

Factors Contributing to the Prevalence of Diarrhea in Children Under the age of 5 years at Hoima Regional Referral Hospital, Western Uganda

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ABSTRACT

Three or more loose stools per day, or more frequent passages than is typical for an individual, are considered diarrhea. In addition to rapidly resulting in dehydration, diarrhea can negatively affect a child's growth and cognitive development. Since children have a larger surface area and lose fluids more quickly, diarrhea can lead to dehydration and mortality as well as long-term consequences like malnutrition. Even though the majority of diarrhea episodes in children are minor, acute occurrences can cause significant fluid loss and dehydration. If fluids are not replaced as soon as diarrhea appears, this might lead to death or other serious effects. Fortunately, diarrhea is curable and preventative. In this study, the causes of diarrheal illnesses in children under five who are patients at Hoima Regional Referral Hospital were evaluated. This was a cross-sectional, descriptive study. It employed both quantitative and qualitative research techniques for gathering and analyzing data. Youngsters under the age of five who experienced diarrhea within the six months before to the study were examined. There were 241 in the sample. Children under five who visit Hoima Regional Referral Hospital have a moderately high prevalence of diarrhea. The age range of 1-3 years old, having an open spring or well as a water source, and discarding household waste within the compound have all been linked to an increase in the occurrence of diarrhea. While caregivers could accurately advice regarding preventive measures, their understanding of the proper treatment of severe diarrhea was lacking, particularly with regard to dehydration. Therefore, in order to reduce the high rate of diarrhea in children under five, the government should make it very easy for people to access safe water. Health education programs focusing on these aspects should also be strengthened in order to train caregivers in home management, which will effectively and sustainably contribute to a reduction in child mortality.

Keywords: Dehydration, Diarrhea, Health education, Child mortality, Children

INTRODUCTION

Diarrhea is passing of three or more loose stool per day or more frequent passage than is normal for an individual. This does not apply in babies that pass semisolid stools when breastfed [1]. Diarrhea is usually a warning sign of infection in the intestinal tract which can be caused by a variety of bacterial, viral and parasitic organisms [2]. The most common pathogen causing diarrhea in infants and children is Rotavirus [3]. Infections are spread through contaminated food or drinking water or from person to person as a result of poor hygiene [4]. The three clinical types of diarrhea are acute watery diarrhea lasts several hours and days and including cholera, acute bloody diarrhea or dysentery and persistent or chronic diarrhea which lasts longer than 14 days [5]. Diarrhea causes dehydration in the shortest time possible and can have a detrimental impact on childhood growth and cognitive development. Mortality resulting from diarrhea results from

dehydration as children lose more water rapidly since they have a large surface area but can also cause long-term effects like malnutrition [6]. Most diarrheal microorganisms are spread from one person's stool to another person's mouth. These infectious agents are usually spread through contaminated water, food, or objects [7]. Some other factors have been implicated in diarrhea in children under 5 like presence of other infections like HIV, duration of breastfeeding, quality of house, availability of latrine facility in homestead, maternal education, and source and storage of water [8]. Globally, approximately 1.7 billion children under the age of 5 still suffer from diarrhea, despite the knowledge people have regarding the causes of diarrhea every year, making it an urgent public health matter. 1,300 children die every day and an estimated half a million children die per year in the world, making it the leading cause of death worldwide in

children under the age of 5 after diarrhea and these numbers are unacceptably high considering diarrhea has simple preventive measures and effective treatment to prevent mortality [9].

Diarrhea, a leading diarrheal disease, is largely due to poor hygiene, lack of clean water, and sanitation. However, 780 million people worldwide lack access to safe water, 2.5 billion lack sanitation, and 1 billion practice open defecation [10].

