بسم الله الرحمن الرحيم

A thesis on:

Knowledge of Mothers About Diarrheal Diseases in Under Five Children in Ahmed Gasim Teaching Hospital, Sudan, 2022.

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Abstract

Background: Diarrheal diseases are a severe threat to individuals in Sudan, particularly children under the age of five, this study has been conducted to assess mothers of under 5 children knowledge about diarrheal diseases in Ahmed Gasim Teaching Hospital, Sudan.

Methodology: A descriptive cross-sectional, hospital-based study was conducted in Ahmed Gasim Teaching Hospital, Sudan. Among All mothers of under 5 children, data was collected by researchers and analyzed using SPSS.

Results: This study has included 384 women, mean age of study participants is 30± 7 years, majority of them were housewives 75.3%. Overall, majority had moderate knowledge 57.6 (scored 50-80 out of 100)%, 19% had poor knowledge (scored less than 50 out of 100) and 23.4% had excellent knowledge (scored 80 and more out of 100). Comparison of knowledge revealed significance difference regarding occupation, education, and socioeconomic status; working women had better knowledge than housewives (p-value 0.001), knowledge increases as education level increases (p-value 0.01), and knowledge increases as socioeconomic status increases (p-value 0.002).

Conclusion: The study found that mothers of under 5 children in Ahmed Gasim Teaching Hospital have moderately good knowledge about diarrheal disease but not about management tips, good knowledge is associated with higher education, working women compared to housewives and higher socioeconomic status.

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CHAPTER ONE: INTRODUCTION

1. INTRODUCTION:

1.1. Background:

Diarrhea is a significant health problem in places where the environment has a negative impact on health, there is inadequate food sanitation, and people lack basic hygiene knowledge (1). Although the number of times a person defecates per day varies by individual and diet, diarrhea is described as having more watery stools than usual and defecating more than three times per day (2).

Not unexpectedly, diarrhea in children under the age of five remains a major public health concern in low- and middle-income countries, where it is a substantial contributor to child mortality (3). Nearly half of all newborns born in underdeveloped nations do not survive to see their first birthday, owing to pneumonia, diarrhea, and malnutrition (4).

According to WHO data, the overall annual number of children under the age of five who died globally decreased from 12.6 million in 1990 to 5.2 million in 2019, when we look at the causes of child mortality, diarrhea remains one of the top five preventable causes of death in the globe (5).

As mothers has a great role in caregiving to their children, this study aims to assess mother's knowledge regarding of diarrheal disease among child under five years.

1.2. Literature review:

Epidemiology:

The probability of a child dying between birth and the age of five, expressed per 1,000 live births, is known as child mortality or the under-five mortality rate. 5.0 million children under the age of five will die between now and 2020. In 2020, this means 13,800 children under the age of five will die every day. Infectious disorders such pneumonia, diarrhea, and malaria, as well as premature birth and intrapartum complications, continue to be the primary causes of death among children under the age of five around the world. The global under-five mortality rate declined by 61 per cent, from 93 deaths per 1,000 live births in 1990 to 37 in 2020,however, in Sudan it is markedly higher; 57 per 1,000 live births.(6)

Causes and Risk factors:

Rotavirus is one of the most frequent diarrheal pathogens in children, accounting for one-third of all diarrheal hospitalizations and 800,000 deaths per year (7–9) Children from the poorest countries, account for 82 percent of all rotavirus deaths among all children under the age of five (10).

Rotavirus can induce fluid, electrolyte, and nutritional deficiencies in the intestine, which can quickly progress to dehydration and mortality (11).

It can be caused by many organisms; Bacteria like Escherichiacoli, campylobacter ,salmonella and shigella or viruses like adenovirus , and caliciviruses or parasites like entamoeba histolytica and giardia lamblia (12)

Contaminated weaning food, improper feeding practices, a lack of clean water, poor hand washing, limited sanitary waste disposal, poor housing conditions, and a lack of access to adequate and affordable health care are all factors that exacerbate the diarrheal disease in children under the age of five (13,14).

