OPEN ACCESS
ONLINE ISSN: 2992-5460
PRINT ISSN: 2992-6041

NEWPORT INTERNATIONAL JOURNAL OF RESEARCH IN MEDICAL SCIENCES (NIJRMS)
Volume 5 Issue 1 2024

https://doi.org/10.59298/NIJRMS/2024/51.3040.1400

Knowledge and Practice of Caregivers about Use of Oral Rehydration Therapy in Management of Diarrhea in Ishaka Adventist Hospital Bushenyi District

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ABSTRACT

Diarrhoea induced dehydration remains a major cause of morbidity and mortality in children under 5 years in Ishaka Adventist Hospital's catchment area. This study was therefore conducted to determine the Oral Rehydration Therapy (ORT) knowledge and practices of caregivers with under 5-year-old children. A descriptive cross-sectional study was undertaken to assess the knowledge and practices of caregivers of children under 5 years of age regarding ORT. Data was collected from 100 caregivers using stratified and convenient sampling, through an interviewer admitted structured questionnaire for knowledge on ORT and an observation checklist for use of ORT. Data was analyzed using Microsoft excel program and presented as descriptive statistics. Caregivers of children under 5 years of age, in general, were found to be equipped with average knowledge about oral rehydration Therapy although the majority did not know how to prepare ORT for use in the prevention/management of dehydration caused by diarrhoea. It can thus be concluded that the ORS knowledge and practices among caregivers were deficient. The implication of this finding is that more needs to be done to strengthen the quality of ORT promotional messages and education given to caregivers in terms of the actual function of ORT so that they can appreciate why it is critical to use it with the onset of diarrhoea.

Keywords: Diarrhoea, Infant mortality, Oral Rehydration Therapy, Watery stool.

INTRODUCTION

Diarrhoea is defined as the passage of three or more loose stools per day or more frequent passage than normal for the individual [1]. On the other hand, clinical guidelines define diarrhea as quantity of loose or watery stool with consideration of normal stool patterns [2, 3]. Diarrhoea, remains among the most common causes of mortality and morbidity in children, particularly in low and middle-income countries [4, 5]. Worldwide, diarrhoea accounts for an estimated 3.6% of the global burden of disease, as expressed in disability-adjusted life years [6] and it is the leading killer, accounting for approximately 8% of all deaths among children < 5 years despite the availability of simple effective treatments [1]. Although the global mortality from diarrhoea has been declining over the past 25 years, the disease is still amajor cause of mortality in children < 5 years of age in Sub Saharan countries, contributing up to 21% of deaths [7]. In East Africa, the situation is not any different, with diarrhoea contributing up to 19% and 7.8% of under-five morbidity and mortality respectively. Most diarrhoeal related deaths occur as a resultof dehydration, which is frequently accompanied by electrolyte derangements [8]. In Uganda, diarrhoea is among the top four causes of morbidity in infants and young children. The Uganda Demographic and Health Survey (UDHS) of 2016 reported that the prevalence of diarrhoea among children < 5 years in Uganda was 20% [9]. In 2017, diarrhoeal disease deaths reached 6.41% of total deaths, making the country to be ranked 27th worldwide in terms of diarrheal related deaths. Presently, diarrhoea still remains among the top ten causes of morbidity in the country, with rotavirus being responsible for about 40% of all diarrheal cases [10]. Some of the factors fueling diarrhea incidence include poor hygiene, depressed immune system and poor nutrition [11-15]. Oral Rehydration Therapy (ORT) is a simple and

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PRINT ISSN: 2992-6041

inexpensive; potentially effective treatment for dehydration related to diarrhoea which has been promoted widely throughout the developing world since the late 1970s [16].

