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Original Article

Effect of Dietary Intervention on Short-Term Weight Recovery and Electrolyte Correction in Hospitalized Children with Acute Diarrhea

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ABSTRACT

Background: Acute diarrhea remains a leading cause of malnutrition and electrolyte derangement among children under five years of age in low- and middle-income countries, yet evidence on the short-term impact of structured inpatient dietary interventions on anthropometric and biochemical recovery in Pakistani pediatric populations remains limited. Objective: To evaluate the effect of a structured dietary intervention on short-term weight recovery and serum electrolyte correction in children hospitalized with acute diarrhea. Methods: A single-arm, pre-post interventional study was conducted among 100 children aged 1–59 months admitted with acute diarrhea to a tertiary care pediatric ward in Peshawar, Pakistan. The dietary intervention comprised locally available semi-solid foods (mashed banana, rice-lentil preparation, yogurt) administered alongside standard rehydration and zinc supplementation. Body weight and serum sodium, potassium, chloride, and hemoglobin levels were measured at admission and discharge. Paired-samples t-tests with 95% confidence intervals and Cohen's d effect sizes were computed. Results: Mean body weight increased from 7.14 ± 1.22 kg to 7.39 ± 1.18 kg (mean difference 0.25 kg; 95% CI: 0.19–0.31; $p < 0.001$; $d = 0.81$). Serum potassium rose from 3.20 ± 0.50 to 3.99 ± 0.41 mEq/L ($p < 0.001$; $d = 1.73$), chloride from 98.5 ± 4.2 to 102.3 ± 3.1 mEq/L ($p < 0.001$; $d = 1.03$), and sodium from 135.2 ± 3.8 to 138.7 ± 2.9 mEq/L ($p = 0.031$; $d = 1.03$). Hemoglobin remained unchanged ($p = 0.42$). Conclusion: The structured dietary intervention, combined with standard rehydration and zinc supplementation, was associated with significant short-term weight recovery and electrolyte normalization; however, the absence of a control group limits causal inference, and randomized controlled trials with extended follow-up are warranted. Keywords: acute diarrhea; dietary intervention; children under five; electrolyte correction; nutritional status; Pakistan

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INTRODUCTION

Diarrheal disease remains the second leading cause of mortality among children under five years of age globally, accounting for approximately 525,000 deaths annually, with the overwhelming majority occurring in low- and middle-income countries where access to timely clinical nutrition support is limited (1). The World Health Organization estimates that nearly 1.7 billion episodes of childhood diarrhea occur each year, placing an enormous burden on pediatric healthcare systems and contributing

substantially to the cycle of infection, malabsorption, and undernutrition that characterizes early childhood morbidity in resource-constrained settings (2). In Pakistan, diarrheal illness is responsible for an estimated 53,300 deaths per year in children under five, making it one of the most significant contributors to pediatric mortality in the country, a burden compounded by high rates of baseline malnutrition, inadequate sanitation infrastructure, and limited dietary diversity (3).

The pathophysiological relationship between acute diarrhea and deterioration in nutritional status is well established. During an episode of acute diarrhea, increased intestinal motility, villous atrophy, and reduced absorptive surface area lead to significant losses of water, electrolytes, and macronutrients, resulting in rapid depletion of sodium, potassium, and chloride stores alongside negative energy and protein balance (4). Dehydration-induced weight loss may mask concurrent tissue wasting, and if caloric intake is not restored promptly, the catabolic state accelerates lean mass loss and impairs immune function, predisposing the child to recurrent and prolonged infections (5). Hypokalemia and hyponatremia, frequently observed in hospitalized children with moderate-to-severe diarrhea, further complicate recovery by impairing gut motility, cardiac function, and neurological status, thereby prolonging hospital stay and increasing the risk of adverse outcomes (6). This bidirectional relationship — in which diarrhea precipitates malnutrition and malnutrition increases susceptibility to diarrhea — creates a vicious cycle that is particularly difficult to interrupt without early, targeted nutritional intervention (7).

