FREQUENCY AND FACTORS OF MORTALITY DUE TO DIARRHEA UNDER 5 YEARS CHILD AT HAYATABAD MEDICAL COMPLEX PESHAWAR

Zeeshan Ahmad[1], Inayat Ullah[2], Farhad Ullah[3], Muhammad Khalil[4], Fazal Rahman[5], Azeem Khan[6]

How to cite this article

Ahmad Z, Ullah I, Ullah F, Khalil M, Rahman F, Khan A. Frequency and Factors of Mortality Due to Diarrhea Under 5 Years Child at Hayatabad Medical Complex Peshawar. J Gandhara Nurs Alli Health Sci. 2024; 4(1):7-10

Date of Submission: 06-12-2023
Date Revised: 20-02-2024
Date Acceptance: 22-02-2024

[2]Internee, MMC General Hospital
[3]Internee, MMC General Hospital
[4]Internee, MMC General Hospital
[5]Internee, MMC General Hospital
[6]Anesthesia Intenee, MMC General Hospital Peshawar

Correspondence

[1]Zeeshan Ahmad, PHD Public Health Scholar, Health Services Academy, Islamabad
✆: +92-310-9360486
✉: zeeshan44ipms@gmail.com
https://doi.org/10.37762/jgnahs.118

ABSTRACT

OBJECTIVES

To determine the mortality rate due to diarrhoea in children under 5 years at Hayatabad Medical Complex Peshawar.

METHODOLOGY

A cross-sectional study was conducted in Hayatabad Medical Complex, Peshawar. The duration of the study was six months. Data was collected from 100 patients using a convenient sampling technique and then calculated using Raosoft software. The study was conducted for a time duration of 6 months. Only patients under 5 years of age admitted for more than 12 hours were examined, and patients with any comorbidity were excluded The data was analysed using SPSS.

RESULTS

Diarrhoea was prevalent in approximately 69% of cases. Risk factors included a higher proportion of literate individuals (72%) compared to illiterate (28%) for maternal education, and a majority (87%) earning less than 20,000 for household income. Breastfeeding was predominant (51%), but only 17% consistently washed hands before feeding. However, 85% washed hands after using the toilet, mostly with plain water (52%). Family systems were divided between joint (58%) and nuclear (42%), and immunization status was nearly equal, with 46% immunized and 54% not fully immunized. Boring water (65%) was the primary water source, outnumbering piped water (35%). These findings highlight the complex factors contributing to diarrhoea, suggesting targeted interventions for improved hygiene and healthcare access among vulnerable populations.

CONCLUSION

The diarrhoea was common among under 5 years of children with poor hygiene conditions are the key factors of it.

KEYWORDS: *Diarrhea, Mortality, Hygiene, Immunized, Maternal*

INTRODUCTION

The passing of three or more loose or liquid stools per day due to an unusually high stool fluid content or an unusual rise in the frequency of daily stools is classified as diarrhoea by the World Health Organization (WHO). In children under the age of five, diarrhoea is the second most common cause of mortality, accounting for 9% of all deaths in this age group worldwide. Furthermore, estimates show that children under the age of five account for more than 80% of the 1.8 million individuals who die from diarrheal diseases every year in impoverished states. More than 90% of children under five die from Diarrhea in low - and middle-income nations. 88% of deaths in the same stage group nationwide were reported to have occurred in South Asia and sub-Saharan Africa.[1] Diarrhoea is a significant source of illness and mortality for children under the age of five in underdeveloped countries where there is a lack of experience in treating diarrheal diseases. An unacceptably high incidence of diarrheal infections among children under five worldwide occurs each year - roughly 1.7 billion. For effective case management of Diarrhea, the United Management of Childhood Infection (IMCI) methods recommend using ORS and continuing to eat. Carers often treat children under five who have diarrheal sickness. Even though ORS is commonly used to lessen dryness associated with Diarrhea, it is rarely utilized by carers at home to manage Diarrhea in children under five.[2] The World Enteric Multicentre Study found that the primary pathogens responsible for moderate-to-severe diarrhoea in children under five during their first two years of life were Rotavirus, cryptosporidium, Sheela, and enterotoxic Escherichia coli. The most frequent viruses that cause diarrhoea are Sheela, Rotavirus, arbovirus, Campylobacter, and norovirus.[3] In Sub-Saharan African nations, diarrheal disease is the most significant public health issue, causing more than 50% of paediatric illnesses and 50-80% of paediatric fatalities. A single developing sub-Saharan African

