



NUTRITIONAL CHANGES AND NURSING CARE IN INTENSIVE CARE PATIENTS

Beliz YEKELER KAHRAMAN¹

Nuray ENÇ²

ABSTRACT

One of the routine treatments applied in intensive care units is nutritional support. The group that benefits most from nutritional support is patients with malnutrition. Enteral feeding is the first feeding route that should be preferred in the nutritional support of intensive care patients. However, for any reason, when the nutritional needs can not be met by enteral route alone, parenteral feeding is to be used. The success of nutrition and minimizing the complications are ensured by proper nursing care. This study includes current nutritional approaches for intensive care patients.

Keywords: Intensive care, Enteral nutrition, Parenteral nutrition, Nursing

ARTICLE INFO

¹Lecturer, Vocational School of Health, Gümüşhane Universty, TURKEY

yekeler_beliz@hotmail.com



Orcid Number: <https://orcid.org/0000-0003-3063-16588>

²Prof. Dr., İstanbul Universty, Florence Nightingale Nursing Faculty, TURKEY

nuray.enc@istanbul.edu.tr



Orcid Number: <https://orcid.org/0000-0002-2219-9124>

Recieved: 03.04.2019

Accepted: 29.04.2019

Cite This Paper: Yekeler Kahraman, B. (2019). Nutritional Changes and Nursing Care in Intensive Care Patients. Journal of International Health Sciences and Management, 5(8): 19-25.

Nutritional Changes and Nursing Care in Intensive Care Patients

The common feature seen in almost all of the inpatients in intensive care units is that their homeostasis is disrupted in some way (Dikmen, 2004). Malnutrition is an important problem that is seen in about 40% of these patients. Complications such as nosocomial infection and multiple organ failure cause morbidity, increase in mortality and prolongation of stay in the intensive care unit (Chan et al, 1999; Delgado et al, 2000; Moral & Uyar, 2011).

Artificial nourishment became an integral part of the patient treatment in consequence of detection in various studies published towards the end of the 1960s that nutritional support reduces the incidence of complications. Therefore, prevention and treatment of nutritional deficiencies in intensive care patients have an important role (Moral & Uyar, 2011; Şahinoğlu, 2003; Heidegger et al, 2008).

When the patient first arrives intensive care, he/she may have malnutrition or malnutrition may develop resulting in a metabolic response to the disease. Proper use of nutritional support in patients with or at risk of malnutrition may prevent increase in complications (Kreymanna, 2006). The consequences of poor nutritional support situations play also a significant role in the prognosis of the patient. These cause weight loss after fat and muscle tissue loss, deterioration of immune system, increase in risk of infection, decrease in albumin level, edemas in result of blood oncotic pressure, delay in wound healing, surgical incision, complications in suture and anastomosis, gastrointestinal disturbances, muscle weakness, cardiac output, myocardial infarction contractility and compliance decrease, metabolic acidosis, impaired pulmonary function, difficulties in transition to spontaneous ventilation in patients with ventilator support (Moral & Uyar, 2011; Tayek et al, 2011; Waitzberg & Correia, 2003). Preventing or treating malnutrition can make significant saving by avoiding unnecessary treatment costs, reduce hospital morbidity and increase life span (Elia et al, 2010).

In the treatment of the patient, assessment of the nutritional status and the determining of factors such as nutritional deficiency and metabolic stress that will result in nutritional deficiency, take an important place. Nutritional support is seen as life-saving treat to reduce catabolism, meet protein energy requirement and maintain fluid electrolyte balance in critically ill patients (Dikmen, 2004; Gündoğdu, 2008). Therefore, US and European Parenteral and Enteral Nutrition (ASPEN-ESPEN) nutrition guidelines recommend transition to artificial feeding within 24 or 24-48 hours to prevent malnutrition development in critically ill patients who cannot receive oral nutrition (Singer et al, 2009).

The main indication of parenteral nutrition is patients with intestinal failure table. It is also a preferred route for patients who cannot be fed by oral or enteral route. The osmolals of parenteral nutrition solutions are 3-8 times of the serum and hypertonic. Infusion of these solutions into small vessels or low-flow velocity vessels causes vascular damage, thrombosis. While subclavian vein is often preferred, internal jugular vein, basilar vein, axillary vein can be used. Peripheral veins can also be benefited for short-term feeding (Şahinoğlu, 2003; Singer et al, 2009; Gossum et al, 2015).

The success of nutrition and minimizing the complications are ensured by proper nursing care. High- flow velocity vessels should be preferred for the risk of vessel damage. Infusion sets used for nutrition are similar to sets used for intravenous infusion. It is recommended that these sets be replaced every day if lipid containing solutions are used and every 2-3 days if lipid-free solutions are used (Singer et al, 2009; Gossum et al, 2015; Gillies et al, 2005). Drug applications, blood and blood products should not be transfused and blood should not be taken through the catheter. Every 4-6 hours, vital signs and blood sugar should be followed up. If the parenteral nutrition application is to be terminated, the solutions should not be cut off immediately and the infusion velocity should be terminated by slow decreasing (Singer et al, 2009).

