Original Article

Enteral nutrition practices in the intensive care unit: Understanding of nursing practices and perspectives

Babita Gupta, Pramendra Agrawal, Kapil D Soni, Vikas Yadav, Roshni Dhakal, Shally Khurana, MC Misra

Department of Anaesthesia and Critical Care, Jai Prakash Narayan Apex Trauma Centre, All India Institute of Medical Sciences, New Delhi, India

Abstract

Background: Adequate nutritional support is important for the comprehensive management of patients in intensive care units (ICUs).
Aim: The study was aimed to survey prevalent enteral nutrition practices in the trauma intensive care unit, nurses' perception, and their knowledge of enteral feeding.
Study Design: The study was conducted in the ICU of a level 1 trauma center, Jai Prakash Narayan Apex Trauma Centre, AIIMS, New Delhi, India. The study design used an audit.
Materials and Methods: Sixty questionnaires were distributed and the results analyzed. A database was prepared and the audit was done.
Results: Forty-two (70%) questionnaires were filled and returned. A majority (38) of staff nurses expressed awareness of nutrition guidelines. A large number (32) of staff nurses knew about nutrition protocols of the ICU. Almost all (40) opined enteral nutrition to be the preferred route of nutrition unless contraindicated. All staff nurses were of opinion that enteral nutrition is to be started at the earliest (within 24–48 h of the ICU stay). Everyone opined that the absence of bowel sounds is an absolute contraindication to initiate enteral feeding. Passage of flatus was considered mandatory before starting enteral nutrition by 86% of the respondents. Everyone knew that the method of Ryle's tube feeding in their ICU is intermittent boluses. Only 4 staff nurses were unaware of any method to confirm Ryle's tube position. The backrest elevation rate was 100%. Gastric residual volumes were always checked, but the amount of the gastric residual volume for the next feed to be withheld varied. The majority said that the unused Ryle's tube feed is to be discarded after 6 h. The most preferred (48%) method to upgrade their knowledge of enteral nutrition was from the ICU protocol manual.
Conclusion: Information generated from this study can be helpful in identifying nutrition practices that are lacking and may be used to review and revise enteral feeding practices where necessary.

Key words: Enteral nutrition, intensive care, nursing, tube feeding

Introduction

Adequate nutritional support is important for the comprehensive management of patients in intensive care units (ICUs).[1] Intensivists are always trying to improve the quality of care and audit the prevalent practices in ICU, with the objective of improving healthcare delivery. The study was aimed to survey prevalent enteral nutrition (EN) practices in trauma ICU, nurses' perception, and their knowledge of enteral feeding.

Address for correspondence: Dr. Pramendra Agrawal, Anaesthesiology, A-148, Sector-15, Noida 201 301, Uttar Pradesh, India. E-mail: pramendraagrawal@yahoo.com

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Materials and Methods

The study was conducted in the ICU of a level 1 trauma center, Jai Prakash Narayan Apex Trauma Centre, AIIMS, New Delhi, India. The study design used an audit in which a questionnaire (see the Appendix) was distributed and nurses were asked to respond about EN practices in their own ICU. The participation was voluntary. All participants were informed that all the data would remain anonymous and confidential. It was optional for respondents to reveal their names. A database was prepared and the audit was done.

Results

A total of 60 questionnaires were distributed; 42 of these 60 (70%) questionnaires were filled and returned [Figure 1]. A majority (38) of the staff nurses (SNs) expressed awareness of nutrition guidelines [Figure 2]. A large number (32) of SNs knew about nutrition protocols in the ICU. Almost all (40) opined EN to be the preferred route of nutrition unless contraindicated. All SNs were of opinion that EN is to be started at the earliest (within 24–48 h of the ICU stay). All the SNs responded that the absence of bowel sounds is an absolute contraindication to initiate enteral feeding. Passage of flatus was considered mandatory before starting EN by 86% of the respondents. Everyone knew that the method of Ryle's tube feeding in their ICU is intermittent boluses. Only 4 SNs were not aware of any method to confirm Ryle's tube position, whereas 38 replied that they auscultate for gastric insufflation of air to check for proper Ryle's tube placement. The backrest elevation rate was 100%. As regards the nature of Ryle's tube feed, 71% were of opinion that it is supplied as a blenderized feed and not a premanufactured one. Gastric residual volumes were always checked, but the amount of the gastric residual volume for the next feed to be withheld varied; 50% opined it to be 100 ml, 40% 200 ml, and 10% opined it to be 50 ml. A majority of SNs said that the unused Ryle's tube feed is to be discarded after 6 h, whereas 19% each thought it to be 2 and 4 h, respectively. While all the SNs wanted to upgrade their knowledge of EN, the method preferred varied. The most preferred (48%) method was from the ICU protocol manual, while 33% wanted nursing tutorials and 19% needed preprinted material to enhance their knowledge of EN. Almost 70% of the SNs were having more than 2 years of ICU experience, while the rest were having either less than or equal to 2 years of ICU experience.

