RESEARCH ARTICLE

FREQUENCY OF DIARRHEA IN INFANTS UNDER SIX MONTHS OF AGE, IN PAEDIATRIC WARD OF BAHAWAL VICTORIA HOSPITAL BAHAWALPUR

Saba Kaynat, Hafsa Niaz, Tabinda Iqbal, Rizwan Anjum Mughal and *Muhammad Afzal Randhawa

Department of Pediatric Medicine, Bahawal Victoria Hospital, Quaid-e-azam Medical College, Bahawalpur, Pakistan

ARTICLE INFO	ABSTRACT
	Introduction: Diarrhea is an increase in frequency of bowel movements or an increase in the liquidity (greater looseness) of stool. Although changes in frequency of bowel movements and looseness of stools can vary independently of each other. Changes often occur in both. Acute diarrhea (including gastroenteritis) remains one of the commonest causes of death among infants and children in developing countries where poor sanitation, deficiency of clean drinking water, poverty and illiteracy are key factors. Viral infection remains another very important cause. In Europe, most cases take a mild to moderately severe course, and fatal outcomes are extremely rare. **Objective:** To find out the frequency of diarrhea in infants less than six months of age cross-sectional study (Descriptive study). **Methods:** A hospital based descriptive study was conducted from 1st December to 1st February 2018 in Pediatric Unit of BVH Bahawalpur. Source of population were 100 children under six months of age. Data analysis was made manually and frequency of diarrhea was calculated. **Results:** The frequency of diarrhea was more in infants 0-2 months. The frequency was low in infants who were on exclusive breast feed the diarrheal frequency was high in infants of rural areas. Female were showing resistance to diarrhea as compared to male. Hand washing before weaning or breast feeding and clean water supply caused a reduction in the frequency of diarrhea. **Conclusion:** Breast feeding, clean drinking water, proper hygiene and literacy must be promoted to prevent diarrhea.

INTRODUCTION

Diarrhea is defined as "Abnormal frequency and liquidity of fecal material"(Chun, 1998). Infectious diarrhea is a leading cause of morbidity and mortality worldwide affecting many infants. Approximately 12 million children in developing countries die before the age of 5 years (Trung, 1993). Diarrhea is the third most common cause of the death in under five children, responsible for 13% deaths in this age group (Muwonge, ?). Unhygienic and unsafe environment place children at risk of death (Gebru *et al.*, 2009). Acute diarrhea, lasting between 1 to 14 days is a serious cause of dehydration and electrolyte imbalance in children. Although, Rotavirus is the most common cause of diarrhea in developing world. The common organisms being E-coli, Shigella, E-histolytica, G-lambia and C-parvum. Some parasites are also the causative factor for diarrhea (Ahmed, 2009).

Corresponding author: Muhammad Afzal Randhawa,
Department of pediatric medicine, Bahawal victoria hospital, Quaid-e-azam medical college, Bahawalpur, Pakistan.

A number of factors have been found to be associated with the occurrence of diarrhea in children in the developing world. Many of the factors depend upon the poverty of family and community as a whole. Infant feedings and their preparation practices are very crucial determinants (Achariya, 1997). A major proportion of diarrheal diseases in the developing world is related to quality and quantity of drinking water depending upon the water source. Unsafe disposal of fecal waste, waste water, education level of house hold head and surface sources of water are determinants of diarrhea (Memon, 2009). The diarrhea control programme is primarily through the use of oral rehydration therapy (ORT) and promotion of appropriate feeding during and after an episode of diarrhea. The four non-vaccine interventions identified as being adequately feasible and effective are covered: promotion of breast feeding, improving weaning practices, improving water supply and sanitation and promotion of personal and domestic hygiene (Huttly, 1997). Poor sanitation, unsafe water supply and inadequate hygiene are responsible for 90% of diarrhea occurrence (Kumar *et al.*, 2014).

Objective Of Study

To find out the frequency of diarrhea in infants less than 6 months of age.

METHODOLOGY

A hospital based descriptive study was conducted from 1st December to 1st February 2018 in pediatric medicine unit of Bahawal Victoria Hospital Bahawalpur. Sample population of the study was 100 children below 6 months of age, both inpatient and outpatient dept. simple random sampling was applied to select the children under 6 months of age. Children below 6 months of age and mothers willing for interview were our inclusion criteria. Children above 6 months of age, children with emergency condition or having marasmus and non-willing mothers for interview, were our exclusion criteria. In questionnaire, mother's education, residential area of the participant, type of feed, hygienic measures used by mothers were focused more. A pre-designed questionnaire was used to collect data. Questions regarding topic under study were translated into local language of concerned participants (Saraiki, Punjabi, Urdu) to increase participant – collector relationship for getting true results. After getting the data, it was analyzed. This analysis was made manually, frequencies were calculated and table was made. The study was ethically approved by the department of Medical Education BVH/ QAMC. Appropriate consent was obtained from all participant mothers and confidentiality was assured.

