SJ Pediatrics and Child Health Africa
Vol. 1 No. 2 (2024): February 2024 issue
https://doi.org/10.51168/y94zb850
Original Article

FACTORS CONTRIBUTING TO LOW UTILIZATION OF ORAL REHYDRATION SOLUTION AMONG MOTHERS OF CHILDREN BELOW FIVE YEARS AT ARUA REGIONAL REFERRAL HOSPITAL, ARUA DISTRICT. A CROSS-SECTIONAL STUDY.

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ABSTRACT.

Aim; To determine the individual, environmental, and health facility factors contributing to low utilization of oral rehydration solutions among mothers of children below five years at Arua Regional Referral Hospital,Arua District.

Methodology:

A descriptive cross-sectional study that employed the simple random method to select 50 respondents who participated in the study. The study data collection tool was a questionnaire. Data was analyzed manually by use of tally sheets and computedinto percentages using the Microsoft Excel computer program with illustrated figures and tables for easier interpretation and presented in the form of frequency distribution tables, bar graphs, and pie charts.

Results:

(88%) had ever heard about oral rehydration solution, (61%) knew that ORS protects the child from diarrheal, (68%) agreed that diarrheal is a serious condition that can lead to dehydration.
(72%) where from villages, (68%) their sourceof water at home were boreholes, (52%) had enough access to materials that are used in preparationof ORS at home
(54%) reported that the quality of ORS which is provided from health facilities and pharmacies was good, (36%) noted that home remedies were the best for diarrheal.

Conclusion:

Participants were reluctant to administer ORS to their children on time, beliefs towards the effectiveness of ORS to manage diarrhea illness, location of the their homes had an impacton the use of ORS, adequate access to safe water, the influence of community member's perception towards ORS, participant's opted home remedies than ORS, poor health-seeking behaviors, and inadequate information from health workers were the outstanding factors contributing to low utilization of oral rehydration solution.

Recommendation:

Arua Regional Referral Hospital should strengthen the strategies and approaches to reach caregivers to increase the coverage of ORS use through intensive health education focusing on the benefits, early initiation, and preparation of ORS.

Keywords: Low Utilization, Oral Re-Hydration Solution, Arua Regional Referral Hospital
Submitted: 2024-01-01 Accepted: 2024-02-15

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BACKGROUND OF THE STUDY.

Globally, since 1978, ORT has been widely implemented in many countries by the World Health Organization. Today, ORS is described as any package dehydration solution containing a form of sugar, together with additional electrolytes, such as sodium or potassium. An alternative form of ORT also exists, described as RHF. However, there are nearly 1.7 billion cases of childhood diarrhea disease every year globally and diarrhea is a leading cause of malnutrition in childrenunder five years old.

Diarrheal diseases in sub-Saharan Africa continue to plague areas without clean water or access tohealthcare. In addition, it is estimated that every year, millions of children under the age of 5 die.Of those children, almost 40% come from Africa. The chance of death for a child living in Africais seven times higher than that of a child in Europe (World Bank, 2022).

A tri-country, sub national, cross-sectional comparative analysis revealed that substantial increases in ORS coverage ranging from 10.3 to 44.2%, were observed in 7 of the 10 provinces of Zimbabwe. The largest percentage increases were observed in Matabeleland South (44.2%) from 12.3% to 56.5%; followed by Bulawayo (39.9%)

from10.4; and Midlands had the lowest increase(10.3%) from 28.4to 38.7. Of the 10 provinces in Zambia, Luapula (24.4%) from 49.1 to 73.5; andLusaka (18.7%) from 55.8 to 74.5 recorded substantial increases between the two periods. All the three regions of Malawi recorded decreases; the Northern (−16.5%) from 78.4% to 61.9%; Central,(− 10.2%) from 73.4% to 63.2%; and Southern from 69.9% to 66.7%

The number of diarrhea cases in the Philippines amounted to approximately 60.6 thousand in 2020, reflecting a decline from the previous year's total. The number of diarrhea cases in the country has fluctuated in the past years (Philippine Statistics Authority, 2023).

The pooled prevalence of diarrhea among under five years of children in East Africa was 15.86% (Philippine Statistics Authority, 2023).
The highest prevalence of diarrhea among under five years children was observed in Burundi witha prevalence rate of 22.84% followed by Uganda (22.10%) and Malawi (21.57%). Conversely, the lowest prevalence was also noticed in Madagascar (8.16%), Ethiopia (11.33%), and Tanzania (12.33%).

General objective.

To determine the factors contributing to low utilization of oral re hydration solution among mothers of children below five years at Arua regional referral hospital, Arua District.

Specific objective.

- To determine the individual factors contributing to low utilization of oral re hydration Solution among mothers of children below five years at Arua regional referral hospital,Arua District.
- To determine the environmental factors contributing to low utilization of oral re hydration Solution among mothers of children below five years at Arua regional referral hospital,Arua District.
- To determine the health care related factors contributing to low utilization of oral re Hydration solution among mothers of children below five years at Arua regional referral hospital, Arua District.

METHODOLOGY.

Study design.

A descriptive cross-sectional design with a quantitative approach employed.

Study area.

