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ORIGINAL ARTICLE

Supporting Nutrition, Supporting Life: Nurses' Perspectives and Practices in Intensive Care Nutrition

Beslenmeyi Desteklemek, Hayatı Desteklemektir: Yoğun Bakım Beslenmesinde Hemşirelerin Görüşleri ve Uygulamaları

Miyase Avci[1], Ahmet Avci[2]

[1]Department of Nursing, Faculty of Health Sciences, Aksaray University, Aksaray, Türkiye
[2]Fundamental of Nursing and Management, Aksaray, Türkiye

Abstract

Introduction: Patients in intensive care units (ICUs) are highly vulnerable to malnutrition, which can result in complications, extended hospital stays, and higher mortality rates if not properly addressed. Therefore, evaluating nurses' roles, knowledge, and competency in providing nutritional support is essential. This study inquiries into nutritional support in ICUs and nurses' perspectives on it.

Methods: This descriptive, prospective study was conducted in the ICUs of a training and research hospital in Central Anatolia. It involved 67 nurses working in neurology, general, and internal medicine ICUs of the hospital, as well as the patients admitted to these units during the study. Data were collected using the Patient Nutritional Process Monitoring Form and Nurse Information Form, then analyzed with SPSS 23.0.

Results: Of the nurses, 38.8% had not received nutritional support training but expressed interest in doing so, while 31.3% had not received training or shown interest. The mean scores of the nurses' adequacy in the nutrition process, which they evaluated themselves on a 10-point visual scale, were determined as 7.25 in initiation, 7.57 in maintenance, and 7.81 in termination. Nutritional support was given to 88.4% of patients, with oral (48.2%) and enteral (34.6%) feeding being most common. Diason (28.1%) and Impact Glutamine (17.4%) were the most frequently used nutritional products.

Discussion and Conclusion: This study reveals that a significant proportion of ICU nurses lack training in nutritional support, which may hinder effective clinical practice, especially during the initiation phase. Improving in-service training and ensuring optimal nurse-to-patient ratios are essential for enhancing the quality and consistency of nutritional care in critical settings.

Keywords: Critically patient; Intensive care unit; Nursing; Nutrition; Nutritional process

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Correspondence: Miyase Avci, PhD. Aksaray Üniversitesi, Sağlık Bilimleri Fakültesi, Hemşirelik Bölümü, Aksaray, Türkiye
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Nutrition, which is considered a controllable risk factor in preventing diseases and maintaining health, is one of the most basic human needs.[1] Adequate nutrition allows for easier avoidance of diseases and faster recovery from illness.[2] However, patients may face the risk of inadequate nutrition both before and during hospitalization, and malnutrition may occur in patients as a result.[1,2] While the rate of malnutrition in hospitalized patients is 22%, it is reported that this rate is 50% or more in patients in intensive care units (ICUs).[3] As a result of malnutrition in patients, functional disorders are observed in the body, infection rates increase, hospital stays are prolonged, costs increase, wound healing is delayed, and many other problems are encountered.[4] An effective nutritional status assessment performed by nurses leads to a decrease in the rate of malnutrition and, accordingly, the length of hospital stays, health care costs[5] and catheter sepsis rates.[6]

In ICUs, where critically ill patients are provided with treatment and care services, ensuring adequate nutrition is of vital importance, and the role of nurses in the administration of enteral nutrition is critical.[7] Assessing the nutritional status of patients, managing the processes related to initiating, continuing and terminating nutritional therapy, ensuring that this process is implemented according to certain standards, correctly executing the nutritional support plan determined for the patient, monitoring, preventing and providing nursing input during the treatment process are stated as some of the duties and responsibilities of nurses in the nutritional process.[8] Although ICU nurses have positive attitudes towards assessing patients' nutritional status, it has been determined that their knowledge level regarding care is not sufficient.[9] It is possible for nurses to effectively fulfill their role in nutritional support with sufficient knowledge. However, studies have shown that nurses need information regarding the provision of nutritional support.[10–12]

