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Review Article

RISK FACTORS REGARDING CHRONIC DIARRHEA AND WEIGHT LOSS IN CHILDREN OF DISTRICT RAJANPUR PUNJAB, PAKISTAN

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Abstract:

Objective: To assess the risk factors associated with chronic diarrhea and weight loss in the children of District Rajanpur Punjab, Pakistan. **Methods:** A purposive randomized controlled trial was conducted among the 100 children of District Rajanpur Punjab, Pakistan with ages between 6 and 36 months and mean age 26 months having more than 3 episodes of acute watery diarrhea for more than 36 hours. **Results:** 36% of the children were below 1 year of age, 34% belonged to 12-24 months and 30% were between 24-36 months. Only 32% were undergoing breastfeeding or exclusively breastfed. 62% had an updated vaccinated status. 64% were low for birth weight. 82% families were consuming the municipal water supplies drinking and cooking. 78% were living in a joint family system. 32% of the mothers were literate with a minimum of primary education and above. 70% of the children had an early weaning history below 6 months of age. **Conclusion:** It was observed that children who had a history of low birth weight below 2.5 kg, under 12 months of age, not or under breastfed during their infancy, nursed on formula milk, unvaccinated status, those consuming un boiled water (municipal water) and those who had a history of early weaning below 6 months of age suffered more episodes of watery diarrhea.

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INTRODUCTION:

It is estimated that nearly 1.3 million children die of diarrhea each year globally [1] causing a higher death toll in the third world countries. Pragmatic steps have been taken to control the mortality by ensuring adequate rehydration measures after progressive water loss resulting from loose stools. [2] Furthermore the introduction of rotavirus vaccine in the EPI schedule has limited the deaths due to dehydration. Diarrhea can broadly be classified into dysentery, acute diarrhea, and diarrhea with extended duration. Prolonged diarrhea is referred as diarrhea of an infectious etiology with acute onset and lasting for at least 7 days; if it lasts for 14 days, it is termed as persistent diarrhea both of them comprise the major bulk of the cases [4]. Diarrhea of extended duration is associated with the stunted growth, mental retardation, micronutrient deficiencies and increased risk of infections. [3], [5], [6], [7] and administration of zinc has shown to have a protective role against acute diarrhea episodes [8]. Watery stools is the most common and sometimes bothersome presenting complaint by which mothers seek medical advice for their children [9]. Current WHO guidelines recommends oral rehydration therapy with breast feeding combined with oral zinc treatment as soon as the signs of dehydration develops [10]. Abuse of antibiotics other than their listed indications such as cholera and amoebic dysentery has led to evolution of antibiotic resistance. Therefore it is imperative to keep a check on the changing signs and symptoms of children during the acute phase so that timely intervention can be done to prevent dehydration.

MATERIALS AND METHODS:

The study was conducted in District Rajanpur Punjab Pakistan May 2021 till September 2021. Cases of acute watery diarrhea were screened after relevant history and examination in pediatrics out-patient department of District Headquarters District Rajanpur Punjab Pakistan through purposive random sampling. Operational definition of diarrhea was quoted as the passage of three or more watery stools and a recent change in its consistency in the last 24 hours. Only those children were included who had symptoms of less than 36 hours after formal approval of the ethical review committee of the hospital and informed consent of the parents in accordance with the Helsinki guidelines. Vaccination status was verified, anthropometric measurements were recorded and multiple logistic regression models were employed to establish the association of independent variables. A *P*-value of less than 0.05 was considered significant.

Demographic data of the children

Age (n=100)	Yes	No
>12 months (36)		
12-24 months (34)		
25-36 months (30)		
Undergoing breastfeeding or breastfed?	32	68
Vaccination updated?	62	38
Low birth weight <2.5kg?	64	36
Using Municipal water supply?	82	18
Joint family status?	78	22
Mother's schooling?	32	68
Early weaning below 6 months?	70	30

RESULTS:

36% of the children were below 1 year of age, 34% belonged to 12-24 months and 30% were between 24-36 months. Only 32% were undergoing breastfeeding or exclusively breastfed. 62% had an updated vaccinated status. 64% were low for birth weight. 82% families were consuming the municipal water supplies drinking and cooking. 78% were living in a joint family system. 32% of the mothers were literate with a minimum of primary education and above. 70% of the children had an early weaning history below 6 months of age.

DISCUSSION:

The study encompasses several significant risk factors responsible for acute watery diarrhea in children. It is witnessed that breastfeeding has a protective role against contracting diarrhea in children irrespective of their ages due to the preformed immunoglobulins and essential nutrients in the mother feed [18], duration and symptoms worsened in non-breastfed [18], [19], [20].

Since younger children have less chances to be exposed to micro-organism and hence they have a weaker humoral immune response to specific pathogens therefore they suffer greater frequency of stools than older children. [21].

Zinc is now preferred and endorsed for the treatment of childhood diarrhea in developing countries reducing duration and severity of illness [11], [22], [23]. But it has also been observed that zinc has less therapeutic effect in children younger than 6 months compared to older children [11], [24], [25], [26], [27]. Our study demonstrated a linear relationship between the number of stools and the duration of illness. This is because

the innate and acquired immunity come into play to halt the number of stools. Thus, stool frequency is directly proportional to the microbial load inside the intestines irrespective of the overall general health of the children.

The positive relation of the number of diarrheal episodes in the warm and humid months of the year can be justified as the breeding and growth of the various bacterial pathogens whereas viral infections tend to be more common in the cooler months while protozoan usually dominate during the wet and temperate seasons [29], [30], [31]. *Cryptosporidium parvum* and *Cyclospora cayentensis* tend to have a longer course and occur during the wet and cool season [32].

Stunted growth and muscle wasting had no association with duration of the illness but becomes a significant finding in children with a diarrhea extending across 14 days and other comorbidities such as malnutrition and severe illness. Such patients need to be given due attention for nutritional support in addition to correcting the dehydration status. Several studies have highlighted the protective role of adequate plasma zinc levels against watery diarrhea of any etiology [33], [34], [35].

Oral zinc has been recommended to all children dwelling in under-developed countries having symptoms of acute diarrhea [10]. It has been observed that infants suffer more from GI upsets and also are less responders to zinc treatment. Breastfeeding has shown promising results in limiting the incidence of watery stools in children of all ages. Long standing diarrhea may lead to abnormal mental development, weight loss and increased risk of infections [36], [4]. Thus prompt screening of the risk factors can save the children from the acute as well as their longterm well-being.

CONCLUSION:

It was observed that children who had a history of low birth weight below 2.5 kg, under 12 months of age, not or under breastfed during their infancy, nursed on formula milk, unvaccinated status, those consuming unboiled water (municipal water) and those who had a history of early weaning below 6 months of age suffered more episodes of watery diarrhea.

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