Arua referral hospital is located Arua in Northern Uganda with approximately 430.4km from Kampala the capital city of Uganda. The hospital receives referrals from nearby districts such as Adjumani, Koboko, Maracha, Moyo, Nebbi, Yumbe and Zombi with an average of 300 patients per day. The hospital has got different departments namely; OPD, Inpatient, Therapeutic FeedingCentre, Paediatric ward, ART clinic, TB ward, ICT department, Dental, Pharmacy, Laboratory, surgical and Antenatal. The rationale of choosing the study area was because the researcher is a student at Kampala school of health sciences and during practicum period in Arua regional referralhospital he observed a lot of diarrheal cases in children under five years were common. The study was carried out from May 2023 to November 2023.

Study population.

The study mainly focused on caretakers of children below five years with children suffering fromdiarrheal illness at Arua regional referral hospital, Arua district.

Selection criteria.

Inclusion criteria.

The study comprised of mothers of children below five years with diarrhea at the hospital the time of data collection and ready to consent.

Exclusion criteria.

Mothers of children below five years who didn't respond to questions appropriately due to illness or temporary visitors were excluded.

Sample size determination.

The sample was determined using the following formula; Kish Leis (1965)$n = z^2pqd^2$
Where;

n- Represents sample size.

d- Represents a precision of the study, a precision of 10% was used due to the limited resources(time and moneys).
z- Represents standard normal deviation corresponding to 95% confidence interval which is 1.96.

Represents proportional characteristics where no reasonable estimate is given. Therefore, 84.5%was used.
Represents (1-p) which is (1-0.845) $n = 1.96^2 x 0.845 x (1-0.845)$
0.1^2
n = 3.8416x0.1309750.01
n = 50.32
n ≈ 50 respondents

Therefore, 50 respondents were considered for the study.

Study variables.

Dependent variable.

The dependent variable in study was oral re hydration solution.

Independent variables.

The independent variables were individual, environmental and health related factors contributingto low utilization of oral re hydration solution among mothers of children below five years.

Sampling technique.

Simple random sampling technique was used to select the sample from the source population. The technique is preferred because it directly targeted exact individual with the interest of the study.

Sampling procedure.

Respondents were purposively selected at random from out and in-patient department using the box with corresponding order of the letters (A, B and C) and the same procedure was repeated until the required number of 50 respondents was attained.

Data collection methods.

Questionnaires with questions were used following the specific objectives, hospitalrecords to determine the rate of cases of diarrhea and immunization status and observation remarks in regards to availability of ORS, ratio of health workers per patients.

Data collection tool.

This study used aquestionnaire with both open and close ended questions written in English language later translatedin local language Lugbara was used in this study in order to solve the research problem. This tool was considered because it saves time and financial resources.

Data collection procedure.

A letter of introduction was obtained from Kampala School of Health Sciences seeking for permission to conduct the study from Arua regional referral hospital. When the permission was granted, two research assistants were employed to ease the data collection process. On each day of data collection, the researcher with his two research assistants introduced themselves to respondents at OPD and pediatric ward to explain the purpose of the study to the respondents. Data collection was done by writing letters on A, B and C on small pieces of papers and putting them into a box. A thorough check was done and then 50 papers were purposively selected at random from the box following the corresponding order of the letters (A, B and C) and the sameprocedure was repeated until the required number of 50 respondents was attained.

Quality control.

To ensure reliability of instrument, a questionnaire was designed and per-tested among 20% of the sample population at Oli health centre IV who were not involved in the actual study. The purpose of piloting was to investigate whether crucial components of the main components arefeasible

In order to ensure accuracy and truth of the data in research, a questionnaire was designed in sucha way that it captured relevant information for the specific objectives. Adjustments were made where necessary to improve its strength, relevance, reliability and validity.

Data was systematically checked and filled before leaving the study area. Therefore, quality control was done to ensure accuracy of the data collected.

Data analysis and presentation.

Data was analyzed manually by use of tally sheets and computed into percentages using Microsoftexcel computer program with illustrated figures and tables for easier interpretation and presented in form of frequency distribution tables, bar graphs and pie charts.

Ethical considerations.

To ensure ethical conduct of the study, a letter of introduction was obtained from Kampala Schoolof health Sciences and addressed to the medical superintendent of Arua regional referral hospital requesting for permission to conduct the study on factors contributing to low utilization of oral re hydration solution among mothers of children below five years at Arua regional referral hospital, Arua District. When permission was granted, the researcher and his assistants introduced themselves to respondents, explained the purpose of the study, informed consent was sought using consent forms and respondents were assured of utmost confidentiality of their information. All information collected remained confidential and was used for purposes ofthe study purpose only.

STUDY FINDINGS.

Demographic data.

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Table 1: Shows the distribution of respondents according to demographic data. (N=50)

Response	Frequency(f)	Percentage (%)
Gender		
Female	31	62
Male	19	38
Total	**50**	**100**
Age		
.>6 months -1year	25	50
2-3 years	18	36
4-5 years	7	14
Total	**50**	**100**
Weight at birth		
>3kg	23	46
< 3 kgs	27	52
Total	**50**	**100**

Response	Frequency(f)	Percentage (%)
Level of education		
Never went to school	06	12
Primary	22	44
Secondary	18	36
College/ university	04	08
Total	**50**	**100**
Occupation status		
Employed	03	6
Unemployed	32	64
Self employed	15	30
Total	**50**	**100**

Table 2; Shows the distribution of respondents according to demographic data.