Signs and symptoms:

Dehydration is the most serious danger posed by diarrhoea. Water and electrolytes (sodium, chloride, potassium, and bicarbonate) are lost by liquid stools, vomit, perspiration, urine, and respiration during a diarrhoeal episode. When these losses are not restored, dehydration ensues. On a scale of one to three, the degree of dehydration is assessed. Dehydration that is severe (at least two of the following symptoms): lethargy/unconsciousness, sunken eyes, inability to drink, or poor drinking, the skin pinch returns very slowly (around 2 seconds). Some Dehydration (at least two of the following symptoms): agitation, restlessness, thirsty sunken eyes sip greedily. There will be no dehydration if there is no enough signs to classify as some or severe dehydration (15).

Management and Prevention

Diarrheal illnesses in children under the age of five can be prevented at both the primary and secondary prevention stages. The first is concerned with improving sanitation and water quality, while the latter is concerned with early detection of dehydration caused by diarrhea and quick oral rehydration using ORS (oral rehydration solution) or other readily available fluids at home. Oral rehydration solution has been shown to be useful in avoiding diarrhea mortality in the community, while the use of home accessible fluid is supported by varied degrees of evidence (16). More than 10% of diarrhea deaths may be avoided if newborn and young child feeding practices were improved.

Better hygienic habits, such as hand washing with soap and proper excreta disposal, can, on the other hand, lower the prevalence of diarrhea by 35 percent (17)

Recent studies:

A study was conducted by Amitkumar Rao et al. to assess the awareness about diarrhea, its prevention, and oral rehydration therapy (ORT) among mothers of under-five children in urban slums of Bengaluru, Karnataka, India. It was a cross-sectional study conducted among 280 mothers of under-five children in urban slums of Bengaluru. Of 280 mothers interviewed, less than one-fourth (24.3%) knew the correct meaning of diarrhea, with three-fourths (73.8%) of them not knowing the correct cause of diarrhea. Only 44.3% mothers knew that diarrhea can be prevented. Majority (88.7%) did not know to look for signs of dehydration. Less than half of the mothers had heard of ORT. preparation of oral rehydration salts

(ORS) was found to be associated with the education of the mother (p = 0.04) proving that knowledge is better among those mothers with formal education. No association was found between ORS preparation and age of the mother (p = 0.229), religion (p = 0.342), and gender of the child (p = 0.061). the study concluded that the awareness regarding diarrhea, its prevention, and ORT was found to be lacking among mothers in urban slums (18).

Another study was conducted in Ethiopia by Hailemariam et al. to assess mothers' knowledge, attitude & practice in prevention & home-based management of diarrheal disease among under-five children in Dire Dawa, Eastern Ethiopia. Institutional based cross-sectional study was conducted from March 15-April 14, 2016, in Diredawa among 295 Mothers who had under-five child with diarrhea in the last 2 weeks using simple random sampling method. Mothers were interviewed face to face by using pretested, standard and structured questionnaire. In this study, from total 295 mothers, around two-thirds (65.2%) of them had good knowledge, but more than half of mothers (54.9%) had a negative attitude towards home-based management and prevention of diarrhea among under-five children. Regarding the attitude of the mothers, 58% had poor practice towards home-based management and prevention of diarrhea among under-five children. The finding of this study showed that the attitude and practice of mothers were unsatisfactory about the prevention and home-based management of under-five diarrheal diseases. Therefore, Health education, dissemination of information, and community

conversation should plan and implement to create a positive attitude and practice towards the better prevention and management of under 5 diarrheal diseases (19).

In a study conducted by Khaing et al. to identify the association of mother's knowledge on diarrhea with the diarrheal disease among under-five children in Hlaing Thar Yar Township, Yangon, Myanmar. The study found that a half (53.43%) of under-five children suffered diarrhea within two weeks prior to the survey. Based on multivariate analysis by controlling all socio-demographic factors, two out of five domains of mother's knowledge showed significant association. An increased one score of mother's knowledge on causes and prevention of diarrhea contributed to decrease the likelihood of diarrheal disease by 37% (OR=0.63; 95%CI=0.44-0.90) and 27% (OR=0.73; 95%CI=0.54-0.99), respectively. The study confirmed that the knowledge of mothers on causes and prevention of diarrhea appears to have important effects on the occurrence of diarrhea among the under-five children. Therefore, health promotion program with an emphasis on providing information related to diarrhea causes and prevention is worth to enhance mother's knowledge and their ability to prevent diarrhea among under-five children in Hlaing Thar Yar Township, Yangon (4).

