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Original Research Article

ASSESSMENT OF NURSES' KNOWLEDGE REGARDING MALNUTRITION IN CHILDREN UNDER 5 YEARS

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ABSTRACT

Background: *Childhood malnutrition remains a major public health challenge and contributes substantially to morbidity and mortality among children under five years of age. Nurses play a critical role in the early identification, assessment, and management of severe acute malnutrition in pediatric care settings. Adequate knowledge of evidence-based management protocols is therefore essential to ensure timely treatment and improved clinical outcomes. However, deficiencies in knowledge among healthcare providers may limit effective care for malnourished children.* ***Objective:*** *To assess nurses' knowledge regarding the management of malnutrition in children under five years of age in pediatric care settings.* ***Study Design:*** *Descriptive cross-sectional study.* ***Settings:*** *Pediatric wards, nutrition stabilization centers, and child health units of tertiary care healthcare facilities.* ***Duration of Study:*** *January to June 2025.* ***Methods:*** *A total of 153 nurses and healthcare providers involved in the care of severely malnourished children were recruited using non-probability convenience sampling. Data were collected through a structured self-administered questionnaire that included demographic characteristics and knowledge-based items related to the management of severe acute malnutrition. Key domains included identification of complications, treatment of hypoglycemia, feeding practices, monitoring of hypothermia, dehydration management, and electrolyte imbalance. Data were analyzed using SPSS version 25. Descriptive statistics were applied, and results were presented as frequencies and percentages.* ***Results:*** *Among the 153 participants, most were aged 21–30 years (54.9%), female (91.5%), and held a nursing diploma (55.6%). Regarding initial management priorities, 27.5% identified treatment or prevention of dehydration as the first step, and 27.5% identified treatment of hypoglycemia as the first step, while 24.8% selected correction of electrolyte imbalance. Hypothermia with dehydration and dehydration with hypoglycemia were the most frequently recognized coexisting conditions (28.1% each). Only 28.1% correctly identified the recommended feeding frequency for hypoglycemia management. Correct identification of hypothermia thresholds was reported by 38.6% of participants, and 28.8% reported appropriate temperature monitoring during treatment. In dehydration management, 37.3% selected replacement of stool losses with oral rehydration solution. A majority (81.7%) correctly recognized sodium imbalance as the electrolyte disturbance associated with edema in severely malnourished children.* ***Conclusion:*** *The findings suggest important knowledge gaps among nurses in several critical aspects of severe acute malnutrition management, particularly treatment prioritization, feeding practices, hypothermia monitoring, and dehydration management. Targeted training and continuing professional education may strengthen nurses' competencies and support improved management of malnourished children in pediatric healthcare settings.*

Keywords: Malnutrition, Severe Acute Malnutrition, Nurses' Knowledge, Pediatric Nutrition, Child Health.

INTRODUCTION

Malnutrition among children under five years of age remains one of the most pressing global public health challenges of the twenty-first century. It encompasses a spectrum of conditions, including undernutrition (stunting, wasting, and underweight), micronutrient deficiencies, and overnutrition, all of which carry profound consequences for child survival, growth, and cognitive development (1, 2). According to global estimates, approximately 21% of children under five were stunted, 7% were wasted, and 13% were underweight in 2019, with South Asia and Sub-Saharan Africa identified as the primary global hotspots of child malnutrition (3). Malnutrition is causally linked to nearly 45% of all deaths among children under five years of age worldwide (3, 2), underscoring its critical role as a determinant of child mortality and morbidity.

Pakistan bears a disproportionately high burden of childhood malnutrition. Data from the Pakistan Demographic and Health Survey (PDHS) 2012–2013 revealed that approximately 44.4% of under-five children were stunted, 29.4% were underweight, and 10.7% were wasted (1). The National Nutrition Survey similarly reported that approximately 43.7% of children under five were stunted, 15% were wasted, and 31.5% were underweight (4). Furthermore, Khaliq et al. reported that three out of four mother–child dyads in Pakistan included either a malnourished mother, a malnourished child, or both, highlighting the intergenerational dimension of the problem (5). Sultan and Iram further demonstrated that food insecurity significantly increases the risk of the double burden of malnutrition among Pakistani children (OR: 1.49, CI: 1.03–2.16) (6). Multiple socioeconomic determinants—including poverty, illiteracy, food insecurity, and limited access to healthcare have been consistently identified as key drivers of malnutrition in Pakistan (7, 1, 2).