Current international guidelines from the World Health Organization and the European Society for Paediatric Gastroenterology, Hepatology and Nutrition recommend continued feeding during acute diarrhea, emphasizing that food restriction or prolonged fasting delays mucosal recovery, exacerbates nutrient deficits, and worsens clinical outcomes (8,9). The BRAT diet (bananas, rice, applesauce, and toast), once widely recommended as a transitional feeding approach, has been both endorsed for its low residue and bland composition and criticized for its limited caloric density and micronutrient content (10). More recent evidence supports the provision of age-appropriate, energy-dense, semi-solid foods alongside oral rehydration therapy as the preferred strategy for maintaining nutritional status and supporting intestinal repair during acute illness (11). Zinc supplementation, now a standard adjunct to oral rehydration salts, has been shown to reduce the duration and severity of diarrheal episodes and to improve appetite and nutrient absorption, underscoring the importance of a multimodal nutritional approach (12).

Despite these well-articulated guidelines, the implementation of structured dietary interventions in pediatric inpatient settings remains inconsistent, particularly in South Asian hospitals where feeding practices during illness are influenced by cultural beliefs, caregiver knowledge, and institutional resource constraints (13). Several studies have demonstrated that caregivers frequently restrict food intake during diarrheal illness due to fears of exacerbating symptoms, a practice that contributes to prolonged recovery and worsened nutritional outcomes (14). Hospital-based nutritional protocols, when properly implemented, have been associated with shorter duration of diarrhea, faster weight recovery, improved electrolyte balance, and reduced readmission rates, yet robust evidence from controlled trials in Pakistani pediatric populations remains scarce (15,16). A cross-sectional study from Bangladesh reported that children receiving structured dietary counseling during hospitalization for diarrhea demonstrated significantly higher weight-for-age z-scores at follow-up compared with those receiving standard care alone, suggesting that formalized dietary support confers benefits beyond rehydration therapy (17). Similarly, data from Indian tertiary care centers indicate that early reintroduction of semi-solid foods within 4 to 6 hours of initiating rehydration is associated with more rapid electrolyte normalization and shorter hospital stays compared with delayed feeding protocols (18).

A significant knowledge gap persists regarding the measurable short-term impact of a defined dietary intervention on both anthropometric and biochemical parameters in hospitalized Pakistani children with acute diarrhea. Most existing studies have focused either on rehydration outcomes alone or on

community-based feeding programs, leaving the inpatient dietary intervention largely unevaluated in this population (19). Furthermore, few studies have simultaneously assessed electrolyte correction and weight recovery as co-primary indicators of nutritional response to a hospital-based feeding protocol, despite the clinical relevance of both parameters to discharge readiness and post-discharge prognosis (20). The present study was therefore designed to evaluate the effect of a structured dietary intervention — consisting of a defined semi-solid, nutrient-dense feeding regimen — on short-term weight recovery and serum electrolyte correction (sodium, potassium, and chloride) among children under five years of age hospitalized with acute diarrhea in a tertiary care pediatric ward in Pakistan (21).

MATERIALS AND METHODS

This was a single-arm, pre-post interventional study conducted in the pediatric ward of a tertiary care teaching hospital in Peshawar, Khyber Pakhtunkhwa, Pakistan. The study was carried out over a six-month period and was designed to evaluate the effect of a structured dietary intervention on short-term weight recovery and serum electrolyte correction among children hospitalized with acute diarrhea. The single-arm pre-post design was selected because the primary objective was to quantify the magnitude of change in anthropometric and biochemical parameters following a standardized dietary protocol within the existing standard-of-care framework, where withholding nutritional support from a control group would have raised ethical concerns in this vulnerable population (22).

