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RESEARCH ARTICLE
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"RELATION OF MATERNAL LITERACY AND KNOWLEDGE ABOUT ORS WITH ACUTE DIARRHEA AND ITS OUTCOME: A HOSPITAL BASED TERTIARY CARE CENTER STUDY IN RAJASTHAN"

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ABSTRACT

Background: Acute diarrheal illness continues to be one of the primary contributors to morbidity and mortality among children under five years of age in developing nations.

Objective: This study aimed to explore the relationship between maternal literacy, awareness of oral rehydration solution (ORS), and outcomes in under five children admitted with diarrhea.

Methods: A prospective observational study was carried out over one year at SHKBM Hospital, Jhalawar, including 400 mothers of children aged 6 months to 5 years. A structured interview schedule was used to assess maternal literacy, knowledge regarding ORS, awareness of danger signs, hygiene and feeding practices. Data were analyzed using SPSS 25.

Results: Of 400 participants, 52.8% were literate. Maternal literacy was significantly associated with lower rates of severe dehydration ($p < 0.001$). Only 57% mothers knew correct ORS preparation, and 49% reported starting ORS the same day of diarrhea onset. About 70.5% could identify danger signs. Children of illiterate mothers had higher prevalence of severe dehydration (22/189 vs. 4/211). Rural residence was significantly associated with more severe dehydration ($p = 0.007$).

Conclusion: Although awareness of diarrhea prevention and ORS use was moderate, significant gaps persist in correct ORS preparation and timely administration. Maternal literacy and health education strongly influence diarrhea outcomes. Focused health education and community-based awareness programs are essential to reduce morbidity and mortality.

Keywords: Diarrhea, Oral Rehydration Therapy, Maternal Literacy, Under-five Children, Rajasthan

INTRODUCTION

Diarrheal diseases are among the leading preventable causes of illness and death in under-five children, particularly in low- and middle-income countries. Despite the availability of simple interventions such as oral rehydration therapy (ORT), coverage and utilization remain inadequate [1,2]. Globally, diarrhea was responsible for approximately 8% of all deaths among children under five in 2017. Dehydration is major threat, and through diarrhea also reduces the absorption of nutrients causing poor growth in children, reduce resistance to infection. Young children are most vulnerable especially under 5 years of age group.[3]

In India, the NFHS-4 reported prevalence of diarrhea in Rajasthan as 7.4% in under-five children.[4] Knowledge, attitude, and practices (KAP) of mothers play a vital role in determining health outcomes in diarrheal diseases. This study was undertaken to assess maternal knowledge about diarrhea and ORS in Jhalawar, Rajasthan.

Global reports indicated that in 2017 worldwide, just over 40 per cent of children under age 5 with diarrhea receive the recommended treatment of oral rehydration therapy and continued feeding. Coverage of this treatment package is lowest in the Middle East and North Africa, South Asia and sub-Saharan Africa (34 per cent, 37 per cent and 39 per cent, respectively). Sub-Saharan Africa and South Asia are also the regions with the most deaths from diarrhea. Over the observed period, progress of this important intervention has been very slow. [5]

METHODS

Study Design: Prospective hospital-based study.

Setting: Department of Pediatrics, SHKBM Hospital, Jhalawar Medical College, Rajasthan.

Duration: December 2018 to November 2019.

Sample: 400 mothers of children aged 6 months–5 years admitted with acute diarrhea.

Exclusion: Children <6 months or >5 years, chronic diarrhea (>14 days), dysentery, unwilling mothers.

Data Collection: A pretested questionnaire assessed maternal literacy, ORS knowledge, awareness of danger signs, hygiene and feeding practices. Interviews were conducted in local language by trained personnel.

