



UNDERSTANDING WATERBORNE DISEASES AMONG MOTHERS IN RURAL INDIA: PREVALENCE, KNOWLEDGE, AND IMPLICATIONS

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ABSTRACT

Waterborne diseases pose a significant public health threat, particularly in rural areas where access to clean water and sanitation facilities is limited. This descriptive study aimed to assess the prevalence and knowledge of waterborne diseases among mothers in the rural area of Khetri, Jhunjhunu, Rajasthan, India. A sample of 100 mothers with children aged 6-12 years participated in the study, providing demographic information and responses to a structured questionnaire. Descriptive and inferential statistical analyses were conducted to analyze the data. The assessment of the prevalence of waterborne diseases revealed that 40.66% of mothers reported a history of their children exhibiting symptoms consistent with waterborne disease illnesses. Furthermore, the study found varying levels of knowledge among mothers regarding waterborne diseases, with 28% demonstrating poor knowledge, 41% moderate knowledge, and 31% good knowledge on the subject. Statistical analysis indicated significant associations between maternal knowledge and demographic variables such as age, education level, occupation, family income, and type of family. In conclusion, this study contributes valuable insights into the prevalence and knowledge of waterborne diseases among mothers in rural India. By building upon the findings of previous research and integrating lessons learned, policymakers and public health authorities can develop comprehensive strategies to promote community health and well-being. Improvements in infrastructure, access to clean water, and sanitation facilities are essential components of these strategies.

KEYWORDS: *Waterborne diseases, Prevalence, Knowledge, Mothers, Rural areas, India.*

INTRODUCTION

Waterborne diseases, constituting a significant public health concern, arise from infections propagated by pathogenic microorganisms present in contaminated water sources, including bacteria, viruses, and parasites^[1]. Approximately 2.6 billion people in the developing world lack sufficient sanitation, and a significant proportion resides in rural areas. Lack of access to clean water and sanitation contributes to the spread of diseases like viral hepatitis, with reported incidences ranging from 12 to 100 cases per 100,000 people.^[2,3]

This distinction is crucial in understanding the transmission dynamics, as exemplified by diseases like malaria, where although mosquitoes have aquatic phases, the actual transmission occurs through mosquito bites.^[4] Recognizing and delineating waterborne diseases from other infection types is imperative for effective public health planning, facilitating targeted interventions, and ensuring that measures implemented are specific to the

primary mode of transmission, thereby mitigating the risk of waterborne illnesses in communities worldwide.^[5] Water-based diseases are directly linked to aquatic environments and involve contact with contaminated water so Effective control measures for water-based diseases involve not only treating affected individuals but also implementing strategies to reduce environmental contamination.^[6]

The report said that poor water quality and the lack of adequate disposal of human, animal, and household wastes are contributing to waterborne diseases. Just 30% of waste water from India's cities is treated before disposal. The rest flows into rivers, lakes and groundwater, it said. Outbreaks of waterborne diseases caused by the contamination of water in the rural regions have become an area of prime concern in the research arena. The impact and intensity of waterborne diseases are expected to increase in these socioeconomic backward regions. India is one of the world's oldest

civilizations. It is a country in the region of South Asia, where the burden of waterborne diseases is of serious concern.^[7]

Understanding the prevalence and knowledge of waterborne diseases among mothers is crucial for implementing targeted interventions and preventive measures to safeguard public health in these vulnerable communities. The transmission dynamics of these diseases are influenced by various factors, including socio-economic status, environmental conditions, and behavioral practices related to water use and hygiene. Effective control measures necessitate not only treating affected individuals but also implementing strategies to reduce environmental contamination and promote behavior change among communities. By delineating the prevalence rates and understanding the knowledge levels among mothers, this research seeks to inform the development of targeted interventions and educational initiatives aimed at reducing the incidence of waterborne diseases and improving overall public health outcomes in rural communities.

METHODOLOGY

Research approach: The research approach adopted for this study is descriptive, aiming to provide a comprehensive portrayal of the prevalence and knowledge of waterborne diseases among mothers.

Setting of the study: The study is conducted in the rural area of Khetri, Jhunjhunu, Rajasthan, chosen for its geographical proximity, feasibility of conducting the study, and availability of samples.