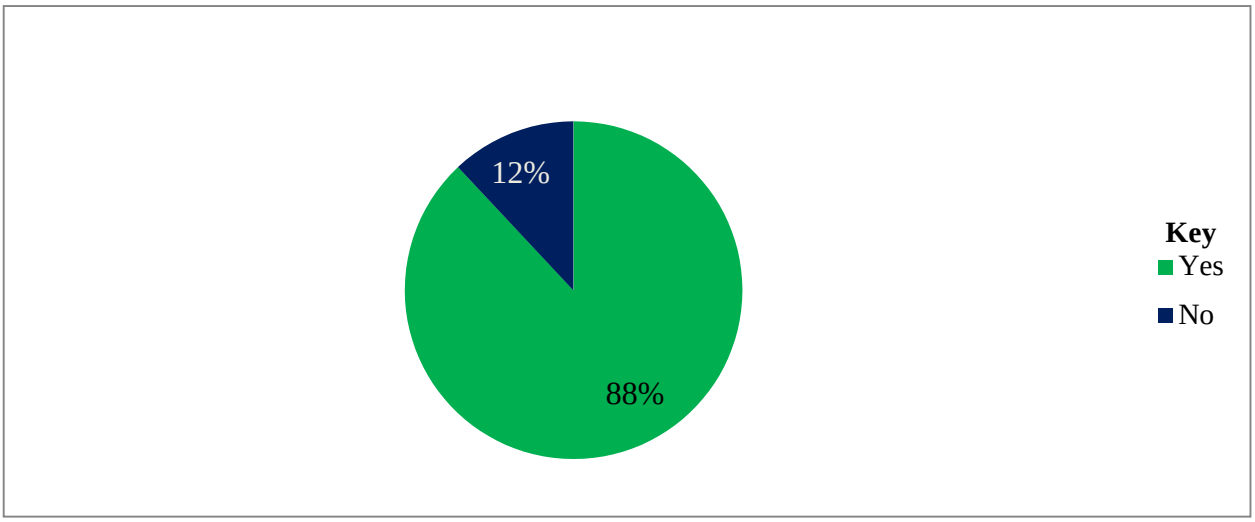
From the table 1 and 2, the majority of the (62%) were females whereas the minority (38%) were males.Basing on the study findings, most of the respondents (46%) their children's weight at birth was >3kg whereas the least (52%) their children's weight at birth was<3kg.

In the same way, the study results revealed that most of the respondents (44%) had attainedsecondary level education whereas the least (8%) had attained college/ University.

Results related occupation, majority of the respondents (64%) was employed whereas the least (6%) were unemployed.

Individual factors contributing to low utilization of oral rehydration solution.

Figure 1: Shows the distribution of respondents according to whether they had ever heardabout oral rehydration solution. (N=50)



From the figure above, majority of respondents (88%) had ever heard about oral rehydrationsolution whereas the least (12%) had never heard about oral rehydration solution.

Table 3: Shows the distribution of respondents who had ever heard about oral rehydrationsolution according to their knowledge about benefits of oral rehydration solution. (N=44)

Response	Frequency(f)	Percentage (%)
Prevents dehydration	11	25
Prevents malnutrition	04	9
Protects the child from diarrhealattacks	27	61
I don't know	02	5
Total	**44**	**100**

From the table 3, more than half of the respondents (61%) knew that ORS protects the child from diarrhea whereas the least (5%) they didn't know the benefits of ORS.

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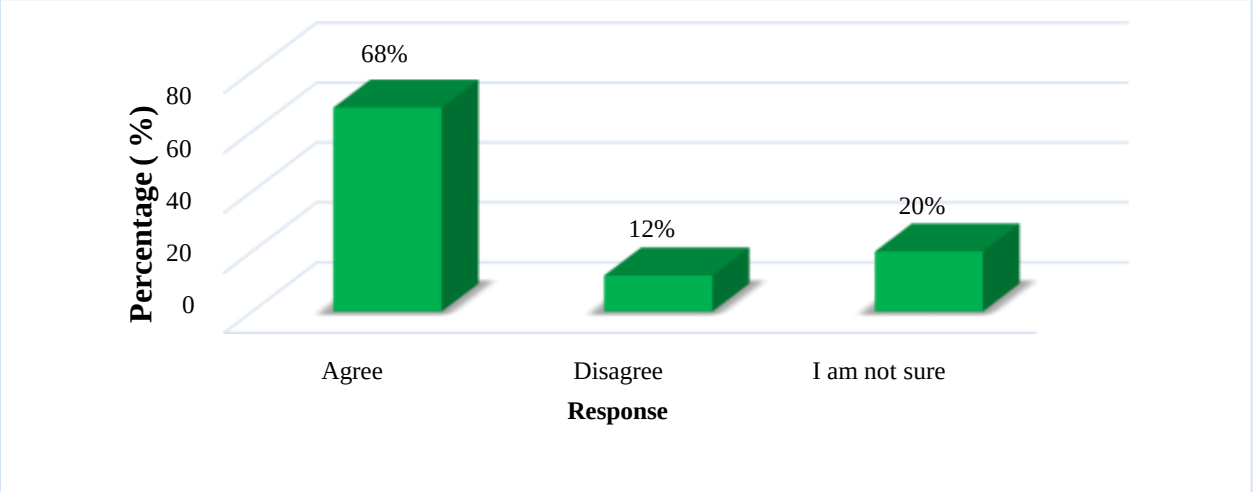
Figure 2: Shows the distribution of respondents according to whether diarrheal is a seriouscondition that can lead to dehydration.(N=50)



