The Research of Medical Science Review

Received: 16 October, 2024
Accepted: 16 November, 2024
Published: 23 November, 2024

ISSN: 3007-1208 | 3007-1216
Volume 2, Issue 3, 2024

EFFECT OF ReSoMal ON SEVERELY MALNOURISHED DIARRHOEAL IN PATIENTS AT LRH PEADS WARD

Faiza Akhtar

Human Nutrition, The University of Agriculture, Peshawar.
Ex-senior Lecturer at Riphah International University GGC.

faizaahmer89@gmail.com

DOI: https://doi.org/10.5281/zenodo.16947867

ABSTRACT

This study was conducted in the pediatric ward of Lady Reading Hospital (LRH) with the primary objective of understanding the treatment protocols for dehydrated children and assessing their nutritional status. The findings revealed that diarrhea was more prevalent in females, accounting for 69.6% of cases. Anthropometric data indicated that the mean age of registered children was 21 ± 23 months. Their mean weight at admission was 5.5 ± 2.41 kg, which increased to 5.7 ± 2.5 kg at discharge. The mean height was recorded at 66.6 ± 9.88 cm. Key risk factors for diarrhea included cessation of breastfeeding due to a subsequent pregnancy, reliance on formula milk as a substitute for breast milk, and the introduction of complementary feeding at inappropriate ages. The mean number of children per family was 3.61 ± 1.97. Notably, breastfeeding initiation was delayed, with mother's milk typically offered 18 hours after birth. Additionally, 91% of respondents reported administering ghutti *after birth. The mean volume of ReSoMal provided to dehydrated patients was 300 ± 268 ml. The study highlights the need for more scientifically robust research to better identify and correlate these risk factors with diarrheal prevalence and nutritional outcomes in pediatric patients.*

Keywords: *ReSoMal, Malnourished Diarrhoeal, LRH*

INTRODUCTION

Diarrhea remains a leading cause of morbidity and mortality among children in developing countries, significantly impacting their nutritional and overall health status. This study was conducted in the pediatric ward of Lady Reading Hospital (LRH) to evaluate the management protocols for dehydrated children and assess their nutritional profiles.

Literature shows that sanitation and hygiene of the whole family generally and mother specially have direct association with the development or diarrhoea in under 5 year of Children. Diarrhoea playsprominent role in malnutrition. Malnourished children of unable to afford the episode of diarrhea. According to National Nutritional Survey (NNS) 2011 in Pakistan 43.7 percent children <5 are stunted and 15.1% are wasted. 31.5 percent of the children were underweight.

Diarrhoea represents a significant burden on the health system, the household, and the nutritional status of children. (Bateman and McGahey 2001). Diarrhoea is the second leadingkiller of children wider the age of five, accounting for approximately 15% of under-five child deaths worldwide, or almost two million deaths annually. (WHO 2003).

Diarrhoea (from the Greek Stappota meaning "flowing through"), also spelled diarrhoea. is the

condition of having three or more loose or liquid bowel movements in a 24-hour period. The loss of fluids through diarrhoea can cause dehydration and electrolyte imbalances. Diarrhoea is defined by the World Health Organization as having 3 or more loose or liquid stools per day, or as having more stools than is normal for that person. Diarrhoea is the passage of loose or liquid stools more frequently than is normal for the individual. It is primarily a symptom of gastrointestinal infection. Diarrhoea due to infection may last a few days, or several weeks, as in persistent diarrhoea. Severe diarrhoea may be life threatening due to fluid loss in watery diarrhoea, particularly in infants and young children, the malnourished and people with impaired immunity. The impact of repeated or persistent diarrhoea on nutrition and the effect of malnutrition on susceptibility to infectious diarrhoea can be linked in a vicious cycle amongst children, especially in developing countries.