In Sudan, a study was conducted by Reem Alfatih to assess Knowledge, attitude and practice of women regarding diarrheal diseases in children under five years old, in general Pediatric Hospital, Khartoum, Sudan,2017 44%percentof mothers of children under-five were between 23-29 years old. Only 14.7% were university graduates .48.6% of children were less than one year and the majority of them58.2% were male. Regarding knowledge

51.7% of mothers didn't know the correct definition of diarrhea and 95.7% think that teething is the cause of diarrhea. Regarding practice of mothers during diarrheal attacks, only 29.6% of mothers seek medical help. About 14.3% of mothers use ORS and others give complementary fluids. About 30.9% of mothers use traditional method for diarrheal management and 16.8% give self-medication. Conclusions: The study concludes that the knowledge, attitude and practice of mothers about diarrheal diseases were relatively good which may be influence by hospitals setting. Children less than one years old were more vulnerable to diarrhea than other age groups. Low knowledge regarding the correct definition of diarrhea and the possible causes of diarrhea. Large number of mothers believe that teething is a major cause of diarrhea in children under five years old. Regarding practice during diarrheal attacks, mothers didn't increase the amount of fluids intake or breast-feeding during diarrhea and they use antibiotic without medical advices. Very small numbers of mothers used ORS in the management. Also, the management was influenced by cultural and social misbelieve. Most mothers seek health services when home management fails. So, we should increase knowledge of mothers about diarrhea and correct misconception through health education sessions (20).

Another study in Sudan by Raja Hashim Majoun aimed to assess mother's knowledge regarding management of diarrheal diseases among children under five years at pediatric departments at Mohammed AL amen Hamid pediatrics teaching Hospital. the study revealed that most of the mother age (25-36) years and have primary level of education. More than half of the mothers they don't know what diarrhea means (55.7 %) and what are

the causes (55.7%). Tow third of study population (62.7%) they did not know about complication 73% of the mothers, treated their children at home while 46% of the mother immediately going to the hospital if their child developed diarrhea. Most the mother have poor knowledge regarding the preparation of ORS (75%), and importance of giving ORS after vomiting (50%). Mother did not know how to evaluate the danger sign (29.2%). Most of the mother have good knowledge regarding prevention (66.6%), while (35%) they did not know about Rota virus vaccine. The study conclude that the mothers had poor knowledge regarding managements of diarrhea and recommend heath education for all mother in community (21).

1.3. Problem Statement:

Diarrheal diseases are a severe threat to individuals in Sudan, particularly children under the age of five. Diarrheal diseases were the second most common disease in Sudan. About 31.4 percent of Sudanese people do not

have access to sanitation, and 54 percent drink from unimproved water sources (22).

Mothers have a critical role, and if we educate and raise their knowledge, they will raise the overall awareness of their family, and they will be able to play a significant role in disease prevention, particularly for their children. There is a substantial link between diarrheal disease and the education and social position of the mother. Every year of mother education reduces the death rate of children under the age of five (23).

1.4. Justification:

Assessment of under 5 children mothers' knowledge about diarrheal diseases will help clarifying the situation, and focusing educational efforts in

lacking domains to improve management and prevention of diarrheal diseases among under 5 children and to reduce complications, and mortality.

1.5. OBJECTIVES:

- General objective:

To assess mothers of under 5 children knowledge about diarrheal diseases in Ahmed Gasim Teaching Hospital, Sudan.

- Specific objectives:

1. To determine mothers' demographic characteristics
2. To assess mothers' knowledge about diarrheal diseases.
3. To find the relationship between mothers' knowledge and demographic characteristics.

CHAPTER TWO: METHODOLOGY

2. METHODOLOGY:

2.1. Study design:

A descriptive cross-sectional, hospital-based study

2.2. Study area:

The study was conducted in of Ahmed Gasim Teaching Hospital, Sudan.