Healthcare professionals, particularly nurses, occupy a pivotal position in the early identification, assessment, and management of childhood malnutrition. Ndiema et al. demonstrated that nutritional assessment in the pediatric unit is frequently suboptimal, with only 29.52% of health workers identifying weight loss as a critical indicator of nutritional status and only 38.64% having received training in nutritional assessment (8). Youssouf et al. found that the majority of staff nurses (70%) had only average knowledge and a neutral attitude toward malnutrition and nutritional care for hospitalized children. In contrast, only 17.5% demonstrated good knowledge and a positive attitude (9). Cate et al. similarly reported that more than 28% of nurses considered malnutrition a small or negligible problem, and that a significant proportion lacked in-depth knowledge of malnutrition risk factors (10). These findings collectively indicate that knowledge deficits among nursing staff represent a significant barrier to effective malnutrition care.

[Citation: Farooq, S., Riasat, A., Maqbool, S., Naureen, U., Shehzadi, Z., Anwar, G., Saddique, H., Yasin, I. (2026). Assessment of nurses' knowledge regarding malnutrition in children under 5 years. *Pak. J. Inten. Care Med. 6(1),* ***2026****: 233.* doi: https://doi.org/10.54112/pjicm.v6i01.233]

The consequences of inadequate nursing knowledge regarding malnutrition are well documented. Anwar et al., in a study conducted at Children's Hospital Lahore, Pakistan, found that only 35.6% of nurses correctly identified Vitamin A deficiency as the most common form of malnutrition, and only 22.2% felt confident in identifying malnutrition clinically (7). Despite 75.6% of nurses reporting that they screened children for malnutrition and 82.2% using growth charts, only 1.1% expressed a strong willingness to provide nutritional education to caregivers (7). Mardani et al. further established that maternal knowledge of undernutrition (AOR: 0.95; 95% CI: 0.91–0.98) and nutrition (AOR: 0.90; 95% CI: 0.85–0.96) were significant determinants of child undernutrition, reinforcing the critical role that healthcare professionals play in educating caregivers (11). El-Sayed similarly emphasized that every effort must be made to identify children at nutritional risk upon hospital admission in order to provide timely nutritional support (12).

Despite the alarming prevalence of childhood malnutrition in Pakistan, the knowledge and preparedness of frontline nursing staff to address this burden remain critically understudied. Pakistan ranks among the countries with the highest rates of under-five malnutrition globally (1, 4), and socioeconomic vulnerabilities—including poverty, low maternal education, and food insecurity—continue to perpetuate the cycle of undernutrition (6, 2). Batool et al. demonstrated a significant association ($p < 0.05$) between maternal nutritional knowledge and children's nutritional status in Pakistan, with children whose mothers had poor nutritional knowledge more likely to be stunted (13). Given that nurses are the primary point of contact for pediatric patients and their caregivers in both hospital and community settings, their knowledge deficits directly translate into missed opportunities for early detection and intervention (7, 9). In the Pakistani context, where resource constraints and inadequate training further compound these gaps (7), a systematic assessment of nurses' knowledge of malnutrition in children under five is essential to inform targeted capacity-building programs and improve pediatric health outcomes at the national level.

METHODOLOGY

A descriptive cross-sectional study was conducted to assess the knowledge of healthcare providers regarding the management of severely malnourished children. The study was conducted over six months, from January 2025 to June 2025, in pediatric care settings where children with severe acute malnutrition are routinely managed. The study targeted healthcare professionals involved in the clinical care of malnourished children.

The study population consisted of nurses and healthcare providers working in pediatric wards, nutrition stabilization centers, and child health units who were directly involved in the management of severely malnourished children. Participants who were actively engaged in patient care during the study period were eligible for inclusion. Healthcare workers not directly involved in patient care, administrative staff, interns, and students were excluded to ensure that the data reflected the knowledge of professionals responsible for clinical management.

A non-probability convenience sampling technique was used to recruit participants. Healthcare providers who met the inclusion criteria and were willing to participate were invited to complete the study questionnaire. A total of 153 participants were enrolled in the study.