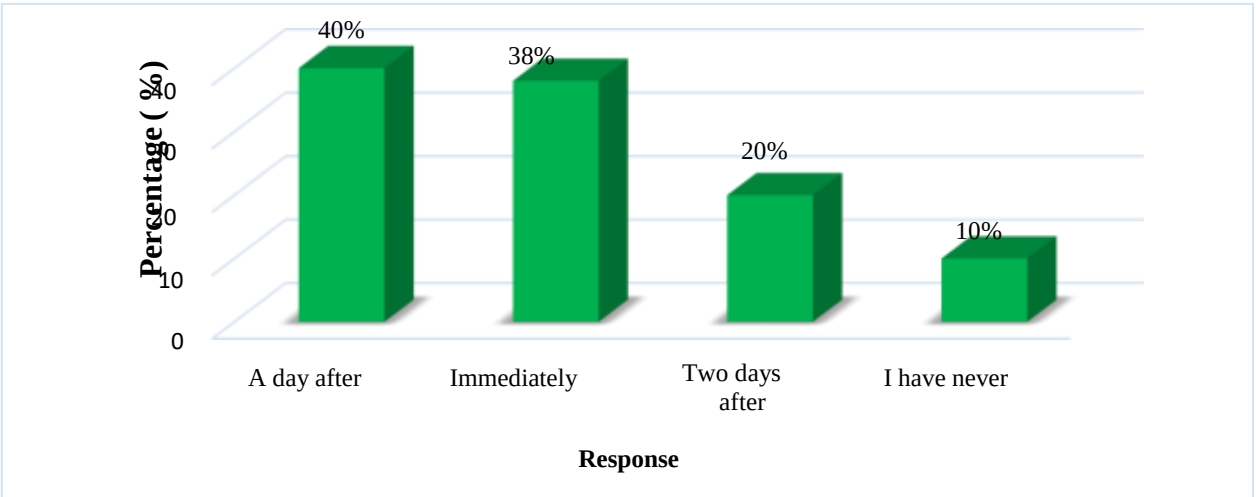
From the figure 2, more than half of the respondents (68%) agreed that diarrheal is a seriouscondition that can lead to dehydration whereas the least (12%) they disagreed.

Table 4: Shows the distribution of respondents according to their skills in preparing ORS. (N=50)

Response	Frequency(f)	Percentage (%)
Good	25	50
Fair	22	44
Poor	3	6
Total	**50**	**100**

From the table 4, half of the respondents (50%) had good skills in preparing ORS whereas theleast (6%) had poor skills in preparing ORS.

Figure 3: Shows the distribution of respondents according to when they commenced administration of ORS a day after onset symptom of diarrhea.(N=50)



From the figure 3, most of the respondents (40%) commenced administration of ORS a day after onset symptom of diarrhea whereas the least (10%) had never used ORS after onset symptomof diarrhea.

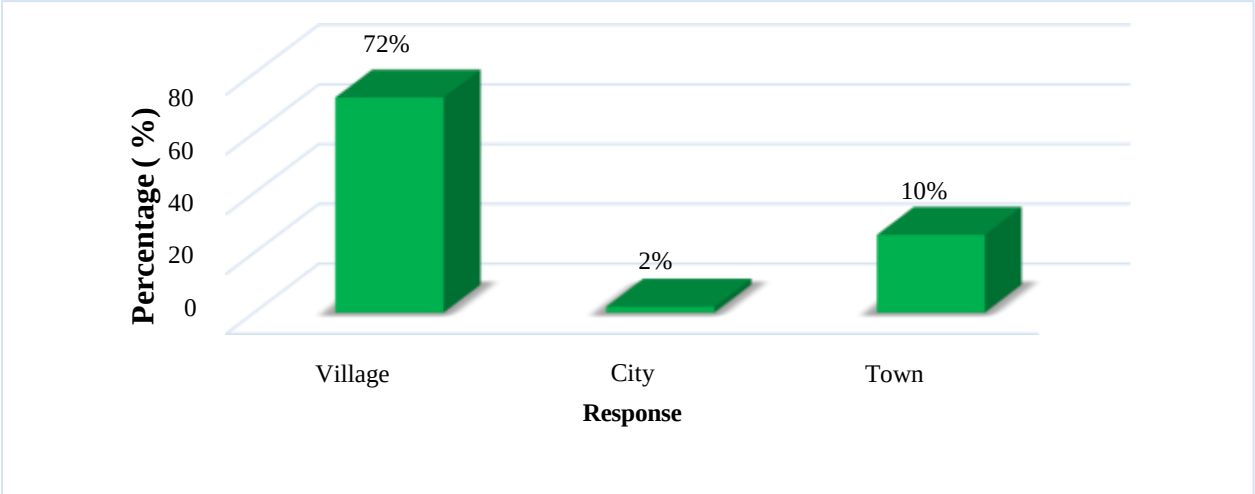
Table 5: Show the distribution of respondents according to their views about whether ORSis enough to manage diarrheal illness. (N=50)

Response	Frequency(f)	Percentage (%)
Agree	11	22
Disagree	35	70
I am not sure	04	8
Total	**50**	**100**

From the table 5, majority of the respondents (70%) disagreed that ORS is enough to preventdiarrhea illness whereas the minority (08%) they were not sure.

