.3% (53)

The knowledge assessment showed that most mothers (78%) had accurate knowledge of diarrhea symptoms, and 56% were aware of the causes of diarrhea. Regarding ORS, 82% of mothers were familiar with its use, but only 46% knew how to prepare it properly. Knowledge about home-based

fluids was reported by 64.7% of participants, indicating that while basic awareness of diarrhea management exists, practical knowledge regarding preparation of ORS and alternative home-based solutions is limited.

Table 2: Knowledge of Mothers Regarding Diarrhea Management

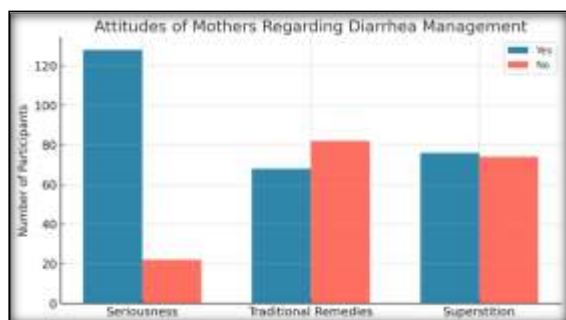
Variable	Category	Frequency (%)
Knowledge of Diarrhea Symptoms	Accurate Knowledge	78% (117)
	Inaccurate Knowledge	22% (33)
Knowledge of Causes of Diarrhea	Accurate Knowledge	56% (84)
	Inaccurate Knowledge	44% (66)
Knowledge of ORS	Familiar with ORS	82% (123)
	Unfamiliar with ORS	18% (27)
Knowledge of How to Prepare ORS	Know How to Prepare ORS	46% (69)
	Do Not Know How to Prepare ORS	54% (81)
Knowledge of Home-Based Fluids	Familiar with Home-Based Fluids	64.7% (97)
	Unfamiliar with Home-Based Fluids	35.3% (53)

Most mothers (85%) perceived diarrhea as a serious condition, whereas 15% underestimated its severity. Approximately 45% of mothers believed in traditional remedies such as homeopathy, while 55% did not rely on them. Superstitious beliefs were reported by 50.7% of mothers. The majority

(70.7%) expressed a strong belief in seeking medical help for diarrhea, yet 41.3% preferred self-treatment using home remedies. When diarrhea symptoms were severe, 81.3% of mothers were willing to seek medical assistance, while 18.7% were hesitant to do so.

Table 3: Attitude of Mothers Regarding Diarrhea Management

Variable	Category	Frequency (%)
Attitude Towards Diarrhea Management	Seriousness of Diarrhea	85% (128)
	Not Serious (Misconception)	15% (22)
Belief in Traditional Remedies (e.g., Homeopathy)	Strong Belief in Traditional Remedies	45% (68)
	Do Not Rely on Traditional Remedies	55% (82)
Belief in Superstitions (e.g., Evil Eye)	Believe in Superstition	50.7% (76)
	Do Not Believe in Superstition	49.3% (74)
Belief in Seeking Medical Treatment	Strong Belief in Seeking Medical Help	70.7% (106)
	Do Not Believe in Seeking Medical Help	29.3% (44)
Preference for Self-Treatment	Prefer Self-Treatment (Home Remedies)	41.3% (62)
	Do Not Prefer Self-Treatment	58.7% (88)
Willingness to Seek Medical Help if Severe	Always Seek Help if Severe Symptoms	81.3% (122)
	Will Not Seek Help if Symptoms are Severe	18.7% (28)



Practical behaviors showed that 59.3% of mothers continued breastfeeding during diarrhea episodes, while 40.7% did not. Bottle feeding was practiced by 28% of mothers and avoided by 72%. Proper handwashing before ORS preparation was observed in 74.7% of mothers. Regarding medical treatment, 67.3% always sought medical help, while 32.7% relied on self-treatment. Regular use of ORS for diarrhea management was reported by 82% of mothers.

