

Assessment of Children Having Diarrheal Diseases

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ABSTRACT

Background: Diarrheal diseases are major public health problems, especially in children in developing countries. Globally, diarrhea remains the second most common cause of death among children under five years of age. **Aim:** This study aimed to assess needs of children having diarrheal diseases. **Research Design:** A descriptive designed was utilized in this study. **Research settings:** This study was conducted at Pediatric Department affiliated to Beni Suef University Hospital and General Beni Suef Hospital. **Research subjects:** A purposive sample included (45) children admitted to the pediatric department who having diarrheal disease was selected from previous mentioned settings. **Tools of data collection:** A Pre-designed Questionnaire Sheet; Medical data sheet; Patient assessment data sheet; Complication monitor sheet. **Results:** of the study revealed that regarding to demographic characteristics of children more than half of children were males, lived in urban and having natural feeding. There were half of them readmission after one week and two thirds have feverish. **Conclusion:** Children having diarrheal disease needs accurate management and nutrition. **Recommendation:** Periodical in-service training programs for nurses to improve their quality of care (QOC) to meet needs of children having diarrheal disease.

Key words: Assessment, Children, and Diarrhea.

Introduction

Diarrheal diseases are major public health problems, especially in children in developing countries. Globally, diarrhea remains the second most common cause of death among children under five years of age. There are an estimated 1.7 billion cases of diarrhoea with an average of 2.9 episodes/child/year, and an estimated 1.87 million deaths among children under five years of age (Al Mohammed & Li Zungu, 2016).

Diarrhea is either an increase in the frequency or a decrease in the consistency of stool (Fleisher, 2014). Diarrhea is a symptoms that results from disorders digestive, absorptive, and secretory functions (Hockenberry, 2015). Diarrhea is derived from a greek word, meaning 'flowing through' (Sharma, 2013).

Diarrhea in children can either be acute or chronic. In the developed world,

viruses account for most diarrhea cases leading to more than 1.5 million office visits and 200.000 hospitalizations each year (Carman, 2016).

According to the World Health Organization (WHO) and UNICEF (United Nations Children's Fund), there are about two billion cases of diarrheal disease worldwide every year, and 1.9 million children younger than 5 years of age perish from diarrhea each year, mostly in developing countries [World Gastroenterology Organization Global Guidelines [WGOGG], 2012; Sayed et al., 2014].

There are factors that predispose to diarrhea such as age, impaired health, environmental factors and seasonal factors. As a rule, the younger the child, the greater the susceptibility to diarrhea and diarrhea

occurs more commonly in infancy, is a lesser threat in early childhood. Malnourished or immunocompromised children are more susceptible and tend to have more severe diarrhea. Diarrhea occurs with greater frequency where there is crowding, substandard sanitation, poor facilities for preparation and refrigeration of food, and generally inadequate health care education (Hockenberry & Wilson, 2015).

Rotavirus is one of the most common causes of diarrhea, and severe infection. Rotavirus gastroenteritis is the leading cause of severe and dehydrating diarrhea in infants and young children especially during late fall and winter months. It causes very foul smelling, watery, green or brown diarrhea that can persist for weeks. Fever and vomiting are common at the onset of the illness. Rotavirus infections are responsible for approximately 55,000 hospitalizations for diarrhea and dehydration in children under 5 years old each year in the United States [Centers for Control and prevention (CDC), 2014].

Diarrhea may be mild, moderate, or severe. In mild diarrhea, stools are slightly increased in number and have a more liquid consistency. In moderate diarrhea, the child has several loose or watery stools. Other symptoms include irritability, anorexia, nausea, and vomiting. Moderate diarrhea is usually self-limiting, resolving without treatment within 1 or 2 days. In severe diarrhea, watery stools are continuous. The child exhibits symptoms of fluid and electrolyte imbalance, has cramping, and is extremely irritable and difficult to console (Ball, et al., 2015).

Children less than five years are more liable to diseases that impair the ability of the immune system to fight off germs are at higher risk of getting infections that lead to acute diarrhea, including some viruses and parasites that would not cause diarrhea in healthier children (NSW Health, 2014).