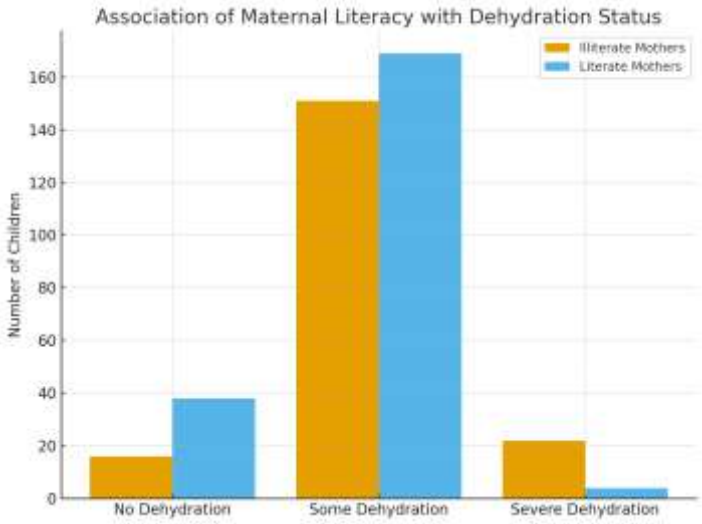
Analysis: Data were entered and analyzed using SPSS v25. Chi-square and Fisher's exact test were applied. A p-value <0.05 was considered significant.

RESULTS

Of the 400 children, 54.8% were boys and 53.3% were below 12 months of age. Severe dehydration was observed more often in children from rural families (p = 0.007). Maternal literacy had a significant protective effect, with literate mothers reporting markedly fewer cases of severe dehydration compared to illiterate mothers (p < 0.001).

Table 1: Association of maternal literacy with dehydration status

		DEHYDRATION STATUS			Total
		NO DEHYDRATION	SOME DEHYDRATION	SEVERE DEHYDRATION	
LITERACY OF MOTHER	ILLITERATE	16	151	22	189
	LITERATE	38	169	4	211
Total		54	320	26	400
P value is < .001 Chi-square 21.294					

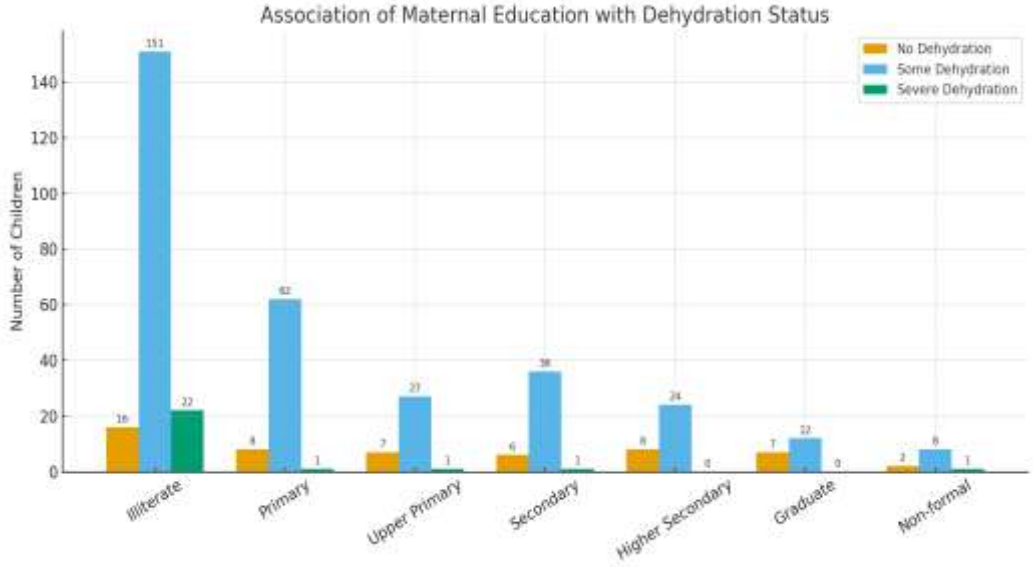


Feeding practices influenced diarrheal outcomes: 28% of children were exclusively breastfed, 45.4% were bottle-fed, and 26.6% received mixed feeding. Exclusive breastfeeding was associated with reduced dehydration, while bottle-feeding was a risk factor [7]. Weaning practices also contributed; among children aged 4 months to 1 year, 74.5% had begun weaning, and inadequate hygiene in food preparation was linked to higher episodes of diarrhea.