Despite the success of oral rehydration therapy (ORT), its proven efficacy and recommendations for use by various organizations, studies show that ORT continues to be underused globally, and specifically in low-income countries [17]. World Health Organization's (WHO) definition of ORT includes oral rehydration salt (ORS) solution, recommended home fluids (RHF) also known as Salt Sugar Solution (SSS) and breastfeeding. Oral rehydration therapy includes rehydration and maintenance fluids with oral rehydration solutions (ORS) combined with continued age-appropriate nutrition. The Oral Rehydration Therapy (ORT) therefore involves rehydrating children by replacing fluids and electrolytes lost through diarrhea [1]. According to current World Health Organisation/United Nations Children Education Fund (WHO/UNICEF) guidelines, ORT should begin at home with "home fluids" or a home-prepared "salt and sugar" solution at the first sign of diarrhoea to prevent dehydration. Feeding should be continued at all times. Use of oral rehydration therapy has been estimated to decrease the risk of death from diarrhea by up to 93% [12]. The Government of Uganda adopted the WHO/UNICEF recommendations for the clinical management of acute diarrhea to include both oral rehydration therapy (ORT) as part of its national treatment policy and is now part of Uganda clinical guidelines [18]. The use of ORS largely depends on the level of knowledge and attitude of mothers. Misconceptions are prevalent that prevent the use of ORT during diarrhoea. Many mothers believe that one needs a prescription from a doctor in order to buy ORS or ORS has a bad taste or no fluids to be given during diarrhea [19]. Despite the popularity and availability of ORS, several mothers/caregivers do not give it to their children when they have diarrhea. Furthermore, wrong preparation of ORS is common amongthe mothers who deem it necessary to give their children ORS during episodes of diarrhea [1]. Therefore, this study was designed to assess the knowledge and practice of caretakers towards oral rehydration therapy in management of diarrhoea in children below 5 years admitted on children's ward of Ishaka Adventist Hospital Bushenyi District.

METHODOLOGY

Study design and rationale

A descriptive research design was used to collect data concerning the knowledge and practice of caretakers towards oral rehydration therapy in management of diarrhea in children below five years in Ishaka Adventist hospital Bushenyi District. The researcher used a quantitative method to obtain information on oral rehydration therapy in management of diarrhea.

Study setting and rationale

The study was conducted in a hospital setting among caregivers with under five year olds attending the busy Integrated Management of Childhood Illness (IMCI) clinic of a private hospital. This clinic attends to about 1646 children under 5 years of age per year. The research was carried out in Ishaka Adventist Hospital,Bushenyi-Ishaka Municipal council, Bushenyi district South Western Uganda a private Not for Profit (PNFP) facility. The hospital's catchment community is comprised of a mixture of several Uganda tribes but with the Banyankole being the main predominant tribe.

Study population

The **s**tudy population was 100 caretakers of children below five years of whom 60 were women and 40 male caretakers of children below five years suffering from diarrhea.

Sample size determination

The minimum number of study subjects **(n)** was estimated by using a sample size formula by Kish and Leslie [20] for cross-sectional studies where **(n)** is calculated by the formula

p = prevalence of the characteristic under investigation (rate of utilization of ORT among under five children in Ishaka Adventist Hospital). The researcher used 9%; the proportion of children with diarrhea receiving ORT at

$$= \frac{z\alpha^2 p(1-p)}{\delta^2}$$

Ishaka Adventist Hospital (obtained from the Ishaka HospitalAnnual performance report 2019/20)

Where Zα = Standard normal deviation at 95% confidence interval corresponding to 1.96;δ = Margin of error *of* 5% or 0.05;

n = estimated sample size for a population greater than 10,000.

$$\mathbf{n} = \frac{1.96^2 \times 0.09 \times 0.91}{0.05 \times 0.05}$$

n= 126 caregivers

But since the target population was less than 10,000, we calculated again usingnf = n / (1+n/N) where;

nf=sample size to be used for the population N that is less than 10000.

N= 1646, the number of children under 5 years attended to by Ishaka Adventist Hospital(Hospital Annual performance review, 2019/20).

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nf= 126/ (1+126/1060) = 112 respondents.

However, due to time and financial limitations the researcher considered a sample size of 100 study participants for this study. However, to cater for non-responsiveness the researcher considered a sample size of 200 study participants for this study.

Sampling procedure

Stratified random sampling method and convenient method were used to select 100 respondents in order to determine the knowledge and practice of caretakers about ORT. The study population was divided into two strata; one for males and another for females. Then a convenient method was used to select 60 female and 40 male caretakers to make a sample size of 100 respondents.

Inclusion Criteria

The study included all female and male caretakers of children with diarrhea under five years whowere are willing to participate in the study.

Research Instruments

The researcher used an interview guide and observational checklist for data collection. All the tools focused on the defined variables of knowledge and practice of caretakers and how these influence oral rehydration therapy in management of diarrhea among children below five years of age. To ensure that no information was missed, the researcher translated the questions into local language for those who did not understand English. Interviews were used because some respondents were illiterate so the researcher had no option but to ask the questions so that the respondent answers followed by the researcher filling the interview guide. They also allowed the researcher to obtain information that was not directly observed. The observation checklist was used to capture practice of caretakers in preparation of Oral Rehydration solution using ORS sachets and water as well as its use.