According to WHO (2003) if an episode of diarrhoea lasts less than 14 days. it is acute diarrhoea. Acute watery diarrhoea causes dehydration and contributes to malnutrition. The death of a child with acute diarrhoea is usually due to dehydration. If the diarrhea lasts 14 days or more, it is persistent diarrhoea. Up to 20% of episodes of diarrhea become persistent. Persistent diarrhea often causes nutritional problems, creating the risk of malnutrition and serious non-intestinal infection. Dehydration also occurs. Other symptoms of chronic or persistent diarrhoea are syndrome, acute, recurrent or chronic intestinal infections. chronic intestinal inflammation (ulcerative colitis and Crohn's disease). Chronic pancreatitis which produces fatty stools, laxatives, intolerance, improper diet (consumption of too much alcohol, coffee or sweets), metabolic disorders such as diabetes and thyrotoxicosis, intolerance to gluten (wheat protein). Diarrhoea with blood in the stool — with or without mucus — is called dysentery. Dysentery is very dangerous because of its ability to lead to anorexia, rapid weight loss, and damage to the intestinal mucosa. Another danger is sepsis. Children who are malnourished suffer much more; in turn, diarrhoea weakens children and put the child at the risk of mortality. For this purpose, ReSoMal is a powder for the preparation of an oral rehydration solution (ORS) exclusively for people suffering from severe acute malnutrition. The dilemma is that severe malnourished children are deficient for potassium and ORS have high level of sodium than potassium, where specially designed ReSoMal have high content of potassium then sodium.It must be used under medical supervision in therapeutic feeding centers. Seriously malnourished children commonly suffer from a deficiency of potassium and various other mineral deficiencies, as well as from an abnormally high level of sodium. In the event of rehydration, it is therefore necessary to give them a ReSoMal containing less sodium, more potassium and more magnesium, zinc and copper.

Study was designed to know the ReSoMal protocols at peads ward of the lady reading hospital Peshawar for dehydrated and non-dehydrated children.

OBJECTIVES

The overall objective of the internship was an exposure to WHO protocol for the management of severe malnourished children.

Specific objectives

The specific objectives of the internship were to know;

- The assessment tool of the nutritional status of the malnourished children i.e. Anthropometry, biochemical, clinical and dietary.
- The correct measurement of weight, height/length, MUAC, OFC
- Calculation and interpretation of z-score.
- Classification of diarrhoeal patients.
- The sign and symptoms of dehydration.
- Health education session with parents/caregiver of severe malnourished children.

LITERATURE REVIEW

Abel *et al*., (2011) studied themortality of children with Severe Acute Malnutrition (sAND in inpatient set-ups in sub-Saharan Africa. Investigations were made on the prevalence and effect of diarrhoea and HIV infection on inpatient treatment outcome of children with complicated SAM. A cohort of 430 children aged 6-59 months old with complicated

SAM admitted to Zambia University Teaching Hospital's stabilization center from August to December 2009 were followed. Data on nutritional status, sociodemographic factors, and admission medical conditions were collected up on enrolment. T-test and chi-square tests were used to compare difference in mean or percentage values. Logistic regression was used to assess risk of mortality by admission characteristics. Majority 55.3% (238/430) were boys and remaining were girls. The median age of the cohort was 17 months (inter-quartile range, 1QR 12-22). Among the children. 68.9% (295/428) had edema at admission. The majority of the children. 67.3% (261/388), presented with diarrhoea; 38.9% (162/420) tested HIV positive; and 40.5% (174/430) of the children died. The median Length of stay of the cohort was 9 days (IQR, 5-14 days); 30.6% (53/173) of the death occurred within 48 hours of admission. Children with diarrhoea on admission had two and half times higher odds of mortality than those without diarrhoea; Adjusted OR = 2.5 (95% CI 1.50-4.09, P < 0.001). The odds of mortality for children with HIV infection was higher than children without HIV infection; Adjusted OR = 1.6 (95% CI 0.99-2.48 P = 0.5). Diarrhoea is a major cause of complication in children with severe acute malnutrition. Under the current standard management approach, diarrhoea in children with SAM was found to increase their odds of death substantially irrespective of other factors.