In a study conducted with 142 nurses to evaluate the knowledge and practices of intensive care nurses on enteral feeding, it was found that 73% of the nurses believed that the continuous drip method of enteral feeding did not require a pump, 57% did not know or knew incorrectly the protocols for flushing enteral feeding tubes before use, and 57% misunderstood the need to evaluate nasogastric tube placement every 24 hours.[7] In another study conducted to evaluate the knowledge of nurses about the feeding of unconscious patients, it was found that nurses had significant knowledge deficiencies about various aspects of enteral feeding, such as indications, complications, and nutritional content.[13] In a systematic review examining the knowledge, attitudes and practices of nurses regarding enteral nutrition, it was determined that nurses needed to improve their knowledge and practices.[14]

Apart from the need for information on nutritional support for nurses, there are also some obstacles to implementing nutritional care. In the literature, these obstacles are stated as not having enough nurses, multidisciplinary team approach, excessive workload, lack of medical and medical supplies, losing too much time during nutrition, not being aware of malnutrition, not having clear definitions of responsibilities and lack of documentation.[15–17] For nutrition to be successful, nutrition should be initiated early, goals should be reviewed daily, and nursing care practices should be in accordance with evidence-based guidelines to prevent complications.[6] Nurse-led interventions are needed to optimize malnutrition care and promote patient participation in the prevention and treatment of malnutrition throughout all stages of hospitalization.[17]

Despite many studies emphasizing the clinical importance of nutrition, it is stated that patients at risk of malnutrition cannot be identified and, indirectly, the nutritional support needed by the patient cannot be provided.[3] Although there are studies on nutritional support in the literature, there is a belief that the number of studies conducted is limited and should be increased.[10,18] Retrospective studies in this field are seen as a risk in providing sufficient data for measurement due to incomplete or inadequate completion of records regarding nutritional support.[19] This study was conducted prospectively to describe nutritional support provided in ICUs.

Materials and Methods

Study Design

The research was conducted in a descriptive and prospective design.

Settings

The research was conducted in a training and research hospital located in the Central Anatolia region, Türkiye. The Neurology ICU where the research was conducted is a 2nd level unit with 5 beds, a General ICU is a 3rd level unit with 22 beds, and an Internal Medicine ICU is a 3rd level unit with 16 beds. Nurses work in two shifts: 08:00–16:00 and 16:00–08:00.

There is a nutrition unit team in the hospital where the study was conducted. The team includes a pharmacist, doctor, dietician and nurse. Nutrition Risk assessment is performed for each patient admitted using the Nutrition

Support Unit Enteral-Parenteral Nutrition Tracking Form (NRS 2002 Form). Patients admitted to ICUs are assessed and nutrition is started within the first 24–48 hours.

Participants

Consisted of all patients admitted to adult ICUs in a training and research hospital located in the Central Anatolia region between 27.12.2023 and 23.02.2024 and nurses working in these clinics. Data regarding the patients were filled in by the researcher. Patients who stayed in ICUs for less than 12 hours were excluded from the study.

All nurses who voluntarily accepted to participate in the study signed the informed consent form and filled out the data collection tools completely constituted the sample of the study. A total of 76 nurses are on duty, 37 from the General ICU, 28 from the Internal Medicine ICU and 11 from the Neurology ICU. During the study, 2 nurses were on sick leave; 4 nurses did not complete the questionnaires, and 3 nurses did not want to participate, so the study was completed with 67 nurses and the participation rate was 88%.

Data Collection Tools

Data were collected using the Patient Nutrition Process Tracking Form and the Nurse Information Form.

Patient Nutrition Process Tracking Form

This form, developed by researchers within the scope of "Nutrition support team: Nurse duties, authorities and responsibilities" published by KEPAN,[8] consists of questions aimed at determining some introductory characteristics of patients; age, gender, diagnosis, Glasgow Coma Scale (GCS), length of stay in ICU, nutritional process due to discharge from ICU, type of nutrition and nutritional product. This form was filled out by researchers.