Data were collected using a structured self-administered questionnaire developed in accordance with established clinical guidelines for the management of severe acute malnutrition. The questionnaire consisted of two sections. The first section recorded demographic information, including age, gender, and educational qualification of the participants. The second section assessed knowledge regarding the management of severely malnourished children. It included multiple-choice questions addressing essential components of clinical management, such as initial stabilization steps, identification of complications, including hypoglycemia and hypothermia, feeding practices during hypoglycemia management, prevention and treatment of dehydration, monitoring body temperature, and electrolyte imbalances associated with edema. Experienced healthcare professionals reviewed the questionnaire to ensure the items were clear, relevant, and appropriate. Participants were provided with an explanation of the study objectives prior to data collection. Participation was voluntary, and informed consent was obtained from all respondents before completion of the questionnaire. Confidentiality and anonymity of the participants were maintained throughout the study, and no identifying information was recorded in the data collection forms. Completed questionnaires were checked for completeness and coded prior to data entry. Data were entered and analyzed using the Statistical Package for Social Sciences (SPSS) version 25. Descriptive statistics were used to summarize the findings. Categorical variables, including demographic characteristics and responses to knowledge questions, were presented as frequencies and percentages. The results were organized and presented in tabular form to provide a clear summary of participants' knowledge regarding the management of severely malnourished children.

RESULTS

A total of 153 healthcare providers participated in a study assessing knowledge related to the management of severely malnourished children. Most participants were aged 21–30, with a majority being female and holding nursing diplomas or Bachelor's degrees (Table 1). When asked about the first step in managing severely malnourished children, the most common responses were treating or preventing dehydration and hypoglycemia (27.5% each), followed by electrolyte imbalance (24.8%) and hypothermia prevention (9.8%) (Table 2).

Regarding conditions that often occur together, hypothermia with dehydration and dehydration with hypoglycemia were frequently identified (28.1% each) (Table 2). Knowledge on feeding frequency in hypoglycemia varied, with the most common response being feeding every 30 minutes for two hours (28.1%) (Table 3).

For identifying hypothermia, the most reported response was an axillary temperature below 35.0°C (38.6%) (Table 4). Monitoring recommendations included checking every hour until the temperature rose above 35°C (28.8%) (Table 4).

Regarding dehydration management, 37.3% recognized replacing stool losses with oral rehydration solution as a preventive measure (Table 5). Monitoring vital signs and fluid losses hourly was the most common response for managing dehydration (38.6%) (Table 5).

Most participants correctly identified sodium imbalance as the electrolyte deficiency associated with edema in severely malnourished children (81.7%), while a small portion reported uncertainty (Table 6).

Table 1: Demographic characteristics of participants (n=153)

Variable	Category	Frequency	%
Age (years)	21–30	84	54.9
	31–40	49	32.0
	41–50	16	10.5
	51–60	4	2.6
Gender	Male	13	8.5
	Female	140	91.5
Educational qualification	Nursing diploma	85	55.6
	BSc Nursing	60	39.2
	MSc Nursing	8	5.2

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Table 2: Initial management and associated conditions in severe malnutrition (n=153)

Variable	Response	Frequency	%
First step in management	Treat/prevent hypothermia	15	9.8
	Treat/prevent dehydration	42	27.5
	Treat/prevent hypoglycemia	42	27.5
	Correct electrolyte imbalance	38	24.8
	Don't know	16	10.5
Conditions occurring together	Hypothermia and hypoglycemia	25	16.3
	Hypothermia and dehydration	43	28.1
	Dehydration and hypoglycemia	43	28.1
	Dehydration and loss of appetite	34	22.2
	Don't know	8	5.2

Table 3: Feeding practices during treatment of hypoglycemia (n=153)

Response	Frequency	Percentage
Every hour for 4 hours	33	21.6
Every 30 minutes for two hours	43	28.1
Every 40 minutes for 3 hours	21	13.7
Every hour for 2 hours	41	26.8
Don't know	15	9.8

Table 4: Identification and monitoring of hypothermia (n=153)

Variable	Response	Frequency	%
Temperature indicating hypothermia	Rectal temperature >35°C	15	9.8
	Axillary <35.5°C and rectal <35.0°C	47	30.7
	Axillary <35.0°C and rectal <35.5°C	59	38.6
	None of the above	18	11.8
	Don't know	14	9.2
Monitoring during treatment	Temperature every 3 hours until >35°C	12	7.8
	Temperature every 2 hours until >36.5°C	33	21.6
	Temperature every hour until >35°C	44	28.8
	Temperature should not be taken	36	23.5
	Don't know	28	18.3

