

## Diarrhoea Disease: A Dangerous Childhood Disease

Obeagu Getrude Uzoma<sup>1</sup> & Obeagu Emmanuel Ifeanyi<sup>2,3\*</sup>

<sup>1</sup>*Department of Nursing Science, Ebonyi State University, Abakaliki, Nigeria*

<sup>2</sup>*Medical Laboratory Science, University Health Services, Michael Okpara University of Agriculture, Umudike, Nigeria*

<sup>3</sup>*Department of Medical Laboratory Science, Imo State University, Owerri, Nigeria*

**\*Correspondence to:** Dr. Obeagu Emmanuel Ifeanyi, Department of Medical Laboratory Science, Imo State University, Owerri and University Health Services, Michael Okpara University of Agriculture, Umudike, Nigeria.

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### Abstract

This seminar work dealt with diarrhea disease; a dangerous childhood disease. Diarrhea is the passing of watery stools more than three times a day with the highest incidence occurring during the weaning period. The objectives of the study were discussed which include types of diarrhea like acute watery diarrhea, chronic diarrhea and dysentery. Others are discussion of childhood diarrhea management, identification of health problems associated with diarrhea disease and ways of preventing diarrhea in children. It was recommended that maintaining proper personal hygiene and environmental sanitation especially during weaning period is of paramount important in the control of diarrhea diseases. Also, oral dehydration therapy which is aimed at replacement of the lost fluid and electrolyte is one of the most effective measures in management of diarrhea disease with its associated health problem like dehydration in children.

## Introduction

According to Anita (2008) [1] diarrhea is the passage of three or more loose or watery stools within 24 hours. Some of these stools may be mixed with blood or mucus and at times may be associated with vomiting.

Also diarrhea refers to a softening in the consistency of the stool with or without an increase in the number of stools. Because of the variability in the frequency and type of stools among children, absolute limits of normalcy are difficult to define; rather any deviation from the child's normal pattern should arouse concern regardless of the actual number of stools or their water content. Some infants, particularly those who are breastfed, often have 5-6 loose stools daily as their normal routine. Other healthy infants may produce only one formed stool every other day [2].

Diarrhea is the leading cause of illness and death among children below 5 years in developing countries. It is commonest during the first 6- 11 months of age and during weaning period [1].

Jelliffe (2009) [3] also stated that the peak incidence of diarrhea is from 6 months to 2 year in general but where many babies less than 6 months are bottle-fed, there can be many below that age.

Diarrhoea with or without vomiting often prompt a visit to the emergency department. An estimated 15 to 20 million episodes of diarrhea occurring annually in the United states while greater number of episodes occur in less developed countries.

The affected children eat less, with diarrhea the nutrients are poorly absorbed and they become prone to infection. If there is superimposed infection, nutritional requirement for the affected children increases [2].

Diarrhoea disease remains a leading cause of morbidity and mortality of children in Sub-Saharan Africa, a region where unique geographic, economic, political, socio-cultural and personal factors interact to create distinctive continuing challenges to its prevention and control. Whereas childhood mortality rates from diarrhea are expected to decrease by 30 to 50% in most areas of the world between 1990 and 2005 the decline in Sub-Saharan Africa is estimated to be only 3%. Consequently, approximately 40% of childhood deaths from diarrhea world wide will occur in Africa by the year 2010, although only 19% of the world's population under the age of five years live in this region [4].

A number of different social, political and economic factors are present in Sub-Saharan African which contribute to the constant morbidity from acute, persistent and dysenteric diarrhea as well as intermittent epidemics of cholera to this region of the world. Morbidity and mortality from childhood diarrhea, whether due to invasive enteropathogens, like shigella or rotavirus, are further compounded by inappropriate household case management and frequent misuse of antibiotics. Limited knowledge among many health care providers on the proper treatment of diarrhoea also contribute to poor outcomes [4].

Gary (2008) [2] also stated that diarrhoea may be the initial manifestation of a wide spectrum of disorders like viruses (Rota virus, enterovirus), parasites example giardia lamblia, entamoebahystolytica, dietary disturbances (over feeding, food allergy) and anatomical abnormalities like intussusception, hirschsprung's disease, partial obstruction etc.

In addition, Anita (2008) [1] highlighted the risk factors associated with childhood diarrhoea disease. These are failure to breast-feed exclusively for the first 6 months. This increases the risk of diarrhoea more than in exclusively breast-fed infants. Drinking of contaminated water either from source of water or water container. Failure to wash hands after defecation, or before handling baby's food.

Any cause of diarrhoea may produce a fatality secondary to dehydration and dehydration is more common in younger children. However, oral rehydration therapy has helped to reduce fatality related to childhood diarrhoea diseases.

## Objectives

1. To discuss the types of diarrhoea disease.
2. To discuss the management of childhood diarrhoea.
3. To identify health problems associated with diarrhoea diseases.
4. To highlight ways of preventing diarrhoea in children.

