

EVALUATION OF RISK FACTORS AND EXPENDITURE ASSOCIATED WITH ACUTE DIARRHEA IN UNDER-FIVE CHILDREN

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ABSTRACT

Objectives: Poor socioeconomic level, an unsanitary living environment, and the caregiver's behavior are all associated with the severity of childhood diarrhea. The goal of this study is to identify the risk factors and financial costs related to diarrhea in children under the age of five.

Methods: Between July 2021 and March 2022, a convenience sampling case-control research with 210 cases and 210 controls was conducted in Jhalawar.

Results: Diarrhea was linked to younger caretakers, a lack of formal education, a lack of awareness, merely washing hands with water, and quitting nursing. Poor economic position, having a family of five or more, being crowded, having a domestic animal, drinking unsafe water, not having a hygienic toilet, disposing of rubbish in an unhealthy manner, and eating street vendor cuisine are all linked to diarrhea.

Conclusion: Out of pocket, expenditure and risk factors for diarrhea under 5 years of age are still present in Jhalawar.

Keywords: Diarrhea, Risk factors, Under-five children, Expenditure.

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INTRODUCTION

Acute diarrhea causes 1.9 billion morbidities and multiple fatalities in children annually [1]. The majority of these deaths take place in underdeveloped nations [2]. Lack of availability of safe drinking water and aseptic toilets, inappropriate hand washing, poor ménage environmental conditions, and a limited health-care system can all worsen the severity of diarrhea [3]. The consequences of interactions among behavioral, socioeconomic, and environmental factors, as well as childhood and infant mortality rates, are crucial factors for assessing social development and health status. These aspects must be delved to have a better script of nonage morbidity [4].

Aside from all of this, diarrheal sickness is a fiscal burden not just on the health-care system, but also on the families of cases [5]. India is a Southeast Asian country with a mixed economy. Despite significant earnings in public health, gaps in the health of the country's people in different geographical areas persist [6]. This is due to a variety of factors, including natural walls such as forests, mountains, ethnic belts, and remote islets that make certain locales inapproachable. In these places, diarrhea is a problem for the healthcare system [7,8]. An estimated nine outpatient clinic visits and 34 house-treated episodes per 1000 diarrhea-stricken children under the age of five cost the health-care provider and society millions of rupees per year [6,9]. The economic impact of acute diarrhea among children includes high medical expenses, productivity loss, and childcare adjustment [3,10]. The economic burden on families is highest among children aged <2 years old with acute diarrhea [11,12]. Assessing the known threat factors and profitable issues associated with acute diarrhea has important policy counteraccusations implications for health intervention programs that latterly will ameliorate child health care in the study area and the country in general [13].

Therefore, this study was done to determine the risk factors and household costs associated with acute diarrhea diseases of under-five children who visited a clinic serving the underprivileged population in Jhalawar, a district in south-eastern Rajasthan.

METHODS

A Hospital-based case-control study was conducted. The research was carried out in Jhalawar's suburban and slum regions, which are densely peopled by unregistered emigrants. It is responsible for the largest number of diarrheal cases in children under the age of five among all primary health conventions. The research study was carried out between July 2021 and March 2022.

This study included all children under the age of five who had diarrhea and went to the health clinic. Caregivers, who agreed to participate in this study inked a written informed consent form. Children with acute diarrhea were chosen as cases, and children who did not have diarrhea were chosen as controls. Under-five children with food allergies, drug side effects, perverse bowel pattern, and any other parasitic diseases were barred. The sample size was calculated using Parker and Bregman's formula [14]. The final sample size therefore obtained was 420; among them, 210 cases and 210 matched controls.

Study tools

A questionnaire-based interview was done to collect data for the present study. The questionnaire used was prepared by the WHO and restated into the local language. After that, a pilot study was conducted in a semi-urban area with 70 repliers, which revealed good reliability (Chronbach's Alpha of 0.82). The questionnaire includes different types of questions and is divided into multiple sections: demographic and socioeconomic section; environmental variables section, caregiver behavioral factors sections; and family out of pocket expenditure costs.

Data management

The data were enciphered using Microsoft Excel 10 and analyzed using IBM SPSS Statistics for Windows, Version 26.0. Descriptive analysis was done to identify demographic and socioeconomic characteristics of the study population and inferential statistics were used to evaluate environmental and behavioral factors that were considered implicit threat factors for diarrhea among under-five children. The ménage cost of a family with under-five children with acute diarrhea was also calculated using Microsoft Excel 10.