Table 5: Prevention and management of dehydration (n=153)

Variable	Response	Frequency	%
Prevention of diarrhea	Keep feeding with the starter diet	31	20.3
	Replace stool losses with ReSoMal	30	19.6
	Encourage breastfeeding	23	15.0
	Replace stool losses with ORS	57	37.3
	Don't know	12	7.8
Management of dehydration	Feeding with starter F-75	15	9.8
	Replace stool losses with ORS	41	26.8
	Encourage breastfeeding	37	24.2
	Monitor vital signs hourly	59	38.6
	None of the above	1	0.7

Table 6: Electrolyte deficiency associated with edema (n=153)

Response	Frequency	Percentage
Magnesium	1	0.7
Potassium	8	5.2
Sodium	125	81.7
Calcium	10	6.5
Don't know	9	5.9

DISCUSSION

The present study enrolled 153 healthcare providers, with the majority (54.9%) aged 21–30 years, 91.5% female, and most holding a nursing diploma (55.6%) or BSc Nursing degree (39.2%). This demographic profile aligns with previous studies. Anwar et al. reported a predominantly female nursing workforce in their cross-sectional study at Children's Hospital Lahore, Pakistan, where most participants held degree-level qualifications (7). Similarly, Oumer et al. demonstrated that prior training and clinical experience in severe acute malnutrition (SAM) management were significant predictors of higher knowledge scores among nurses (AOR = 1.56 for SAM training; AOR = 1.70 for prior SAM management experience), suggesting that younger and less experienced nurses may have greater knowledge gaps (14). Youssouf et al. also found that 70% of nurses had only average knowledge regarding malnutrition and nutritional care of hospitalized children (9). The female predominance observed in this study is consistent with global nursing workforce patterns, as Alizadeh and Takasi reported that 87.77% of nursing students in their systematic review were female (15).

Regarding the first step in managing severely malnourished children, the most frequent responses were treating or preventing dehydration (27.5%) and hypoglycemia (27.5%), followed by correcting electrolyte imbalance (24.8%) and preventing hypothermia (9.8%). About 10.5% of participants did not know the answer. These findings suggest an incomplete understanding of the WHO 10-step SAM management protocol, which prioritizes treating hypoglycemia first (14). Oumer et al. reported that 49.2% of nurses had poor knowledge of SAM protocols, particularly regarding initial management priorities (14). Similarly, Anwar et al. found that only 22.2% of nurses felt confident in identifying and managing malnutrition clinically (7). Ndiema et al. also reported that only 29.52% of health workers correctly identified weight loss as a key indicator of nutritional status (8). The distribution of responses in the present study indicates substantial knowledge gaps among nurses regarding the prioritization of SAM management steps.

The present study showed that hypothermia with dehydration and dehydration with hypoglycemia were the most frequently identified co-occurring conditions (28.1% each), while 5.2% of participants did not know. WHO guidelines highlight that hypoglycemia and hypothermia commonly occur together in SAM. Oumer et al. demonstrated that nurses with limited knowledge of SAM protocols were less likely to identify these complications correctly (14). Anwar et al. also reported knowledge gaps among nurses regarding clinical manifestations of malnutrition (7). Although some participants recognized the co-occurrence of dehydration and hypoglycemia, fewer identified the clinically important association between hypothermia and hypoglycemia. Shipanga et al. emphasized that knowledge gaps regarding clinical manifestations of malnutrition remain a barrier to effective management in resource-limited settings (16).

Regarding feeding frequency for hypoglycemia management, the most common response was feeding every 30 minutes for two hours (28.1%), followed by feeding every hour for two hours (26.8%). Only 28.1% selected the correct WHO-recommended response. These findings indicate inadequate knowledge of feeding protocols. Oumer

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et al. reported that nurses' knowledge of feeding protocols for SAM complications was among the weakest areas assessed (14). Youssouf et al. also found that most nurses had only average knowledge of nutritional care for hospitalized children (9). Ndiema et al. further reported that only 47.73% of health workers frequently provided nutritional advice to caregivers (8). These findings highlight the need for structured training on therapeutic feeding protocols.