Table: 2 Association of education of mother with dehydration status

EDUCATION OF MOTHER		DEHYDRATION STATUS			Total
		NO DEHYDRATION	SOME DEHYDRATION	SEVERE DEHYDRATION	
	ILLITERATE	16	151	22	189
	PRIMARY	8	62	1	71
	UPPERPRIMARY	7	27	1	35
	SECONDARY	6	36	1	43
	HIGHERSECONDARY	8	24	0	32
	GRADUATE	7	12	0	19
	NONFORMAL	2	8	1	11
Total		54	320	26	400

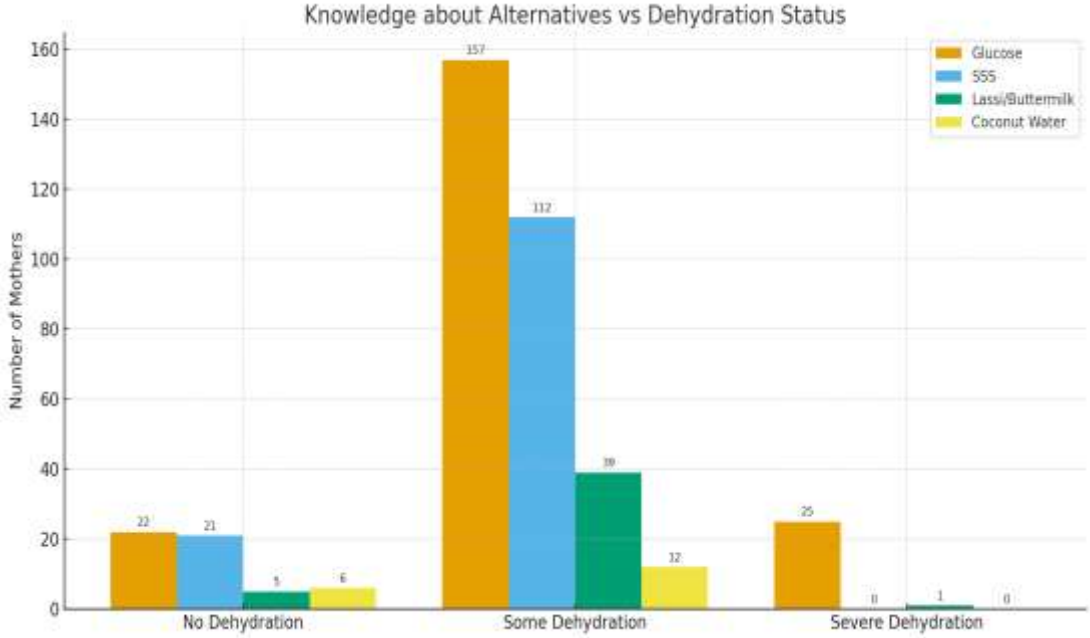
None of the Graduate and Higher secondary educated mother's child suffering from severe dehydration.



Knowledge about ORS was suboptimal. Although nearly all mothers (95%) had heard about ORS, only 57% demonstrated the correct method of preparation. More than half (51%) believed that plain glucose water could substitute for ORS. Only 49% started ORS administration on the first day of diarrhea. Danger sign recognition was reported by 70.5% overall, but among children with severe dehydration only 42.3% of mothers recognized danger signs.