Data collection procedure

After the researcher had been granted permission to carry out the research by the hospital administration, she was introduced to the caretakers by the ward in charge. The researcher then enrolled them after gaining their consent to take part in the study. The interview was administered to the participants on a daily basis until the required number of 50 respondents was raised. The researcher used face to face method in collection of data from respondents privately. Data was collected for 5 days, with researcher interviewing and observing a maximum of 10 caretakers on each data collection day.

Data Management

Data management included data editing before leaving the area of study to ensure that there wereno mistakes or blank areas. They were therefore corrected before leaving the area of study. Data management also included double checking of the entire interview guide for completion before losing contact with respondents.

Data Analysis

Data was manually tallied accordingly and later fed in a computer. Then coding was done using numeric values to reduce the level of entering errors. Data was analyzed using Microsoft excel program and presented in percentage, frequency distribution tables, pie charts and bar graphs.

Ethical consideration

Prior to data collection ethical clearance was obtained from the Dean Faculty of Clinical Medicine and Dentistry who gave the researcher an introductory letter, the basis of which the researcher was allowed to conduct the study. Participants were informed about the purpose of the study and their full right to or not to be interviewed at all. Informed written consent from every participant was obtained before conducting the interview. The address and names of the respondents was not included for the sake of confidentiality. The participants' privacy was ensured by interviewing the respondents in privacy. The participants were assured that there were no rewards/incentives for participating in the study or harm for not participating or refusingto participate in the study.

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RESULTS

Socio-demographic characteristics of the respondents.

The demographic characteristics of the respondents are presented in the following sub- sections.

Age of the respondents

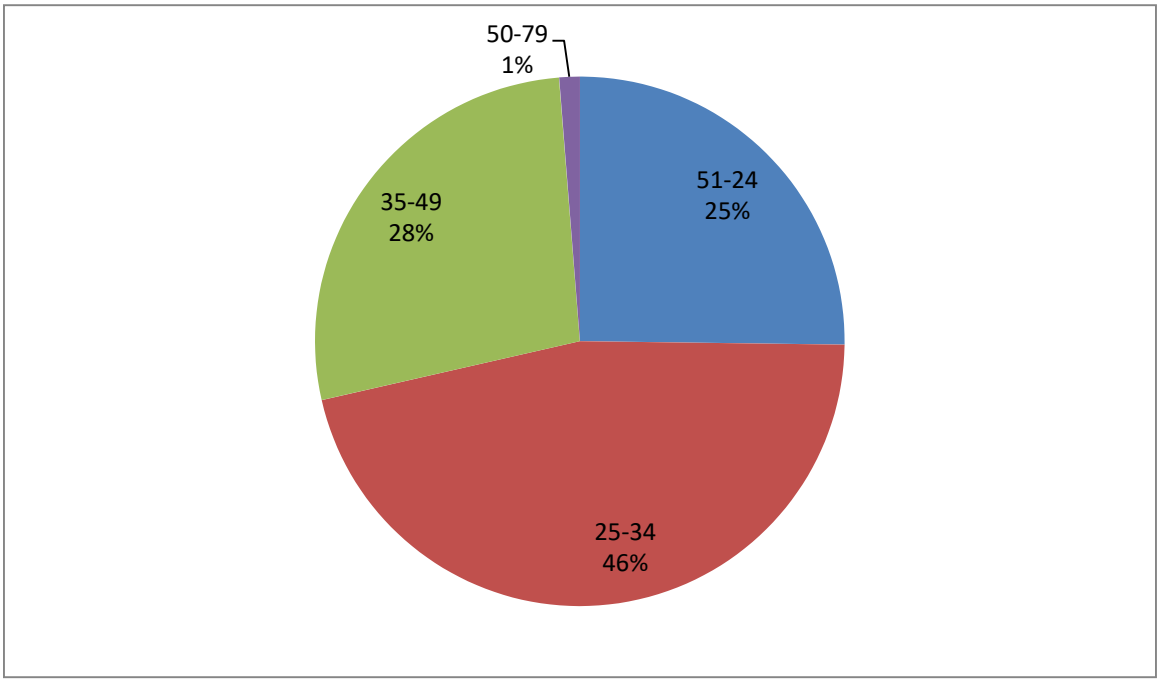

Figure 1: Age of the respondents (N=50)

Slightly less than one half of the respondents, 23(46.0%) were aged 25-34 years, about one quarter, 13(26.0) were aged 35-49 years and 12(24.0%) were aged 15-24 years. Their mean age was 30.1 years with a standard deviation of 9.6 years.