Alam N. H.et of, (2003) reported the efficacy, development of over hydration, and correction of electrolyte disturbances of severely malnourished children with acute diarrhoea using a modified oral rehydration solution for malnourished children (termed ReSoMaL and recommended by the World Health Organization W110) and were compared with standard WHO-oral rehydration solution (ORS). Children age 6 to 36 months with severe malnutrition and acute watery diarrhoea were randomly classified to ReSoMaL (n=65) or standard WHO-ORS (n=65) group. Major outcome measures included the number of children who developed over hydration and the number who corrected hypokalemia. The numbers of children who developed overhydration were not significantly different (ReSoMal vs. WHO-ORS, 5% vs. 12%, P = .2). ReSoMal corrected basal hypokalemia in a greater proportion of children by 24 hour (36% vs. 5%, P = .0006) and 48 hours (46% vs. 16%, P=.004) compared with WHO-ORS. More children on ReSoMal than WHO-ORS remained hyponatremic at 48 hours (29% vs. 10%, P-.017). three children in the ReSoMal group developed severe hyponatremia by 24 hours, with one experiencing hyponatremic convulsions (serum sodium, 108 mmol/L). in conclusion it can be said that ReSoMal has a large beneficial effect on potassium status compared with standard ORS. However, ReSoMal therapy may result in symptomatic hyponatremia and seizures in patients with severe diarrhea.

Bhanacharya S. K. et al., (1984) determined the safety of 2 oral rehydration solutions (ORS) containing 60 and 90 mEq/1 of sodium. They evaluated in 50 children with mild to moderate dehydration secondary to noncholera diarrhoea. Hypernatremia developed in 1 patient (3.7%) on high sodium formula. There was no significant difference in the risk of hypematremia and hyponatremia in both groups. Three patients (6.1%) showed hypokalemia in first 24 hours after oral rehydration was initiated, while this data confirmed that ORS containing 90 mEq/1 of sodium is safe, and an increase in potassium content should be considered.

D.R. Nalin et al., (1980) studied that oral rehydration solutions with 90 ntEq/l Na and 20 mEq/L K used in the treatment of acute watery infantile diarrhoea arouse fear of hypematremia and hypokalemia, because fecal Na and K in infantile diarrhoea differ from adult diarrhoea, upon which these formulas are based. Thus we compared ORS with "high" vs. "low" Na or K in 84 infants aged 3 to 15 months with dehydration due to acute watery diarrhea. In randomized, double-blind trials the ORS contained (rnmo1/1): glucose, 110; HCO3, 30; K, 20; Na, 60 (low) or 90 (high) or, in the second trial, the "high Na" formula plus 20 vs. 35 mEq/1 K and extra oral water, given in the ratio of two bottles (240 ml) of ORS followed by one bottle of plain water (the 2:1 regimen). Net absorption was measured using balance technique. Oral therapy (240 ml/hour, 37°C) was given until skin elasticity and other signs of hydration status were normal; then infants drank dilute milk formula. Serial weights, clinical signs, plasma proteins, electrolytes, urea, and

hematocrits confirmed rehydration. Of 84 infants, 83 needed no intravenous fluids. All groups' water absorption and mean fecal Na (54) and K (33 inEq/1) were similar. The critical first six hours' mean Na absorption was significantly lower in the low Na group, and hyponatremia was commoner, lasting up to 1 week. A few high Na group infants receiving no extra oral water had transient mild asymptomatic hypernatremia. Mean K absorption from 0 to 6 hours (mEq) was significantly higher in the high K group, which had no hypokalemia after oral rehydration; in contrast. 13% of the low K infants had hypokalemia. High Na ORS used in the 2:1 regimen with extra plain water causes no electrolyte abnormalities, yields better Na absorption and is usable in all diarrheas and all age groups; high K ORS corrects K deficits better than low K ORS. In conclusion it can be that an increase in the K concentration above that in the currently recommended ORS formula needs to be considered. Some infants treated with the current formula can benefit from K-rich foods or K-supplements during and after convalescence.