Table: 3 Association of dehydration status with Knowledge of ORS alternatives

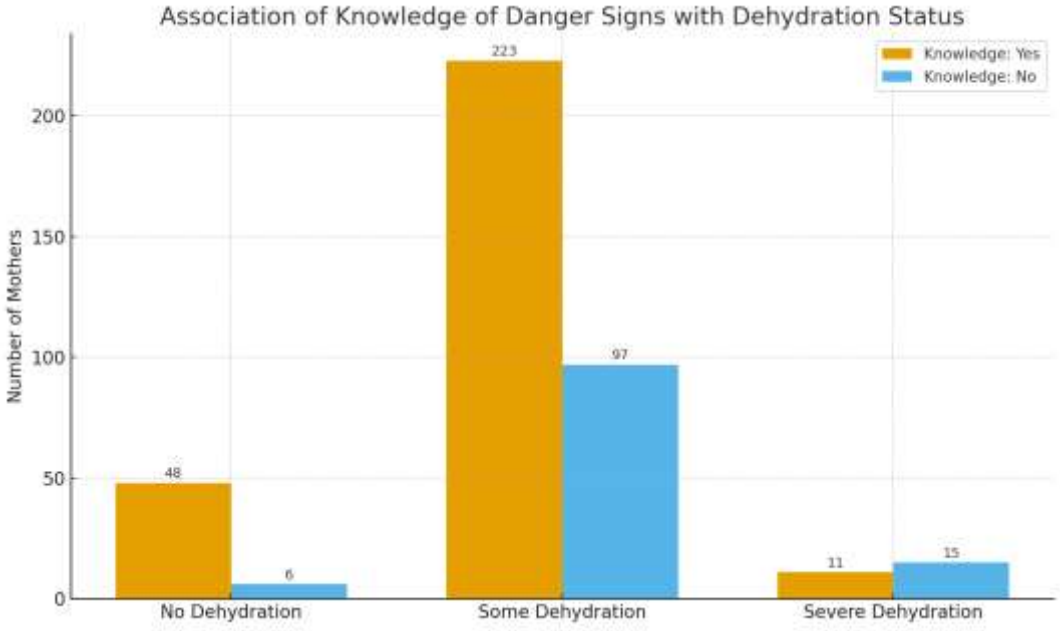
		KNOWLEDGE ABOUT ALTERNATIVES				Total	Chi-square	P value
		GLUCOSE	SSS	LASSI/ BUTTERMILK	COCONUT WATER		29.72	< .001
	NO DEHYDRATION	22	21	5	6	54		
	SOME DEHYDRATION	157	112	39	12	320		
	SEVERE DEHYDRATION	25	0	1	0	26		
Total		204	133	45	18	400		



204(51%) mothers having misconception that plain glucose water can be used in place of ORS at home.

Table: 4 Association of knowledge of danger signs with dehydration status

		DEHYDRATION STATUS			Total
		NO DEHYDRATION	SOME DEHYDRATION	SEVERE DEHYDRATION	
KNOWLEDGE REGARDING DANGER SIGNS	YES	48	223	11	282
	NO	6	97	15	118
Total		54	320	26	400
P value from Fisher's Exact test is < .001 Chi-square 18.818					



In severe dehydration group only 42.3 % having any knowledge about danger signs.
Literate mothers had significantly better knowledge and practices than illiterate mothers.

DISCUSSION

The present study confirms that maternal literacy is strongly associated with better knowledge and practices related to diarrhea management. Children of literate mothers had significantly lower rates of severe dehydration. This aligns with findings from Bangladesh, Delhi, and Maharashtra, where higher maternal education levels were consistently linked to improved health practices [6,7]. Despite awareness of ORS, correct preparation and timely initiation remain inadequate, echoing the gaps reported in earlier Indian studies [8].

Misconceptions such as using glucose water or delaying ORS are key barriers that need to be addressed through targeted health education. Our findings emphasize the need for strengthening IEC campaigns, training of ASHA and Anganwadi workers, and improved community awareness programs. Ensuring availability of ORS packets at household and community levels, combined with maternal education, can significantly reduce diarrheal morbidity.

In this study, 43% mothers (19% in severely dehydrated children, 59% in some dehydration group and 62.9% mothers in children with no dehydration) knew how to prepare Oral Rehydration Solution. As it can be seen from the data that lack of knowledge leads to worsened child's dehydration. Pandey et al [7]. Regarding preparation of ORS, 19 % mothers had good, 65% mothers had average knowledge and rest 16% were having poor knowledge. From total 400 patients 189 (47.3%) mothers think that ORS is used to stop diarrhea, 135(33.8%) did not know whereas only 76(19%) having good knowledge that ORS is used to replace fluid and electrolytes loss, Similarly Dr. Rajendra G et al [8] found 15.8 % knew that ORS is used for fluid and electrolyte replacement. Targeted IEC campaigns and training of community health workers are essential. Policy efforts must prioritize maternal education and child health awareness in semi-urban Rajasthan.

CONCLUSION

Maternal literacy and health education significantly influence diarrhea outcomes. It was seen that certain government initiatives like intensified diarrhea control fortnight (IDCF), mass media campaign, awareness through Anganwadi and ASHA leads to increase in the knowledge about ORS, Diarrhea, Hygiene and Diet in comparison to previous studies. Strengthening community-based health education programs, ensuring availability of ORS, and empowering mothers through education are key strategies to reduce morbidity and mortality due to childhood diarrhea.

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