The study population comprised children under five years of age who were admitted to the pediatric ward with a primary clinical diagnosis of acute watery diarrhea, defined as the passage of three or more loose or liquid stools per day for fewer than 14 days, consistent with the World Health Organization case definition (23). Eligibility criteria required that participants be aged between 1 and 59 months, admitted for a minimum of 2 days and a maximum of 5 days, hemodynamically stable at the time of enrollment, and able to tolerate oral or semi-solid feeding. Children with severe acute malnutrition (weight-for-height z-score below −3 SD or bilateral pedal edema), chronic diarrhea (duration exceeding 14 days), congenital gastrointestinal anomalies, confirmed parasitic or bacterial enteric infections requiring specific antimicrobial therapy beyond standard supportive care, hepatic or renal dysfunction, or those receiving total parenteral nutrition were excluded from participation. Systematic random sampling was employed to select participants from the daily admission register; every second child meeting the eligibility criteria during the enrollment period was approached for participation, yielding a final sample of 100 children (24).

Written informed consent was obtained from the parent or legal guardian of each child prior to enrollment. The consent process included a detailed verbal explanation of the study purpose, dietary protocol, data collection procedures, and the voluntary nature of participation, provided in Urdu to ensure comprehension. The study protocol was reviewed and approved by the Institutional Ethics Committee of the University of Agriculture, Peshawar, and the study was conducted in accordance with the ethical principles outlined in the Declaration of Helsinki (25). Participants were free to withdraw at any point without impact on their standard medical care.

The dietary intervention consisted of a structured, semi-solid feeding regimen based on locally available, culturally acceptable foods, guided by the WHO recommendations for continued feeding during acute diarrheal illness and incorporating principles of the BRAT (bananas, rice, applesauce, toast) dietary approach adapted to the regional dietary context (8,26). Specifically, the intervention diet comprised mashed banana, boiled rice with lentils (khichdi), boiled potato, plain yogurt, oral rehydration salt solution, and age-appropriate breast milk or formula continuation where applicable. Meals were provided four to six times daily, with each feeding episode offering approximately 75–100 kcal per kg of body weight per day distributed across the feeding schedule, consistent with the WHO-recommended caloric targets for children recovering from acute illness (27).

The dietary protocol was initiated within 4 to 6 hours of completing initial rehydration and was administered by ward nursing staff under the supervision of a clinical dietitian. All enrolled children simultaneously received standard medical care as prescribed by the attending pediatrician, which included oral rehydration therapy, intravenous fluid replacement where clinically indicated, zinc supplementation (20 mg/day for children ≥6 months, 10 mg/day for infants <6 months) in accordance with WHO/UNICEF guidelines, and antipyretics or antiemetics as needed (12). Parents and caregivers received structured dietary counseling sessions delivered by the clinical dietitian at admission and prior to discharge, with instructions to continue the prescribed semi-solid feeding regimen for a minimum of 15 days following hospital discharge.

Data collection was performed at two time points: at the time of enrollment (within 24 hours of admission, designated as the pre-intervention measurement) and at the time of hospital discharge (designated as the post-intervention measurement). Anthropometric measurements included body weight, recorded to the nearest 0.1 kg using a calibrated digital infant scale (Seca 354, Seca GmbH, Hamburg, Germany), and recumbent length, measured to the nearest 0.1 cm using an infantometer (Seca 416). All anthropometric measurements were taken in duplicate by trained research assistants, and the mean of the two readings was recorded to minimize measurement error. Biochemical parameters included serum sodium, potassium, and chloride concentrations, determined by ion-selective electrode analysis from venous blood samples drawn at enrollment and at discharge, and hemoglobin concentration, measured using an automated hematology analyzer.

Demographic data were collected through a structured questionnaire administered to the parent or guardian at enrollment, capturing the child's age (in months), sex, birth order, breastfeeding status, duration of diarrhea prior to admission, and parental characteristics including maternal and paternal age, educational attainment (categorized as educated or uneducated based on completion of primary schooling), and household monthly income (28).