Sample and Sample size: A sample of 100 mothers is selected using a non-probability convenient sampling technique. This sample size is determined to provide practical and manageable data while ensuring a balanced representation of the broader population. Inclusion criteria encompass mothers with children aged 6-12 years who understand Hindi or English and are willing to participate in the study.

Data collection Tools and Techniques: A self-administered structured questionnaire is used as the primary data collection tool. This questionnaire includes demographic details and questions assessing the prevalence and knowledge of waterborne diseases among mothers. The tool's validity and reliability are ensured through expert validation and reliability measures such as the KR 20 method.

Plan for data analysis: Data analysis involves organizing, tabulating, summarizing, and analyzing collected data according to the study's objectives. Descriptive and inferential statistics are employed to analyze the prevalence rates, maternal knowledge, and association with selected demographic variables.

RESULT

Table 1: Frequency and percentages of distribution of socio - demographic variables of samples. (N=100)

S. N.	Demographical variable	Frequency	Percentage
1	Age of mother		
	(A) 25-29 years	29	29.0
	(B) 30-34 years	33	33.0
	(C) 35-39 years	16	16.0
	(D) >40 years	22	22.0
2	Education of mother		
	(A) No education/Illiterate	17	17.0
	(B) Primary school	16	16.0
	(C) Secondary school	26	26.0
	(D) Sr. Sec. school	31	31.0
3	Occupation of mother		
	(A) House maker	84	84.0
	(B) Self employed	6	6.0
	(C) Government employee	4	4.0
	(D) Private employee	6	6.0
4	Family income monthly in rupees		
	(A) < 15000	10	10.0
	(B) 15001-20000	40	40.0
	(C) 20001-25000	42	42.0
	(D) > 25001	8	8.0
5	Type of family		
	(A) Nuclear	16	16.0
6	Source of water		
	(A) Well	35	35.0

	(B) Rain (Hod)	22	22.0
	(C) Municipal	43	43.0
7	Waste management in community		
	(A) Open	100	100.0
	(B) Close	0	0.0
8	Drainage system in community		
	(A) Open drainage system	100	100.0
	(B) Close drainage system	0	0.0
9	No. of children in family		
	One	23	23.0
	two	27	27.0
	Three	36	36.0
	More than three	14	14.0

The socio-demographic shows that majority of mothers fell within the age range of 30-34 years (33.0%), followed closely by those aged 25-29 years (29.0%). Regarding education, the largest proportion of mothers had attained education up to Senior Secondary School (31.0%), while a significant portion were educated up to Secondary School level (26.0%). The predominant occupation among mothers was house maker (84.0%), and the majority belonged to families with a monthly income ranging from 15001-25000 rupees (42.0%). Joint

families were predominant (84.0%) compared to nuclear families (16.0%). In terms of the source of water, municipal supply was the most common (43.0%). Waste management and drainage systems were predominantly open (100.0%) in the community. The average number of children per family was three (36.0%). These demographic characteristics provide insights into the composition of the study population, facilitating a better understanding of the context in which the research was conducted.

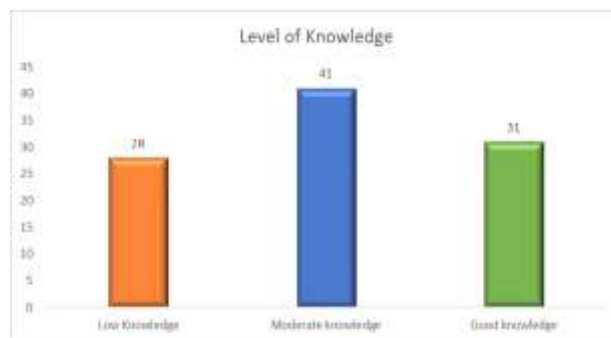


Figure 1: Bar diagram on knowledge regarding water born disease in children among mothers.

The assessment of "Prevalence of waterborne disease" provided significant insights into the occurrence of such diseases. Findings indicated that 40.66% of mothers reported a history of their children exhibiting symptoms consistent with waterborne illnesses. Regarding the knowledge levels among mothers concerning waterborne

diseases, the findings indicate that 28% have poor knowledge, 41% possess moderate knowledge, and 31% exhibit good knowledge on the subject. These percentages underscore the varying degrees of awareness within the study population.