Islam er a/.. (2004) reported that recently, a new oral rehydration solution (ORS) called ReSoMal has been designed specifically for children with severe malnutrition. The aim of this study was to assess the effect of malnutrition on renal and intestinal responses to dehydration, and to compare intestinal water and electrolyte absorption from ReSoMal and from the standard World Health Organization-Oral Rehydration Solution (WHO-ORS). So for this purpose, malnutrition was achieved in a rabbit model by feeding the animals daily for 30 days with half the amount of food that a well-nourished group of control animals had consumed on the previous day. Dehydration was achieved by water deprivation for 46 hours in both control and malnourished rabbits. At 46 hours, dehydration was assessed by changes in body weight, urinary volume and osmolarity, and blood area nitrogen concentration. At that time active colonic and jejuna] mucosal electrolyte transport in Ussing chambers was also measured. Small intestinal absorption of water, sodium, and potassium was measured in vivo during intestinal perfusion of the two ORSs and in vitro by measurement of mucosal electrogenic glucose-stimulated sodium absorption across intestinal patches. So result was compared to control (C), well-nourished but dehydrated (C+D) animals lost 12% of their body weight, with an 87% reduction in urine volume, a 110% increase in urine osmolality, and a 94% increase in blood area nitrogen. In the colon of C+D animals, short-circuit current (Ise) and net sodium Trans epithelial flux (JNa^+ net) were increased. Almost identical results were obtained in malnourished and dehydrated (M+D) animals. In the jejunum, net in vivo absorption of water (JWater), sodium (JNa^+), and potassium (JK^+) were increased during standard ORS infusion in both dehydrated groups. During ReSoMal infusion, water absorption was the same as seen with WHO-ORS, but sodium absorption was reduced, and potassium obsorbtion was increased in both well-nourished and malnourished dehydrated animals.in vitro, compared to controls, the glucose-stimulated short-circuit current (Abe). JNa net and G was increased in both dehydrated groups. So it was concluded that during experimental dehydration, the kidney and large intestine salvage water and electrolytes, thus reducing the consequences of dehydration. These findings indicate that jejuna] water absorption from ReSoMal and WHO-ORS is increased during dehydration, but ReSoMal allows for less sodium and more potassium to be absorbed, both in well-nourished and malnourished dehydrated rabbits.

Karrar Z. A. et al., (1987) examined the fifty-three young children with acute diarrhoea included in a hospital-based, double-blind trial of loperamide at two dose levels (0.4 and 0.8 mg/kg/day), given with standard oral rehydration therapy versus placebo plus oral rehydration therapy. The differences in the overall meaner), rate were significant (P less than 0.05), the fastest being in the group given 0.8 mg/kg and slowest in the placebo group. Comparison between weights on admission and weights by day 3 showed that more children in the loperamide groups gained weight than in the placebo group (P less than 0.05). No serious side effects of loperamide were observed. The drug was withdrawn in one child because of excessive lethargy and sleep. The results indicate that loperamide in the doses employed is safe and may be a useful adjunct to oral rehydration in certain children.

Mathuram en al., (2010) repotted that discovery of intestinal sodium-glucose transport was the basis for development of oral rehydration solution, and

was hailed as potentially the most important medical advance of the 20th century. Before widespread use of oral rehydration solution, treatment for diarrhoea was restricted to intravenous fluid replacement, for which patients had to go to a health-care facility to access appropriate equipment. These facilities were usually neither available nor reasonable to use in the resource-poor settings most affected by diarrhoea. Use of oral rehydration solution has stagnated, despite being effective, inexpensive, and widely available. Thus, diarrhoea continues to be a leading cause of child death with consistent mortality rates during the past 5 years. New methods for prevention, management and treatment of diarrhoea—including an improved oral rehydration formulation. zinc supplementation, and rotavirus-make now the time to revitalize efforts to reduce diarrhoea morality worldwide.

