

KNOWLEDGE AND PRACTICES OF INTENSIVE CARE NURSES ON ENTERAL NUTRITION CARE

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INTRODUCTION

Enteral Nutrition (EN) refers to delivery of comprehensive nutritional feed into stomach, duodenum or jejunum by orally or using a tube (Kerby and Parisian, 2011). Further, EN is the preferred method of nutritional administration for critically ill patients (Escribano *et al.*, 2011) who have increased metabolic states and augmented nutritional needs (Webster and Galley, 2000).

EN should be initiated within first 24 – 48 hours of admission for patients who receive ventilator support and having stable hemodynamic states. In the preparation of EN feeds, specialized formulae are recommended to critically ill patients as formulas are less contaminated compared to handmade feeds (Sullivan *et al.*, 2001). When administering EN, continuous feeding is preferred to intermittent feeding as this method prevents peptic ulcers. With regard to risks associated with EN, incorrect position of feeding tubes and aspiration account the foremost. Aspirations can be minimized by keeping the head of the bed to a minimum of 30° to 45° during administering EN. The only reliable method of ascertaining the placement of feeding tube is radiographic confirmation because the results of using capnography and pH testing have been inconsistent. The assessment of gastric residual volume (GRV) is useful to recognize intolerance to EN. In this aspect, the GRV values greater than 200mL are considered as high in critically ill patients who are in mechanical ventilation. The pro-kinetic agents have been used to promote gastric motility and prevent unnecessary interruptions of feeding. The patency of feeding tube should be maintained by routine water flushes as occlusions are more frequent when administering EN (Bourgault *et al.*, 2007).

Intensive Care Unit (ICU) nurses play a major role in maintaining patients' nutritional status at a desired level which should be closer to the nutritional goals. As the nurses' responsibilities in determining EN volume, tube insertion, administration of feeding and related care are important, the nurses' knowledge and practice related to EN will affect the clinical outcome of the patient. For instance, some nursing practices may contribute to patients being malnourished and hypo-caloric (Kalaldehy, 2011) while accurate nursing practices on EN such as, using prokinetic agents, diminishing feeding rate, measurement of gastric residual volume, maintaining correct patient's position and checking tube placement are important to prevent such consequences related to EN (Kalaldehy, 2009). Thus, the present study was carried out to assess the ICU nurses' knowledge and practices on EN care and to identify the barriers in providing EN care thereby ensuring the desired level of EN care for critically ill patients.

METHODOLOGY

A quantitative descriptive study was conducted in three government and provincial hospitals in Colombo, Ratnapura and Kalutara districts during the month of December 2014. Registered nurses who are having two years working experience in the medical, surgical and neurological ICUs of National Hospital of Sri Lanka (NHSL) and general ICUs of General Hospital, Ratnapura and Base Hospital, Panadura requested to fill in structured and pretested questionnaire regarding knowledge and practices on EN care for critically ill patients. The

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questionnaire was consisted of four parts: demographic and background characteristics, knowledge and practices on EN care and barriers to provide good EN care. A purposive sample of 150 was included in the study. Ethical clearance was granted from the Ethical Review Committee of NHSL. The descriptive analysis of data was performed by using SPSS 16 and the data management tool Microsoft Excel 2007.

RESULTS AND DISCUSSION

The response rate was 92%. Seventy three point nine percent study participants were recruited from NHSL while the remainder was from General Hospital, Ratnapura and Base Hospital, Panadura. Majority of the sample (70.3%) represented from the 26-35 years age group while 94.9% of the participants were females. When considering the type of ICU, majority of the participants (31.2%) works in Medical ICUs. It was observed that nearly 45% of the respondents were experienced for 5 to 10 years as ICU nurses (Table 1).

Table 1. Demographic and background characteristics of participants

Characteristic	Frequency	Percentage %
Age (Years)		
26-35	97	70.3
36-45	28	20.3
>46	13	9.4
Gender		
Male	07	5.1
Female	131	94.9
Affiliated Hospital		
National Hospital of Sri Lanka	102	73.9
General Hospital, Ratnapura	25	18.1
Base Hospital, Panadura	11	8.0
Type of ICU		
Medical	43	31.2
Surgical	32	23.2
Neurological	27	19.6
General	36	26.1
Experience as a ICU Nurse (Years)		
2-4	49	35.5
5-10	62	44.9
>10	27	19.5

The assessment of knowledge on EN revealed the following (Figure 1). Majority of the study participants (89.9%) expressed that aspiration is a major risk accompanied with EN while approximately 83% of participants further mentioned that positioning of head of the bed to a minimum of 30° will reduce the risk of aspiration. A similar result was obtained by Bourgault et al. (2007). Among the study participants, only 39.9% were known

that EN should be initiated within first 24-48 hours of admission. However, this result was contradicted the finding of Gupta *et al.* (2012). With regard to preferred administering method of EN, only 40.1% of the respondents correctly identified continuous feeding. This finding was contrast with Mula, Ncama and Maluwa (2014) study as 68.6% of their study group correctly stated continuous feeding. When considering the preparation of EN feeds, nearly three quarter of participants correctly indicated that specialized formulas should be used for critically ill patients. However, this result was not consistent with Mula, *et al.* (2014) study as only half of their participants expressed the correct measure. About 56% of the respondents correctly knew that it is necessary to check GRV before administering EN. This finding was proven by Mula, *et al.* (2014). All the participants identified the importance of flushing tubes with water to prevent occlusion.