Early (<24 hours) enteral feeding should be initiated with nutrients in the appropriate amount for critically ill patients who are hemodynamically stable and have active gastrointestinal system. The amount of enteral feeding is adjusted according to intestinal tolerance and course of illness. There is no need for additional parenteral feeding in patients who tolerate enteral feeding and can feed according to their target values (Kreymanna, 2006).

To the 2010 nursing law, intensive care nurse specifies the nutritional requirements (enteral and parenteral nutrition) of patients, plans nursing care according to their needs and provides continuity of sterilization of appliances used for nutrition (Republic of Turkey Ministry of Health, 2011). As stated in the regulation, nurses are responsible for meeting the nutritional requirements of the patients. When the doctor decides the patient to get enteral feeding, the role of the nurse varies according to the hospital policies, in addition he/she in charge of inserting nasal feeding tube into the patient, nutrition tube maintenance, giving the recommended nutrients to the patient, following gastric residual volume, giving 20-25 cc of water before and after each feeding and prevention of complications (Gündoğdu, 2008; Uysal et al, 2011; Persenius, 2006).

Nasogastric tube is enough for short-term feeding, such as four to six weeks. Before each feeding, coughing, vomiting, aspiration may also cause the wrong placement of the nasogastric tube. That's why, the nurse should regularly check the position of the tube (Uysal et al, 2011; Singer, 2015; Gürkan & Gülseven, 2013). If enteral feeding is planned for more than 4-8 weeks, percutaneous endoscopic gastrostomy (PEG) is recommended against nasogastric tube. The risk of aspiration isn't reduced with PEG. But PEG is recommended for an agitated patient who removes the tube and/or a patient in vegetative state (Singer, 2015).

Preventable complications (tube blockage or displacement, vomiting, diarrhea, aspiration pneumonia, dehydration, etc.) may occur in case nurses fail to provide adequate care for enteral fed patients. That's why, the implementation of enteral feeding practices according to evidence-based practices is extremely important in terms of improving the quality of nursing care (Singer, 2009; Uysal, 2011; Singer, 2015; Gürkan & Gülseven, 2013) .

Enteral nutrition method is among the preventable risk factors of ventilator-associated pneumonia (VAP) that is one of the important hospital infections seen in intensive care units. And in evidence-based practices, it carries the value of evidence at A level. Enteral feeding protocols showed a reduction in pneumonia rates from 6.8 to 3.2 in 1000 ventilator days (Saltoğlu, 2008). To reduce risk of developing VAP; nurses should frequently wash their hands (at every feeding and earlier on), be careful to have the patient's head upright, feed in continuous infusion way instead of bolus style feeding, frequently check the position of the tube.

The responsibility of nurses is primarily to prevent complication developing, to recognize and interpret the changes over the patient when complication develops, inform the doctor by taking necessary precautions. In this context, nursing care, which has a key role in the success of enteral nutrition, should be facilitating nutrition, enhancing patient comfort and reducing complications. Since the bands used for the feeding tube's attachment to nose may cause irritation of the skin, the area should be rotated as the nose is detected. It is recommended to measure gastric residual volume at 6-8 hours intervals in patients who are fed continuously, before each feeding meal in patients who are fed intermittently. The injector used to measure the gastric residual volume should be replaced once in 24 hours, kept dry, and not left dirty after application. To prevent infection development, the feeding set should be changed once in 24 hours and the set change date should be recorded on the nurse follow-up form. Food used in the feed should be stored in the refrigerator after opening, not kept more than 4 hours in the room temperature. In order to prevent cramping, distension of the patient while waiting, food

should be given to the patient by keeping it in the room temperature for a while after removing it from the fridge. After all feedings, it is important to prevent blockage of the tube via giving water to the patient. Solid drug delivery from the supply tube is not recommended. If it is extremely necessary, the drug should be thoroughly crushed and diluted with 30 cc of water. Before and after the procedure, the tube should be washed again with 30 cc of water (Uysal, 2011; Bankhead et al, 2009; Williams & Leslie ,2005).

As a result, parenteral feeding should be given alone when only enteral feeding is not possible and parenteral feeding should be used additionally if enteral feeding can not be tolerated when it is given enough to meet the needs. In most studies, for critical patients, gastrointestinal surgery and oncology patients have achieved better results than parenteral nutrition alone, by enteral feeding or parenteral feeding in addition to enteral feeding. In both cases, parenteral feeding is seen as an addition to enteral feeding, and therefore, the two methods are complementary to each other instead of alternatives (Gossum, 2015; Kreyman, 2006). It is important that all nurses follow evidence-based practices in their daily care, use them in their care, and make provable study or contribute to these studies.