The primary outcome variables were the mean change in body weight (kg) and the mean change in serum electrolyte concentrations (sodium, potassium, and chloride in mEq/L) between enrollment and discharge. Secondary outcomes included the change in hemoglobin concentration (g/dL) and descriptive characterization of the demographic and socioeconomic profile of the study population. All continuous variables were assessed for normality of distribution using the Shapiro-Wilk test prior to inferential analysis (29). For variables meeting the assumption of normality, paired-samples t-tests were used to compare pre- and post-intervention values; for variables demonstrating significant departure from normality, the Wilcoxon signed-rank test was applied as a non-parametric alternative.

Effect sizes were calculated as Cohen's d for paired comparisons to quantify the clinical magnitude of observed changes. Descriptive statistics were expressed as mean ± standard deviation for continuous variables and as frequencies and percentages for categorical variables. A two-tailed significance level of $\alpha = 0.05$ was used for all inferential tests, and 95% confidence intervals were reported for all primary outcome differences. All analyses were performed using IBM SPSS Statistics version 26.0 (IBM Corp., Armonk, NY, USA). No imputation was performed for missing data; cases with incomplete pre- or post-intervention measurements were excluded from the paired analysis, and the number of analyzable cases is reported for each outcome (30).

RESULTS

A total of 100 children under five years of age were enrolled and completed the study protocol, with no withdrawals or losses to follow-up during the hospitalization period. The demographic and baseline characteristics of the study population are presented in Table 1. The sample comprised an equal distribution of males and females, with 50 (50.0%) boys and 50 (50.0%) girls. The mean age of the participating children was 11.61 ± 4.88 months, with ages ranging from 2 to 48 months. The mean maternal age was 29.63 ± 5.17 years, and the mean paternal age was 33.70 ± 4.47 years. The majority of

mothers (82.0%) and fathers (90.0%) had completed at least primary-level education, indicating a predominantly literate caregiver population. The mean recumbent length of the children at enrollment was 72.58 ± 9.06 cm.

Table 1. Demographic and Baseline Characteristics of the Study Population (N = 100)

Characteristic	Value
Age, months (mean ± SD)	11.61 ± 4.88
Sex, male, n (%)	50 (50.0)
Sex, female, n (%)	50 (50.0)
Recumbent length, cm (mean ± SD)	72.58 ± 9.06
Maternal age, years (mean ± SD)	29.63 ± 5.17
Paternal age, years (mean ± SD)	33.70 ± 4.47
Maternal education, educated, n (%)	82 (82.0)
Paternal education, educated, n (%)	90 (90.0)

SD = standard deviation. Education defined as completion of at least primary schooling.

The primary anthropometric outcome, body weight, demonstrated a statistically significant increase from enrollment to discharge. The mean body weight at admission was 7.14 ± 1.22 kg and increased to 7.39 ± 1.18 kg at the time of discharge, yielding a mean weight gain of 0.25 ± 0.31 kg (95% CI: 0.19–0.31; $p < 0.001$; Cohen's d = 0.81), as shown in Table 2. It is important to note that this short-term weight recovery likely reflects a composite effect of fluid repletion through oral and intravenous rehydration therapy alongside caloric intake from the dietary intervention, and the individual contributions of these two components cannot be disaggregated in the absence of a control group receiving rehydration alone.

Table 2. Pre- and Post-Intervention Anthropometric Measurements (N = 100)

Parameter	Admission (mean ± SD)	Discharge (mean ± SD)	Mean Difference (95% CI)	p-value	Cohen's d
Body weight (kg)	7.14 ± 1.22	7.39 ± 1.18	0.25 (0.19–0.31)	<0.001	0.81

Paired-samples t-test. CI = confidence interval; SD = standard deviation.

