Original Article

FREQUENCY, RISK FACTORS AND OUTCOMES ASSOCIATED WITH DIARRHEA IN CHILDREN UNDER AGE OF 2 YEARS AT KHYBER TEACHING HOSPITAL PESHAWAR; A CROSS-SECTIONAL STUDY

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Abstract:

Background: To assess the frequency of diarrhea in children under the age of 2 years in the region of Peshawar and to determine its risk factors and outcomes.

Materials & Methods: A cross sectional descriptive study was conducted in pediatrics wards and OPD in Khyber Teaching Hospital Peshawar from 1st May 2021 to 31st August 2021 with a sample size of 245 children. The Information was collected through questionnaire distribution and by verbally asking the mothers questions regarding diarrhea. For analysis, we used the SPSS software version 20.

Results: The frequency of diarrhea in children under 2 years of age was found to be 56.7% (139). The majorrisk factors associated with diarrhea were the mother's poor educational status (31.4%), children's exposure to the sanitation system of the house (11.2%), incomplete vaccination status (16.73%), poor handhygiene of mothers (8.59%), lack of using boiled water (9.5%) and residency in rural areas (8.24%). Out of 139 children who suffered from diarrhea 61.9% had sunken eyes, 58.3% had dry skin, 75.5% had lethargy, 71.9% had weight loss and only 10.1% had loss of consciousness.

Conclusion: The frequency of diarrhea was very high in Peshawar and the major risk factors were lack of mother's education, lack of use of boiled water, poor hand washing practice by mothers, incomplete vaccination status and residency in the rural area.

Keywords: Diarrhea, Outcome, Prevalence, Risk Factors.

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INTRODUCTION

Diarrhea is the passage of 3 or more loose or liquid stools per day, or more frequently than is normal for an individual. It is one of the common symptoms of gastrointestinal infections[1].

Diarrheal illness is a problem worldwide with considerable local variation in the predominance of particular pathogens. Globally, childhood diarrhea contributes to a major proportion of less than 5 years and infant mortality rate. Global efforts to prevent, protect and manage diarrhea among children have been made over the past few decades and were successful[2]. According to the World Health Organization, about 525,000 children under the age of 5 years die every year due to diarrheal diseases with 1.7 billion cases of diarrhea each

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year[2]. In less developed countries children under the age of 3 years suffer from diarrhea which causes great loss of electrolytes and nutritional substances which greatly affect their growth[3]. Its complications in malnourished children are seen more frequently.

The prevalence of diarrhea is mainly linked to the socio-economic state, poor hygiene, lack of proper sanitary system and unawareness among people. In 2015 in Pakistan, about 465000 children died due to diarrhea and the country ranked 4th with the highest mortality in the world contributing 5% of the total world mortality pie[5]. The high incidences of diarrheal diseases lead to acute and chronic effects of diarrhea on the health of children.

In Ethiopia, research was carried out on the incidence of diarrhea which showed that diarrhea tends to be higher in the second half of an infant's life when a child is born with weak inborn immunity and exposure to contaminated weaning food. They also showed that children living in houses that have toilet facilities are less affected than those that do not have this facility[6]. The major decreases in the incidence of diarrhea are associated with flush toilets compared topit latrines[7]. Public latrines have flies and dirty floors which further promotes infection of salmonella, shigella etc. which are leading causes of diarrhea in children[8]. Diarrheal prevalence was highest among those children who were living inhouses that drink water from unprotected and unhygienic sources like open and unprotected wells[9]. In underdeveloped countries like Pakistan diarrhea has a high mortality rate. In Karachi, studies show that 40% of the population lives in such areas where water and sanitary infrastructure is limited. In these areas the mortality rate of infants is high, about 40% deaths of under the age of 5 years are due to diarrhea[10].