Environmental related factors contributing to low utilization of oral rehydration solution among mothers of children below five years.

Figure 4: Shows the distribution of respondents according to location of their home place.(N=50)



From the figure above, majority of the respondents (72%) where from villages whereas theminority (2%) where from city.

Table 6: Show the distribution of respondents according to the sources of water at home. (N=50)

Response	Frequency(f)	Percentage (%)
Borehole	34	68
Rain water	5	10
River water	11	22
Total	**50**	**100**

From the table 6, more than half of the respondents (68%) reported that the source of water athome were boreholes whereas the least (10%) were using river water.

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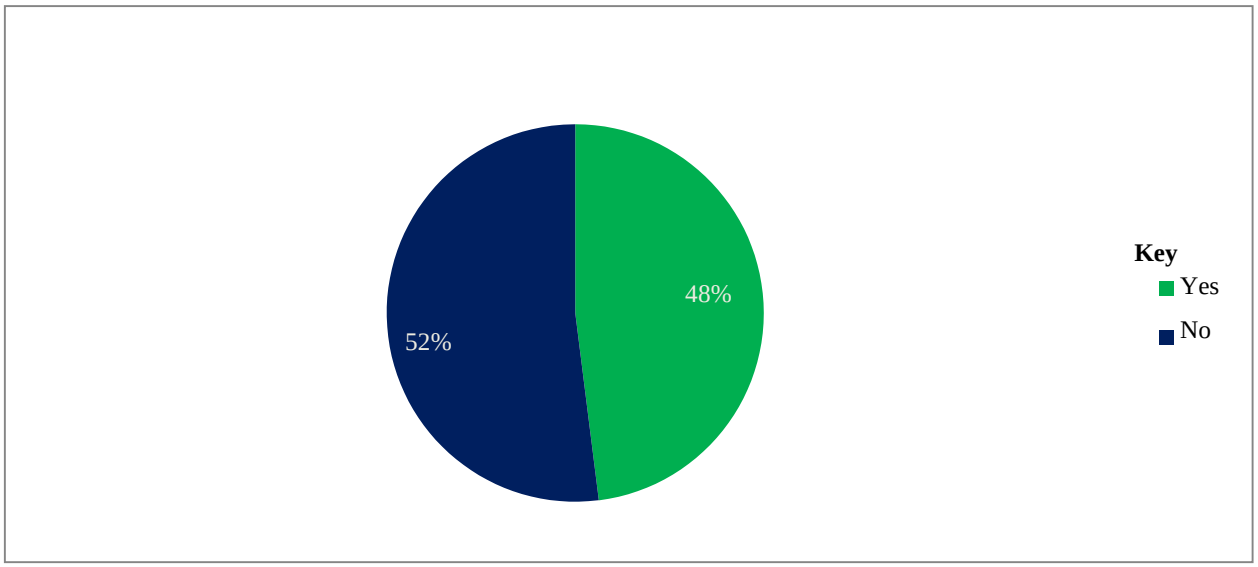
Figure 5: Shows the distribution of respondents according to whether they always hadenough access to materials that are used in preparation of ORS at home. (N=50)



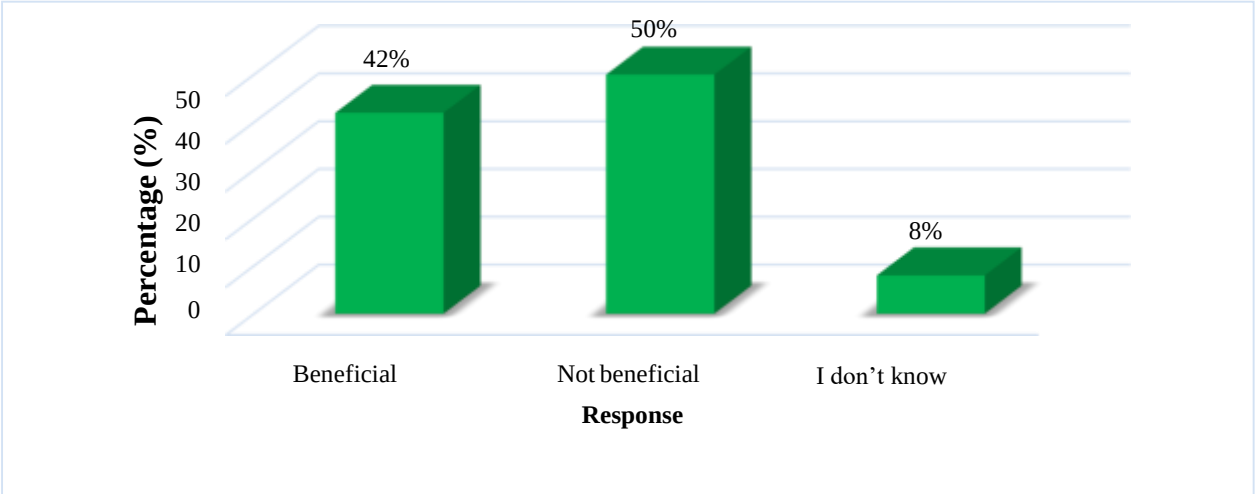
From the figure 5, most of respondents (52%) reported that they always had enough access tomaterials that are used in preparation of ORS at home whereas the least (48%) never had enough access to materials that are used in preparation of ORS at home.