country, Ethiopia, adds to the significant problem of diarrheal disease and mortality. Typically, 1 in 15 children dies before turning five in the year 2016 alone. In Ethiopia, diarrhoea claims the lives of about 15,000 children under the age of five.[4] The frequency of isolates with multiple medication resistances is rising.[5,6] Appropriate fluid and electrolyte replacement and maintenance must be administrated to treat diarrheal disease effectively.[7] Rotavirus is one of the leading causes of death in children with diarrhoea. Following a rotavirus vaccine, the number of deaths due to Diarrhea in children dropped to a great extent. The administration of rotavirus vaccine is therefore recommended for children.[8,9] Oral rehydration therapy was introduced in 1979, and since then, the annual mortality rate from diarrhoea has decreased from 4-5 million.[10] However, diarrhoea accounts for 20% of newborn mortality in Bangladesh and 1 in 9 deaths (18%) among children under the age of five.[11] Zinc deficiency is common wherever pneumonia and diarrhoea are common; daily zinc regimens reduce infant mortality and prevent and treat pneumonia.[12,13] This study aims to contribute to the existing literature by providing an updated mortality rate.

METHODOLOGY

A cross-sectional study was carried out at the tertiary care hospital, Hayatabad Medical Complex, Peshawar. The study collected data from 100 patients using a convenient sampling technique. The data was calculated using Raosoft software and the study was conducted for 6 months. The study only examined patients under 5 years of age who were admitted for more than 12 hours and did not have any comorbidities. The graduate committee and the advanced study research board approved this study, and a questionnaire was developed to determine the frequency and factors of mortality due to diarrhoea under 5 years old child at Hayat Abad medical complex Peshawar. Before data collection, written and oral consent was obtained from the parents. The data collected was then analysed using SPSS version 22.0.

RESULTS

A total of 100 children participated in the study, with the majority being males, comprising 73% of the patients, while 27% of the participants were females.

Table 1: Gender-Wise Distribution of Patients

Gender	Frequency
Male	73
Female	27

Table 2: Age-wise Distribution of Patients

Age Group	Frequency
Below 1	48
1-3 years	47
4-5 years	05

Table 3: Frequency of Diarrhoea

Diarrhoea	Frequency
Yes	69
No	31

Table 4: Risk Factors of Diarrhoea

Risk Factors	Frequency
Maternal Education	
Illiterate	28
Literate	72
Household income	
Less than 20,000	87
More than 20,000	13
Feeding	
Bottle	10
Breast	51
Washing hands before giving feed	
Yes (every time)	17
No or occasional	83
Washing hand after attending toilet	
Yes	85
No	15
Hand wash with soap	
Soap	48
Plain water	52
Family system	
Joint	58
Nuclear	42
Immunization Status	
Immunized	46
No or partial immunized	54
Source of water use	
Boring water	65
Piped water	35

DISCUSSION

Each year, an estimated 2.5 billion cases of diarrhoea occur among children under five years of age, and estimates suggest that overall incidence has remained relatively stable over the past two decades. In 2019, a total of 21.4 deaths were reported per 1000 children after patient treatment.[14] More than half of these cases are in Africa and South Asia, where bouts of diarrhoea are more likely to result in death or other severe outcomes. The incidence of diarrheal diseases varies greatly with the seasons and a child's age.[14] The youngest children are most vulnerable: Incidence is highest in the first two years of life and declines as a child grows older. Despite these declines, diarrhoea remains the second most common cause of death among children under five years of age globally, following closely behind pneumonia, the leading killer