Table 4: Practice of Mothers Regarding Diarrhea Management

Variable	Category	Frequency (%)
Breastfeeding During Diarrhea Episode	Continue Breastfeeding	59.3% (89)
	Do Not Continue Breastfeeding	40.7% (61)
Bottle Feeding	Bottle Feeding	28% (42)
	Do Not Bottle Feed	72% (108)
Handwashing Before ORS Preparation	Wash Hands Before Preparation	74.7% (112)
	Do Not Wash Hands Before Preparation	25.3% (38)
Seek Medical Treatment	Always Seek Medical Help	67.3% (101)
	Avoid Medical Help (Self-Treatment)	32.7% (49)
Use of ORS for Diarrhea Management	Use ORS Regularly	82% (123)
	Do Not Use ORS Regularly	18% (27)



DISCUSSION

The findings of this study provide a comprehensive understanding of the knowledge, attitudes, and practices (KAP) of mothers regarding the management of diarrhea in children. Diarrheal diseases continue to be a leading cause of morbidity and mortality in children, especially in low- and middle-income countries, making it critical to examine how caregivers, particularly mothers, manage this condition. Our study highlights several key findings that can inform public health strategies aimed at improving diarrhea management practices in the community. The study revealed that while a majority of mothers demonstrated adequate knowledge of diarrhea symptoms (78%), only 56% were aware of the causes of diarrhea. This knowledge gap could be attributed to the limited access to comprehensive health education on diarrhea, which may leave mothers unaware of the underlying factors that contribute to the condition. The lack of knowledge regarding diarrhea causes may also explain the reliance on home remedies or superstitions, such as the "evil eye," seen in a substantial portion of the participants (50.7%).^[13] The knowledge of ORS (82%) was relatively high among the mothers, which is promising as ORS is a cornerstone in managing dehydration caused by diarrhea. However, the knowledge on how to prepare ORS (46%) was significantly lower, indicating a need for more targeted educational interventions focusing on the preparation and proper use of ORS. This knowledge gap may explain why some mothers may not be fully utilizing ORS to its potential, which could result in poor outcomes in managing dehydration, a key risk factor in diarrheal morbidity and mortality.^[14] The attitudes of mothers toward diarrhea management revealed mixed perceptions. Most mothers recognized the seriousness of diarrhea (85%) and believed in seeking medical treatment for diarrhea. However, a concerning finding was that 41.3% of mothers still preferred self-treatment through home remedies, despite knowing the importance of medical intervention. Additionally, 29.3% of mothers did not believe in seeking medical care, potentially delaying treatment and exacerbating the child's condition.^[15-18]

In terms of practical behaviors, the study found positive trends in practices such as breastfeeding

during episodes of diarrhea. 59.3% of mothers continued breastfeeding during their child's diarrhea, which is consistent with current recommendations for maintaining nutrition during diarrhea. However, 28% of mothers still resorted to bottle-feeding, which is not recommended due to the risk of further gastrointestinal irritation and dehydration. This suggests that while breastfeeding rates were relatively good, there remains a portion of mothers who still rely on bottle-feeding, which needs to be addressed in educational programs. Another encouraging finding was the high rate of handwashing practices before preparing ORS (74.7%) and after contact with diarrhea (68%). Hand hygiene is a critical aspect of diarrhea prevention and management.^[19] However, a proportion of mothers (25.3%) did not wash their hands before preparing ORS, which can lead to contamination and reduce the efficacy of the treatment. This gap underscores the need for further education on the importance of hygiene practices during diarrhea management and ORS preparation.^[20,21] The findings of this study have important implications for public health strategies. First, improving maternal education on diarrhea, its causes, and the importance of ORS preparation is essential. This can be achieved through targeted community health education programs, which could focus on areas where knowledge gaps exist, such as the preparation and correct usage of ORS. Second, addressing cultural beliefs and superstitions is critical. Community health workers and healthcare professionals must work with community leaders to challenge misconceptions and encourage evidence-based treatments, particularly emphasizing the importance of seeking medical care for diarrhea, even in mild cases. Finally, hygiene education programs should continue to promote handwashing before preparing ORS and after handling children with diarrhea, as this can significantly reduce the spread of pathogens and improve treatment effectiveness.

CONCLUSION

It is concluded that maternal knowledge, attitudes, and practices regarding the management of childhood diarrhea play a crucial role in shaping health outcomes for children. While the majority of mothers in the study demonstrated adequate knowledge of diarrhea symptoms and the importance of oral rehydration salts (ORS), significant gaps were observed in their understanding of the causes of diarrhea and the correct preparation of ORS. Additionally, cultural beliefs and reliance on home remedies still influence the management practices of some mothers, often delaying timely medical intervention. Despite recognizing the seriousness of diarrhea, a considerable number of mothers preferred self-treatment or avoided seeking medical help during

milder symptoms. This highlights the need for targeted public health education programs that not only enhance knowledge about diarrhea causes and treatments but also promote early medical consultation for all cases of diarrhea, regardless of severity.

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