2.3. Study duration:

The study was conducted in 2022.

2.4. Study population:

All mothers of under 5 children in Ahmed Gasim Teaching Hospital, Sudan.

Inclusion Criteria:

All mothers of under 5 children who agree to participate in the study

Exclusion Criteria:

All mothers of under 5 children who refuse to participate or with significant disability.

2.5. Study sample:

Convenient sampling was used to collect the data and the minimum sample size required was determined using the formula:

$n=Z^2xpx(1-p)/e^2$

p=prevalence (estimated to be 0.5)

Z=standard deviation (1.96)

e= standard error (0.5)

n=sample size, estimated to be 384.

2.6. Study variables:

The study variables were mother's demographic data, occurrence of diarrhea for their under 5 child during the las two weeks and knowledge assessment.

2.7. Methods of data collection:

The data was collected by interviewing mothers using a structured close ended questionnaire.

2.8. Data analysis

Data was entered and analyzed using Statistical Package of Social Sciences (SPSS). Variables were described in term of frequencies and illustrated in figures. The comparison of dependent variables according to the date was done. Inference was considered as significant if p-value was less than 0.05.

2.9. Ethical consideration and confidentiality:

Permission from the hospital authority was obtained. questionnaire has no names and serial numbers were used instead to ensure confidentiality.

CHAPTER THREE: RESULTS

Results:

This study has included 384 women to assess mothers of under 5 children knowledge about diarrheal diseases in Ahmed Gasim Teaching Hospital, Sudan.

All women have under-5 child with mean age of 23± 12 month.

Mothers' demographics:

The mean age of study participants is 30± 7 years, majority of them were housewives 75.3%, and 24,7% were working. Regarding education, 2.1% are illiterate, 24 had primary education, 42.7% had secondary education, 28.9 had university education, and 2.3% had postgraduate studies. More than half of them 52.1% are of low socioeconomic status, 32.8% had moderate socioeconomic status, and 15.1% are of high socioeconomic status.

Table 1: Demographic characteristics of 384 mothers of under 5 children knowledge about diarrheal diseases in Ahmed Gasim Teaching Hospital, Sudan.

Character	Category	Frequency /mean±/SD	Percent
Having under-5 child		384	100
Child age	(months)	23± 12	
Mother age	(years)	30± 7	
Occupation	Housewife	289	75.3
	Working	95	24.7
Education	Illiterate	8	2.1
	Primary	92	24
	Secondary	164	42.7
	University	111	28.9
	Post graduate	9	2.3

Socioeconomic status	Low	200	52.1
	Moderate	126	32.8
	High	58	15.1

Regarding knowledge assessment, only 81 (21.1%) have known that diarrhea is Increase amount, and number of stools more than 3 times per day. Causes of diarrhea identified by participants were poor personal hygiene 93%, food contamination 85.4%, viruses, bacteria and fungi 73.4%. regarding complications, dehydration was recognized by 87.5%, malnutrition by 24% and growth retardation by 20.8%. recognition of dehydration signs was as follow; Dry skin and mouth 89.8%, Unable to drink or breastfeed 72.7%. lethargy 73.2%, sunken eyes 74.5%. regarding management, increasing fluid intake was recognized by 86.5%, only 29.9% reported that they should continue breastfeeding, and only 23.4% were confident that they shouldn't stop breastfeeding, 40.6% recognized ORS. Only 22.4% known the right way to prepare ORS. Regarding preventive measures, Washing hand and breast before feeding the child was known by

92.2%, food covering by 94.3%, Giving your child Rota virus vaccine by 82.6%, and Washing your child hand from age over 2 years by 88.5%.

Table 2: Knowledge about diarrhea of 384 mothers of under 5 children knowledge about diarrheal diseases in Ahmed Gasim Teaching Hospital, Sudan.