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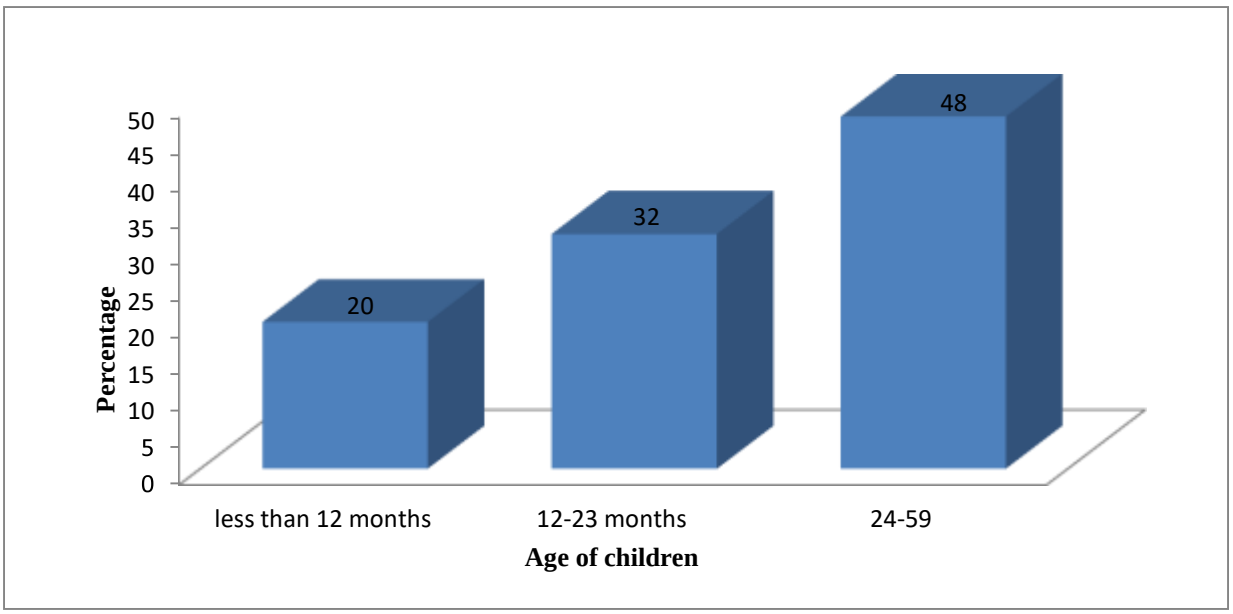

Figure 2: Age of the children (N= 50)

The mean age of the children and standard deviation were 26.1 and 15.6 months respectively. Slightly more than one half of the children 24(48.0%) were aged 24-59 months, about one third 16(32.0%) were aged 12-23 months while one fifth, 10(20.0%) were aged less than 12 months.

Level of Education of the respondents

Table 1: Education level of the respondents (N=50).

Level of Education	Frequency	Percentage (%)
No Education	04	08.0
Primary	13	26.0
Secondary	26	52.0
Tertiary	07	14.0
Total	**50**	**100.0**

Slightly more than one half of the respondents, 26(52.0%) had secondary education, about one quarter, 13(26.0%) had primary education, 7(14.0%) had attained tertiary education and 4(8.0%)had no education at all.

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Occupation of the respondents