Complications of diarrhea include cardiac dysrhythmias due to fluid and electrolyte (potassium) imbalance, urinary output less than 30 mL/h, muscle weakness, paresthesia, hypotension, anorexia, drowsiness (report if potassium level is less than 3.5 mEq/L [3.5 mmol/L]), skin care issues related to irritant dermatitis, and death if imbalances become severe (Victoria et al., 2013).

Primary prevention of diarrhea is to control fecal-oral transmission of pathogens through water sanitation and hygiene. Effective interventions include rotavirus vaccinations, breast-feeding and oral rehydration therapy as well as community education on safe water, sanitation and hygiene practices [World Health Organization (WHO) and The United Nations Children Emergency Fund recommend (UNICEF), 2011].

The major goals in the management of acute diarrhea including 1) assessment of fluid and electrolyte imbalance, 2) rehydration, 3) maintenance fluid therapy, and 4) reintroduction of an adequate diet. Treatment of diarrhea and prevention of dehydration including replacing fluid, continuing feeding and close monitoring of infants and children (Hockenberry et al., 2017).

Oral rehydration solution (ORS) is one of the major worldwide health care advances. It is more effective, safer, less painful, and less costly than intravenous (I.V) rehydration. Treat infants and children with acute diarrhea and dehydration first with oral rehydration solution (ORS). The American Academy of Pediatrics (AAP), World Health Organization (WHO) and Centers for Disease Control and Prevention (CDC) all recommended ORS as the treatment of choice for most cases of dehydration caused by diarrhea (Hockenberry et al., 2017).

Continues breast feeding during infant diarrhea reduced diarrheal losses and requirements of oral rehydration. Breast milk contains many protective factors that act at the intestinal mucosal surface to prevent microbial infection and enhance development of the immune system. Changing the diet may relieve some types of diarrhea (Bhutta et al., 2012).

The management of most cases of acute diarrhea takes place in the home with education of the caregiver. Teach caregivers to monitor for signs of dehydration (especially the number of wet diapers or voidings) and the amount of fluids taken by mouth, and to assess the frequency and amount of stool losses. Education relating to Oral rehydration therapy (ORT), including the administration of maintenance fluids and replacement of ongoing losses, is important. ORS should be administered in small quantities at frequent intervals (Hockenberry & Wilson, 2015).

Vomiting is not a contraindication to ORT unless it is severe. Information concerning the introduction of a normal diet is essential. The benefits of a better nutritional outcome with fewer complications and a shorter duration of illness outweigh the potential increase in stool frequency. Address parents' concerns to ensure adherence to the treatment plan (Hockenberry & Wilson, 2015).

Significance of the study:

Diarrheal disease remains one of the most important causes of morbidity and mortality in developing countries, especially in African countries. Diarrhea kills an estimated 2.5 million people each year, with about 60-70% of them being children under five years of age. The disease is responsible for over a quarter of the deaths of children in the world today. Most of these deaths occur in developing countries where an estimated 25% of under-five mortality is directly

attributed to diarrhea disease (Christopher & Yilgwan, 2012).

Aim: This study aimed to assess needs of children having diarrheal diseases.

Research Questions: What are the needs of children having diarrheal disease?

Subjects and Methods

Design: A descriptive designed was utilized in this study.

Setting: This study was conducted at Pediatric Department affiliated to Beni Suef University Hospital and General Beni Suef Hospital. The two settings are having the highest capacity of children having diarrheal diseases.

Sampling: A purposive sample included children (45) admitted to the pediatric department who having diarrheal disease was selected from previous mentioned settings. Under the following criteria:-

Inclusion criteria

- Vomiting and/or diarrhea with or without accompanying nausea, fever or abdominal pain.

Exclusion criteria

- Patient <3 months of age.
- Toxic appearance (consider sepsis).
- Diarrhea >7 days (consider chronic disease, bacterial enteritis).
- Comorbid conditions (Medically complex children (MCC), renal failure, cardiac disease).
- Bilious emesis (consider bowel obstruction).
- Hyponatremia (< 130 mEq/l) or Hypernatremia (>155 mEq/l).
- Acute surgical abdomen.