	Answer	Frequency	Percent
Definition of diarrhea	Water liquid stool	105	27.3
	Increased number of defecations	198	51.6
	Increase amount, and number of stools more than 3 times per day	81	21.1
Causes of diarrhea	Poor personal hygiene	257	93
	Food contamination	328	85.4
	Virus, bacteria and fungi	282	73.4
Complications of diarrhea	Dehydration	336	87.5
	Malnutrition	92	24

	Growth retardation	80	20.8
Signs of dehydration	Dry skin and mouth	345	89.8
	Unable to drink or breastfeed	279	72.7
	Lethargy	281	73.2
	Sunken eyes	286	74.5
Management	Increase fluid intake	232	86.5
	Continue breast feeding	111	28.9
	Stop breast feeding	90	23.4
	Give ORS	156	40.6
ORS is preparation	6 cups of tea water	86	22.4
	4 cups of tea water	125	32.6
	3 cups of tea water	97	25.3
	I don't know	76	19.8
Prevention	Wash hand and breast before feeding the child	354	92.2
	Cover food	362	94.3
	Give your child Rota virus vaccine	317	82.6
	Wash your child hand from age over 2 years	340	88.5

Comparison of knowledge revealed significance difference regarding occupation, education, and socioeconomic status; working women had better knowledge than housewives (p-value 0.001), knowledge increases as education level increases (p-value 0.01), and knowledge increases as socioeconomic status increases (p-value 0.002). table 3.

Table 3: comparison of knowledge among demographic characteristics of 384 mothers of under 5 children knowledge about diarrheal diseases in Ahmed Gasim Teaching Hospital, Sudan.

	Category	Mean± SD	p-value
Knowledge score		63.7± 20	
Occupation	Housewife	61± 20	0.001
	Working	70± 19	
Education	Illiterate	32± 21	0.001
	Primary	56± 20	
	Secondary	61± 18	
	University	73.8± 17	
	Post graduate	88.9± 15	
Socioeconomic status	Low	60± 18	0.002
	Moderate	67± 21	
	High	68.5± 24	

Overall, majority had moderate knowledge 57.6 (scored 50-80 out of 100)%, 19% had poor knowledge (scored less than 50 out of 100) and 23.4% had excellent knowledge (scored 80 and more out of 100).