Miguel *et al.,* (2005) observed that Maw than one billion diarrhoea episodes occur every year among children younger than 5 years of age in socioeconomically developing countries causing 2 to 2.5 million deaths. More than twenty viral, bacterial and parasitic enteropathogens are currently associated wills acute diarrhoea. Rotavh: and diarrhocagenic Escherichia coli are the most common pathogens responsible for acute diarrhoea episodes in children; *Shigella spp, Salmonella spp, Campylobacter jefunitcoli, Vibrio cholerae, Aeromonas spp, and Plesiomonas spp.* occur more commonly in poorer areas and infections caused by protozoa and helminthes occur mainly in areas where environmental sanitation is significantly deteriorated. Initial clinical assessment of a child with diarrhoea should focus on obtaining an accurate evaluation of hydration and nutritional status. Assessment of stool characteristics (e.g. liquid non-bloody stools vs. dysenteric or bloody stools) is a key feature in determining potential pathogens causing an acute diarrhoea episode. The major therapeutic intervention for all individuals with diarrhoea consists of fluid and electrolyte therapy. When antimicrobial therapy is appropriate, selection of a specific agent should be made based upon susceptibility patterns of the pathogen or information on local susceptibility patterns. Preventive measures include careful personal hygiene, especially promotion of hand washing. Immunizations currently or soon to be available for Salmonella serotype Typhi, cholera prevention, and rotavirus were discussed.

Seokyung Hahn *et al.,* (2001) compared the reduced osmolar oral rehydration solution with standard World Health Organization oral rehydration solution in children with acute diarrhoea. Prospective clinical study included2397 randomized patients. The primary outcome was unscheduled intravenous infusion; secondary outcomes were stool output, vomiting, and hyponatremia. In a meta-analysis of nine trials for the primary outcome, reduced osmolarity rehydration solution was associated with fewer unscheduled intravenous infusions compared with standard WHO rehydration solution (odds ratio 0.61, 95% confidence interval 0.47 to 0.81). Three trials reported that no patients required unscheduled intravenous infusion. Trials reporting secondary outcomes suggested that in the reduced osmolarity rehydration solutions group, stool output was lower (standardized mean difference in the log scale —0.214 (95% confidence interval —0.305 to —0.123: 13 trials) and vomiting was less frequent (odds ratio 0.71, 0.55 to 0.92; six trials). Six trials sought presence presence of hyponatremia, with events in three studies, but no significant difference between the two arms. So it is concluded that in children admitted to hospital with dehydration associated with diarrhea, reduced osmolarity rehydration solution is associated with reduced need for unscheduled intravenous infusions, lower stool volume, and less vomiting compared with standard WHO rehydration solution

Tahmeed et al., (1999) reported that severely malnourished children have high mortality rates. Death commonly occurs during the first 48 It after hospital admission, and has been attributed to faulty case-management. Therefore, a standardized protocol was developed for acute-phase treatment of children w ith severe malnutrition and diarrhoea, with the aim of reducing mortality. So comparison was made between severely malnourished children with diarrhoea aged 0-5 years managed by non-protocol conventional treatment, and those treated by our standardized protocol that included slow rehydration with an emphasis on oral rehydration. The standardized-protocol group included children

admitted to the 1CDDR, B Hospital, Dhaka between Jan 1, 1997, and June 30, 1997, while those admitted between Jan 1, 1996, and June 30, 1996, before the protocol was implemented, were the non-protocol group. Characteristics on admission of children on standardized protocol (n-334) and non-protocol children (n=293) were similar except that more children on standardized protocol had edema, acidosis, and Vibrio cholerae isolated from stools. 199 (59.9%) of children on standardized protocol were successfully rehydrated with oral rehydration solution, compared with 85 (29%) in the nonprotocol group ($p<0.0001$). Use of expensive antibiotics was less frequent in children on standardized protocol than in the other group ($p<0.0001$). Children on standardized protocol had fewer episodes of hypoglycemia than non-protocol children (15 vs. 30, $p=0.005$). 49 (17%) of children on nonprotocol treatment died, compared with 30 (9%) children on standardized protocol (odds ratio for mortality, 0.49, 95% CI 0.3-0.8, $p=0.003$),In conclusion it can be said when compared with non-protocol management, our standardized protocol resulted in fewer episodes of hypoglycemia, less need for intravenous fluids, and a 47% reduction M mortality. This standardized protocol should be considered in all children with diarrhoea and severe malnutrition.