Ethical consideration and consent

The Institutional Ethical Committee authorized the research. All of the participants' parents gave their approval to participate in the study. The allocated research assistant gave the parents a verbal explanation as well as a written guide. Before accepting, parents were also encouraged to read the disclosure thoroughly and ask any questions they had about the study.

RESULTS

In this study, 420 children under the age of five were included, with a mean age of 30.1±15.9 (mean±SD) months. Sociodemographic details of the cases and controls are shown in Table 1.

The caregivers were at a mean age of 31.1±7.1 (range 17–63) years old. The average monthly income was INR1723.62±1617.71 (Range INR 580–10000). There is a statistically significant difference (p=0.02) in the monthly menage earnings between the cases (1611.43±1304.21) and controls (2045.81±1811.00). Children from homes with domestic animals, clean drinking water, sanitation, waste disposal, and hand washing (with soap cleanser) had statistically significantly less diarrhea than children from homes without domestic animals, clean drinking water, sanitation, waste disposal, and practice hand washing (with soap cleanser) (Table 2).

The only element of this study's association test for diarrhea-related knowledge, attitude, and practice that revealed a significant connection with under-five diarrheal morbidity was knowledge. Children of caregivers with low mindfulness of diarrhea are 2.3 times more likely to have acute diarrhea than children of caregivers with advanced knowledge of the disease (OR=2.3; 95% CI 1.2–4.3; p0.008).

Table 3 shows the overall menage costs of seeking care for under-five children with acute diarrhea in this study. The average time spent travelling was 12:10 minutes. Consultations and medicines are the most precious goods for families, going INR 8.00 and 19.80. We discovered that the monthly food expenses are INR 467.99. The mean cost per diarrheal episode is INR 15.10, which nearly consumes 3% of the mean monthly food expenses.

The Indian government's profitable economic and planning commission classified households' economic status as poor or not poor. There were 57 families (61.3%) in the case group and 36 (38.7%) in the control group with low menage economic status (n=93). Poor menage economic status was reported by 48 (41.0 percent) of the case group and 69 (59.0%) of the control group (n=117). We discovered a statistically significant link between menage profitable economic status and acute diarrhea in children under the age of five. The odds of having under-five acute diarrhea are 2.3 times advanced in those with poor menage economic status compared to those without. At 64.8%, the main source of backing for menage costs for diarrhea episodes was savings from monthly income. Other common sources included reducing other expenses (29.5%), borrowing (3.8%), and donations from friends/relatives (1.0%).

DISCUSSION

Diarrhea is extensively recognized as a leading cause of illness and mortality in children. Poor socioeconomic conditions, a lack of education, inadequate environmental sanitation, and poor hygiene practices all pose serious pitfalls to human health, particularly among children. In India in 2017, diarrhea was the cause of 8% of hospitalizations and 5.67% of fatalities. The age of a child, the terrain in which he or she lives, and the caregiver's behavior are all risk factors for severe diarrhea. This research adds to the limited previous research that has been done in Jhalawar.

Children progressed 6–11 months had the loftiest rate of diarrhea. Diarrhea rates among children under the age of five remained high. Males outnumbered females in all age groups in this study. The reason

Table 1: Sociodemographic Profile of children and caregivers

Variables	Cases (n=210) (%)	Controls (n=210) (%)
Gender		
Male	126 (60.0)	126 (60.0)
Female	84 (40.0)	84 (40.0)
Age groups of children (months)		
Mean age	29.1	31.2
Under 1 year	36 (17.1)	34 (16.2)
1–3 years	102 (48.6)	98 (46.7%)
4–5 years	72 (34.3)	78 (37.1%)
Household income per month (INR)		
<1000	68 (32.4)	50 (23.8)
1000–3000	122 (58.1)	132 (62.9)
3001–5000	16 (7.6)	20 (9.5)
>5000	4 (1.9)	8 (3.8)