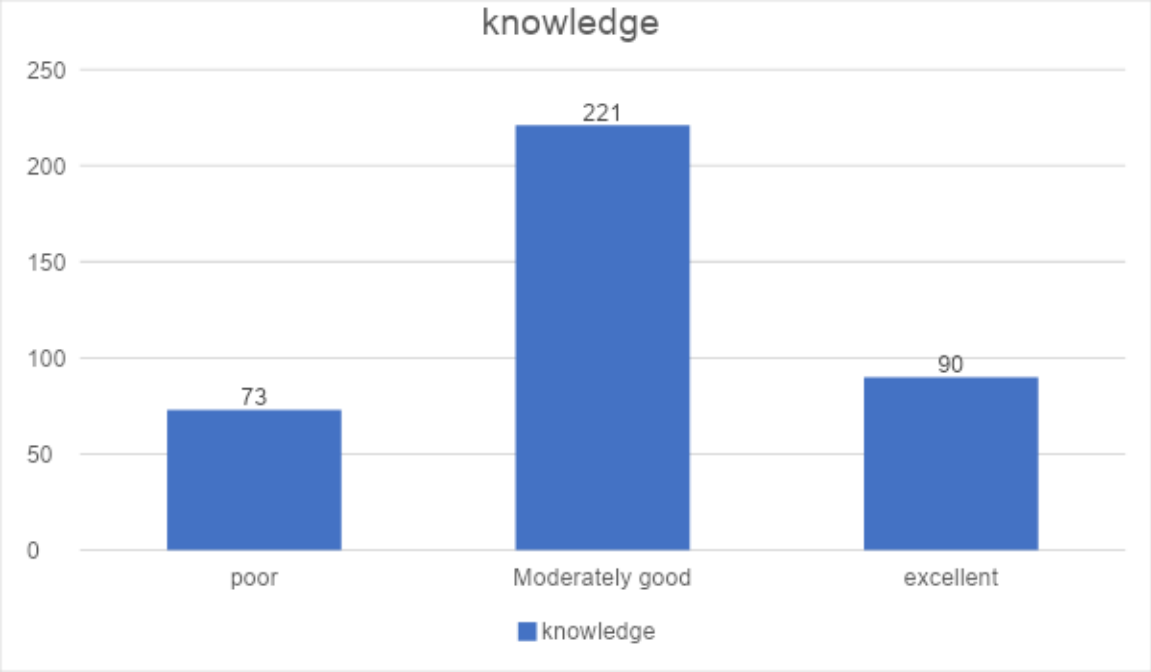

Figure 1: knowledge distribution of 384 mothers of under 5 children knowledge about diarrheal diseases in Ahmed Gasim Teaching Hospital, Sudan.

CHAPTER FOUR: DISCUSSION

Discussion:

Diarrheal diseases are a severe threat to individuals in Sudan, particularly children under the age of five. Diarrheal diseases were the second most common disease in Sudan. About 31.4 percent of Sudanese people do not have access to sanitation, and 54 percent drink from unimproved water sources (22).

This study has been conducted to assess mothers of under 5 children knowledge about diarrheal diseases in Ahmed Gasim Teaching Hospital, Sudan.

The study revealed that the mean age of mothers of under 5 children is 30± 7 years, majority of them were housewives. Primary, secondary and university education, were prominent. More than half of them 52.1% are of low socioeconomic status, 32.8% had moderate socioeconomic status, and 15.1% are of high socioeconomic status.

In the present study, only 21.1% known that diarrhea is increase amount, and number of stools more than 3 times per day this is considered low compared to what Amitkumar Rao et al and Reem Alfatih reported in India and Sudan respectively; as 24.3% and 48.3% of participants could identify the correct definition of diarrhea (18) (20).

Study participants showed good knowledge regarding the cause as they recognized poor personal hygiene 93%, food contamination 85.4%, viruses, bacteria and fungi 73.4%. this is better than recent studies in Sudan; Raja Hashim reported that 55.7% of mothers of children under five years at pediatric departments at Mohammed AL amen Hamid pediatrics teaching Hospital had known the causes of diarrhea (21).

Participants showed good knowledge about dehydration as a complication of diarrhea 87.5% and its signs; Dry skin and mouth 89.8%, Unable to drink or breastfeed 72.7%. lethargy 73.2%, sunken eyes 74.5%. but not malnutrition 24% and growth retardation 20.8%. in India, Majority (88.7%) did not know to look for signs of dehydration (18). And the recent Sudanese study by Raja reported that two-third of study population (62.7%) they did not know about complication (21).

Regarding management of diarrhea only increasing fluid intake has been recognized by 86.5%, but they showed poor knowledge about continuing breast feeding and giving ORS 28.4%, and 40.9% respectively. Furthermore only 22.4% correctly identified the right way to prepare ORS. Similarly, less than half of the mothers had heard of ORS in India (18). And Raja reported that most the mother have poor knowledge regarding the preparation of ORS (75%) in Sudan (21).

Study participants showed good knowledge regarding prevention of diarrhea, many practices such as washing hand and breast before feeding the child 92.2%, food covering 94.3%, Giving your child Rota virus vaccine 82.6%, and washing your child hand from age over 2 years 88.5%. similarly, Raja reported that most of the mother have good knowledge regarding prevention 66.6% (21).

The overall knowledge participants shoed good knowledge about diarrhea (57.6% had moderate knowledge, 19% had poor knowledge and 23.4% had excellent) compared to Ethiopian women; two-thirds (65.2%) of them had good knowledge(19). Finally, the study found that knowledge about diarrheal diseases among mothers of under 5 children is proportionate to

education, furthermore, good knowledge is associated with higher socioeconomic status, and was found to be higher among working women compared to housewives.

Conclusion:

The study found that mothers of under 5 children in Ahmed Gasim Teaching Hospital have moderately good knowledge about diarrheal disease but not about management tips, good knowledge is associated with higher education, working women compared to housewives and higher socioeconomic status.

Recommendations:

Management of diarrhea is crucial to prevent morbidity and mortality, it is important to raise women knowledge about management of diarrhea specially breastfeeding and ORS.

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Appendix

Questionnaire