of young children.[15] This study showed a higher frequency of 59% (264) of diarrhoea out of 450 cases.[16] While a similar study was done in 2012, by Kakulu in Tanzania showed 33% diarrheal frequency out of 301 children under five years of age.[17] In our study most susceptible age for diarrhoea was found to be children less than 24 months of age (88%). A study conducted by Khattak et al in PAF hospital, Rawalpindi showed that in acute watery diarrhoea, children's peak age was between 13-24 months. This age group is important as a child passes through different developmental stages like teething, crawling, and weaning.[19] It is a known fact that there is a strong relationship between the child's health' and the parent's education, especially the mother's education. According to our study results illiterate mothers were found to be 76.5% and illiterate fathers were 28%. So illiteracy rate among mothers was very high. In Tanzania Kakulu, s et al study results showed that parents' education has a significant association with diarrhoea.[20] In our study it was found that most of the mothers were housewives (97%). In 2004, a study done by Khan MH et al in Peshawar showed that mothers of diarrheal children were largely housewives (96%). Fathers of those children were either employed or self-employed 72%.[21] our study also showed that hygiene conditions, income, immunization and water intake are crucial for causing the diarhea. In 2011, a study done by Kakakhel ZM et al, in Nurpur Pakistan, results showed that Of the 107 households surveyed, 2.8% used wells, 63% used tap water and 32.7% used hand pumps, whereas only 0.9% consumed store-bought water as their major source of drinking water.[22]

LIMITATIONS

The limitation of this study relies on a specific population within Hayatabad Medical Complex Peshawar, it may not be representative of the broader population, leading to potential sampling bias.

CONCLUSIONS

The diarrhoea was common among under 5 years of children with poor hygiene conditions are the key factors of it.

CONFLICT OF INTEREST: None

FUNDING SOURCES: None

REFERENCES

1. Demissie GD, Yeshaw Y, Aleminew W, Akalu Y. Diarrhea and associated factors among under-five children in sub-Saharan Africa: Evidence from demographic and health surveys of 34 sub-Saharan countries. PLoS One. 2021;16(9 September):1-13.
2. Terefe G, Murugan R, Bedada T, Bacha G, Bekele G. Home-based management practice of Diarrhea in under 5 years old children and associated factors among caregivers in Ginchi town, Oromia region, west Ethiopia. SAGE Open Med. 2022;10.
3. Hartman RM, Cohen AL, Antoni S, Mwenda J, Weldegebriel G, Biey J, et al. Risk Factors for Mortality Among Children Younger Than Age 5 Years With Severe Diarrhea in Low- and Middle-income Countries: Findings From the World Health Organization-coordinated Global Rotavirus and Pediatric Diarrhea Surveillance Networks. Clin Infect Dis. 2022;76(3):1047–53.
4. Mosisa D, Aboma M, Girma T, Shibru A. Determinants of diarrheal diseases among under five children in Jimma Geneti District, Oromia region, Ethiopia, 2020: a case-control study. BMC Pediatr. 2021;21(1):1-13.
5. Gashe F, Mulisa E, Mekonnen M, Zeleke G. Antimicrobial resistance profile of different clinical isolates against third-generation cephalosporins. Int. J. Pharm. 2018;2018.
6. De R. Metagenomics: aid to combat antimicrobial resistance in Diarrhea. Gut Pathogens. 2019 Dec;11(1):1-9.
7. Abbas J, Chandra Pandey D, Verma A, Kumar V. Management of acute Diarrhea in children: Is the treatment guidelines is really implemented. IJRMS. 2018 Feb:6(2):539.
8. Shah MP, Tate JE, Mwenda JM, Steele AD, Parashar UD. Estimated reductions in hospitalizations and deaths from childhood diarrhea following implementation of rotavirus vaccination in Africa. Expert review of vaccines. 2017 Oct 3;16(10):987-95.
9. Troeger C, Khalil IA, Rao PC, Cao S, Blacker BF, Ahmed T, Armah G, Bines JE, Brewer TG, Colombara DV, Kang G. Rotavirus vaccination and the global burden of rotavirus diarrhea among children younger than 5 years. JAMA pediatrics. 2018 Oct 1;172(10):958-65.
10. Charoenwat B, Suwannaying K, Paibool W, Laoaroon N, Sutra S, Thepsuthammarat K. Burden and pattern of acute diarrhea in Thai children under 5 years of age: a 5-year descriptive analysis based on Thailand National Health Coverage (NHC) data. BMC Public Health. 2022;22(1):1–14.
11. Degebasa M, Dawit Z, Marama M. Diarrheal status and associated factors in under five years old children in relation to implemented and unimplemented community-led total sanitation and hygiene in Yaya Gulele in 2017. Pediatr Heal Med Ther. 2018;Volume 9:109–21.
12. Mandal K, Lu H. Zinc deficiency in children. IJSIT. 2017;6(1):9-19.
13. Agarwal A, Gupta NK, Upadhyay A, Soni RK, Shah D, Jaiswal V. Serum zinc levels as a predictor of severity of acute Diarrhea. The Indian Journal of Pediatrics. 2018 Mar;85:179-83.
14. 14. Talbert A, Ngari M, Bauni E, Mwangome M, Mturi N, Otiende M, Maitland K, Walson J, Berkley JA. Mortality after inpatient treatment for Diarrhea in children: a cohort study. BMC medicine. 2019 Dec;17:1-1.
15. Melese B, Paulos W, Astawesegn FH, Gelgelu TB. Prevalence of diarrheal diseases and associated factors among under-five children in Dale District, Sidama zone, Southern Ethiopia: a cross-sectional study. BMC public health. 2019 Dec;19(1):1-0.
16. Musa N, Gul R, Mehmood Y. Frequency of Diarrhoea and its Risk Factors among Children Under-Five Years of Age in Three Teaching Hospitals of Peshawar. JGMDS. 2016 Mar1; 2(2).
17. Beyene SG, Melku AT. Prevalence of diarrhea and associated factors among under five years children in Harena Buluk Woreda Oromia region, south East Ethiopia, 2018. Int. J. Public Health. 2018 Dec 5;1(2):9-26.