Data collection tools :

- Data were collected through (4) tools:

1-Pre-designed questionnaire sheet to assess: Characteristics of the study children.

2-Medical data sheet: was designed as a hospital policy by hospital staff , used by the researcher to look for the diagnosis, main complain, past medical history and treatment.

3- Patient assessment data sheet: It adapted from **WHO (2014)**, to assess diagnostic tests and physical examination.

4- Complication monitor sheet: It is adapted from **Spiro (2012)** and **WHO (2014)**, to monitor the complications

- Tools revised by (5) expertise's in the field of Pediatric Nursing.

Ethical design: According to the faculty of nursing staff committee for ethical issues in research, the researcher was got the children's caregiver consent before conducting of the study. Assured them about confidentiality, safety and privacy data obtained.

Administrative design: An official letter requesting permission to conduct the study were obtained before embarking the study from the Dean of the faculty of nursing, Ain shams university to the director of each study setting. This letter was included the aim of the study in order to get the permission and help for collection of data.

II. Operational Design:

This phase will be based on the following steps:

- It included reviewing of literature and theoretical knowledge of the various

aspects of this issue in order to developing study tool.

Content validity & Reliability:

Tools will be revised by 5 experts in the field of Pediatric Nursing to ascertain relevance and completeness of the study.

A pilot study:

The pilot study was conducted on 10% from the total sample in order ensure the clarity, applicability of the tools and the time needed to be completed. According to the results obtained of the pilot study, the requirement modification were performed. The sample of pilot study were excluded from the main study sample.

Field work:

The actual field of work was carried out from the beginning of April 2017 to the end of September 2017 for data collection. The researcher were available in the study settings two days per week, at the morning shift from 8.00 a.m to 2.00 p.m in Beni Suef University Hospital and at the afternoon in General Beni Suef Hospital, the researcher will introduce herself to medical and nursing staff members in the previously mentioned settings. The researcher explained the nature and the aim of the study and ask for co-operation.

Statistics: The collected data was organized, reviewed, coded, tabulated, analyzed and presented using descriptive statistic in the form of frequencies and percentages for qualitative variables; Means, standard deviations, for quantitative data. Test of significance was used for comparison between the study and control groups.

Where:

- $P > 0.05$, no statistically significant difference.
- $P < 0.05$, statistically significant difference.
- $P < 0.01$, highly statistically significant difference.

- $P < 0.001$, very highly statistically significant difference.

Results

Table (1): shows that, Number and percentage distribution of the studied children according to their characteristics. This table illustrated that, more than half female (51.1%), and lived in urban.

Table (2): Demonstrates that there was more than half (55.6%) of them in relation to hospital stay period and nearly two thirds (66.7%) of them admitted once in the hospital as P level < 0.000000 , < 0.000003 .

Table (3): shows that there were nearly half (48.9%) in relation to readmission at hospital after discharge (after week) as $x^2 = 25.74$ at $P < 0.000003$.

Table (4): displays that there were all of them have moderate dehydration in relation to physical examination of diarrhea for children having diarrheal disease as P level > 0.05 .

Table (5): displays that there were more than half (60.0%) have feverish at P level < 0.001 .

Table (6): shows that there was more than half (53.3%), (68.9%) of them have Hyponatremia and hypokalaemia regarding to blood tests for children having diarrheal disease at P level < 0.001 .

Table (7): illustrates that there was more than half (68.9%) have Hyponatremia and the majority (84.4%) have hypokalemia regarding to complication of children having diarrheal disease, at P level < 0.001 and < 0.01 .