Nurse Information Form

This form, developed by researchers, includes questions about the introductory characteristics of nurses; age, gender, school graduated from, years working as a nurse, years working in ICU, satisfaction with ICU, number of patients cared during a shift, receiving nutrition education, desire to receive education, and the reflection of the education received on care. This form also includes three questions regarding the level of self-perceived competence in initiating, maintaining and terminate nutritional support. A 1–10 point visual analog scale was used to answer these questions. 1 point means not competent at all, 10 points means fully competent.[9,15,17,19]

Data Collection

The patient data belonging to the study were filled in by the researchers every morning through observation, files and interviews with the nurses. The Nurse Information Form was given to the nurses after the purpose of the study was explained and consent was obtained from the participants, and the nurses were asked to fill out this form. The questionnaires given in the morning were collected a few hours before the shift change, considering the intensity of the ICU, and the questionnaire forms were distributed to those who would come to the other shift after the necessary explanations were made, and consent was obtained. These forms were collected in the morning. Filling out the questionnaires took 5–10 minutes.

Statistical Analysis

Data were analyzed using IBM SPSS Statistics (Version 25.0. Armonk, NY: IBM Corp.). Frequency and percentage were used for categorical variables, mean and standard deviation (SD) were used for continuous variables. A visual analog scale ranging from 1 to 10 was used for nurses' self-assessment of initiating, maintaining, and terminating nutrition. Nurses were asked to score themselves on this scale, and their average scores were calculated based on the points given to the scale.

Ethical Statement

To conduct the research, approval was obtained from the Clinical Research Ethics Committee of Aksaray University (Date: 26.10.2023 Number: 2023/20-04). Afterwards, permission was obtained from the hospital where the research would be conducted. The study process was carried out in accordance with the Declaration of Helsinki. The purpose of the research, the protection of personal information and confidentiality, and the voluntary nature of participation were explained to the nurses, and both written and verbal consent was obtained.

Results

In this study, 53.7% of the participants were female, 85.1% had a bachelor's degree, and 91.0% stated that they were satisfied to work in the ICU. When we look at nutrition education, 38.8% of the participants did not receive education but wanted to receive it, 31.3% did not receive education and did not want to receive it. Those who received education and reflected on care were 28.4%, while those who received education but could not reflect on care were 1.5%. The average age of the participants was 32.67 (min: 22.00–max: 50.00). The average working hours as a

Table 1. Characteristics of nurses

	n	%
Sex		
Female	36	53.7
Male	31	46.3
Graduated high scholl		
Health vocational high school	2	3.0
Associate degree	6	9.0
Bachelors degree	57	85.1
Postgraduate	2	3.0
Satisfaction of working at ICU		
Yes	61	91.0
No	6	9.0
Nutrition education		
Uneducated wants to get education	26	38.8
Uneducated does not want to get education	21	31.3
Reflects on education and care	19	28.4
Educated but cannot reflect on care	1	1.5
	Mean±SD	Min–Max
Age	32.67±7.79	22.00–50.00
Length of working as a nurse (years)	10.15±8.18	1.00–31.00
Duration of working in ICU (years)	4.40±4.42	0.00–17.00
Number of patients cared for in a shift	2.30±0.49	1.00–3.00
Level of self-perceived competence in initiating nutritional support (1–10)	7.25±1.74	2.00–10.00
Level of self-perceived competence in maintaining nutritional support (1–10)	7.57±1.58	4.00–10.00
Level of self-perceived competence in termination nutritional support (1–10)	7.81±1.43	5.00–10.00

ICU: Intensive care unit; SD: Standard deviation; Min: Minimum; Max: Maximum.

nurse are 10.15 years (min: 1.00–max: 31.00), the average length of service in the ICU was 4.40 years (min: 0.00–max: 17.00). The average number of patients cared for in a shift was 2.30 (min: 1.00–max: 3.00), the mean value marked by participants for initiating nutritional support was 7.25 (min: 2.00–max: 10.00), for maintaining nutrition was 7.57 (min: 4.00–max: 10.00), and for terminating nutrition was 7.81 (min: 5.00–max: 10.00) (Table 1).