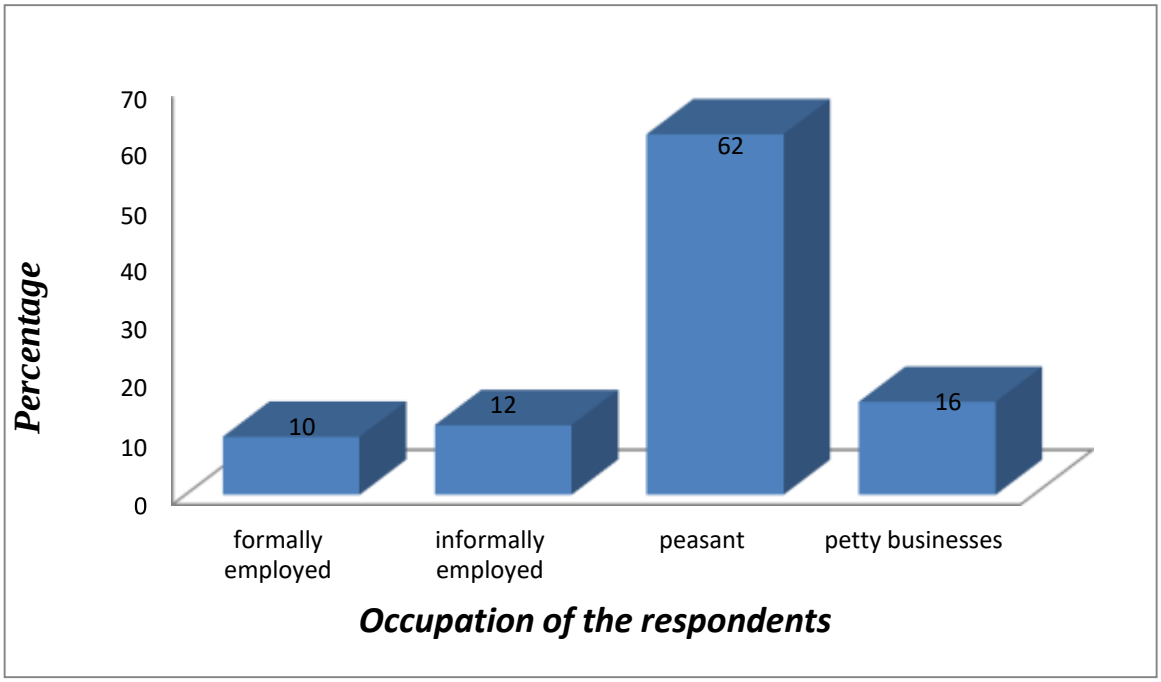

Figure 3: Occupation of the respondents (N=50)

Marital status of the respondents

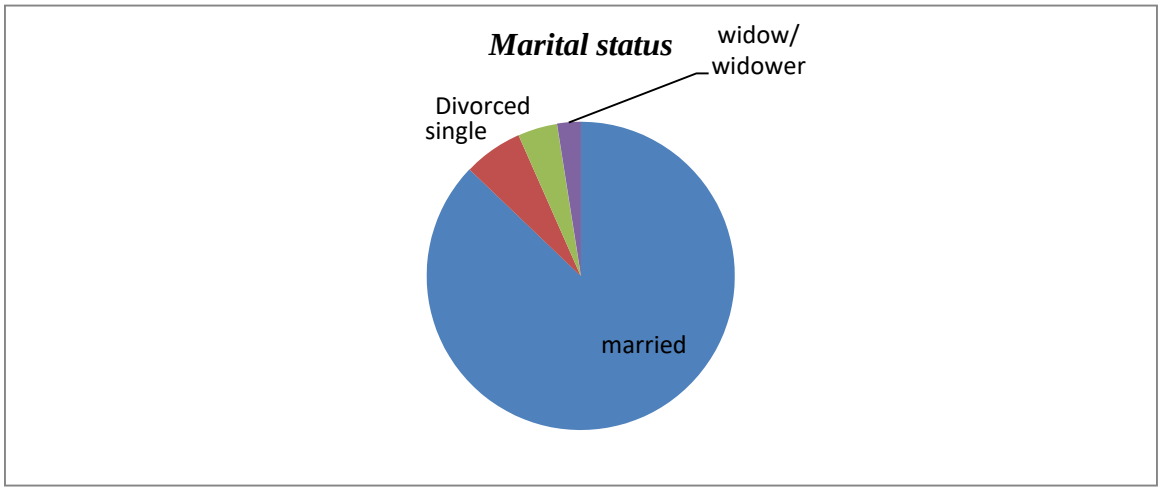

Figure 4: Marital status of the respondents (N=50)

The majority, 42(84.0%) were married, 3(6.0%) were single, 2(4.0%) were divorced while3(6.0%) were widows or widowers.