Children under the age of three in low income countries experience an episode of diarrhea on average three times a year. Each episode deprives the child of nutrients necessary for growth and as a result diarrhea is a major cause of malnutrition and malnourished children are more likely to suffer from diarrhea. It causes death by depleting body fluids resulting in profound dehydration in a short period of time [11]. Uganda has a population of 36 million people, and according to the 2015 World Bank statistics, Uganda is a low-income country in the sub-Saharan region of Africa. Globally, Uganda ranks 19th with the highest under-five mortality rate with a rate of 53/1000, ranking 27th in the world with the worst under-five mortality of 53 per 1000, and diarrhea accounts for 5% of all deaths, with the prevalence of diarrhea at 19.5%. An estimated 18,000 children die per year in Uganda due to diarrhea-related complications, and on average, a child under the age of three gets three episodes of diarrhea per year [12]. Because in Uganda, 1 out of 3 children lack access to clean water, only 19% of the total population have access to improved sanitation and only 71% of the population have a fecal disposal facility like latrine or toilet, diarrhea in children is still a matter public

health which can be eliminated by prevention and control of diseases by improving access to clean water, improved sanitation and increasing latrine coverage especially in rural areas [13]. Though most episodes of childhood diarrhea are mild, acute cases can lead to significant fluid loss and dehydration, which may result in death or other severe consequences if fluids are not replaced at the first sign of diarrhea is both preventable and treatable [14]. However, it comes second as the leading cause of morbidity and mortality, after diarrhea in children below 5 and is the major cause of malnutrition causing detrimental effect on child growth and cognitive development in the long-term [1]. Approximately 540,000 children die from diarrhea related complication especially dehydration accounting for 9% of all deaths. Most of the cases of diarrhea occur in sub-Saharan Africa and south East Asia accounting for more than 80% of all deaths due to diarrhea worldwide. In sub-Saharan Africa alone, 300,000 children die every year due to diarrhea complications [1]. Despite the global reductions in diarrhea deaths from 4.6 million in 1980 to 540,000 deaths in 2018, the number of children who still die from diarrhea diseases is unacceptably high each year especially in low income countries because of lack of access to clean water, sanitation, and urgent medical care [15]. Nonetheless, no studies have been published regarding prevalence of diarrhea in children under 5 attending Hoima Regional Referral Hospital. This study, therefore, will assess the factors contributing to diarrheal diseases in children below five years attending Hoima Regional Referral Hospital.

METHODOLOGY

Study Design

This study was a descriptive, cross sectional in nature. It used both qualitative and quantitative research methods of data collection and analysis. The design allowed for collection of data within a period of 6months.

Study Area

The study was conducted in Hoima Regional Referral Hospital located in Industrial division Hoima, Municipality, Hoima district. Hoima Municipality is the administrative and commercial town of Hoima district with Busiisi, Kahoora and Mparo divisions, Hoima is a city in the western Uganda in Bunyoro sub-region, covers a total of 1,120m, 200 km from Kampala the capital city of Uganda, it has a population of 122700 according to UBOS statistics 2020, its coordinates latitude 1.431944; longitudinal: 31.352500

Target Population

Children below 5years and their caretakers attending Hoima Regional Referral Hospital-Hoima Municipality.

Study Population

Children below five years that have or had diarrhea in the last 6months before the survey and their caretakers who have consented and are attending Hoima Regional Referral Hospital.

Inclusion Criteria

Children who are between 0 and 59months have or had diarrhea in the last 6months attending Hoima Regional Referral Hospital and whose caretakers have consented.

Caregiver that are above 18years of age and have consented.

Exclusion Criteria

Children below 5years with diarrhea but whose mothers and caretakers haven't consented.

Caretakers that are mentally challenged and or below 18years.

Sample Size Determination

Using Kish Leislie [16] formula;

$$n = Z^2 P (1-P) / E^2$$

Where n is the estimated minimum sample size required

P is the proportion of a characteristic in a sample (19.5%)

Z is a constant 1.96 (for a confidence interval of 95%)

E is the margin of error at 5%

$$n = 1.96^2 \times 0.195(1-0.195) / 0.05^2$$

$$n(\text{sample size}) = 241$$

Sampling Procedure

Consecutive sampling method was used to enroll counseled and educated participants who met inclusion criteria and consent to join the study until the calculated sample size was achieved.

Data Collection

Questionnaires were used to collect data.

A questionnaire was used as the main tool.