The mean age of the patients is 68.25±17.11, and the ratio of males to females is almost equal. Respiratory system diseases and cardiovascular diseases are prominent among the common diagnoses. The average GCS in all intensive care units is 10.52±4.84. The mean length of stay is 9.99±15.55 days. While the mortality rate is 34.0%, 66.0% of the patients were transferred to the ward. 88.4% of the patients are receiving nutritional support. The most common forms of nutrition were determined as oral (48.2%) and enteral (34.6%) (Table 2).

General ICU, the most used enteral feeds are Diason (n=17) and Impact Glutamine (n=15). In internal medicine ICU, the most used enteral feeds are Diason (n=15) and Glucerna (n=8). In the neurology ICU, Diason (n=2) and Ensource Plus (n=2) are the most used enteral feed. Overall, Diason (n=34, %=28.1) and Impact Glutamine (n=21, %=17.4) are the most used feeds in ICUs (Table 3).

Discussion

ICUs are critical areas where patients' vital functions are constantly monitored and intervened. In this environment, patients' nutritional status and nutritional support are an important part of the treatment process. Nutritional support can accelerate patients' recovery, reduce complications, and improve their general health status. This prospective study was conducted to describe nutritional support in ICUs.

Table 2. Characteristics of patients

	General ICU		Internal ICU		Neurology ICU		Total	
Age (Mean±SD)	67.78±17.86		70.21±14.71		63.04±20.84		68.25±17.11	
GCS (Mean±SD)	10.08±4.92		11.06±4.89		10.71±4.10		10.52±4.84	
Length of stay (Mean±SD)*	10.68±16.75		9.06±14.15		9.96±14.46		9.99±15.55	
	n	%	n	%	n	%	n	%
Sex								
Male	74	50.0	53	48.6	16	57.1	143	50.2
Female	74	50.0	56	51.4	12	42.9	142	49.8
Diagnosis								
Respiratory system diseases	42	28.4	50	45.9	1	3.6	93	32.6
Cardiovascular system diseases	24	16.2	16	14.7	0	0.0	40	14.0
Nervous system diseases	20	13.5	11	10.1	22	78.6	53	18.6
Digestive system diseases	17	11.5	12	11	1	3.6	30	10.5
Cancer diagnosis	14	9.5	6	5.5	0	0.0	20	7.0
Kidney diseases	14	9.5	10	9.2	2	7.1	26	9.1
Other	17	11.5	4	3.7	2	7.1	23	8.1
Reason for discharge**								
Transfer to service	94	63.5	75	68.8	19	67.9	188	66.0
Death	54	36.5	34	31.2	9	32.1	97	34.0
Nutritional status								
Receiving	131	88.5	94	86.2	27	96.4	252	88.4
Not receiving	17	11.5	15	13.8	1	3.6	33	11.6
Nutritional type***								
Oral	60	42.9	57	50.4	14	42.4	131	48.2
Enteral	56	40.0	32	28.3	6	18.2	94	34.6
Parenteral	24	17.1	10	21.2	13	39.4	47	17.3

GCS: Glasgow Coma Scale; ICU: Intensive care unit; SD: Standard deviation; *: The day the patient was admitted to the clinic was considered the beginning of the hospitalization day, and the day the study ended was considered the end of the hospitalization day. **: Patients who were in the clinic on the day the study ended were considered as patients transferred to the ward. ***: 20 patients received two or three types of nutrition.