The purpose of this study was to find out the frequency, leading causes and the main consequences associated with diarrhea in children under the age of 2 years. The information from the study about diarrheal diseases regarding their prevalence, risk factors and complications in childrencan give us an overview of the general burden of disease in children in Peshawar. Also, it can be used in devising effective educational programs for reducing the problem in high risk segments of the population. It can also be used for the formulation of management strategies for acute diarrhea and eventually can be used for reducing complications.

MATERIALS AND METHODS

A cross sectional descriptive study was conducted in pediatrics wards and OPD in Khyber Teaching Hospital Peshawar from 1st May 2021 to August 2021 (4 months). We took a sample size of 245 children which was calculated according to WHO formula $N= Z^2 PQ/D^2$ with prevalence of 20%[14] or 0.2, Z for confidence interval = 1.96, Q= 1-P, D= 0.05.

The sampling technique used was convenient non-probability. Data was collected by questionnaire distribution and by interviewing the mothers or guardians present at the data collection site. Detailed information regarding the demographic status& the health condition of the child along with associations and complications of diarrhea was obtained. The study included all children under the age of 2 years and excluded immunodeficient children.

Approval was obtained from the institutional ethical committee with IREB No. 736/IREB/KMC. After obtaining thenecessary consent from individuals, we explained the study's purpose to them and ensured strict confidentiality. All data is presented in the form of tables and Pie charts. Quantitative variables like age are presented as mean standard deviation.

RESULTS

Data was collected from 245 children with a mean age of 15 months and a standard deviation of 1.087. In this study out of 245 children, 144 (59%) were males and 101(41%) were females. Out of 245 children, 139 had diarrhea with a frequency of 56.7%. (Table 1)

The majority of the children that we investigated were under 12 months of age and the highest frequency was found in children from 6-12 months (34%).