The first section was used to collect data about socio-demographic data. The second explored general understanding of diarrhea, the third section was probe environmental factors, the fourth examined knowledge, and practice on prevention and management of diarrhea, and the fifth will be community based nutritional assessment. Questionnaires were both open and close ended questions.

House Hold Information

Table 1. Shows that majority 192(79.7%) of the study participants' primary caregivers were fathers. Approximately 85.5% (206/241) came from families

Information was collected using interview methods.

The information was quantitative and qualitative. 5 pre-trained research assistants were used in each of the 5 villages and a minimum requirement of senior four were required of them. They were trained on communication skills, community engagements and interview techniques. Principle investigator checked the data daily

Quality Control

Five research assistants with minimum senior four education level were used to collect data one for each village in a period of two weeks and handed in to the principle researcher who compiled the results for data analysis.

Questionnaire were pre-tested 2 months before data collection is started.

Ethical Consideration

A letter of introduction was collected from KIU Western campus allowing me to carry out the research after approval by IRC (institutional research committee). Another letter of introduction from local council 3 was obtained to allow me go into the community. Informed consent was obtained from all respondents (caretakers) and record of it taken in form of a signature or thumb print. Confidentiality was maintained and participants were allowed to leave at any time during research study. No child or caretaker was induced with money or presents.

RESULTS

with <5 members, many 44.0% of the children under five years were aged 1-3 years and majority 52.3% were females

Table 1: House hold information of families where children under five attending Hoima regional referral hospital

Variable	Frequency(n)	Percentage (%)
Primary caregiver		
Father	192	79.7
Mother	10	4.1
Others	39	16.2
Number of households		
<5 members	206	85.5
≥5 members	35	14.5
Age of children selected for interview		
<1 year	49	20.3
1-3 years	106	44.0
4-5 years	86	35.7
Gender of children selected for interview		
Male	115	47.7
Female	126	52.3

Mothers / Caregivers Information

Table 2. Table 1. Majority 190 (78.8%) of the caregivers were aged 20-30 years and many

104(43.2%) of our caregivers had attained secondary level of education. Approximately 42.3% of the caregivers were farmers and Christians formed the

majority, 61.4%. Over 80% of the caregivers were married and 87.6% of the study participants were earning less than 100,000 Uganda shillings a month.

Table 2: Care givers of children under five attending Hoima regional referral Hospital

Variable	Frequency(n)	Percentage (%)
Age in years		
18-19	13	5.4
20-30	190	78.8
31-40	38	15.7
Education		
None	26	10.8
Primary	57	23.7
Secondary	104	43.2
Tertiary	54	22.4
Occupation		
Unemployed	7	2.9
Business	40	16.6
Civil servant	34	14.3
Farmer	102	42.3
Housewife	56	23.2
Student	2	0.8
Religion		
Christian	148	61.4
Muslim	93	35.6
Marital status		
Married	195	80.9
Single	43	17.8
Widow	3	1.3
Monthly income in Uganda shillings		
<100,000	211	87.6
≥100,000	30	12.4

Prevalence of Diarrhea in Children under Five Attending Hoima Regional Referral Hospital

Table 3 and figure 1 below. In our study, the rate of occurrence diarrhea in children under five attending Hoima Regional Referral Hospital was 17.4%

Table 3: Rate of diarrhea in children under five attending Hoima regional referral Hospital

Diarrhea in children under five	Number(n)	Percent (%)
Have diarrhea (Passing watery stool ≥ 3 times a day)	42	17.4
Don't have diarrhea (Passing watery stool < 3 times a day))	199	82.6