## Types of Diarrhoea Disease

Lucas and Gilles (2003) [5] classified diarrhoea into 3 types which are:

- Acute Watery diarrhoea
- Chronic/Persistent diarrhoea
- Dysentery

### Acute Watery Diarrhoea

This is the Sudden Passage of Watery faecal matter from the gastro intestinal tract which is caused by the entrance of pathogen into the gastrointestinal tract. It comes on suddenly, but only lasts for 5-10 days. Short term diarrhoea is usually a symptom of gastroenteritis which is an infection of the bowel.

Gastroenteritis may be caused by a virus such as rota virus, food poisoning usually caused by Salmonella, Campylobacter or staphylococci bacteria and Escherichia Coli- bacterial infection which causes acute watery diarrhea. Other causes of acute diarrhea include: Antibiotic, contaminated food or water, emotional upset or anxiety, drinking too much alcohol, drinking too much coffee or the side effect from some medicines. The major predisposing factor to acute diarrhoea disease is Vitamin A deficiency which may predispose the child to increase risk of diarrhoea illness.

### Chronic (Persistent) Diarrhoea

This type of diarrhoea occurs when episode of diarrhoea continues for at least 14 days. It occurs in 3-20% of all cases and this leads to significantly increased mortality. Fourteen percent (14%) of persistent cases are fatal compared with 1% of acute cases.

The risk factors in the development of persistent diarrhoea include: age, nutritional status, immunological status, previous infections, concomitant enteropathogenic bacteria (e.g. entero adherent *Escherichia Colii*, Enteropathogenic *E. Coli* and *Cryptosporidia*), Laxatives and Longterm conditions which includes ulcerative colitis, Cohn's disease, irritable bowel syndrome and pancreatitis [6].

## **Dysentery**

According to Lucas and Gilles (2003) [5], dysentery is the inflammation of the intestine especially the colon. It can also be defined as the frequent passage of loose stool containing blood and mucus.

### ***Types of Dysentery***

- Bacillary dysentery
- Amoebic dysentery

### **Bacillary Dysentery**

This type of dysentery is caused by an infectious agent called *Shigella* bacterium which is a non-motile, gram negative bacillus. It affects the large intestine directly. Its incubation period is between 2-7 days and its mode of transmission is through direct faecal contamination of food, water or fomites (Lavatory seat, door handle, bedding and flies). The organisms which are excreted in the faeces may gain access to food through the toiled fingers of patients or carriers.

The signs and symptoms of bacillary dysentery include abdominal cramp, abdominal pains, Tenesmus, slight fever, watery mucoid stool with stained bright red blood from the damage lining of the colon, high fever develops, followed by dehydration of the tissues.

### **Amoebic Dysentery (Amoebiasis)**

This is caused by the Protozoan known as *Entamoebahistolytica*. This protozoa lives in the large intestine causing ulceration of the mucosa with consequent diarrhoea. Amoebic dysentery is not as common as the bacillary type but is more dangerous. Its mode of transmission is through contaminated hands, foods and poor personal hygiene. Young children often contact the organisms through food handled by their mothers. Its incubation period is 3-4 weeks but may range from 5 days to several months.

## **Management of Childhood Diarrhoea**

Denise (2009), states that diarrhoea often stops without treatment after a few days, as the person's immune system fights off the infection.

According to Denise, symptoms of diarrhoea can be eased by the following steps.

❖ **Avoid Dehydration:** Dehydration can be prevented by drinking lots of fluids, taking small frequent sips of water or diluted juice when the child vomits but if the child shows signs of dehydration like drowsiness, passage of scanty urine, a dry mouth and tongue, unresponsiveness or glazed eyes, the child should be taken to hospital immediately.

❖ Eating food rich in nutrients especially carbohydrates, protein, minerals and vitamins etc as the child feels like eating can help in the replacement of lost nutrients from the system.

If the child wants to eat, offer soups and foods high in carbohydrates at first then the child can eat normally as soon as possible but if the child refuses to eat, continue to offer drinks and wait until his appetite returns.

❖ Encourage the mother to continue breastfeeding even if the child has been weaned to family food.

❖ Antipyretics such as liquid paracetamol can be given if the child has fever.

Drug such as flagyl (antiamoebic) can be given to relieve symptoms by slowing down the movement of bowel contents thereby increasing water absorption from the gut.

❖ Use of rehydration drinks such as salt sugar solution and oral rehydration therapy from WHO/UNICEF.

The composition of oral rehydration therapy include:

- Sodium chloride                    3.5mmol/L
- Sodium bicarbonate               2.5mmol/L
- Potassium chloride                1.5mmol/L
- Glucose (anhydrous)              20mmol/L

## **Preparation of Salt Sugar Solution**

### **Requirements**

- I teaspoon and I tablespoon
- Sugar (granulated or cube)
- Salt
- Clean towel
- A clean bowl with cover
- Clean drinking water
- Clean bottle (a bear bottle or coca cola bottle 29 cl x 2).

### **Procedure**

- Make sure the requirements are complete and clean.