In our study, 38.8% of the nurses reported that they would like to receive training on nutritional support despite not having received any prior education on the topic, while 31.3% stated that they had not received such training and had no desire to pursue it. These findings indicate that a total of 70.1% of the nurses had not received any form of training on nutritional support, a proportion considered notably high. In comparison, Kıymaz et al.[15] found that 56.4% of nurses had previously received training on nutritional support, with 63.6% evaluating this training as only partially sufficient. Moreover, 44.3% of participants in their study reported being unable to implement nutritional nursing care, and 20.7% attributed this to inadequate training. Similarly, Karasu and Özşaker[20] reported that 65.9% of surgical nurses had received training in nutrition. In another study, Çoşğun and Kısacık[1] observed that 62% of nurses had previously received nutritional support training, with 37.7% having done so within the past year through in-service education programs. The findings of this study indicate that a significant proportion of nurses have not received training related to nutritional support, and that knowledge gaps may lead to inadequacies in clinical practice. Although institutional procedures regarding nutritional care are in place, challenges in their implementation persist. Therefore, enhancing nurses' knowledge and awareness is essential for ensuring the effective application of these existing procedures in clinical settings. In-service training programs should not only be

Table 3. Enteral nutrition types used*

	General ICU	Internal ICU	Neurology ICU	Total	
	n	n	n	n	%
Enteral nutrition products					
Diason	17	15	2	34	28.1
Impact glutamine	15	5	1	21	17.4
Glucerna	9	8	-	17	14.0
Ensource plus	12	2	2	16	13.2
Nutrivigor	9	1	-	10	8.3
Resource	8	1	1	10	8.3
Gi control	6	2	-	8	6.6
Novasource	1	4	-	5	4.1

ICU: Intensive care unit; *: 27 patients used more than one type of nutrition product together or in rotation.

offered regularly but also be designed to be accessible, up-to-date, and practice-oriented. Incorporating clinical scenarios and case analyses into these educational activities may facilitate the transfer of theoretical knowledge into practice. Additionally, nurse managers should establish mechanisms to monitor the implementation of procedures and develop feedback systems that focus on identifying and addressing barriers encountered in practice. In doing so, standardization in nursing practices can be promoted, leading to more accurate and effective assessment of patients at risk for malnutrition.

Nurses indicated self-perceived competence scores of 7.25, 7.57, and 7.81 for initiating, maintaining, and terminating nutritional support, respectively. These findings suggest that nurses feel moderately-to-highly confident in managing nutritional support processes, with slightly lower confidence observed during the initiation phase. This result is consistent with the study by Kıymaz et al.[15] which reported that although 56.4% of nurses had received prior education on nutritional support, a significant portion (44.3%) stated they could not adequately implement nutritional nursing care. Furthermore, 20.7% of participants attributed this limitation to insufficient training. This supports the notion that theoretical knowledge alone may not translate effectively into clinical practice, particularly in the early stages of nutritional care. In a more recent international study, Tang et al.[21] found that only 40% of clinical nurses in China had received any form of nutrition-related continuing education. Notably, those who had undergone such training reported significantly higher competence in providing nutritional care. This finding underscores the global relevance of our results and reinforces the importance of structured and practical education programs to improve nurses' confidence, particularly in the initiation phase of nutritional interventions. Taken together, our findings and those of related studies emphasize the need for targeted educational interventions that not only provide theoretical knowledge but also focus on practical skills, especially in the earlier stages of nutritional support. Enhancing nurses' confidence through tailored training may contribute to more effective nutritional care and improved patient outcomes.

In this study, enteral nutrition (EN) was identified as the second most commonly used nutritional support method after oral nutrition, with a usage rate of 34.6%. This finding aligns with recent evidence emphasizing the importance of EN in critically ill patients. Over the past five years, several studies have reinforced the clinical benefits of EN, particularly when initiated early. For instance, early enteral nutrition was associated with improved clinical outcomes among patients with circulatory shock that was resolved within the first day.[22] Similarly, initiating enteral feeding within 48 h. of ICU admission is associated with improved clinical outcomes, although these benefits may be influenced by individual patient factors and disease severity.[23] International guidelines also support these findings. The European Society for Clinical Nutrition and Metabolism (ESPEN) and the American Society for Parenteral and Enteral Nutrition (ASPEN) recommend initiating EN as the preferred route whenever the gastrointestinal tract is functional.[24,25] These guidelines highlight that EN helps preserve gut mucosal integrity, modulates the immune response, and lowers the risk of infectious complications compared to parenteral nutrition (PN). Moreover, EN is associated with improved nutritional adequacy, better tolerance, and fewer