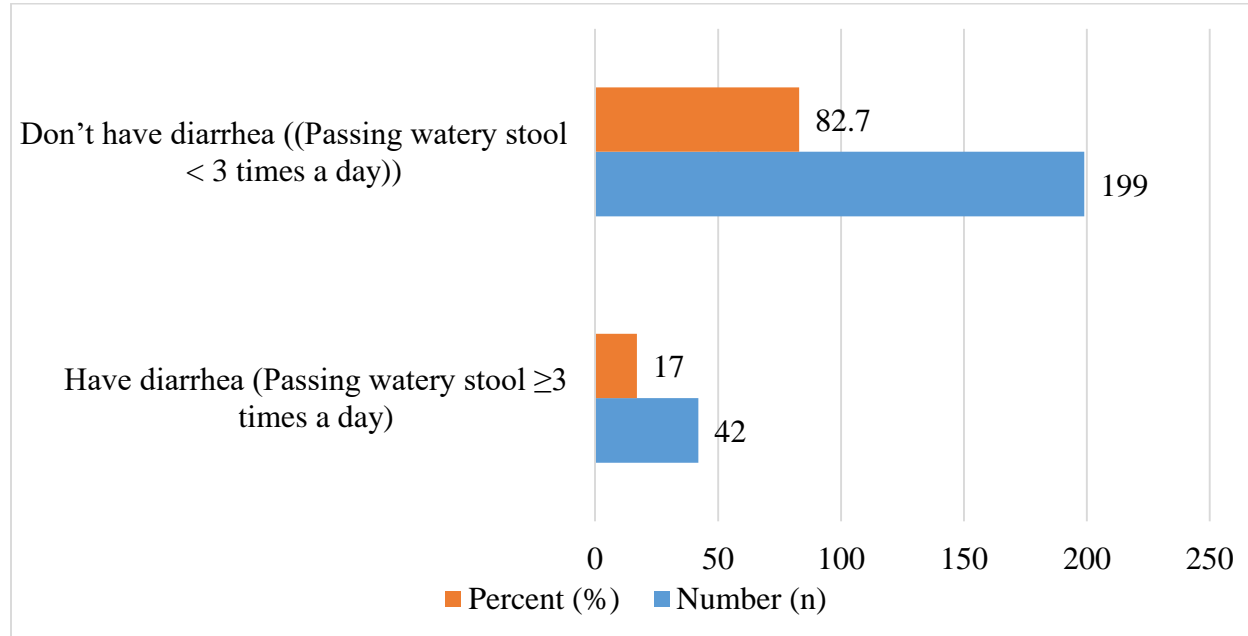


Figure 1 A graph showing rate of having diarrhea in 6months among children under five attending Hoima Regional Referral Hospital

Table 4: Bi-variate binary logistic regression: socio-demographic and socioeconomic factors affecting prevalence of diarrhea in children under five years attending Hoima regional referral hospital

Variable	Rate of diarrhea		cOR(95%CI)	p-value
	Had diarrhea (42)	Never had diarrhea (199)		
Care givers' Age in years				
18-19	3	10	1.00	
20-30	27	163	0.82(0.22-3.0)	0.76
31-40	12	26	0.31(0.06-1.56)	0.16
Caregivers' Education level				
None	5	21	1.00	
Primary	20	37	2.61(0.71-9.58)	0.15
Secondary	13	89	2.47(0.71-8.61)	0.16
Tertiary	4	50	2.18(0.58-8.20)	0.25
Caregivers' Occupation				
Unemployed	3	4	1.00	
Business	10	30	1.32(0.14-12.33)	0.81
Civil servant	5	29	2.74(0.29-25.54)	0.38
Farmer	17	80	1.59(0.19-13.17)	0.67
Housewife	5	51	1.48(0.17-12.76)	0.72
Student	1	1	3.6(0.26-50.33)	0.34
Family income				
<100000Ugshs	33	178	1.00	
≥100000Ugshs	8	23	0.23(0.04-1.37)	0.12
Child's sex				
Male	19	96	1.00	
Female	21	105	0.77(0.38-1.55)	0.46
Child's age				
<1year	14	35	1.00	
1-3years	13	93	(0.01-0.96)	0.75
4-5years	23	63	0.38(0.11-1.26)	0.11

According to table4, education level, family income and child's age had P-value than 2 thus were

proceeded for multivariate stages once they had P-values less than 0.2.