Table 2: Associated threat factors between cases and controls

Variables	Cases (n=210) (%)	Control (n=210) (%)	X2 95% CI	OR
Literacy of caregivers			7.09	2.69
Illiterate	54 (25.7%)	24 (11.4)		
Literate	156 (74.3%)	186 (88.6)		
Overcrowding			12.82	2.89
Present	158 (75.2%)	116 (55.2)		
Absent	52 (24.8%)	94 (44.8)		
Household			11.53	3.1
>5	174 (82.9%)	130 (61.9%)		
<5	36 (17.1%)	80 (38.1%)		
Domestic animal in house			7.78	2.21
Yes	110 (52.4%)	70 (33.3%)		
No	100 (47.6%)	140 (66.7%)		
Sanitation facility			8.08	2.77
Unimproved	48 (22.8%)	20 (9.5%)		
Improved	162 (77.2%)	190 (90.5%)		
Knowledge on diarrhea			6.96	2.89
Poor	74 (35.2%)	40 (19.0%)		
Above poor	136 (64.8%)	170 (81.0%)		
Hand-washing with			17.68	4.79
Water only	70 (33.3%)	20 (9.5%)		
Water and soap	140 (66.7%)	190 (90.5%)		
Breastfeeding			4.04	1.91
No	148 (70.5%)	120 (57.1%)		
Yes	62 (29.5%)	90 (42.9%)		
Consumed Street Food			7.92	2.62
Yes	64 (30.5%)	30 (14.3%)		
No	146 (69.5%)	180 (85.7%)		

Table 3: Total health seeking expenditure of case group

Type of cost	Number	Mean+SD
Direct expense	106	9.70+21.30
Circular expense	7	59.40+34.70
Total incurred expenditure	105	15.10+28.10

for this disparity is unclear. However, when it comes to older children, boys are more active than girls. Boys have a greater proclivity to move around and touch objects on the ground than girls [6,15]. Girls prefer to play with further aseptic toys and remain close to their caregivers [4,16].

Children from low-income families are more likely to suffer from severe diarrhea. This conclusion is harmonious with exploration accepted in Pakistan [4,16]. Lower-income levels may have resulted in lower consumption of healthy foods such as fruits and vegetables, as well as

lower food safety and quality. A lack of coffers, such as disinfectants for house cleaning and the state of the house itself, would also affect from a poor economic situation. Caregivers who are literate are more likely to save a child suffering from acute diarrhea than illiterate caregivers [17]. Education also provides important introductory but also critical information about personal hygiene, weaning and feeding practices, and disease signs and symptoms, allowing for further timely intervention in cases of childhood illness [6].

Children from overcrowded households were more likely to have diarrhea than children from non-overcrowded households [18]. Children who lived in households with domestic animals were at a higher risk of diarrhea than children who did not. As a result of pet ownership, this could indicate the presence of zoonotic illnesses or hygiene issues in our research population [1,7]. Children from families with improved drinking water sources and access to adequate sanitation facilities were less susceptible to diarrhea than children from unimproved water sources [3,7].

Children of caregivers who understood general concepts, signs and symptoms, causes, complications, and preventive measures for diarrhea were less likely than those who did not to develop acute diarrhea [19,20]. Caregivers' awareness of disease causes and general knowledge of disease prevention is critical in reducing diarrhea-related morbidity and mortality, which are currently unacceptably high [18,21,22].

Families face financial difficulties as a result of diarrhea. Even if the total number of household economic expenses associated with each episode of childhood diarrhea is small, the cumulative impact is likely to be substantial [23,24]. The low average costs also conceal the constant possibility that an incident will necessitate more extensive and costly treatment, resulting in not only debt but also the sale of productive assets. Furthermore, all of the costs and other barriers to care may contribute to or exacerbate disparities in negative outcomes, such as mortality [12].

CONCLUSION

In Jhalawar, risk/threat factors for diarrhea in children under the age of five still exist, particularly among the poor. Intervention in environmental and hygiene practices is needed to control acute diarrhea in children under the age of five. The method used to select the controls, as well as the lack of an observational component, are both limitations of this study.

This study suggests that there is a need to concentrate on comprehensive acute diarrheal disease control strategies, such as improved water quality, hygiene, and sanitation, as well as regular breastfeeding awareness talks.

AUTHOR'S CONTRIBUTION

The author has made vast contributions from the conception of the idea to the formulation of the manuscript.

CONFLICTS OF INTEREST

There are no conflicts of interest.

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