

## **DIARRHOEA IN CHILDREN – A LITERATURE REVIEW**

**Rajesh. PJoseph<sup>1</sup>, Ami Patel<sup>2</sup>,**

<sup>1</sup>Associate Professor, Department of Pediatric Nursing  
Sumandeep Nursing College

Sumandeep Vidyapeeth Deemed to be University  
Pipariya, Waghodia, Vadodara – 391760. Gujarat, India

<sup>2</sup>Post Graduate Student, Department of Pediatric Nursing  
Sumandeep Nursing College

Sumandeep Vidyapeeth Deemed to be University  
Pipariya, Waghodia, Vadodara – 391760. Gujarat, India

### **Corresponding Author**

**Rajesh. P. Joseph,**

Sumandeep Nursing College

Sumandeep Vidyapeeth Deemed to be University  
Pipariya, Waghodia, Vadodara – 391760. Gujarat, India

Email: rajesh.p.joseph@gmail.com

### **Abstract**

**Introduction:** Diarrhea is a second largest cause of mortality worldwide in children from the Perinatal period to the age of 5 years. Rotavirus has been the most commonly identified viral cause of diarrhea in children. It is normal for young infants to have up to 3 to 10 stool per day.

**Objectives:** This literature review was aimed to determine the extent of dehydration associated with diarrhea and identify other problems that require treatment or referral.

**Methodology:** The investigator accessed PubMed, Google scholar and Cochrane library databases for the literature review and included 25 scientific papers which were published between the years 2000 – 2015.

**Discussion:** This study review was this is the global and worldwide in under 5 children. It is common in children during winter and cause of infection of gastroenteritis. It is mostly occurred to the bacteria and pathogens.

**Conclusion:** Diarrhea is the mostly seen in the children. If it is occurred then go to the hospital or management of it. In this provide to the ORS, antibiotics medicine to the dehydrated children.

**Keywords:** Diarrhea, Mortality rate, Underfive children

## **INTRODUCTION**

Diarrhea is a leading cause of child morbidity and mortality globally and the third most common cause of death in under-five children. The condition is responsible for 13% deaths in under five age-group and causing estimated 300,000 deaths in India each year. Diarrhea is defined as having loose or watery stools at least three times per day, or more frequently than normal for an individual. Most incidents of childhood diarrhea are mild, acute cases can lead to significant fluid loss and dehydration, results in death or other severe consequences [1].

## **INCIDENCE RATIO**

According to WHO, children about 2.5 million in the year 2001 to 1.5 million in 2012 in India were died because of diarrhea. By considering the rising cases of diarrhea, Universal programs like expanded program on immunization for the control of diarrheal diseases and several other programs were launched globally [1].

## **CAUSES OF DIARRHEA**

According to the sources the causes are vast in numbers. They are

- Viruses
- Food poisoning
- Contamination of food and water by bacteria or other germs
- Effects of medications

### **Rota virus and its clinical presentation**

Rotavirus is characteristically linked with triad of fever, vomiting and diarrhea. This triad of symptoms happens in two out of three individuals infected with rotavirus presenting to the hospital, while two of these three symptoms occur in 95% of sick individuals. Dehydration with acute gastroenteritis occurred in 83% of rotavirus-infected children versus 40% of non-rotavirus-infected children. Rotavirus is the foremost cause of diarrhea hospitalization among children worldwide, an approximation of 2.1 million annual deaths from diarrhea, we calculated that rotavirus causes 440,000 annual deaths in children <5 years of age worldwide. [2, 3, 4]

### **Norovirus and its clinical presentation**

It occurs throughout the year and very particularly during the winter through fecal oral route. Vomiting is more protuberant with norovirus than with rotavirus but diarrhea is less prominent than with rotavirus. Norovirus infections are typically less severe than those observed with rotavirus. It has been reported that, 200,000 children under 5 years of age die each year from norovirus. Immune cross-protection between norovirus genotypes is poor, and immunity has been shown to last for less than 4 years. These characteristics result in recurrent norovirus infections throughout life. [5, 6, 7, 8, 9, 10]

### **Role of Astrovirus in childhood diarrhea**

The virus spreads in the winter and is mostly observed in children under 2 years of age. Watery diarrhea and vomiting occur in the children with astrovirus, but the severity of illness is much less than that observed with rotavirus due to a shorter duration of vomiting and diarrhea. A total of 67–90% of astrovirus infections in children under 2 years of age is due to serotype 1. Serum antibodies are noted in over 90% of children to type 1 by the age of 6–9 years but only 42% against type 3. Astrovirus can also be nosocomial cause of diarrhea. [11]