Table 5: Multivariate binary logistic regression: socio_ demographic and socio-economic factors affecting occurrence prevalence of diarrhea in children under five attending Hoima regional referral hospital

Variable	aOR	95%CI	p-value
Education level			
None	1.00		
Primary	4.38	0.73-26.34	0.11
Secondary	3.05	0.53-17.63	0.21
Tertiary	0.25	0.05-1.15	0.08
Family income			
<100000ugshs	1.00		
≥100000ugshs	0.88	0.17-11.88	0.92
Child's age			
<1years	1.00		
1-3years	7.74	0.78-76.28	0.03
4-5years	0.08	0.005-1.20	0.07

Table 5. Child's age was significantly associated with diarrhea that is children aged 1-3 years were found to

be 7times more likely to have diarrhea as compared to those aged less than year OR=7.74,95%I0.78-76.28.

Environmental factors (water sanitation and hygiene factors) contributing to diarrhea in children under five attending Hoima regional referral Hospital

Table 6. Shows that “source of drinking water” and “where garbage is thrown” had p-values less than 0.2 thus were proceeded for the multivariate analysis.

Table 6: Bi-variate regression logistic regression: Environmental factors contributing to diarrhea in children below 5 years attending Hoima regional referral hospital

Variable	Rate of diarrhea		cOR(95%CI)	p-value
	Had diarrhea(n=42)	Never had diarrhea(n=199)		
Source of water for drinking				
Public tap	16	165	1.00	
Protected dug well/spring	10	23	0.23(0.10-0.53)	0.001
Borehole	7	10	0.54(0.25-1.16)	0.12
Unprotected dug well/spring	8	1	2.79(1.0-7.83)	0.05
Storage of drinking water				
Jerricans	30	184	1.00	
Tank	6	13	1.37(0.15-12.51)	0.78
Pots	5	2	1.67(0.42-6.65)	0.47
Storage of drinking water different from other domestic purpose				
Always	7	125	1.00	
Sometimes	28	56	2.3(0.61-8.74)	0.22
Never	7	18	1.37(0.42-4.43)	0.60
Is water always available all times				
No	20	81	1.00	
Yes	21	118	1.35(0.53-3.45)	0.53
Type of toilet used at your household				
Flush toilet	7	28	1.00	
VIP latrine	9	47	1.48(0.61-3.58)	0.39
Ordinary toilet	25	124	0.62(0.18-2.10)	0.44
What do you use hand wash after using toilet or after helping your child use a toilet				
Hand washing with water only	10	79	1.00	
Hand washing with water and soap	3	29	2.8(0.5-15.65)	0.24
Never wash hands	29	91	3.15(0.28-34.83)	0.35
Where do you throw you garbage for your house hold				
Open surrounding	10	50	1.00	
You burn it	7	33	0.57(0.23-1.40)	0.22
Taken away by your community utility service	25	116	0.51(0.27-0.94)	0.032

Multi variate binary logistic regression: Environmental factors (water sanitation and hygiene factors) contributing to diarrhea in children under five attending Hoima regional referral Hospital

Table 7. In our study, the study participants who used unprotected dug well/spring as source of drinking water were 3.4 times more likely to have children with diarrhea as compared to mothers/caregivers who used public taps as source of drinking water, aOR=3.4,95%CI1.0-11.4.

In this mothers/caregiver who threw house hold garbage in open were 9.7 times more likely to have children with diarrhea as compared to those who burnt their household garbage surrounding aOR=9.7,95%CI1.2-77.9.

Similarly, mothers/caregivers who threw their household garbage in open surrounding were 29times more likely to have children with diarrhea compared to that garbage was taken away by a community utility services, aOR=29.3,95%CI1.4-624.5.

Table 7: Multivariate binary logistic regression: Environmental factors contributing to diarrhea in children attending Hoima regional referral hospital

Variable	aOR	95%CI	p-value
Source of drinking water			
Public tap	1.00		
Protected dug well/spring	1.88	0.04-85.88	0.75
Borehole	3.15	0.62-16.00	0.17
Unprotected dug well/spring	3.40	1.00-11.43	0.048
Where do you throw garbage from your household			
Open surrounding	1.00		
Burn it	9.70	1.21-77.90	0.032
Taken away by a community utility services	29.3	1.37-624.50	0.03

Caregivers' knowledge and practices on prevention and management of diarrhea in children under the age of 5 attending Hoima Regional Referral Hospital

Tables 8 below showed that 69.5% of the participants had appropriate answers regarding first signs of diarrhea and the importance to give the child plenty of fluids than take her to the hospital, 89.7% had appropriate answers regarding breastfeeding a child during the first 6months of life to help prevent diarrhoea,79.3% had appropriate answers regarding

vaccinating the child against other diseases to prevent diarrhea, 68.9% had appropriate answers regarding statement' main reason why you give a child oral rehydration solution is to replace what was lost in stools and vomiting',65.7% had appropriate answers regarding bottle-feeding your child as safe as using a cup and spoon and 82.9% had appropriate answers regarding a child having diarrhea, and stopping breastfeeding.