Table 1: Frequency Of Diarrhea

	Frequency	Percent
Yes	139	56.7
No	106	43.3

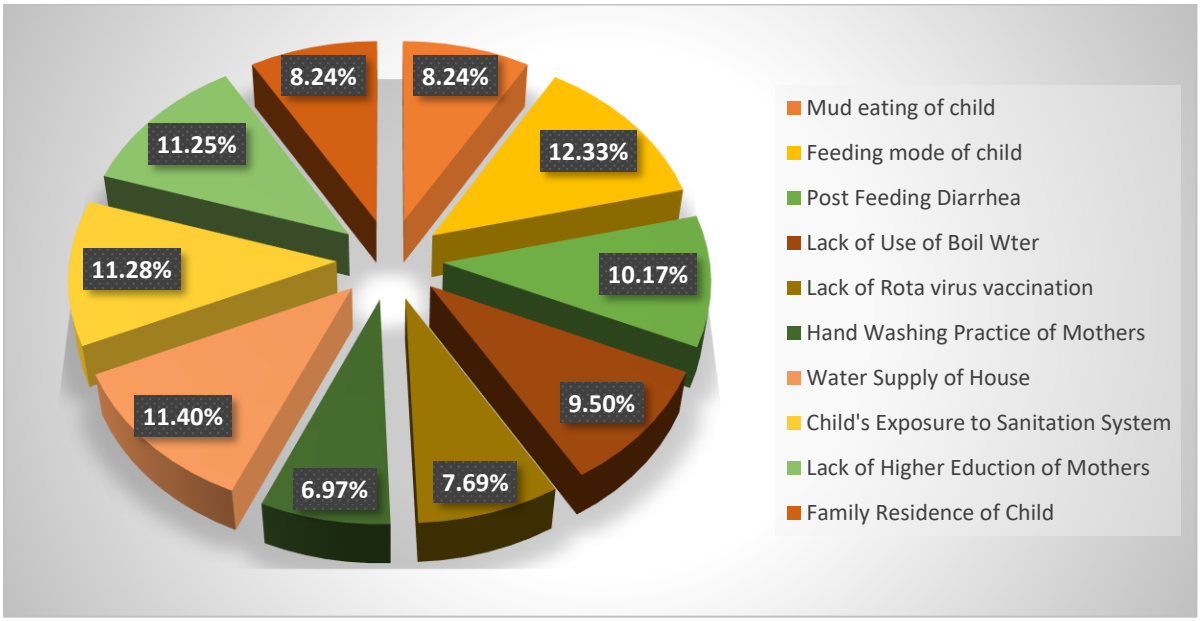

Fig. 1: Risk factors for Diarrhea

As depicted in Fig 1, The major risk factors associated with diarrhea include feeding mode of a child 17 (12.23%), lack of higher education among mothers 16 (11.52%), child's exposure to sanitation system of house 16 (11.51%) water supply of house 16 (11.50%), post feeding diarrhea 14 (10.17%), lack of using boiled water 13 (9.36%), the residential status of a child 11 (8.24%), lack of Rota virus vaccination 11(8%), mud eating habit of a child 11 (8.0%), and poor hand washing practice by mothers 9 (6.48%).

Out of 139 children who had diarrhea about 76% (105) children showed lethargy, 72% (100) children showed weight loss,62% children (86) had sunken eyes and dry skin, and about 10% (14) children had loss of consciousness after diarrheal episode.

DISCUSSION

In the study out of a total of 245 children, 139 had diarrhea. The frequency of diarrhea was 56.7%. It was high as compared to other studies.

A South Indian article has shown the prevalence of diarrhea to be 1 in 6 cases of diarrhea in hospitalized patients. At this age, a soft diet is also taken and the children are exposed more to environmental conditions.[11]

A study was carried out in northern Sudan which showed that 35% of children had diarrhea[12]. Another study was done in Eastern Ethiopia which shows the prevalence of diarrhea was about 21.5%[13].

The overall incidence of diarrhea in one of the articles in Ethiopia showed 20% diarrheal incidence[14].

The findings are not synchronous with our findings in a way that our study showed a very high prevalence rate as compared to the previous study that we mentioned but the cause could be small sample size and time of data collection as a lot of cases of food poisoning and diarrhea generally reports in summer.

Another similar study was conducted in West Bengal by Gautam Sarker, Avisek Gupta and Arup Jyoti Rout about diarrhea in children in 2015. The analysis showed that its prevalence was 20.36%[15]. The study is in synchronous with our study showing incomplete immunization as

a major risk factor for children presenting with acute diarrhea.

Another study conducted in the Peri-urban communities of Karachi in Low Income Peri-urban communities of Karachi, Pakistan in 2017 showed that the incidence was more in less educated mothers and children[16]. The study showed similar risk factors and outcomes associated with diarrhea as in our study further emphasizing the relevance of our study in the current setting.

Due to feasibility only one hospital in Peshawar i.e. Khyber Teaching Hospital was included to check the frequency of diarrhea. The sample size was also small for the same reason. To get accurate representation sample size should be large.

The COVID-19 pandemic significantly limited our data collection efforts. Another limiting factor could be recalling bias as our data collection was a convenient sampling technique so the data that we collected depended on the memory of the guardian/mother creating a risk for such bias.

CONCLUSION

The prevalence of diarrhea was very high (56.7%) in Peshawar, especially in June, July and August and the major risk factors associated with diarrhea were the feeding mode of children, lack of mother's education, lack of use of boiled water, poor hand washing practice by mothers, the water supply of house and residency in rural areas. The major outcomes were lethargy, weight loss, dryness of skin and sunken eyes.

The focus should be on improvement in mothers' educationalstatus and hand hygiene, use of boiled water, proper sanitation system of houses, and awareness among people regarding vaccination and diarrhea.

AUTHOR'S CONTRIBUTION:

JH: Proposal Development
JA: Data Analysis
SA: Data Collection
RI: Data Entry
S: Reference Management
HG: Manuscript Writing
RH: Literature Review

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