Table 7: Show the distribution of respondents according to the types of toilet they had at home. (N=50)

Response	Frequency(f)	Percentage (%)
Pit latrine	42	94
Water closet	1	2
VIP latrine	1	2
We don't have	6	12
Total	**50**	**100**

From the table 7, almost all the respondents (94%) had pit latrines at home whereas the least(10%) had water closet and VIP latrines at home.

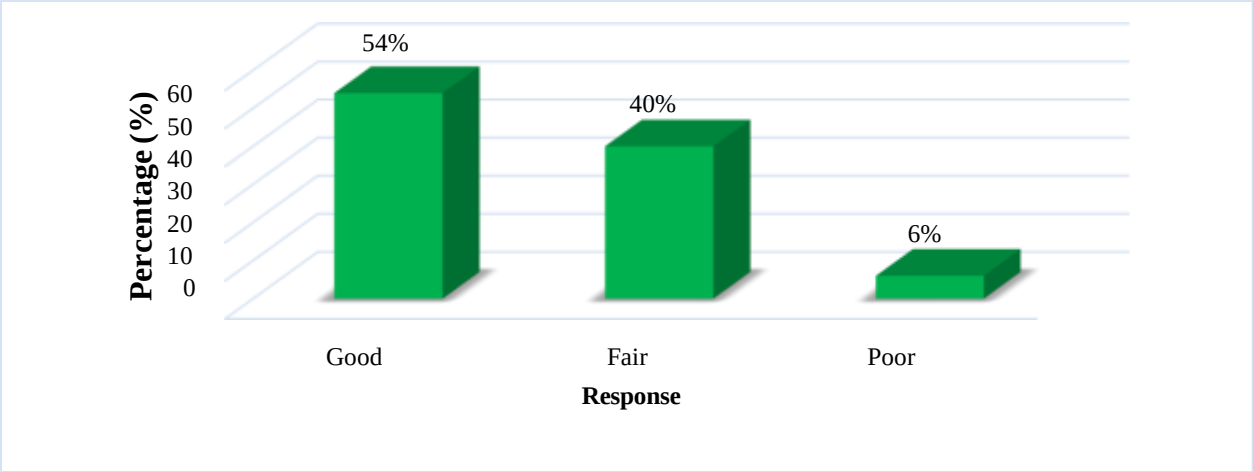
Figure 6: Shows the distribution of respondents according to what do people in their community think of ORS in management of diarrheal at home.(N=50)



From the figure 6, half of the respondents (50%) noted that people in their community perceive ORS not beneficial in management of ORS whereas the least (8%) they didn't know theperception of other people towards management of ORS in management of diarrheal at home.

Health care related factors contributing to low utilization of oral rehydration solution among mothers of children below five years.

Figure 7: Shows the distribution of respondents according to how they rate quality of ORSwhich is provided in health facilities and pharmacies.(N=50)



From Figure 7, most of the respondents (54%) reported that the quality of ORS which is provided by health facilities and pharmacies was good whereas the least (6%) reported thatthe quality of ORS provided by health facilities and pharmacies.

Table 8: Show the distribution of respondents according to their best management remedies darrhea. (N=50)

Response	Frequency(f)	Percentage (%)
ORS	14	28
Home remedies	18	36
Other convection medicines	15	30
Traditional medicine	03	06
Total	**50**	**100**

From Table 8, most of the respondents (36%) noted that home remedies were the best fordiarrheal whereas the least (06%) reported traditional medicine as the best remedy to manage diarrhea.

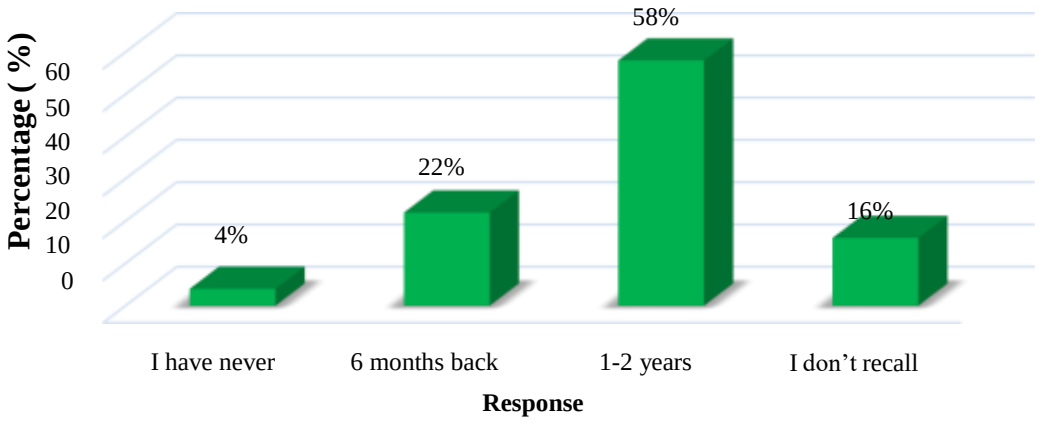
Table 9: Show the distribution of respondents according to whether they pay for access to ORS. (N=50)

Response	Frequency(f)	Percentage (%)
Yes	11	22
No	24	48
Sometimes when it is out of stock in government facilities	15	30
Total	**50**	**100**

From Table 9, most of the respondents (30%) reported that they don't pay for access to ORS whereas the least (12%)

reported that they pay for access to ORS.