Table 8: Distribution of appropriate answers on knowledge about prevention and management of diarrhea in children under the age of 5 years attending Hoima regional referral hospital

Question or statement	Appropriate answers	Percent (%)
True statements		
At the first signs of diarrhea, it is more important to give the child plenty of fluids than take her to the hospital.	167/241	69.5
Does breastfeeding a child during the first 6months of life help prevent diarrhea?	216/241	89.7
Should you vaccinate your child against rotavirus infection to prevent diarrhea?	103/241	42.7
Should you vaccinate your child against other diseases to prevent diarrhoea?	191/241	79.3
The main reason why you give a child oral rehydration solution is to replace what was lost in stools and vomiting.	166/241	68.9
False statements		
Is bottle-feeding your child as safe as using a cup and a spoon?	158/241	65.7
When your child has diarrhea, you should give her medication to stop the diarrhea.	77/241	31.9
When your child has diarrhea, you should not offer solid food	87/241	36.3
Oral rehydration solution is supposed to stop diarrhea /vomiting.	52/241	21.6
When your child has diarrhea, you should stop breastfeeding	200/241	82.9

DISCUSSION

Prevalence of diarrhea in children under five

In this study, the Prevalence of diarrhea in children under five attending Hoima regional referral Hospital was 17.4%. This is high when compared with results by CDC [17] which showed that the global prevalence of diarrhea was 10.4% for children under the age of five. The reason from this high rate/occurrence in this is that this study was limited to one specific area, other than averaging rates from different parts/area like the way global rate are obtained.

However, it was low when compared to the prevalence of diarrhea in Burundi which was 24.8%, 23.2% in Rwanda, 23.9% in Tanzania [18]. The reason for low rate can be related the fact this study was done in Uganda whose problems are quite different from those Rwanda, Burundi, and Tanzania. Also since this is current (2021) many prevention ways such as extension of water services must have been put in place that have reduced the rate diarrhea. Nevertheless, DHS [18] reflected that over all prevalence of diarrhea in children below 5 in Uganda was 19.5%, in south western region prevalence of diarrhea was 14.0%, northern regions it was 29.3% and eastern regions it was 26.9%. Therefore, geographical differences play a great role in determining the rates of diarrhea. In conclusion, the occurrence of diarrhea in children under five attending Hoima regional referral Hospital is moderate high.

Socio demographic and socioeconomic factors affecting prevalence of diarrhea in children under the age of 5

Child age

In this study, child's age was significantly associated with diarrhea that is children aged 1-3 years were found to be 7times more likely to have diarrhea as compared to those aged less than year. There is an inconsistent result probably because children less one year are exclusively breastfed and haven't learnt how to crawl while those aged 1-3 years have started crawling which increases their exposure to infectious organisms and introduction of complimentary feeds which may not be prepared using good sanitary conditions. In addition, children between 1-3 years are at the stage of discovering their surroundings and preferred to play in the unsanitary outdoor environment. After which it is believed that their bodies have mounted immunity from previous infections and children may be exposed to infectious agents but the bodies will fight them off.

Environmental factors (water, sanitation and hygiene) contributing to diarrhea in children under the age of five attending Hoima regional referral Hospital

Source of drinking water

In this study, the study participants who used unprotected dug well/spring as source of drinking water were 3.4 times more likely to have children with diarrhea as compared to mothers/caregivers who used public taps as source of drinking water. This is in line with findings in Uganda which show that 33% of children in Uganda lack access to clean water and 60% of children live more than 30minutes away from a water source [18]. The study findings were also consistent with result in study done by Kamara [19], which showed that sanitation ultimately remains one of the biggest health challenges and people living in rural area seem to suffer more having no access safe water and improved sanitation. Thus, having no access to safe water in rural places like Hoima is a reason for high rate of diarrhea.