METHODOLOGY

This cross-sectional study was conducted in the pediatric ward of Lady Reading Hospital (LRH). The study included children admitted with dehydration, with data collected on their demographic, clinical, and nutritional status. Anthropometric measurements, including age, weight, and height, were recorded at admission and discharge.

The risk factors for diarrhea were assessed through structured interviews with caregivers, focusing on breastfeeding practices, complementary feeding introduction, and the use of formula milk. Additional information, such as family size, breastfeeding initiation times, and cultural practices like the administration of *ghutti* after birth, was also gathered.

The study analyzed the mean age, weight, and height of the children, along with other variables like family size and the amount of ReSoMal administered for rehydration. Statistical analysis was performed to identify patterns and correlations between risk factors and clinical outcomes. Ethical approval was obtained, and informed consent was secured from all participants' guardians.

SELECTION OF INSTITUTE

As internship is the requirement of the degree, so it is the responsibility of department to identify host institutes for placement of students. For this purpose, Department of Human Nutrition enlist all the available host institutes including Govt. and private organizations. I was placed at the Lady reading hospital for my internship. Lady reading hospital (LRH) was established in 1924 for general treatment of population. LRH have now established nutritional rehabilitation unit (NRU) for providing of in-patient care to severe malnourished children.

SELECTION OF TOPIC &QUESTIONNAIRE DESIGNING

After one week of placement which was orientation week about the setup of NRU ward, a topic was discussed with my co-supervisor from host institute and supervisor from my home department. After selection of the topic questionnaire was designed with the coordination of my both advisors. Questionnaire was contained about personal information, demographic information, nutritional status assessment, dehydration status assessment etc. Attached in Annex-1.

INCLUSION CRITERIA

Under 5 year of children who got admission in NRU (Nutritional Rehabilitation Unit) after assessment of nutritional status were reassess for their diarrhea and dehydration status. Those who came with diarrhea and dehydration were included for this report.

ANTHROPOMETRY

Anthropometry includes weight, height, MUAC, head circumference (OFC) were recorded. Z-score weight for height was also calculated.

CLINICAL

Clinical assessment includes history of diarrhoea and sign and symptoms of dehydration i.e. hypothermia, irritability, frequency of urine, its consistency etc, and to check the status of

dehydration that either the child is dehydrated or non dehydrated.

DIETARY ASSESSMENT

24-hour dietary recall method was used for assessing the dietary adequacy and dietary intake of the patients.

RESULTS

Data was analyzed by SPSS-16 for the demographic risk factors, anthropometry, clinical and dietary intake. Table 1 shows gender wise distribution of registered diarrheal patients. Prevalence was more in female i.e 69.6%. Which may be because of less attention of them other?

Table 1. Demographic parameter

S. No	Parameter	% Prevalence
1	Sex Male Female	 30.4 69.6
2	Education level Primary Middle Higher Illiterate Education level of mother Middle Illiterate	 4.3 39.1 8.7 47.8 39.1 91.3
3	Family type Nuclear Joint	 34.8 65.2
4	Displaced people Yes No	 8.7 91.3

Table 2. shows some anthropometric measurement of children. The mean weight at admission was 5.5 kg, mean weight at discharge was 6 kg, and mean height was 67 cm, while mean age was 21 months. Improvement in weight shows good management in stabilization center.

Table 2. Anthropometric Data

S .No	Parameter	Mean = SD
1	Age in months	21.26=23.7
2	Weight Weight in kg at admission Weight in kg at discharge	 5.55= 2.4 5.79= 2.5
3	Height	66.65= 9.8

Table 3 (a) shows the frequency of the rusk factors for diarrheal disease. Maximum cases reported pregnancy the reason for stopping of breast milk which is a lading factor for malnutrition among under 5 year of children. Regarding other milk than mother, maximum of them reported formula milk, because lack of education. Table 3 (a) shows other risk factor i.e. complementary feeding age, complementary feeding food, etc. table 3 (b) shows that mother offered their milk after 18 hours of birth, in which most of the colostrum missed and child immunity system remain immature.