Figure 8: Shows the distribution of respondents according to when they last attended any health sensitization program with health workers towards the use of ORS in the management of diarrhea.(N=50)



From Figure 8, most of the respondents (58%) reported that they had last attended a health sensitization program with health workers towards the use of ORS in the management of diarrhea for1-2 years whereas the least (4%) they had never.

Table 10: Show the distribution of respondents who had ever attended a health sensitization program with health workers towards the use of ORS in the management of diarrhea accordingto how they rate the quality of the information received. (N=46)

Response	Frequency(f)	Percentage (%)
Adequate	14	30.4
Fairly adequate	25	54.3
Inadequate	7	15
Total	**46**	**100**

From Table 10, most of the respondents (54.3%) reported that the quality of information they received from health workers was fairly adequate whereas the least (15%) reported that theypaid for access to ORS.

Table 11: Show the distribution of respondents according to whether their children had other medical problems that inhibit the management of diarrheal with ORS. (N=50)

Response	Frequency(f)	Percentage (%)
Yes	22	44
No	28	56
Total	**50**	**100**

From Table 11, more than half of the respondents (56%) reported that their children never had any medical problem that inhibited the management of diarrhea with ORS whereas the least (44%) children had any medical problem that inhibited the management of diarrhea.

DISCUSSION.

Individual factors contributing to low utilization of Oral Rehydration Solution.

An overview of study findings revealed that the majority of respondents (88%) had never heard about oral rehydration solutions. This is attributed to the fact that diarrhea is among the most common conditions that every child below five years is most likely to at least be exposed to and ORS is themost immediate treatment for diarrheal. Therefore, the probability of being aware was expectedto be high. The study results were related to findings from Romana et al (2022), where 91.4% heard about ORS.

The study results also revealed that more than half of the respondents (61%) knew that ORS protects the child from diarrheal. However, despite being aware the uptake is very low, itispredisposed to persistent diarrhea illness due to some reasons the study has yet to ascertain. This is consistent with study results from Nigeria done by Ifeoma et al (2022), where about two-thirds 249 (67.1%) of the respondents knew the correct role of ORS/SSS in the management of childhood diarrhea.

To add on that, more than half of the respondents (68%) agreed that diarrheal is a serious conditionthat can lead to dehydration. Therefore, there could be an implication that caretakers of children were more reluctant to utilize ORS although they were very cognizant of how seriousis the conditions. The study findings were in line with Bogale et al (2017), where (74%) agreed that diarrheal is a serious condition that can lead to dehydration.

The study further revealed that most of the respondents (40%) commenced administration ofORS a day after the onset symptom of diarrhea. Such a percentage rate of response depicts that a substantial number of participants commenced administration of ORS lately hence paving the way to persistent diarrheal illness. The current results were in disagreement with Osonwaet al (2016), where about 14(20.3%) revealed that they commenced administration of ORS/SSS when they noticed that their children showed signs of body weakness.

However, the majority of the respondents (70%) disagreed that ORS is enough to prevent diarrhea illness. This could be a result of the fact that they had other home remedies that would stop diarrheal than ORS hence leading to low utilization of ORS. Study results differ from Ogugua & Chiejina (2021), who agreed that 86% knew that L-ORS and Zinc are effective in reducing the severity and duration of diarrhea.

Environmental-related factors contributing to low utilization of oral rehydration solution among mothers of children below five years.

The study results indicated that the majority of the respondents (72%) were from villages and sometimes location also has an implication towards timely access to medication due to long distances which also hamper easy accessibility to ORS. The study results were respectively similarto Ucheoma (2016), where mothers who lived in rural areas were 0.77 less likely to provide their children with ORS during diarrhea episodes.

Stand still more than half of the respondents (68%) reported that the sources of water at home were boreholes. Therefore, limited access to safe water which is used in preparation for ORS had an impact on low uptake of ORS. Almost all the respondents (94%) had pit latrines at home. However, even though they had toilets at home the sanitation conditions could not stop persistent illness however much they could adequately give their children ORS. Study findings were inconsistent with Idowu et al (2020),where 369(90.0%) of them had at least one toilet with a water closet being the commonest type andavailable in 261 (63.7%)

Interestingly, half of the respondents (50%) noted that people in their community perceive ORS as not beneficial in the management of ORS. This could be attributed to the fact that an average number of participants had other remedies they used to treat diarrheal than ORS and they were most likelynot advised to use ORS. This is in line with Olufunmilola et al., (2020), addressing the Sub-Optimal Use of Oral Rehydration Solution for Childhood Diarrhea in the Tropics in rural areas of Nigeria revealed that relatives (70%) occasionally encouraged mothers to use ORS for their children since they perceived ORS to be beneficial.