Table 2: Showed mean, median, mode, S.D., range & mean % of level of knowledge.

	Mean	Median	Mode	S.D.	Range	Mean %
Knowledge scores	12.55	12.00	11.00	6.239	22	52.29

Table 3: Association between the level of knowledge of mother regarding water borne disease in children, among Mothers and Selected demographic variables. (N=100)

S. N.	Demographical variable	Chi square	Df	Tabulated chi square value	Result
1	Age of Mother	39.792	6	12.59	S
2	Education of mother	96.328	8	15.51	S
3	Occupation of mother	16.642	6	12.59	S
4	Family income monthly in rupees	17.634	6	12.59	S
5	Type of family	8.666	2	5.99	S
6	Source of water	3.393	4	9.49	NS

S = significant
NS = Non significant

Table 3 presents the results of a Chi-square test shows maternal age ($\chi^2 = 39.792$, $df = 6$), education level ($\chi^2 = 96.328$, $df = 8$), occupation ($\chi^2 = 16.642$, $df = 6$), family income ($\chi^2 = 17.634$, $df = 6$), and type of family ($\chi^2 = 8.666$, $df = 2$) all showed statistically significant associations with maternal knowledge of waterborne diseases. However, no significant association was found for the source of water ($\chi^2 = 3.393$, $df = 4$).

DISCUSSION

The prevalence of waterborne diseases, as evidenced by 40.66% of cases exhibiting such illnesses, underscores the urgent need for targeted interventions to address this public health issue. This finding aligns with previous research conducted by Ejaz Mahmood *et al.*, which reported similar prevalence rates in rural communities. The high prevalence rate emphasizes the critical importance of enhancing access to clean water and sanitation facilities, as highlighted by the WHO/UNICEF report, which indicated that approximately 2.6 billion people lack sufficient sanitation, particularly in rural areas.^[8]

Assessing the knowledge levels among mothers regarding waterborne diseases revealed varying degrees of awareness within the study population. While 28% demonstrated poor knowledge, 41% exhibited moderate knowledge, and 31% showed good knowledge on the subject. These findings corroborate the results of a study conducted by Latha P *et al.*, which similarly found disparities in knowledge levels among mothers in rural.^[9] Such discrepancies underscore the importance of targeted educational initiatives aimed at improving awareness and promoting preventive measures against waterborne diseases. Another study conducted by N. Kapadiya similarly found that 58.63% of participants had average knowledge regarding the prevention and management of waterborne diseases among children under five. This consistency supports the findings of the present study.^[10]

The association between demographic variables and maternal knowledge of waterborne diseases highlights several key factors influencing awareness levels. Maternal age, education level, occupation, family income, and type of family all showed statistically significant associations with knowledge levels. These findings resonate with the findings of John Bosco Isunju *et al.*, who similarly identified demographic factors as influential determinants of knowledge regarding waterborne diseases. These results underscore the importance of tailoring interventions to address the specific needs of different demographic groups, thereby maximizing the effectiveness of public health campaigns and educational initiatives.^[11] In the study conducted by Varalakshmi *et al.*, it was found that education level had a significant relationship with knowledge of waterborne

diseases and its prevention, while age, occupation, and monthly income did not show any relationship.^[12]

While the source of water did not show a significant association with maternal knowledge in this study, it remains a crucial determinant of waterborne disease transmission. Improving access to clean and safe water sources is essential for reducing the risk of waterborne illnesses, as emphasized by Shayo *et al.* in their study on water quality and disease prevalence.^[13] Addressing issues related to water contamination and sanitation infrastructure is paramount in mitigating the burden of waterborne diseases in rural communities.

Overall, the findings of this study underscore the importance of multifaceted approaches to combat waterborne diseases, encompassing improvements in infrastructure, targeted educational initiatives, and policy interventions. By building upon the findings of previous research and integrating lessons learned from comparable studies, policymakers and public health authorities can develop comprehensive strategies to promote community health and well-being in rural areas.

CONCLUSION

This study highlights the prevalence of waterborne diseases among mothers in rural India, with 40.66% reporting instances of such illnesses in their children. Knowledge levels varied among mothers, emphasizing the need for targeted educational interventions. The association between demographic variables and maternal knowledge underscores the importance of tailored approaches to address waterborne disease awareness in vulnerable communities.

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