ICU nurses' practices regarding Enteral Nutritional care

According to the findings (Table 2), majority of the study participants always perform the correct practices of elevation of head of the bed to 30° - 45° when feeding (71%), educating patients and their relatives regarding nutritional requirements (100%), discarding unused feeds 06 hours after preparation (90.6%) whereas 79.7% of respondents always incorrectly followed the practice of mixing handmade feeds with specialized formulae when preparing

the feeds. Gupta et al. (2012) indicated a similar finding for the correct practice regarding unused feeds.

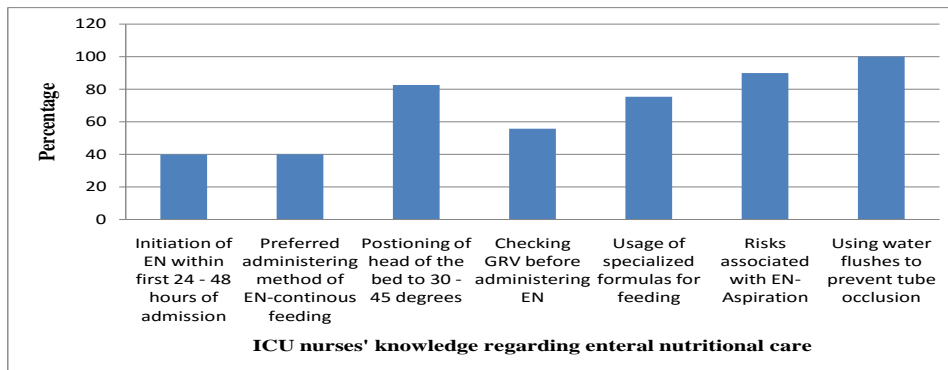


Figure 1. ICU Nurses' knowledge on EN care

It is essential to prepare feeds according to the calorie requirement of patients and to use prokinetic agents in promoting gastric motility all the time. However, 63.8% and 96.4% of the study participants sometimes practice them respectively. Majority of the participants rarely use feeding bags and infusion pumps when feeding (71%) and confirm tube placement by both auscultation and abdominal X ray methods (41.3%). The latter finding was evident by the study conducted in 2012 by Gupta *et al.* About 36% of ICU nurses always followed special diet menus when preparing feeds while 33.3% and 30.4% of the participants followed them sometimes and rarely.

The study findings (Figure 2) revealed that the majority of participants indicated the following barriers will compromise the provision of EN in a desired level. Inadequate dieticians working during weekends and holidays (100%), prioritizing client care activities over EN care (94.9%), unavailability of enteral feeding formulas (73.9%) and inadequate supply of balanced diet (73.9%). However, only 22.5% considered insufficient feeding bags and pumps as a barrier.

Table 2. ICU nurses' practices on EN care

Practice	Always		Sometimes		Rarely	
	N	(%)	N	(%)	N	(%)
Elevate the head of the bed to 30 ⁰ - 45 ⁰ when feeding	98	71.0	40	29.0	0	0.0
Prepare feeds according to the calorie requirement of the client	38	27.5	88	63.8	12	8.7
Follow special diet menus when preparing feeds	50	36.2	46	33.3	42	30.4
Mix handmade feeds and formulas when preparing feeds	110	79.7	17	12.3	11	8.0
Provide health education to clients and their relatives regarding nutritional requirements of the client	138	100.0	0	0.0	0	0.0
Usage of feeding bags and infusion pumps when feeding	12	8.7	28	20.3	98	71.0
Use prokinetic agents to promote gastric motility	05	0.4	133	96.4	0	0.0
Both auscultation and abdominal X ray methods used to confirm tube placement	34	24.6	47	34.0	57	41.3
Unused feed is discarded after 06 hours	125	90.6	13	9.4	0	0.0

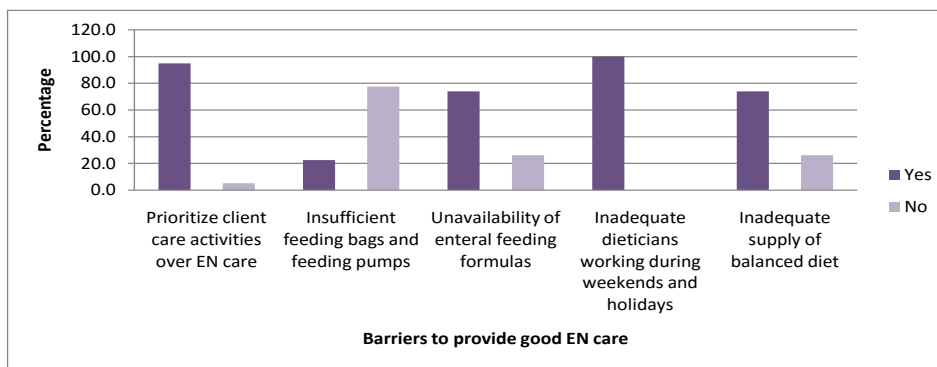


Figure 2. Barriers to provide good EN care

CONCLUSIONS/RECOMMENDATIONS

The study findings suggested that participants' knowledge on EN care is adequate in areas of risk associated with EN, patient positioning and prevention of tube occlusions. However, knowledge on suitable administering method of EN and the time of initiation of EN should be improved. The participants had desirable practices related to elevation of head of the bed when feeding, educate patients and their relatives on nutritional requirements and discard unused feeds. When preparing the feeds the practice of mixing handmade feeds with specialized formulas should be discontinued urgently. Immediate actions should be taken to eliminate the barriers such as inadequate dieticians working during weekends and holidays and prioritizing client care activities over EN care. Further, it is recommended the necessity of increasing the knowledge, improving the practices and eliminating barriers in aspects where there is a deficiency.

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