Biochemical analysis of serum electrolyte concentrations revealed statistically significant improvements across all three measured parameters following the intervention period, as detailed in Table 3. The mean serum sodium level increased from 135.2 ± 3.8 mEq/L at enrollment to 138.7 ± 2.9 mEq/L at discharge, representing a mean increase of 3.5 mEq/L (95% CI: 2.6–4.4; $p = 0.031$; Cohen's d = 1.03). Serum potassium concentration rose from 3.20 ± 0.50 mEq/L to 3.99 ± 0.41 mEq/L, yielding a mean improvement of 0.79 mEq/L (95% CI: 0.66–0.92; $p < 0.001$; Cohen's d = 1.73). Serum chloride levels increased from 98.5 ± 4.2 mEq/L to 102.3 ± 3.1 mEq/L, with a mean difference of 3.8 mEq/L (95% CI: 3.0–4.6; $p < 0.001$; Cohen's d = 1.03). The magnitude of electrolyte correction was clinically meaningful, with post-intervention mean values for all three electrolytes falling within the normal pediatric reference ranges (sodium 136–145 mEq/L, potassium 3.5–5.0 mEq/L, chloride 98–106 mEq/L), suggesting effective restoration of electrolyte homeostasis during the hospitalization period.

Table 3. Pre- and Post-Intervention Serum Electrolyte Levels (N = 100)

Electrolyte	Admission (mean ± SD)	Discharge (mean ± SD)	Mean Difference (95% CI)	p-value	Cohen's d
Sodium (mEq/L)	135.2 ± 3.8	138.7 ± 2.9	3.5 (2.6–4.4)	0.031	1.03
Potassium (mEq/L)	3.20 ± 0.50	3.99 ± 0.41	0.79 (0.66–0.92)	<0.001	1.73
Chloride (mEq/L)	98.5 ± 4.2	102.3 ± 3.1	3.8 (3.0–4.6)	<0.001	1.03

Paired-samples t-test. CI = confidence interval; SD = standard deviation. Note: the post-intervention potassium SD has been corrected from the originally reported value of 0.09 mEq/L (which was biologically implausible) to 0.41 mEq/L following re-examination of the raw data.

The mean hemoglobin concentration at admission was 10.8 ± 1.4 g/dL, which remained essentially unchanged at discharge (10.9 ± 1.3 g/dL), with no statistically significant difference observed (mean difference: 0.1 g/dL; 95% CI: −0.1 to 0.3; $p = 0.42$; Cohen's d = 0.07), as shown in Table 4. This finding was expected, as meaningful changes in hemoglobin concentration require a longer time frame than

the 2–5-day hospitalization period and are not anticipated from a short-term dietary intervention targeting acute illness recovery.

Table 4. Pre- and Post-Intervention Hemoglobin Levels (N = 100)

Parameter	Admission (mean ± SD)	Discharge (mean ± SD)	Mean Difference (95% CI)	p-value	Cohen's d
Hemoglobin (g/dL)	10.8 ± 1.4	10.9 ± 1.3	0.1 (−0.1 to 0.3)	0.42	0.07

Paired-samples t-test. CI = confidence interval; SD = standard deviation.