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Knowledge about Oral Rehydration Therapy

Table 2: knowledge about oral Rehydration Therapy (N= 50)

Variable	Response(s)	Frequency	Percentage (%)
Ever heard about ORT	Yes	45	90.0
	No	05	10.0
Content of ORT (N=45)	Salt sugar	30	66.7
	Salt only	02	04.4
	Sugar only	03	06.7
	Don't know	10	22.2
Use of ORS (N=45) (more than one response possible)	Treat/ prevent dehydration	06	13.3
	Treat/ prevent diarrhoea	28	62.2
	Kill microorganisms	02	04.4
	Don't know	08	17.7
Amount of water used to mix onesacket of ORS	½ Litre	4	08.0
	1 Litre	28	62.2
	2 Litres	3	06.7
	More than 2 litres	1	02.2
	Don't know	9	20.0
Length of time prepared ORSshould be kept for use	24 hours	21	46.7
	2 days	4	08.8
	More than 2 days	2	04.4
	Don't know	18	40.0

Correct responses.

An overwhelming majority, 45(90.0%) had reportedly ever heard about ORT. When asked about the contents of ORS, only two thirds, and 30(66.7%) mentioned all the components of ORSwhile about a quarter, 10(22.2%) did not know them. About the use of ORS, 28(62.2%) mentioned treatment or prevention of diarrhoea with only 6(13.3%) mentioning treatment/ prevention of dehydration.

The majority, 28(62.2%) knew the correct amount of water used to mix one sachet of ORS whileslightly less than one half, 21(46.7%) knew the correct length of time that prepared OralRehydration Solution should be kept.

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Table 3: ORS Practices (N=45)

Practices	Option	n (%)
Availability of clean/boiled water	Yes	35(87.8)
	No	10(22.2)
Availability of ORS Sachet(s)	Yes	25(55.6)
	No	20(44.4)
Clean containers for preparing ORS	Yes	23(51.1)
	No	22(48.9)
Presence of one Litre or more of water	Yes	32(71.1)
	No	13(28.9)
Utensils to use for feeding child with prepared ORS solution likespoon, 500mls cup/feeding bottle	Yes	26(57.8)
	No	19(42.2)
Availability of hand washing equipment	Yes	12(26.7)
	No	33(73.3)
Checked expiry date on the ORS Sacket	Yes	3(6.7)
	No	42(93.3)
Used clean container	Yes	18(40.0)
	No	27(60.0)
Measured and used one litre of water	Yes	24(53.3)
	No	21(46.7)
Used clean/boiled water	Yes	33(73.3)
	No	12(26.7)
Whole sachet added to the water	Yes	38(84.4)
	No	7(15.6)
Stirred the ORS until they dissolved in the water.	Yes	15(33.3)
	No	30(66.7)
Keeps prepared ORS Solution covered	Yes	24(53.3)
	No	21(46.7)

NB: Five mothers did not know about ORS

As clearly seen in the table 3, ORS practices were far from perfect. The majority, 35(87.8%) had clean/boiled water, 25(55.6%) had ORS sachets, 23(51.1%) had clean containers for preparing ORS, 32(71.1%) had at least one litre of water for preparing Oral Rehydration Solution. When asked to prepare ORS, only 12(26.7%) followed all the recommended steps. Only 3(6.7%)checked the sachet's expiry date, 18(40.0%) used clean containers, 24(53.3%) used one litre of water for mixing a sachet and 38(84.4%) added the whole sachet to the water. Only 24(53%) kept the solution covered.

DISCUSSION

In recognition of the fact that successful management of diarrhoea lies in the hands of well- informed caregivers rather than the health system, it means that the way forward is to support and inform caregivers about ORT so that they are more inclined to use it as encapsulated in the present IMCI diarrhoea management principles, with regard to the use of ORT to treat diarrhea induced dehydration. It was because of this fact that this study was carried out.

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Knowledge about Oral Rehydration Therapy

In the current study, it was found that the majority of the respondents 45 (90.0%) had ever heard,about ORT. This is consistent with similar reports in rural Zimbabwe in whose study 88.8% of the respondents had heard about ORT [21] but disagrees with results from another study where only 45.6% of the caregivers had heard about it [22]. Regarding the content of ORS, the majority, 30(66.7%) were able to list all the contents, Sugar and salt with a significant number 15(33.3%) mentioning wrong contents. Worse still, slightly more than one third of the respondents, 17(37%) did not know the correct volume of water for mixing one sachet of ORS. However, despite the reportedly huge awareness, it was surprising that the majority of the caregivers did not know the exact function of ORT and why it should be given in diarrheal illnesses. From all the respondents, the most mentioned role of ORS was that it prevents/treats diarrhea according to the majority of the respondents (88.7%). Very few (13.3%) knew that it stops/prevents dehydration, which is the major pathophysiological pathway that prevents shock and eventual death from diarrhoea. This finding contradicts another study on diarrhea management by Ellis *et al.* [23] where it was found that nearly all the mothers interviewed knew that ORT could replace lost fluids. The implication of this finding is that more needs to be done to strengthen the quality of ORT promotional messages and education given to caregivers in terms of the actual function of ORT so that they can appreciate why it is critical to use it with the onset of diarrhoea.

