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A Study to Assess Household Water Purification Practices and Their Impact on the Prevalence of Waterborne Diseases in a Selected Rural Area of Rohtas, Bihar.

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Abstract: Safe drinking water is essential for maintaining health and preventing waterborne diseases. In rural areas, inadequate water purification practices contribute significantly to disease burden. This study aimed to assess household water purification practices and their impact on the prevalence of waterborne diseases in a selected rural area of Rohtas, Bihar. A quantitative, descriptive cross-sectional design was adopted, and 60 households were selected using convenience sampling. Data were collected through a structured interview schedule covering demographic variables, purification practices, disease prevalence, and awareness. Results revealed that only 36.7% of households practiced adequate water purification, while 58.3% reported at least one waterborne disease. A statistically significant association ($\chi^2 = 8.52$, $p < 0.05$) was found between purification practices and disease prevalence. The study concludes that improving household water purification practices and awareness can significantly reduce waterborne diseases. Community-based health education and low-cost interventions are recommended.

Keywords: Water purification, Water-borne diseases, Rural health, Household practices, Bihar

Introduction

Water is a fundamental necessity for life and plays a crucial role in maintaining health and hygiene. Despite various public health initiatives, access to safe drinking water remains a challenge in rural India. Consumption of contaminated water leads to diseases such as diarrhea, typhoid, cholera, and hepatitis, contributing to high morbidity rates.

Household water purification practices, including boiling, filtration, and chlorination, are essential



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preventive strategies. However, their adoption depends on awareness, education, and socio-economic status. In rural regions like Rohtas, Bihar, dependence on untreated water sources such as hand pumps and wells increases the risk of contamination.

This study was conducted to assess household water purification practices and examine their association with the prevalence of waterborne diseases, providing evidence for community health interventions.

Methodology

Research Design and Approach

A quantitative research approach with a descriptive cross-sectional design was used.

Setting and Sample

The study was conducted in Keshobigha village, Rohtas district, Bihar. A total of 60 households were selected using a non-probability convenience sampling technique.

Data Collection Tool

A structured interview schedule was used, consisting of:

Table 4: Association Between Purification Practices and Disease

- Section A: Demographic variables
- Section B: Water purification practices
- Section C: Prevalence of waterborne diseases
- Section D: Awareness regarding waterborne diseases

Data Collection Procedure

Data were collected through house-to-house visits. Each interview lasted 20–30 minutes.

Data Analysis

- Descriptive statistics: Frequency and percentage
- Inferential statistics: Chi-square test

Ethical Considerations

Informed consent was obtained, confidentiality was maintained, and ethical approval was secured.



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Results

Table 1: Demographic Characteristics (N=60)

Variable	Category	Frequency	Percentage
Age	31–45 years	20	33.3%
Education	Illiterate	18	30%

Table 2: Water Purification Practices

Practice Level	Frequency	Percentage
Adequate	22	36.7%
Moderate	20	33.3%
Inadequate	18	30%

Table 3: Prevalence of Waterborne Diseases

Disease Status	Frequency	Percentage
Present	35	58.3%
Absent	25	41.7%

Practice Level	Disease Present	Disease Absent
Adequate	8	14
Moderate	12	8
Inadequate	15	3

Chi-square (χ^2) = 8.52, df = 2, p < 0.05 (Significant)

Discussion

The study revealed that a majority of households had inadequate or moderately adequate water purification practices. This indicates a lack of awareness and accessibility to safe water treatment methods. The prevalence of waterborne diseases was high (58.3%), highlighting a significant public health concern.



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The findings demonstrated a statistically significant association between water purification practices and disease prevalence, confirming that inadequate practices increase disease risk. These results are consistent with previous studies emphasizing the importance of household-level interventions.

Awareness levels were mostly average, indicating a gap between knowledge and practice. Socio-economic factors such as education and income influenced adoption of purification methods. Improper storage and handling of water also contributed to contamination.

Summary and Conclusion Summary

- Only 36.7% households practiced adequate water purification
- 58.3% households reported waterborne diseases
- Awareness levels were moderate
- Significant association between purification practices and disease

Conclusion

The study concludes that inadequate household water purification practices significantly contribute to the high prevalence of waterborne diseases. Improving awareness and promoting simple, cost-effective purification methods can reduce disease burden. Community health nurses play a vital role in implementing health education programs.

Recommendations

Strengthen health education on safe water practices
Promote low-cost purification methods like boiling
Improve access to safe drinking water
Conduct further studies with larger samples

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