- Wash hands properly and dry.
- Measure out 1 level of teaspoon of salt into the bowl
- Measure out also 10 level teaspoon of granulated sugar into the same bowl or use 5 cubes of sugar because 1 cube of sugar is equivalent to 2 level teaspoons of granulated sugar.
- Add 2 soft drink bottle full of clean water into the bowl or one bottle of water from beer bottle.
- Stir to mix thoroughly and taste it. The solution should taste like cocoa nut water.
- Use for 24 hours. Any remains should be discarded the following morning and a fresh one prepared if diarrhoea continues and it should not be stored in the refrigerator.

**NOTE:** Boil water if it is contaminated and leave it to cool before use. In severe dehydration, intravenous therapy is required such as Normal saline 0.9%, Ringers lactate, Half strength darrow's solution [1].

## Health Problems Associated with Diarrhoea Disease

Denise (2009) [7] identified dehydration as a complication of diarrhoea disease which is caused by loss of body fluid. Signs and symptoms of dehydration include passing little urine, a dry mouth and tongue, unresponsiveness, glazed eyes (sunken eyes), drowsiness and confusion in severe cases. Dehydration is treated with intravenous fluid, oral rehydration therapy and management of the underlining cause of dehydration.

Also Davidson and Gerald(2008) [4] enumerated the following complications of diarrhoea:

- Salt (electrolyte) imbalance in the body. This is the most common complication. It occurs if the electrolyte especially sodium and potassium are lost in the child's stools or when they vomit and are not replaced by drinking enough fluid (SSS) or intravenous infusion administration.
- **Reactive Complications:** Rarely, other parts of the child's body can react to an infective diarrhoea of their gut. This can cause symptoms such as arthritis (joint inflammation), skin inflammation and eye inflammation (conjunctivitis). Reactive complications are uncommon if a virus is the cause of the diarrhoea.
- Spread of infection to other parts of the child's body such as bones, joints especially in diarrhoea caused by Salmonella infection.
- **Persistent Diarrhoea Syndrome:** This is a rare complication but it is common in children with deficiency of vitamin A.
- **Irritable Bowel Syndrome:** This is sometimes triggered by a bout of infectious diarrhoea.
- **Lactose Intolerance:** This can sometimes occur for a period of time after infectious diarrhoea. It is known as secondary or acquired lactose intolerance. The child's gut lining can be damaged by the episode of diarrhoea. This leads to lack of an enzyme called lactase that is needed to help the body digest a sugar called lactose that is in milk. Lactose intolerance leads to bloating, abdominal pain, wind and watery stools after drinking milk. This condition gets better when the infection is over and gut lining heals.

• **Haemolyticuraemic Syndrome:** This is a rare complication. It is usually associated with diarrhoea caused by a certain type of E. Coli infection (E.Coli 0157). It is a serious condition where there is anaemia, a low platelet count in the blood, and kidney failure. If recognized and treated, most children recover well.

• **Malnutrition:** This may follow some gut diarrhoeal infection. This is mainly a risk for children in developing countries.

## Ways of Preventing Diarrhoea in Childhood

According to Davidson and Gerald (2008) [4], the following strategies are ways of preventing diarrhea disease in children:

- Interventions to increase the availability and use of safe water supplies
- Efforts to improve personal and domestic hygiene
- Efforts to improve weaning practices.
- Improvement of food and water handling and storage method as well as practice.
- Immunization programmes for enteric pathogens (rotavirus)

The use of government action to limit the availability of anti diarrhea drugs.

- Training of health care personnel in the appropriate management of childhood diarrhea using integrated management of childhood illness (IMCI) guidelines.
- Proper implementation of diarrhea control programme.

Also USAID'S strategies for preventing diarrhea disease focuses on:

- Promoting breast feeding
- Expanding community approaches for delivery of oral rehydration therapy (ORT) through community health workers.
- Zinc supplementation to decrease the duration and severity of diarrhea disease in under 5 age children.

In addition, Denise (2009) [7] identified the following preventive measures for diarrhea disease.

- Washing hands regularly after using the toilet or potty, after playing with pets, after gardening and before touching food.
- Cleaning the toilet with disinfectant after using it.

## Summary/Conclusion

Diarrhoea is a dangerous childhood disease and the leading cause of illness and death among children below 5 years in developing countries. It is commonest during the first 6-11months of age and during weaning period. The symptoms of diarrhea can be eased off by avoiding dehydration through drinking lots of

fluids, taking small frequent sips of water or diluted juice when the child vomits. Also eating foods rich in nutrients especially carbohydrates, proteins, vitamins and mineral salts helps in the replacement of lost nutrient from the system.

In other to prevent this childhood disease, efforts should be made on improvement of personal and environmental hygiene, promotion of breast feeding and improvement of weaning practices.

## Recommendations

The following recommendations were made for better improvement in the management and prevention of diarrhoea.

- Government should organize training of health care personal in the appropriate management of childhood diarrhoea.
- Provision of free oral rehydration therapy by the government for the members of the community.
- Organization of immunization programme against enteric pathogens example rota virus vaccine.
- Health education of the community members especially mothers on importance of improved weaning practice and maintenance of personal and environmental hygiene.
- Adequate provision of portable water supply.

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