



Determinants of Diarrheal Diseases among under Five Years of Age at a Pediatric Hospital

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ABSTRACT

The study was designed as a descriptive cross-sectional study aimed at identifying the determinants and risks of diarrheal diseases among under five years of age at a Pediatric Hospital in Khartoum state, Sudan. The study sample was 184 at the required age. The results clarified that diarrheal diseases were more prevalent among the age group one month to one year (72%), 78.3% of mothers were not using disinfected water at home, 34.8% of mothers weren't cleaning breasts before breastfeeding their children. The study recommended educating and training mothers on how to prepare Oral Rehydration Salts (ORS) at home, cleaning the breast before breastfeeding, washing hands techniques, and raising their health awareness to reduce risk factors of diarrheal diseases among that age group.

Keywords: Diarrheal diseases, Under-five, Pediatric hospital

INTRODUCTION

Diarrheal disease is the second leading cause of death in children under five years of age. It is both preventable and treatable, each year diarrhea kills around 760, 000 of under five years worldwide [1]. A significant proportion of diarrheal disease can be prevented through safe drinking water, adequate sanitation, and hygiene. Globally, there are nearly 1.7 billion cases of diarrheal disease every year [2]. Diarrhea is a symptom of infections caused by bacterial, viruses, and parasitic organisms, most of which are spread by feces-contaminated food or water [3]. Infections are more common when there is a shortage of adequate sanitation, hygiene, and safe water for drinking, cooking, and cleaning. *Rotavirus* and *Escherichia coli* are the two most common agents of diarrhea in developing countries. Other causes of diarrheal disease spread from person-to-person and aggravated by poor personal hygiene [4]. Food is another major cause of diarrhea when it is prepared or stored in unhygienic conditions [5].

Objectives

General objectives: To identify the risks of diarrheal disease among under-five children at (Omdurman) pediatric hospital in Khartoum state, Sudan

Specific Objective:

- To identify the risk factors of diarrheal disease among under five years of age
- To identify preventive measures that can be used to reduce risks of such diseases in this age group

METHODOLOGY

Study Design

This is a descriptive cross-sectional study aimed at identifying the risk factors of diarrheal disease among under-five children at Mohamed AL-Amin Hamid pediatric hospital.

Study Area

The study was carried out at (Omdurman) Pediatric Hospital in Khartoum state, Omdurman Locality. Sudan.

Study Population

Under-five children with diarrhea were attending in (Omdurman) pediatric hospital at Khartoum state, Omdurman locality.

Sample Size

The sample size determines as follows: (N=184)

$$n = \frac{N}{1 + N(e^2)}$$

n=sample size

N=Total population

e²=level of precision=0.05

$$n = \frac{341}{1 + 341(0.05)^2}$$

Data Collection

Data were collected using structured questionnaires and interviews with mothers of children under five of age admitted to the pediatric hospital.

Data Analysis

The data were analyzed using SPSS (Statistical Package for Social Sciences), version 18.

Sampling Procedure

All mothers of under-five children attending hospital clinics during the study period of 3 months.

Ethical Clearance

Ethical clearance was obtained from the Ministry of the health research department, Number. (MOH, RD, SD.60548)

RESULTS

Table 1 shows that 65 (35.3%) of mothers were illiterate, while 31 (16.8%) are ranging between secondary school and university level.

Table 1 General data of respondents

Level of education	Frequency	Percentage
Illiteracy	65	35.3
Basic school	57	31
Secondary school	31	16.8
University	31	16.8
Total	184	100

Table 2 shows the age of children. It was found that 129 (72%) of study group their age is from one month to one year, while 53(5%) are from two to three years.

Table 2 Age of children at Mohamed Al-Amin hospital n=184

Age of Child	Frequency	Percentage
One month to one year	129	72
Two to three year	53	5
Four to five year	2	23
Total	184	100

Table 3 shows the source of water used in drinking and cooking. It was found that 153 (28.3%) water sources were pipelines, while 29 (15.8%) of their water source were wells.

Table 3 Source of water used in drinking and cooking at home n=184

Source of water uses in (drinking and cooking)	Frequency	Percentage
Tank	52	28.3
Pipe lines	103	56
Wells	29	15.8
Total	184	100

Table 4 It was found that 144 (78.3%) of the mother are not treating water at home, while 40 (12.7%) treated drinking water at home.

Table 4 Disinfection of drinking water at home n=184

Treatment of drinking water at home	Frequency	Percentage
Yes	40	21.7
No	144	78.3
Total	184	100

Table 5 shows the type of feeding for a child. It was found that 154 (83.7%) of children were normally breastfed, while 20 (16.3%) of children were artificially fed.

Table 5 Type of child feeding among mothers n=(184)

Type of child feeding	Frequency	Percentage
Normal breastfeeding	154	83.7
Artificial feeding	20	16.3
Total	184	100

Table 6 shows the cleaning of the breast before breastfeeding. It was found that 110 (71.5%) of mothers clean their breasts before breastfeeding, while 44 (28.5%) breastfeeding their children without cleaning their breasts.