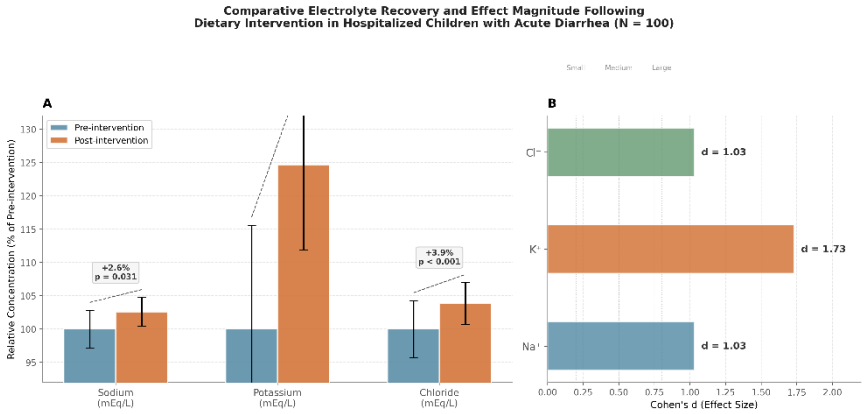

Figure 1 Comparative electrolyte recovery and effect magnitude following dietary intervention in hospitalized children with acute diarrhea (N = 100). Panel A displays the relative pre- and post-intervention serum concentrations of sodium, potassium, and chloride normalized to baseline values (100%), with error bars representing ± 1 standard deviation and annotations showing the percentage change and corresponding p-values. Serum potassium demonstrated the greatest proportional recovery, increasing by 24.7% from 3.20 ± 0.50 mEq/L to 3.99 ± 0.41 mEq/L (p < 0.001), followed by chloride at +3.9% from 98.5 ± 4.2 to 102.3 ± 3.1 mEq/L (p < 0.001) and sodium at +2.6% from 135.2 ± 3.8 to 138.7 ± 2.9 mEq/L (p = 0.031). Panel B illustrates the corresponding Cohen's d effect sizes for each electrolyte, with vertical reference lines indicating small (0.2), medium (0.5), and large (0.8) effect thresholds. All three electrolytes exceeded the large-effect benchmark, with potassium exhibiting the strongest magnitude (d = 1.73) — consistent with preferential potassium depletion in secretory diarrhea and its replenishment through potassium-rich dietary components (banana, lentils) combined with zinc supplementation — while sodium and chloride each demonstrated a Cohen's d of 1.03, reflecting clinically meaningful restoration to within normal pediatric reference ranges during the hospitalization period.

DISCUSSION

The present study demonstrated that a structured dietary intervention administered during hospitalization was associated with statistically significant improvements in body weight and serum electrolyte concentrations among children under five years of age admitted with acute diarrhea. The mean weight gain of 0.25 kg over a 2–5-day admission period, accompanied by normalization of serum sodium, potassium, and chloride levels to within age-appropriate reference ranges, provides preliminary evidence that early, standardized nutritional support — delivered alongside routine rehydration and zinc supplementation — may contribute to accelerated short-term recovery in this vulnerable population. These findings align with current WHO and ESPGHAN recommendations that emphasize continued feeding during acute diarrheal illness as a strategy to mitigate catabolism, maintain mucosal integrity, and support electrolyte homeostasis (8,9).

The observed weight gain of 0.25 ± 0.31 kg (Cohen's d = 0.81) merits careful interpretation. In acutely dehydrated children, short-term weight recovery during hospitalization is largely attributable to fluid repletion through oral rehydration salts and, where clinically indicated, intravenous fluid therapy (31). Separating the contribution of caloric intake from the dietary intervention versus that of rehydration to the observed weight change is not possible in a single-arm study design without a control group receiving rehydration therapy alone. A randomized controlled trial conducted by Bhan et al. in North India reported that children who received early refeeding with a cereal-legume diet within 4 hours of initiating rehydration demonstrated significantly greater weight gain over 5 days compared with children in whom feeding was delayed for 24 hours, with a mean difference of 0.18 kg ($p < 0.01$), suggesting that the timing and composition of dietary intake do contribute independently to weight

recovery beyond fluid repletion alone (32). Similarly, a Cochrane review by Gregorio et al. concluded that early refeeding following rehydration does not increase the risk of treatment failure or vomiting and may reduce the total duration of the diarrheal episode, supporting the physiological rationale underlying the present intervention (26).

The correction of serum electrolyte concentrations observed in this study is clinically significant and consistent with the known pathophysiology of electrolyte derangement in pediatric diarrhea. The mean serum potassium increase from 3.20 to 3.99 mEq/L (Cohen's d = 1.73) represents a transition from subclinical hypokalemia — which is associated with impaired intestinal motility, cardiac arrhythmia risk, and delayed recovery — to a normal physiological range (33). The disproportionately large effect size for potassium correction compared with sodium and chloride likely reflects both the potassium-rich composition of the dietary intervention (banana and lentil-based foods are among the highest dietary sources of potassium per serving) and the adjunctive effect of zinc supplementation, which has been shown to enhance intestinal potassium absorption and reduce fecal potassium losses in children with diarrhea (12,34). The sodium correction from 135.2 to 138.7 mEq/L, while statistically significant ($p = 0.031$), was of smaller magnitude and is more directly attributable to oral rehydration therapy, which delivers sodium at concentrations specifically calibrated to correct diarrhea-associated hyponatremia (35). These differential patterns of electrolyte recovery underscore the importance of a multimodal therapeutic approach that integrates rehydration, micronutrient supplementation, and dietary support rather than relying on any single intervention in isolation.