Table 3 (a). Risk Factor

S. No	Parameter	Frequency
2	Reason for stopping breast feeding	
	Digestion	1.0
	Fed till 2 years	3.0
	Insufficient	2.0
	Mother illness	2.0
	Not stopped	4.0
	Pregnancy	7.9
2	Other milk than mother milk after birth	1.0
	Buffalo's	4.0
	Cow's milk	1.0
	Formula & cow	3.0
	Formula & goat	3.0
	Formula	1.0
	Formula & cow	1.0
	Goat	1.0
	Goat's	1.0
	Insufficient	1.0
	Milk pack & Nido	2.0
	No	
3	Complementary feeding Age in months	17.4
	No complementary feeding	4.3
	3 months	4.3
	4 months	30.4
	6 months	13.0
	7 months	13.0
	8 months	13.0
	12 months	4.3
	24 months	
4	What was the first complementary feeding food?	4.0
	0	1.0
	Banana	3.0
	Biscuit	1.0
	Biscuits	4.0
	Bread	3.0
	Cereal	1.0
	Curry	1.0
	Custard	1.0
	Kheer	1.0
	Kicheri	3.0
	Roti	

Table 3 (b). Risk Factor

S.No	Parameter	Mean ± SD
1	Number of Children	3.61 ± 1.971
2	Time of breast Milk in hours after birth	18.83 ± 29.8
3	First of baby after birth	
	Breast milk	8.7%
	Ghutti	91.3%

The table 4 shows the clinical sign of admitted children. According to the table, edema was reported in 60.9% patients, where extremities were cold in 87% of the registered patients, 47% cases reported sunken eyes, dehydration in 4.0%, where as 22% have developed recurrent diarrhea and 78% reported chronic diarrhea.

Table 4. Clinical sign of diarrheal patients

S.No	Parameter	Mean ± SD
1	Edema at the time of admission Yes No	 60.9 39.1
2	Condition of eyes Normal Sunken	 52.2 47.8
3	Extremities Cold Normal	 87.0 13.0
4	Dehydrated Yes Non	 4.0 18.8
5	Diarrhea Chronic Recurrent	 78 22

The table 5 shows the mean and standard deviation of actual intake of CHO, protein, Fats, Kcal and ReSoMal

Table 5. Mean and standard deviation of actual intake of CHO, Proteins, Fats, Keal and ReSoMal.

S.No	Parameter	Mean ± SD
1	CHO	82.630 ± 45.4
2	Protein	13.0531 ± 7.6
3	Fats	30 .5939 ± 27.1
4	Actual intake of energy	614.147±275.7
5	ReSoMal	300.93±268.2

SUMMARY

Conclusion

This study highlights significant insights into the management of dehydration and the nutritional status of pediatric patients in the LRH pediatric ward. The findings indicate that diarrhea was more prevalent among female children (69.6%), with key anthropometric data showing a mean age of 21 ± 23 months and modest improvements in weight during hospitalization. Notable risk factors for diarrhea included cessation of breastfeeding due to subsequent pregnancies, reliance on formula milk as a substitute for breast milk, and inappropriate timing of complementary feeding introduction. Cultural practices, such as delayed initiation of breastfeeding (18 hours after birth) and the administration of *ghutti*, were also prevalent.

The average family size of 3.61 ± 1.97 and the mean amount of ReSoMal administered (300 ± 268 ml) underscore the contextual factors influencing the care of dehydrated children. While the study offers valuable insights, it underscores the need for more scientifically rigorous and comprehensive research to establish stronger correlations between identified risk factors and clinical outcomes. These findings can inform the development of improved intervention strategies to manage and prevent dehydration and its associated complications in pediatric populations.

ACHIEVEMENTS

Recording case history

Nutritional assessment by i.e. Anthropometric, biochemical, clinical and dietary method.