ORT practices

The Oral Rehydration preparatory skills were evidently poor with slightly less than one half of the respondents, 24(53.3%) using the recommended one litre to mix one sachet of ORS. Despite the relatively high proportion of caregivers (66%) who reported having used ORT at some point, it was very disappointing that only 33.7% of the entire study population could prepare it correctly. This finding agrees with Wenjing et al. [24] finding where a study on awareness about ORT in rural Uganda found that the Oral rehydration solution preparatory skills among caregivers were very poor. This is quite worrying because administration of correctly prepared ORT is central to the effective and successful management of dehydration. It is particularly important to use a correctly prepared rehydration solution to prevent complications that mayarise from using dangerous hyper/hypo-osmolar mixtures, which could cause hyper- or hyponatremia. Only slightly more than one half, 24(53.3%) measured and used one litre of water to mix the sachet of ORS. The inadequate knowledge of the correct preparation of a sachet of ORS with a litre of water observed in this study also mirrors findings from some other studies [17]. The fact that slightly less than one half of the respondents that mixed a sachet of ORS withless than or more than a litre of water may be due to the fact that caregivers have not fully differentiated the amount of water used to prepare SSS (600mls) from that used to prepare ORS (1L). This unfortunate practice by home caregivers can result in either hypotonic or hypertonic dehydration in children receiving these incorrectly prepared ORS mixtures, leading to increased morbidity and mortality.

CONCLUSION

According to the study findings the following conclusions have been made:

- Generally, caregivers' ORT knowledge was unsatisfactory because most of the caregivers had heard of ORT but only a few could explain its use correctly. The majority erroneously thought that it prevents/treats diarrhea. Less than one fifth of the respondents knew the actual use ofORT as a prevention/treatment against dehydration.
- It was generally disappointing that less than half of the entire study sample and about half of thecaregivers who claimed that they could prepare ORT were indeed able to prepare a correct recipe.
- The gap in ORT knowledge and use underscores the urgent need to empower caregivers with adequate information/health education that would improve their ORT knowledge and practices.

RECOMMENDATIONS

Basing on the study findings, the following are recommended:
Health education intervention should be used to empower mothers with knowledge and imbue them with skills that will enable them prevent diarrhoea and or promptly give ORT/SSS during episodes of diarrhoea. This can be achieved using four strategies.

- First, there is need for formal training of caregivers on causes, prevention and treatment of diarrhea using ORT/SSS. In addition to correcting misconceptions about cause of diarrhoea, training provides opportunity for mothers to acquire skills through return- demonstration for correct preparation of SSS and how to give this to children who have diarrhoea. This training can be done in a workshop setting where trainer/trainee interactions facilitate learning. Such training can be organized in the community through local government health office.
- Secondly, education can also be provided for mothers during ante-natal or post-natal visits. Diarrhoea prevention

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and treatment can be included as a component of mother and child welfare program.

- Thirdly, volunteers' mothers/caregivers may be recruited and trained as peer educators who should be charged with the responsibility of informing and teaching skills for preparation of ORT/SSS and their use during episodes of diarrhoea.
- Finally, educational materials like posters and handbills with pictorial illustrations on the stepsinvolved in preparing SSS and ORS need to be developed and distributed by trained peer educators to each household in the Ishaka Adventist Hospital's catchment area part of strategies to promote use of SSS in this community. This will serve as a reminder each timethey read the contents of the materials.

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CITE AS: Najma Ali Ahmed (2024). Knowledge and Practice of Caregivers about Use of Oral Rehydration Therapy in Management of Diarrhea in Ishaka Adventist Hospital Bushenyi District. NEWPORT INTERNATIONAL JOURNAL OF RESEARCH IN MEDICAL SCIENCES, 5 (1): 30-40. https://doi.org/10.59298/NIJRMS/2024/51.3040.1400