Healthcare-related factors contributing to low utilization of oral rehydration solution.

Similarly, most of the respondents (36%) noted that home remedies were the best for diarrheal. Such evidence clarifies that they were most likely not to use ORS. The study results were consistent with Osonwa et al (2016), where 45(22.5%) of mothers admitted that they use traditionalmedicine/herbs to manage diarrhea in children more efficiently than ORS.

Findings also revealed that most of the respondents (58%) had last attended a health sensitization program with health workers towards the use of ORS in the management of diarrhea for 1-2 years. Therefore, due to scanty mobilization programs from health workers and poor health-seeking behaviors participants were most likely to be reluctant to use ORS. The study resultswere not in line with Nigatu & Alemayehu, (2015), where a majority (62.4%) of the mothers hadever sought sensitization on treatment from licensed medical practitioners for their children who s/he had diarrhea six months back.

To add on, among the notable participants who received information from health workers, most of the respondents (54.3%) reported that the quality of information they received from healthworkers was fairly adequate. In one or the other partially packaged information may hinder

uptake of ORS. Current findings vary with Greenland et al (2016), where (67.4%) of the caregiverspermitted that the information the health workers provided was not adequate to enable them to manage diarrheal with ORS.

CONCLUSION.

The study discovered that a significant number of study participants were reluctant to administer ORS to their children despite the fact they were cognizant of the impact of ORS on the management of diarrheal as only (40%) commenced administration of ORS a day after the onset symptomof diarrhea and beliefs towards theeffectiveness of ORS to manage diarrhea illness as (70%) disagreed that ORS was enough to manage diarrheal were the individual factors contributing to low utilization of oral rehydration solution

The study recognized that the location of the study participant's homes had an impact on the use ofORS as the majority of the respondents (72%) were from villages, with adequate access to safe water in regards to the preparation of ORS (68%) were using borehole water sources and influence of community member's perception towards ORS since (50%) noted that people in their community perceive ORS not beneficial in the management of ORS were the environmental factors contributing to low utilization of oral rehydration solution.

Participants preferred home remedies to ORS as noted by (36%), poor health-seeking behaviorssince (58%) had last attended a health sensitization program with health workers towards the use ofORS in the management of diarrhea for 1-2 years, and inadequate information from health workers towards the use of ORS as noted by (54.3%) were the health facility related factors contributing to low utilization of oral rehydration solution.

Generally, it was discovered that; participants were reluctant to administer ORS to their children on time, beliefs towards the effectiveness of ORS in managing diarrhea illness, the location of their homes had an impact on the use of ORS, inadequate access to safe water, influence of community member's perception towards ORS, participant's opted home remedies than ORS, poor health seeking behaviors, and inadequate information from health workers were the outstand-ing factors contributing to low utilization of oral rehydration solution.

RECOMMENDATIONS.

It is imperative to note that constant training and retraining of healthcare workers on current publichealth best practices should be done by the Ministry of Health, especially concerning the integrated management of childhood illnesses such as diarrhea, will help to improve counseling strategies and management of childhood diarrhea with ORS

The government of Uganda through the Ministry of Health should intensify its efforts to make sure that people have access to clean water and environmental hygiene.

Arua Regional Referral Hospital should strengthen the strategies and approaches to reach caregivers to increase the coverage of ORS use through intensive health education focusing on the benefits, early initiation, and preparation of ORS.

Further research should be conducted on factors influencing the utilization of home remedies in the management of diarrheal to come up with other strategies that will be used in bridging the researchgaps.

Even though caretakers had awareness about ORS, public health interventions on the importance of ORS usage for preventing dehydration should specifically target rural residents, population groups with lower wealth index, lower education covering proper feeding practices, increasing fluid consumption during diarrheal episodes, and evidence-based approaches of diarrhea treatment. This can be achieved through health campaigns, mass media, and during hospital consultations.

ACKNOWLEDGEMENT.

I am most grateful to the almighty God who made everything beautiful in his time.

My foremost gratitude goes to my supervisor Ms. Nabukenya Sharifah who through her advice,Criticisms, and corrections, contributed to the success of this work
I humbly acknowledge my father Mr. Zake Alu, my mother Ms. Lucy Alu, my brother Gerald Alu,and my sister Winnie Alu for their prayers, and moral and financial support towards me. May the almighty God bless you all.

Special thanks go to my friends Ssebugwawo Joel and Ogwang Ivan for their constant follow-up advice, and support, I found the strength to push on when all was extremely difficult.

LIST OF ABBREVIATIONS.

HMIS: Health management information systems
ICF: International Classification of Functioning
MoH: Ministry of Health
ORS: Oral Rehydration Solutions
ORT: Oral Rehydration Therapy
OPD: Outpatient Department
RHF: Recommended Home Fluids
SDG: Sustainable Development Goal
UAHEB: Uganda Allied Health Examinations Board
UBOS: Uganda Bureau of Statistics
UNICEF: United Nations Children's Fund
WHO: World Health Organization

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SJ Pediatrics and Child Health Africa
Vol. 1 No. 2 (2024): February 2024 issue
https://doi.org/10.51168/y94zb850
Original Article

Publisher Details.

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