gastrointestinal complications.[26] Economic considerations also support the use of EN. Compared to PN, EN is more cost-effective and easier to implement, which is particularly relevant in resource-limited ICU settings.[27] The combination of lower cost, clinical effectiveness, and physiological benefits makes EN a sustainable strategy in critical care nutrition. From a nursing perspective, successful EN delivery depends on adequate knowledge, adherence to protocols, and interprofessional collaboration. Recent studies underscore the need for continuous education among nursing staff to enhance their competence in recognizing EN complications and ensuring proper feeding practices.[14] Therefore, supporting nursing education on evidence-based nutrition strategies is vital for improving patient outcomes. In conclusion, both the findings of this study and current literature support the use of enteral nutrition as a safe, effective, and evidence-based approach to feeding critically ill patients. Timely initiation of EN plays a critical role in improving recovery, minimizing complications, and optimizing the use of healthcare resources.

In our study, the average number of patients cared for by a nurse per shift in the ICU was 2.30. This nurse-to-patient ratio is a critical factor influencing the quality of nutritional support provided to critically ill patients. Recent literature underscores the impact of nursing workload on the adequacy of EN delivery. For instance, a study by Zaher et al.[28] found that higher nurse workloads were associated with delays in initiating EN and reduced achievement of nutritional goals. Increased nursing workload correlates with higher rates of missed nutritional assessments and suboptimal nutrition delivery in ICU settings.[29,30] These findings suggest that maintaining an optimal nurse-to-patient ratio is essential for ensuring timely initiation and adequate delivery of nutritional support in ICUs. Implementing evidence-based protocols and providing adequate staffing can mitigate the adverse effects of high nursing workloads on patient nutrition outcomes. Therefore, our study's findings highlight the need for healthcare administrators to consider nurse staffing levels as a pivotal component in the delivery of effective nutritional support to critically ill patients.

Limitations

This study is limited to patients admitted to Internal ICUs within a two-month period, covers a patient population at a specific time point, and was conducted in only one center. Therefore, the findings may not be generalizable to patients admitted to Surgical ICUs and Internal ICUs of other institutions and to nurses working in these clinics.

Conclusion

This study highlights several critical factors influencing the effectiveness of nutritional support in intensive care settings, particularly the role of nursing education, perceived competence, and staffing ratios. Despite institutional protocols, a substantial proportion of nurses (70.1%) reported not having received training on nutritional support, which may contribute to knowledge gaps and suboptimal practice. While many nurses expressed a willingness to pursue such training, a notable portion did not indicate variability in motivation and awareness. The self-reported competence scores in initiating, maintaining, and terminating nutritional support suggest moderate to high confidence levels; however, slightly lower confidence during the initiation phase reflects challenges identified in both national and international literature. These findings emphasize the importance of targeted, practical training programs that bridge the gap between theoretical knowledge and clinical application, especially during the initial stages of nutritional care.

The study also reinforces the importance of EN as an evidence-based and cost-effective method, supported by current guidelines and clinical research. Its successful implementation, however, is heavily dependent on nursing competence and adequate staffing. The average nurse-to-patient ratio of 1:2.30 observed in this study, although aligned with international standards, underscores the workload pressures that may hinder the timely and effective delivery of EN. As the literature suggests, higher workloads are associated with delays and deficiencies in nutritional interventions. Therefore, continuous professional development, investment in structured in-service training, and workforce planning are essential strategies for improving the quality of nutritional care. Strengthening nurses' roles through education and support systems will not only enhance patient outcomes but also contribute to the standardization and sustainability of evidence-based nutritional practices in ICUs.

Ethics Committee Approval: The Aksaray University Ethics Committee granted approval for this study (date: 26.10.2023, number: 2023/20-04).

Informed Consent: Written informed consent was obtained from participants.

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