RESULTS

We collected data from 100 patients, 60% among them were male and 40% were females. Regarding diarrheal episodes, we divided the age into 3 categories, among them 45 were in age limit 0-2 months, 20 were in age limit 2-4 months and 34 were in age limit 4-6 months. Maximum frequency of diarrhea was seen in first to months of life. Regarding residential area, 70% were living in rural areas, 45% were living in urban slums and 265 were living in urban areas. Rate of occurrence of first diarrheal attack and subsequent attacks was greater in rural areas. Regarding mother's education, 62% mother were illiterate, 24% were under matric and 14% were above matric or graduate. Infants of illiterate mothers have more attacks of diarrhea. Regarding feeding habits, 35% infants were on formula milk, 14% were on breast feed, 29% were on mammalian diluted milk and 22% were on mammalian un-diluted milk. Frequency of diarrhea was very low in breast fed group. Regarding mothers of these infants, 68% were not in habit of washing hands before feeding and 32% were washing their hands. frequency of diarrhea was more in infants whose mothers did not washed hands before feeding. Regarding water source of drinking, 96% infants were on tap water and only 4% were on mineral water with frequency of diarrhea more in infants taking tap water.

DISCUSSION

Infectious enteritis is very common in infancy and early childhood. Children up to age 3 have an average of one to two episodes per year (Van Damme *et al.*, 2007). About 40% of cases of acute diarrheal illness in the first 5 years of life are caused by rotaviruses, while a further 30% are caused by other viruses, mainly Noro-viruses and adenoviruses (Van Damme *et al.*, 2007). In about 20% of affected children, a bacterial pathogen can be identified in the stool (Campylobacter Jejuni, Yersinia, Salmonella, Shigella, pathogenic E. coli, or clostridium difficile). Parasites are the cause in fewer than 5% (Lamblia, Cryptosporidia, Entamoeba histolytica, and others). Regardless of the particular causative organism, the patient generally develops watery stools, sometimes mixed with blood, after an incubation period of one to seven days. Vomiting and fever can precede or follow the diarrhea, or be absent entirely. The further manifestations depend on the degree of fluid and electrolyte loss, i.e., the degree of dehydration. Rare complications include intussusception or toxic or hypovolemic shock with pre-renal azotemia as an expression of severe dehydration. Epileptic convulsions can result from fluid and/or electrolyte shifts, or from hypoglycemia. Encephalitis is rarely seen. Vomiting usually stops within a few hours after adequate rehydration, and after a maximum of 48 hours; diarrhea usually stops in two to seven days.

In acute diarrhea, the most important diagnostic step is clinical assessment of the degree of dehydration. The further diagnostic evaluation concerns the potential complications or differential diagnoses that may lie behind the clinical presentation of infectious enteritis. Good history-taking and physical examination is the foundation of the diagnostic evaluation. In severe cases, when complications arise, or when the diagnosis is in doubt, further studies must be performed. The younger the child, the greater the risk that fluid and electrolyte losses will lead to dehydration. The type of dehydration—isotonic, hypotonic, or hypertonic—is independent of the causative organism. Fluid losses resulting from diarrhea and vomiting can be as high as three times the circulating blood volume (80–125–250 mL per kg body weight per day).

If a urinary tract infection is suspected, the urine should be tested. Ultrasonography or another type of imaging study is indicated if there is clinical suspicion of intussusception. Endoscopic procedures for the obtaining of biopsy samples are reserved for special situations, e.g., in patients with an underlying illness to exclude other possible diagnoses, such as chronic inflammatory bowel disease. The foundation of treatment is fluid and electrolyte replacement and the enteric administration of food to prevent or correct a catabolic state and to promote enterocyte regeneration. Infectious diarrheal illnesses are usually self-limiting. In mild cases, increased fluid administration combined with normal or reduced feeding often suffices to prevent dehydration. When the losses are greater because of numerous, watery stools and/or frequent vomiting, so that dehydration becomes clinically manifest, the patient should be rehydrated with oral rehydration solution (ORS) and then given appropriate food for age. Continuing losses due to persistent diarrhea or vomiting can be most safely replaced by the administration of ORS between meals (e.g., 10 mL/kg for each watery stool). Longer interruptions of feeding or the maintenance of a reduced-calorie "gentle" or "build-up" diet for several days can delay recovery and increase the risk of a post-enteritic syndrome with protracted diarrhea.In order to keep the blood volume constant, the body extracts fluid from the intracellular space, leading to dehydration. Complications and hospitalization can usually be prevented by the early and adequate oral administration of a rehydration solution (glucose-electrolyte solution) and normal food for the child's age.