Table 6 cleaning of breast before breastfeeding n=184

Cleaning of breast before breast feeding	Frequency	Percentage
Yes	110	71.5
No	44	28.5
Total	154	100

Table 7 shows the level of awareness on symptoms of diarrhea. It was found that 68 (37.0%) of children their symptoms of diarrhea increase the number of defecations more than three times per day, while 31 (16.8%) of their symptoms were a physical weakness.

Table 7 Awareness among mothers on symptoms of diarrhea in children n=184

Symptoms of diarrhea in children	Frequency	Percentage
Physical weakness	31	16.8
Increase the number of defecations more than three times a day	68	37.0
Loss of fluids	50	27.2
Dry skin	35	19.0
Total	184	100

Table 8 shows practices when a child had diarrhea, It was found that 101 (54.9%) of the mothers went to the hospitals when their child had diarrhea, while 83 (45.1%) of mothers use traditional medicine.

Table 8 Practices when a child has diarrhea n=184

Practices when a child has diarrhea	Frequency	Percentage
Go to the nearest hospital	101	54.9
Use of traditional Medicines	83	45.1
Total	184	100

Table 9 shows causes of diarrhea in children. It was found that 56 (30.4%) were contaminated water, while 30 (16.3%) were eating with dirty hands.

Table 9 What causes of diarrhea in children n=184

Causes of diarrhea in children	Frequency	Percentage
Contaminated water	56	30.4
Eating contaminated food	54	29.3
Eating dirty hands	30	16.3
Falling flies on food	44	23.9
Total	184	100

It was found that 135 (73.4%) have been died due to diarrhea, while 49 (26.6%) died due to various reasons (Table 10).

Table 10 Children can die due to diarrhea n=184

Children died due to diarrhea	Frequency	Percentage
Yes	49	26.6
No	135	73.4
Total	184	100

Table 11 shows the best way to prevent diarrhea. It was found that 75 (40.8%) of mothers prevent diarrhea by washing hands with water and soap before eating.

Table 11 Best ways to prevent diarrhea n=184

Best way to prevent diarrhea	Frequency	Percentage
Use of clean water	53	28.8
Washing hands with water and soap before eating	75	40.8
Improve the health of food	35	19
Wash hands after defecation with water and soap	21	11.4
Total	184	100

Table 12 shows the preparation of ORS at home. It was found that 98 (52.2%) of mothers didn't know how to prepare it.

Table 12 Preparation of ORS at home n=184

Preparation of ORS at home	Frequency	Percentage
Yes	86	47.8
No	98	52.2
Total	184	100

DISCUSSION

Diarrhea is one of the common causes of morbidity in children in developing countries. It is responsible for 4000 million episodes and 2.4 million deaths each year among children under 5 years [6].

This study clarified that 35.3% of diarrheal cases existed among children whose mothers are illiterate, while the lower percent 16.8% range between children whose mother's education ranging between secondary school and university level, this result agreed with the study of Zwane AP, and Kramer M which clarified the same conclusion [7].

The study showed 15.8% of the study group depends on wells, which are not operated by the state government, these wells' water is not safe, which may lead to increase morbidity among the target group.

The study clarified that diarrheal incidents were lower in the children who breastfed because the milk of the mother contains antibodies that lead to protecting the children from diarrhea. This agrees with the study of Armistead J, et al. [8].

The study explained that 28.5% of mothers breastfed their children without cleaning their breasts, while a high rate of diarrheal diseases was among the children whose mother was not cleaning their breasts.

The study explained that a high rate of mothers (45.1%) usually uses traditional medicine when their children got diarrhea, this may lead to increase mortality rates due to it, this agrees with the study of Zwane AP, and Kramer M [7]. The study showed that 52.2% of mothers do not know how to prepare ORS at home, preparation of ORS at home can reduce the risks of the complications of diarrheal diseases. The study of Khan AM, et al. agreed with the above clarifications [9].

CONCLUSION

Based on the results of this study it was clear that there is a need for huge efforts from MOH, NGOs, and all other related sectors to improve socio-economic status in the slum areas of Khartoum city, improvement of water supplies to all these areas, provision of quality primary health care services including health education and promotion activities to raise awareness among the inhabitants of these areas about the healthy practices and skills necessary to reduce the incidence of diarrheal diseases especially among an under-five year of age.

Multidisciplinary, intersectoral efforts are needed to overcome the problem, because it had multiple sides, social,

economic, behavioral sides need to be addressed using teamwork efforts, and the expected results of such efforts will be of great importance for the current and future generations of the country.

Recommendations

Based on what mentioned above the following is recommended:

- Improvement of socioeconomic status of most affected families including the provision of clean water supply, proper PHC services
- Training of mothers on how to prepare ORS, and other healthy practices on breastfeeding, washing hands, etc.

DECLARATIONS

Conflicts of Interest

The authors declared no potential conflicts of interest concerning the research, authorship, and/or publication of this article.

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