### **Sapovirus and its effects in children**

During winter the virus spreads and it is common among young children. One of the studies found, sapoviruses accounted for the 9% of all gastroenteritis occurrences but tended to be less severe than other forms of virus. Almost all children will have antibody against sapovirus by the age of 5 years[12, 13]

## **PREVENTION OF DIARRHEA**

In developing countries, morbidity due to diarrhea and many of the life-threatening morbidity are not reported to the health system. The WHO and UNICEF recommend adoption of household water treatment with strategies such as chlorination and filtration in addition to safe storage systems. An projected 88% of diarrheal deaths worldwide are due to lack of access to sanitation, inadequate availability of water for hygiene and ingestion of unsafe water. Promotion of early and exclusive breastfeeding in developing countries is crucial. Bottle feeding and mixed bottle and breast feeding is associated with an increased risk of infant mortality due to diarrhea in developing countries, particularly within the first 2 months of life.[14, 15]

Therapeutic use of zinc for the treatment of diarrhoea in children has been shown to reduce diarrhoea incidence and stool frequency and diarrhoea duration as well as respiratory infections in zinc deficient children. Less conclusive evidence exists for therapeutic zinc is mortality due to diarrhoea and respiratory infections. Prophylactic zinc's effectiveness in diarrhoea duration and severity effectiveness of therapeutic zinc in reducing mortality due to diarrhoea and respiratory infections are warranted. [16]

A rotavirus (RVA) vaccine, effectiveness and impact on gastroenteritis mortality and hospitalization rates and RVA hospitalization rates are described. Among middle-income RVA is very effective in children and infants. A growing body of literature offers convincing evidence of "real world" vaccine program successes in Latin American settings, which may be expanded as more countries in the region include RVA vaccine in their immunization programs. Development of vaccines for prevention of viral gastroenteritis has been a focus of interest since the discovery of these viral pathogens. It is the much efforts focused on developing safe and effective vaccines for rotavirus.

Combining the monkey and human rotavirus strains in vitro resulted in reassortment of the genetic material and the subsequent development. Prelicensure studies demonstrated 48% efficacy in prevention of any rotavirus episode, 70% efficacy in prevention of hospitalization and 88% efficacy in the prevention of severe disease. [17, 18]

## **TREATMENT OF DIARRHEA**

Once diarrhea is established, management can be challenging and particularly when diarrhea is combined with vomiting. A solution of oral rehydration salts (ORS) has been available for over 30 years. ORS utilize of the sodium–glucose co transporter that continues to function despite even severe secretory diarrhea. This isto co transport of salt and glucose across the small bowel epithelium facilitates water absorption. In 2004, the WHO and UNICEF recommended low-osmolarity ORS due to decreased stool output, vomiting and need for unscheduled intravenous therapy with low-osmolarity ORS. In this low-osmolarity solution, the concentration of sodium, chloride and carbohydrate is lower (245 instead of 311 net milliosmoles/l) continued feeding during the diarrhea episode while providing the ORS in resource-poor settings improves fluid absorption and helps maintain nutritional status. [19]

Traveler's diarrhoea is a common problem worldwide and is likely to continue to increase with the expansion of travelling. It is through bacteria, parasites and viruses may be important and depending on the location, New pathogens may well emerge in the future. Prevention must be antibiotic prophylaxis is clearly effective. For those taking antibiotic prophylaxis advice, as always, should be given regarding the possible adverse effects. Concern about the emergence of resistant strains may be less with the new 4-fluoroquinolone antibiotics and its alternatives for prophylaxis include bismuth subsalicylate which is safe and not an environmental hazard. [20]

In the developed countries, additional medications can be helpful in the management of diarrhea. Pepto-Bismol (bismuth subsalicylate) has been shown to decrease the duration and symptoms of acute diarrhea, particularly when illness is due to

rotavirus. This treatment has not gained general acceptance due to concern about the risk of Reye syndrome with the salicylate component of the medication. Diphenoxylate, loperamide and codeine are not recommended for use in children because of safety concerns, but data do demonstrate that they can help reduce the severity of symptoms [21].

## **CONCLUSION**

Diarrhea can be prevented and treated through contamination free food and water and environmental sanitation. Health care providers have to take the responsibility to create awareness among the community population and where health facilities are lacking.

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