18. Ganguly E, Sharma PK, Bunker CH. Prevalence and risk factors of diarrhea morbidity among under-five children in India: A systematic review and meta-analysis. IJCH. 2015 Oct; 2(4):152.
19. Berhe H, Mihret A, Yitayih G. Prevalence of diarrhea and associated factors among children under-five years of age in enderta woreda, tigray, northern ethiopia, 2014. IJTA. 2016 Jun;31:32-7.
20. Omona S, Malinga GM, Opoke R, Openy G, Opiro R. Prevalence of diarrhoea and associated risk factors among children under five years old in Pader District, northern Uganda. BMC Infect. Dis. 2020 Dec;20:1-9
21. Acharya D, Singh JK, Adhikari M, Gautam S, Pandey P, Dayal V. Association of water handling and child feeding practice with childhood diarrhoea in rural community of Southern Nepal. J INFECT PUBLIC HEAL. 2018 Jan 1;11(1):69-74.
22. Cohen A, Colford JJ. Effects of boiling drinking water on diarrhea and pathogen-specific infections in low-and middle-income countries: a systematic review and meta-analysis. The American journal of tropical medicine and hygiene. 2017 Nov 11;97(5):1362.

CONTRIBUTORS

1. ***Zeeshan Ahmad -*** *Concept & Design; Data Acquisition; Supervision; Final Approval*
2. ***Inayat Ullah*** *- Concept & Design; Data Acquisition; Data Analysis/Interpretation*
3. ***Farhad Ullah*** *- Concept & Design; Data Acquisition; Drafting Manuscript*
4. ***Muhammad Khalil*** *- Concept & Design; Data Acquisition; Data Analysis/Interpretation; Drafting Manuscript*
5. ***Fazal Rahman*** *- Concept & Design; Data Acquisition*
6. ***Azeem Khan*** *- Concept & Design; Data Acquisition*