Table (1): Number and percentage distribution of the studied children according to their characteristics.

| Items | NO. | % | Chi- squared x^2 | P- Value |
|----------------------|------------------|-------|-----------------------|----------|
| Age in Months | | | | |
| < 6 | 10 | 22.2% | Equal | |
| 6 < 12 | 13 | 28.9% | | |
| 12 < 18 | 16 | 35.6% | | |
| 18 < 24 | 6 | 13.3% | | |
| Mean \pm SD | 10.91 \pm 5.18 | | | |
| Sex | | | | |
| Male | 22 | 48.9% | 2.91 | 0.087761 |
| Female | 23 | 51.1% | | |
| Residence | | | | |
| Urban | 22 | 48.9% | 1.62 | 0.203092 |
| Rural | 23 | 51.1% | | |

Table (2): Number and percentage distribution of the studied children according to their frequency of hospitalization.

| Items | NO. | % | Chi- squared x ² | P- Value |
|----------------------------------|-----|-------|--------------------------------|----------|
| Hospital stay period | | | | |
| one day | -- | -- | | |
| two days | -- | -- | 55.79 | 0.000000 |
| three days | 25 | 55.6% | | |
| four days | 15 | 33.3% | | |
| five days | 5 | 11.1% | | |
| Number of hospitalization | | | | |
| NO | 5 | 11.1% | | |
| Once | 30 | 66.7% | 25.33 | 0.000003 |
| Twice or more | 10 | 22.2% | | |

Table (3): Number and percentage distribution of the studied children according to their readmission after discharge.

| Items | NO. | % | Chi- squared x ² | P- Value |
|-----------------------------|-----|-------|--------------------------------|----------|
| Hospital Readmission | | | | |
| N O | 15 | 33.3% | | |
| The same week | 8 | 17.8% | | |
| After a week | 22 | 48.9% | 25.74 | 0.000003 |

Table (4): Number and percentage distribution of the studied children according to their physical examination.

| Physical examination | NO. | % | Z | P- Value |
|-------------------------------|-----|--------|-------|----------|
| 1.Thirst sensation | 45 | 100.0% | Equal | |
| 2. Weight loss | 45 | 100.0% | Equal | |
| 3. Depressed fontanel | 38 | 84.4% | 1.34 | 0.17971 |
| 4.Sunken eye | 45 | 100.0% | Equal | |
| 5.Dry mucus membrane | 45 | 100.0% | Equal | |
| 6.Loss of skin elasticity | 45 | 100.0% | Equal | |
| 7. Vomiting | 33 | 73.3% | 0.85 | 0.39802 |
| 8.Tachycardia | 4 | 8.9% | Equal | |
| 9. Decrease of blood pressure | -- | -- | Equal | |
| 10.Oliguria | -- | -- | Equal | |
| 11. Loss of consciousness | -- | -- | Equal | |

Table (5): Number and percentage distribution of the studied children according to their physiological examination.

| Physiological examination | NO. | % | Chi-squared χ^2 | P- Value |
|---------------------------|-----|-------|-------------------------|----------|
| Temperature | | | | |
| Normal | 18 | 40.0% | | |
| Hypothermia | -- | -- | | |
| Feverish | 27 | 60.0% | 1.61 | 0.20489 |
| Heart rate | | | | |
| Normal | 41 | 91.1% | | |
| Tachycardia | 4 | 8.9% | 0.71 | 0.39802 |
| Bradycardia | -- | -- | | |

Table (6): Number and percentage distribution of the studied children according to their blood tests.

| Blood tests | NO. | % | Chi- squared χ^2 | P- Value |
|-----------------------------|-----|-------|--------------------------|----------|
| Complete blood count | | | | |
| Not Done | 27 | 60.0% | | |
| Normal | 15 | 33.3% | 38.58 | 0.00000 |
| Abnormal | 3 | 6.7% | | |
| Sodium | | | | |
| Not Done | 10 | 22.2% | | |
| Normal | 11 | 24.4% | 15.03 | 0.00055 |
| Hyponatremia | 24 | 53.3% | | |
| Hypernatremia | -- | -- | | |
| Potassium | | | | |
| Not Done | 8 | 17.8% | | |
| Normal | 6 | 13.3% | 26.32 | 0.00000 |
| Hypokalaemia | 31 | 68.9% | | |
| Hyperkalaemia | -- | -- | | |
| Stool Culture | | | | |
| Not Done | 45 | 100% | Equal | |
| Normal | -- | -- | | |
| Abnormal | -- | -- | | |

Table (7): Number and percentage distribution of the studied children according to their complication.