REFERENCES

- Bankhead, R., Boullata, J., Brantley, S., Corkins, M., Guenter, P., Krenitsky, J., Lyman, B., Metheny, N.A., Mueller, C., Robbins, S., Wessel, J., (2009). Enteral nutrition practice recommendations. *Journal of Parenteral and Enteral Nutrition* 33 (2): 122-167.
- Delgado AF, Kimura HM, Cordoso AL, Uehara D, Corrazza FR., (2000). Nutritional follow-up of critically ill infants receiving short term parenteral nutrition. *Rev Hosp Clin Fac Med Sao Paulo*; 55: 3-8
- Dikmen Y. (2004). Nutrition in Intensive Care Conditions. IU Cerrahpaşa Medical Faculty Continuous Medical Education Activities . Nutrition in Health and Illness, Symposium Series No: 41; Page:103-111
- Elia, M., Russell, CA., Stratton, RJ. (2010). Malnutrition in the UK: policies to address the problem. *Proc Nutr Soc*; 69: 470-6.
- Gillies D, O'Riordan L, Wallen M, Morrison A, Rankin K, Nagy S, (2005). Optimal timing for intravenous administration set replacement. *Cochrane Database Syst Rev*; 19 (4): CD003588
- Gossum A.V., Ballarin A., Lievin V., (2015). http://kepan.org.tr/files/pdf/LLL_Kurs/T9_2_metin.pdf Access Date: 20.01.2018
- Gündoğdu HR. (2008). Principles of Nutrition Support Treatment in Intensive Care Patient *Intensive Care Magazine*; 8 (1): 5-21
- Gürkan A., Gülseven B., (2013). Enteral Nutrition: Current Approaches in Care. *Journal of Anatolia Nursing and Health Sciences*; 16: 2
- Heidegger CP, Darmon P, Pichard C., (2008). Enteral vs. parenteral nutrition for the critically ill patient: a combined support should be preferred. *Current Opinion in Critical Care*; 14:408-14
- Chan S, Mc Cowen K, Blackburn GL., (1999). Nutrition management in the ICU. *Chest*, 115 (5): 145-148
- Kreymanna K.G., Bergerb M.M., Deutz N.E., Hiesmayr M., Jolliet P., Kazandjiev G., Nitenberg G., van den B.G., Wernerman J., DGEM (German Society for Nutritional Medicine), Ebner C., Hartl W., Heymann C., Spies C., (2006). ESPEN Guidelines on Enteral Nutrition: Intensive care. *Clinical Nutrition* 25, 210-223

Moral AR, Uyar M., (2011). Nutrition in Intensive Care Patients. Şahinoğlu H, Ed. Intensive Care Problems and Treatments. Nobel Medical Bookstores; 3rd Edition, Page: 525-542

Persenius MW., Larsson BW., Hall-Lord M., (2006). Enteral nutrition in intensive care nurses perceptions and bedside observations. Intensive and Critical Care Nursing; 22: 82-94.

Republic of Turkey Ministry of Health. (2011). Regulation on the Amendment of the Nursing Regulation. Official Gazette No. 27515,

Şahinoğlu AH. (2003). Intensive Care Problems and Treatments. Nobel Medical Bookstores; 3 rd Edition, Page:251-80

Saltoğlu, N. (2008). Prevention and Control of Ventilator Associated With Pneumonia. İ.U. Cerrahpaşa Medical Faculty Continuous Medical Education Activities. Hospital Infections: Prevention and Control Symposium Series No: 60 January; p.89-103

Singer P. (2015). http://kepan.org.tr/files/pdf/LLL_Kurs/T18_2_metin_yeni.pdf Access Date: 20.01.2018

Singer P., Berger M.M., Van den B.G., Biolo G., Calder P., Forbes A., Griffiths R., Kreyman G, Leverve X., Pichard C., (2009). ESPEN Guidelines on Parenteral Nutrition: Intensive Care. Clinical Nutrition, 28, 387-400

Tayek JA. Nutrition. Bongard FS, Sue DY, Vntch JRE, Ed., (2011). Intensive Care Diagnosis and Treatment. Lange Medical books, Güneş (Sun) Medical Bookstores; 3rd edition. Page: 117-134

Uysal N., Eşer İ., Khorsıd L. (2011). Examination of Practice and Records for Enteral Nutrition Process of Nurses. Journal of Anatolia Nursing and Health Sciences; 14: 2

Waitzberg DL, Correia MI., (2003). Nutritional assessment in the hospitalized patient. Curr Opin Clin Nutr Metab Care; 6: 531-8.

Williams TA, Leslie GD., (2005). A review of the nursing care of enteral feeding tubes in critically ill adults: Part II. Intensive and Critical Care Nursing 20: 330-343.