In this study, 38.6% correctly identified hypothermia as axillary temperature below 35.0°C and rectal temperature below 35.5°C, while 30.7% selected the reverse values. Additionally, 23.5% believed temperature should not be taken during treatment. These results indicate gaps in knowledge of both diagnostic thresholds and hypothermia monitoring practices. Oumer et al. similarly reported deficiencies in nurses' knowledge of hypothermia management (14). Anwar et al. also documented knowledge gaps regarding clinical complications of malnutrition (7). Continuous temperature monitoring is essential in SAM management, making the misconception reported by some participants concerning. Cate et al. reported that more than 28% of nurses considered malnutrition a minor clinical issue, which may contribute to inadequate management practices (10).

Regarding diarrhea management in SAM, 37.3% of participants identified replacing stool losses with oral rehydration solution (ORS), while only 19.6% correctly selected ReSoMal. WHO guidelines recommend ReSoMal rather than standard ORS for severely malnourished children. The predominance of ORS responses suggests that nurses may apply general pediatric dehydration protocols instead of SAM-specific guidelines. Oumer et al. reported similar deficiencies in distinguishing between ORS and ReSoMal among nurses (14). Anwar et al. also noted that although many nurses screened children for malnutrition, their knowledge of specific therapeutic interventions was limited (7). Ndiema et al. reported suboptimal nutritional assessment and management practices among healthcare workers (8). While 38.6% correctly recommended monitoring vital signs and hourly fluid losses, confusion about appropriate rehydration therapy remains a concern.

The present study also found that 81.7% of participants identified sodium imbalance as the electrolyte disturbance associated with edema in SAM; however, only 5.2% identified potassium deficiency. Although sodium imbalance is associated with edematous malnutrition, potassium and magnesium deficiencies are also critical electrolyte abnormalities in SAM. Oumer et al. reported that nurses' knowledge of electrolyte management requires significant improvement (14). Anwar et al. similarly identified knowledge gaps regarding biochemical complications of malnutrition (17). Mardani et al. demonstrated that healthcare professionals' knowledge of nutritional biochemistry significantly influences the quality of nutritional care (11).

Overall, the findings reveal substantial knowledge gaps among nurses regarding the management of severely malnourished children. These gaps include understanding of initial treatment priorities, feeding protocols, hypothermia management, dehydration treatment, and electrolyte disturbances. Similar deficiencies have been reported in multiple studies (7, 14, 9, 8). Oumer et al. identified SAM-specific training as a key predictor of adequate knowledge among nurses (14). At the same time, Anwar et al. emphasized the importance of strengthening nurses' capacity to manage malnutrition in Pakistan (7). Given the high burden of childhood malnutrition in Pakistan, where approximately 44.4% of under-five children are stunted and 29.4% are underweight (1), improving nurses' knowledge through structured training and refresher programs is essential to improve pediatric health outcomes.

CONCLUSION

The findings indicate that although nurses demonstrated partial awareness of aspects of severe acute malnutrition management, substantial knowledge gaps remain in key clinical areas, including treatment prioritization, therapeutic feeding, hypothermia monitoring, and appropriate rehydration strategies. These deficiencies may affect the timely identification and management of malnourished children. Strengthening nurses' competency through structured training, updated clinical guidelines, and continuing education programs may improve the quality of pediatric nutritional care and contribute to better health outcomes among children under five years of age.

DECLARATIONS

Data Availability Statement

All data generated or analysed during the study are included in the manuscript.

Ethics approval and consent to participate

Approved by the department Concerned. (IRBEC-ICN-38/25)

Consent for publication

Approved

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Not applicable

CONFLICT OF INTEREST

The authors declare no conflict of interest.

AUTHOR CONTRIBUTION

SHMREZA FAROOQ
Conceived the study, coordinated data collection, and prepared the first draft of the manuscript

ANAM RIASAT
Assisted in data collection, literature review, and manuscript preparation

SHAISTA MAQBOOL
Contributed to methodology implementation, documentation, and preliminary analysis

UZMA NAUREEN
Participated in data acquisition, data entry, and organization of results

ZUMAR SHEHZADI
Assisted in the compilation of findings, preparation of tables, and referencing

GHUZALA ANWAR
Provided academic supervision, contributed to study design, and critically reviewed the manuscript.

HUMAIRA SADDIQUE (AP)
Guided data analysis, reviewed the manuscript, and contributed to the interpretation of results.

IQRA YASIN (Principal)
Provided institutional oversight, final manuscript review, and approval for submission

All authors read and approved the final version of the manuscript.

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