Disposing household garbage

In this mothers/caregivers who threw household garbage in open were 9.7times more likely to have children with diarrhea as compared to those who burnt their household garbage surrounding. Similarly, mothers/caregivers who threw their household garbage was taken away by your community utility service were 29times more likely to have children with diarrhea compared to those whose garbage was taken away by a community utility services. This finding is in line with results in a study done by Bauleth et al. [20] which showed that mothers who reported presence of human excreta in their homes had greater likelihood for children with diarrheal diseases compared to those reported different.

Caregivers' knowledge and practices on prevention and management of diarrhea in children under the age of 5attending Hoima Regional Referral Hospital

Most caregivers provided adequate answers to questions about prevention of diarrhea, such as the importance of breastfeeding. They also agreed that bottle-feeding is not a safe child feeding practice. Therefore, we believe that the health guidance currently provided, especially in the primary health care setting, has been effective in terms of imparting knowledge about preventive measures. Regarding disease management, most caregivers reported taking their child to the hospital at the slightest sign of diarrhea, rather than initially increasing the supply of fluids. This is an essential practice in early-stage

diarrhea to prevent dehydration, which is the leading cause of death. Furthermore, caregivers were unable to identify the signs of dehydration and may thus either take their children to hospital to early and unnecessarily or delay seeking medical care, thus resulting in additional complications or even in the death of the child. Most caregivers correctly named the purpose of oral rehydration therapy (ORT), although most also reported that it cures diarrhea. This belief may lead to frustration and limit the use of ORT. Caregivers exhibited a disturbing lack of knowledge about the preparation of ORT. As in other countries, this may be due to the existence of other forms of oral rehydration salts, including homemade solutions and different commercially available presentations, which may cause confusion. Another possible reason may be the lack or low quality of information provided by healthcare professionals. Despite making changes to the child's diet, most caregivers acknowledged the importance of breast

milk and continued breastfeeding during diarrhea. Although this knowledge does not prove that breastfeeding is being provided as recommended, it can be considered an advance from a public health stand point, as studies have proven the effectiveness of breastfeeding as a practice that prevents diarrhea and diarrhea related deaths. Most caregivers reported the use of medications to stop diarrhea, a practice also mentioned by caregivers in studies evaluating the treatment of diarrhea in children aged under 5 years in other countries. However, anti-diarrheal drugs have no role in the management of diarrhea in children, and antibiotics should not be given routinely. On the other hand, zinc supplementation has shown to be an effective treatment in that it reduces disease duration and severity and may be unacceptable option in the community setting. If given as combination therapy or as an adjunct to ORT to reduce the use of inappropriate drugs such as antibiotics and anti-diarrheal agents by mothers.

CONCLUSION

The prevalence of diarrhea in children under five attending Hoima regional referral Hospital is moderately high. The prevalence of diarrhea was seen to increase with age of 1-3 years, having unprotected spring/well as source of water and throwing household garbage in compound. Although caregivers were able to provide correct information about prevention measures, they had limited knowledge of appropriate management of acute diarrhea, especially in relation to dehydration.

Recommendations

- The government, should make it very easy to access safe water in order to curb down

this high-rate diarrhea in children under five years

- Mother with children aged 1-3 years should be alerted on how their children are at high risk of diarrhea
- Mothers should be educated and encouraged to always burn their household garbage or give to persons responsible for community utility services
- There is need to strengthen health education measures focused on these aspects as to train caregivers in its home management, thus contributing effectively and sustainably to reductions in child mortality.

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CITE AS: Mugisha Christopher (2024). Factors Contributing to the Prevalence of Diarrhea in Children Under the age of 5 years at Hoima Regional Referral Hospital, Western Uganda. IDOSR JOURNAL OF SCIENCE AND TECHNOLOGY 10(1):12-22. <https://doi.org/10.59298/IDOSR/JST/24/101.122239>