Specific anti-infectious treatment is not recommended for most children with acute diarrheal illnesses. Antibiotics are obligatory in cases of infection with Salmonella typhi, Vibrio cholerae, Entamoeba histolytica, and Giardia lamblia and for children over 1 year old with proven, toxin-positive Clostridium difficile colitis. Antibiotics are recommended for the treatment of diarrheal disease due to bacterial infection in the following situations or for the following types of patients: infants in the first three months of life, premature infants up to 52 weeks of post-conceptional age, children with primary or secondary immune deficiency, and children whose illness is complicated by sepsis. The following mediations are not recommended and/or not approved for the treatment of infants and toddlers with acute diarrheal illness, because they have no effect, or a deleterious effect, on the course of the illness: motility inhibitors such as loperamide, nonspecific adsorbents such as charcoal or kaolin-pectin, cholestyramine, and bismuth preparations.

Mother's milk protects against infection, including acute infectious enteritis (Kramer *et al.*, 2004). General hygienic measures include, manual hygiene, particularly after urination and defecation and after diaper changes, reduces the spread of infection in households and institutions. For hospitalized patients, hospital hygiene should be strictly adhered to: disposable gloves and gowns, hand disinfection, routine disinfection of surfaces with abrasive wipes, grouping affected patients together if possible, individual toilets. Hygienic handling of food is necessary. Bacterial infections acquired through food usually arise because of the consumption of incompletely cooked meat (Yersinia, Campylobacter, Salmonella), raw eggs (salmonella), and unpasteurized milk (EHEC infections). Vaccination against rotavirus infection is also recommended. Two oral vaccines for the primary prevention of rotavirus infection are now available. The rate of protection against severe Rota-viral illness is higher than 95%. Vaccination is recommended for all infants, including premature infants, by the European (ESPID, ESPGHAN) (Vesikari *et al.*, 2008) Widespread vaccination in the USA from February 2006 onward has led to a dramatic reduction in hospitalizations and emergency treatment because of rotavirus infection (American Academy of Pediatrics, Committee on Infectious Diseases).

Conclusion

Our study highlighted the importance/ relation of mother education, living area, hygienic conditions and breast feeding with the frequency of diarrhea. Frequency of diarrhea is more in illiterate families, those living in rural area, poor sanitation conditions and avoidance of breast feeding generally or during illness. By preventing or addressing these issues the frequency can be markedly reduced and also related morbidity and mortality can be prevented.

Statement of ethics: The study was performed in accordance with the Helsinki Declaration and Good Clinical Practice.

Disclosure Statement: The authors have no conflicts of interest to disclose.

Consent of the patients/ Gaurdians

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

REFERENCES

Achariya D, Ghimire UC. 1997. Breast feeding and risk of diarrhea morbidity and mortality. *Bulletin of Pan American Health Organisation,* 21 (1): 93-105.

Ahmed SF, Farheen A, Muzaffar A. 2009. Prevalence of diarrheal disease, its seasonal and age variation in under fives in Kashmir. *J. Microbial Immunology Infect.* 42(3): 265-270.

American Academy of Pediatrics, Committee on Infectious Diseases. Prevention of Rotavirus Disease: Updated Guidelines for Use of Rotavirus Vaccine. Pediatrics. 2009;30 (PubMed)

Chun WC, Chen PY. 1998. Epidemiology of diarrhea among children, a questionnaire based study in Taiwan. *Tropical Medicine and parasitology.* 41 (2) 98-104.

Gebru T, Taha M. 2009. Risk factors of diarrheal diseasein under five children among health extension model and non-model families in Sheko-district Rural Community Southwest Ethiopia. *Journal of Tropical pediatrics.* 15(1): 167-171.

Huttly SRA, Morris SS. 1997. Frequency of diarrhea in young children. *Bulletin of the World Health Organization*; 72(2): 163-174

Khan MH, Shah SH, Sarwar G. Factors affecting frequency of infantile diarrhea BMC Public health. 2011; 11 (suppl.3): 515-520.

Kramer MS, Kakuma R. 2004. The optimal duration of exclusive breastfeeding: a systematic review. *Adv Exp Med Biol.,* 554:63–77. (PubMed)

Kumar R, Hashmi A, Somro, JA. 2014. Diarrheal disease among children in India. *BMC Public Health.* 17(2) : 39-47

Memon KN, Usman G. 2009. Frequency of diarrhea in youngs and risk factors of diarrhea. *East African Medical Journal.* 86 (11) : 65-90.

Muwonge R, Borde MK. Acute diarrhea in children 0-5 years in Uganda.

Trung RV, Phung LV. 1993. Epidemiology of diarrhea in children in Hanoi. *Journal of Tropical Medicine and hygiene.* 96(1) : 203-211.

Van Damme P, Giaquinto C, Huet F, Gothefors L, Maxwell M, Van der WM. 2007. Multicenter prospective study of the burden of rotavirus acute gastroenteritis in Europe, 2004-2005: the REVEAL study. *J Infect Dis.,* 95;(Suppl 1):4–16. (PubMed)

Vesikari T, Van DP, Giaquinto C, *et al.* 2008. European Society for Paediatric Infectious Diseases/European Society for Paediatric Gastroenterology, Hepatology, and Nutrition evidence-based recommendations for rotavirus vaccination in Europe: executive summary. *J Pediatr Gastroenterol Nutr.* 46:615–618. (PubMed)

****