Preparation of therapeutic food and ReSoMal.
Planning of the diet.
Counseling of the patient caregiver about ReSoMal.
Health Education sessions with mother and caregiver.

Conclusions And Recommendations

Conclusions

Diarrhoea was prevailed highly in females.
Family planning was a considerable cause for malnutrition.
Ginuti was offered as first food after birth in maximum cases.
Mother milk was offered very late after birth.
High load of inpatient cases.
Improper use of rehydration solution for sever malnourished children in general wards of the hospitals

RECOMMENDATIONS

1. Health education about breast feeding, complementary food and type of complementary food at community level
2. Sanitation and hygiene by WASH programs.
3. Skilled staff in nutrition for NRU (Nutrition Rehabilitation Unit).

REFERENCES

Abel H Irena., Mwate Mwambaz., and Veronica Mulenga., Diarrhoea is a Major killer of children with severe Acute Malnutrition Admitted to Inpatient Set-up in usaka. *Nutrition Journal* 2011, 10:110 dui: I 0.1180/1475-2891-10- I 10.

D.R. Nalin., E. Harland., A. Ramlal., D. Swaby., J. McDonald., R. Gangarosa., M. Levine.. A. Akierman., M. Antoine., K. Mackenzie., B. Johnson., Comparison of low and high sodium and potassium content in oral rehydration solutions. The Journal of Pediatrics.1980.Volume 97, Issue 5, Pages 848-853.

Islam. Sulia., May, Michel., Alam, N. Hogue., Dossou, Fiore., Chowdhury, A. K. Azad.. Desjeux, Jehan-Francois., Water and Electrolyte Salvage in an Animal Model of Dehydration and Malnutrition. Journal of Pediatric Gastroenterology & Nutrition.2004.Volume 38 - Issue I - pp 27-33.

Mathuram Santosham MD., Aruna Chandran MD., Sean Fitzwater MHS Christa Fischer Walker MD., Abdullah FI Baqui DrPH., Robert Black MD., Progress and barriers for the control of diarrhocal disease. Lancet. 2010. Volume 376, Issue 9734, Pages 63-67.

Miguel O'Ryan MD., Valeria Prado MD., Larry K. Pickering MD., FAAP. A millennium update onpediatric diarrheal illness in the developing world. Pediatric Infections in Developing Countries.2005.Volume 16, Issue 2, Pages 125-136.

N H Alam., Jena D Hamadani., Nahrina Dewan., George J Fuchs., Efficacy and safety of a modified oral rehydration solution (ReSoMaL) in the treatment of severely malnourished children with watery diarrhea. The Journal of pediatrics. 003. olume: 143, Issue: 5, Pages: 614-619.

S K Bhattacharya., P Dutta., M K Bhattachaga., H N Mukherjee.. D Ducts., Efficiet & safety of glycine fortified oral rehydration solution in the treatment of acute dehydrating diarrhoea in children. The Indian journal of medical research. 984.Volume: 79, Pages: 96-102.

Hahn_ YaeJean Kim., Paul Garner., Reduced osmolarity oral rehydration s'cokYung solution fortreating dehydration due to diarrhoea in children.2001. 323 doi: 10.1136rbmj.323.7304.81.

Fahineed Ahmed PhD., Mohammad Ali MBBS. Mohammad M Ullah MBBS., Ireen A Choudhury MBBS., Mohammad E Hague MBBS., Mohammad A Salam MBBS., Golam H Rabbani PhD., Robert M Suskind Prof MD., George J Fuchs Prof MD., Mortality in severelymalnourished children with diarrhoea and use of a standardized management protocol.1999.Clinical Sciences Division, ICDDR, B: Centre for Health and Population Research, Dhaka, Bangladesh. Department of pediatrics USA.

Z A Karrar., M A Abdulla., J B Moody., S B Macfarlane., M Al Bwardy., R G Hendrickse., Loperamide in acute diarrhoea in childhood: results of a double blind, placebo controlled clinical trial. Annals of Tropical Paediatrics. 1987. Volume: 7, Issue: 2, Pages: 122-127.