| Complication | NO. | % | Chi- squared χ^2 | P- Value |
|---------------------|-----|--------|-----------------------|----------|
| Dehydration | | | | |
| Mild | -- | -- | Equal | |
| Moderate | 45 | 100.0% | | |
| Severe | -- | -- | | |
| Sodium | | | | |
| Not Done | 4 | 8.9% | 5.02 | 0.08141 |
| Normal | 10 | 22.2% | | |
| Hyponatremia | 31 | 68.9% | | |
| Hypernatremia | -- | -- | | |
| Potassium | | | | |
| Not Done | 3 | 6.7% | 6.49 | 0.03899 |
| Normal | 4 | 8.9% | | |
| Hypokalaemia | 38 | 84.4% | | |
| Hyperkalaemia | -- | -- | | |
| Temperature | | | | |
| Normal | 18 | 40.0% | | |
| Hyperthermia | 27 | 60.0% | | |
| Diaper rash | | | 1.61 | 0.20489 |
| NO | 8 | 17.8% | 22.04 | 0.00000 |
| Yes | 37 | 82.2% | | |
| Malnutrition | | | | |
| NO | 36 | 80.0% | 5.07 | 0.02428 |
| Yes | 9 | 20.0% | | |

Discussion

Diarrheal diseases are major public health problems, especially in children in developing countries. Globally, diarrhea remains the second most common cause of death among children under five years of age. There are an estimated 1.7 billion cases of diarrhoea with an average of 2.9 episodes/child/year, and an estimated 1.87 million deaths among children under five years of age (*Brown et al., 2013; Al Mohammed & Li Zungu, 2016*).

The present study was carried out to assess needs of children having diarrheal disease.

Finding of the current study showed(**in table 1**) that in relation to characteristics of children revealed that more than half female and lived in rural. This finding is disagree with the study done by *Nasser (2014)*, who studying effect of

clinical pathway on outcome of children with hemolytic anemia, who stated that male exceeded female.

Regarding to the study finding (**in table 2**) more than half of them stay three days in hospital stay period and nearly two thirds of them admitted once to the hospital. This findings is supported by *Sanad (2011)*, who mentioned that child stay long period in hospital stay period.

In the present study, concerning hospital readmission (**in table 3**), The present result revealed that, less than half were admitted to the hospital after week from discharge.

Finding of the current study showed(**in table 4**) that all of them have moderate dehydration in relation to physical examination for children having diarrheal disease. In relation to physical examination

of thirst sensation, weight loss, depressed fontanel, sunken eye, Dry mucus membrane, Loss of skin elasticity, Vomiting, Tachycardia, Decrease of blood pressure, Oliguria and Loss of consciousness.

The current findings were agree with *Miller (2013)*, who state that clinical manifestation of children having moderate dehydration were thirst sensation, weight loss, depressed fontanel, sunken eye, Dry mucus membrane, Loss of skin elasticity, Vomiting, Tachycardia, Decrease of blood pressure, Oliguria and Loss of consciousness.

Finding of the present study showed (in table 5) that there were more than half have feverish regarding to physiological examination. This study agree with *Hockenberry et al., (2015)*, who stated that the basis for the diagnosis of gastroenteritis is physical and physiological examination and blood test. The result of the examination indicated the severity of illness measured among the admission group studied and controlled.

Finding of the present study showed (in table 6) that there was more than half of them have Hyponatremia and about two thirds have hypokalaemia regarding to blood tests for children having diarrheal disease regarding Complete blood count (CBC), Sodium, Potassium and Stool Culture.

This results is agree with *Ward et al., (2016)*, who mentioned that basis for diagnosis should be done physical, physiological examination and complete blood count (CBC), sodium, potassium and stool Culture if the child is dehydrated.

Finding of the current study showed (in table 7) that there was more than half have Hyponatremia and the majority have hypokalemia regarding to complication of children having diarrheal disease. The previous finding is agree with *Desoky (2012)*, who found that, there is complication with different disease.

Conclusion and Recommendations

From the study we can concluded that the Children having diarrheal disease needs accurate management and nutrition.

From this study we can recommended that:

Periodical in-service training programs for nurses to improve their quality of care (QOC) to meet needs of children having diarrheal disease.

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