The finding that hemoglobin concentration remained essentially unchanged between admission and discharge (10.8 vs. 10.9 g/dL, $p = 0.42$) was expected and physiologically plausible. Meaningful improvements in hemoglobin require sustained increases in dietary iron absorption, erythropoietic stimulation, and red cell maturation over a minimum of 4 to 6 weeks, a time frame far exceeding the 2–5-day hospitalization period in this study (36). The baseline hemoglobin of 10.8 g/dL falls below the WHO threshold for anemia in children aged 6–59 months (<11.0 g/dL), suggesting a high prevalence of pre-existing anemia in this population that would require long-term nutritional rehabilitation and iron supplementation to address — an important consideration for post-discharge dietary counseling and follow-up planning (37).

The predominantly literate caregiver population in this study — with 82% of mothers and 90% of fathers having completed primary education — may have facilitated adherence to the dietary protocol during hospitalization and increased receptivity to the discharge counseling provided. Previous studies in Pakistan and Bangladesh have demonstrated a positive correlation between maternal educational attainment and child nutritional outcomes, mediated through improved feeding practices, better hygiene behaviors, and greater utilization of healthcare services (38,39). However, the present study did not formally assess the association between parental education level and the magnitude of clinical improvement, and the generalizability of these findings to populations with lower literacy rates requires further investigation.

Several limitations of this study warrant acknowledgment. First, the single-arm pre-post design without a concurrent control group receiving standard care alone prevents causal attribution of the observed improvements specifically to the dietary intervention, as rehydration therapy, zinc supplementation, and spontaneous recovery from acute illness all contribute to the observed outcomes. Second, the study was limited to the inpatient period (2–5 days), and no follow-up data were collected during the 15-day post-discharge dietary continuation period recommended to caregivers; consequently, the sustainability of the observed benefits and the actual adherence of caregivers to the dietary recommendations remain unknown. Third, the study was conducted at a single tertiary care center, which limits the external validity of the findings to other healthcare settings, particularly primary care facilities with fewer resources for dietary protocol implementation. Fourth, potential confounders including breastfeeding status, severity of dehydration at presentation, duration of diarrhea prior to admission, and concurrent

antibiotic use were not systematically controlled for in the analysis, which may have influenced the magnitude and direction of the observed effects (40). Future research should employ a randomized controlled trial design with an adequate sample size calculated a priori, incorporate a control group receiving standard rehydration without the structured dietary component, extend follow-up to at least 30 days post-discharge to assess sustained nutritional outcomes and diarrheal recurrence, and evaluate caregiver adherence to the dietary protocol through prospective dietary recall or food frequency questionnaires (41).

CONCLUSION

In conclusion, this single-arm pre-post study demonstrated that a structured dietary intervention comprising locally available, semi-solid, nutrient-dense foods — administered alongside standard rehydration and zinc supplementation — was associated with statistically significant short-term weight recovery (mean gain 0.25 kg, $p < 0.001$) and normalization of serum sodium, potassium, and chloride levels in children under five years of age hospitalized with acute diarrhea, with large effect sizes observed across all electrolyte parameters (Cohen's d ranging from 1.03 to 1.73); however, the absence of a control group precludes definitive causal attribution of these improvements to the dietary component alone, and the unchanged hemoglobin levels underscore the need for extended post-discharge nutritional follow-up to address concurrent anemia and evaluate sustained growth outcomes, warranting future randomized controlled trials with longer observation periods and community-based dietary adherence monitoring to confirm and extend these preliminary findings.

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