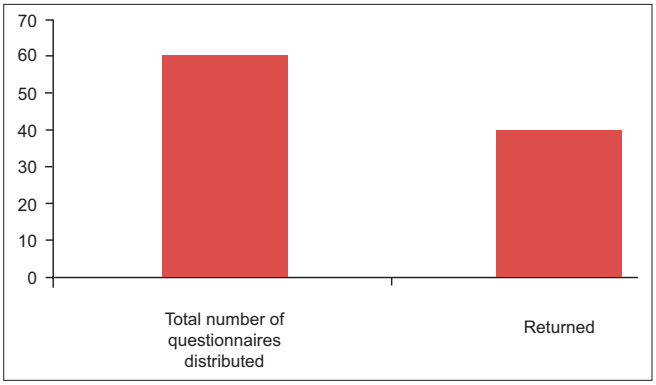

Figure 1: Response rate

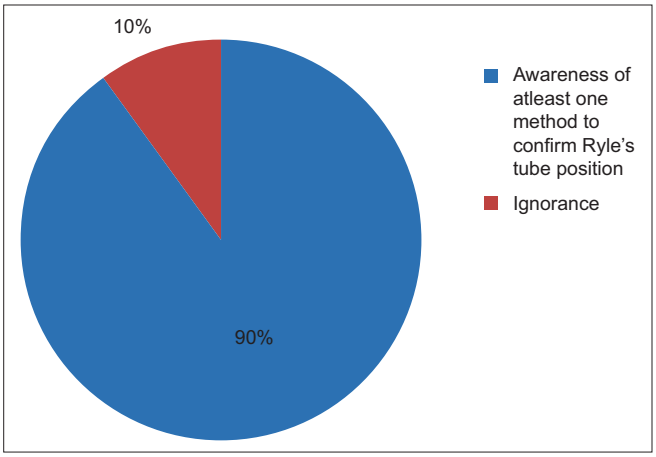

Figure 2: Awareness of at least one method to confirm Ryle's tube position

Discussion

Early administration of EN maintains gastrointestinal integrity and functioning, thus minimizing the translocation of organisms. These accrued benefits translate into a reduced complication rate, reduced length of the ICU stay, and decreased risk of death.[2] The American Society for Parenteral and Enteral Nutrition (ASPEN) guidelines highlighted EN as the preferred route of feeding over parenteral nutrition (PN) in critically ill patients who require nutrition support therapy (grade B) and starting it early within the first 24–48 h following ICU admission (grade C). However, a series of international studies have shown that in many ICUs, EN is not started in all eligible patients and there is delay in administration.[3-6] In European countries, the EN rate ranges from 34% to 60%.[7,8] In our study, all SNs were of opinion that EN was the preferred feeding route unless contraindicated and it is started at the earliest (within 24–48 h of the ICU stay) because a 'window of opportunity' exists in the first 24–72 h following admission before the onset of a hypermetabolic insult. Feedings started within this time frame, compared with feedings started later (after 72 h), are associated with less gut permeability, diminished activation and release of inflammatory cytokines, that is, tumor necrosis factor, and reduced systemic endotoxemia. A meta-analysis by Heyland *et al*[3] showed a trend toward reduced infectious morbidity (relative risk [RR] 0.66; 95% confidence interval [CI] 0.36–1.22; $P = 0.08$) and mortality (RR 0.52; 95% CI 0.25–1.08; $P = 0.08$) with early EN. In our study, a majority of SNs knew the advantages of EN and few guidelines on it. However, many were unaware of the rationale behind it.

The prevalent enteral route as a preferred feeding practice for ICU patients reflects a shift in practice, which probably results from concerns over the cost and higher risks associated with PN. The ASPEN guidelines recommend that in the ICU patient population, neither the absence of bowel sounds nor the evidence of passage of flatus and stool is required for the initiation of enteral feeding (grade B). It is based on the rationale that bowel sounds are only indicative of contractility and do not necessarily relate to mucosal integrity, barrier

function, or absorptive capacity. In this study, we found that SNs were not aware that nonpassage of flatus and absent bowel sounds are not an absolute contraindication to start EN.[9] Each of the SNs responded that the absence of bowel sounds is an absolute contraindication to initiate enteral feeding and 86% of the respondents considered passage of flatus mandatory before starting EN.

The nutrition practices in our center involve discussion among the treating physician, surgeon, and dietician, and nurses usually are not the part of it. Besides following the basic standard protocols, the therapy is individualized as there is great ambiguity and differences among various guidelines about the strength of recommendations. The Ryle's tube feed in our ICU comes from the hospital kitchen and is a blenderized preparation, composition of which can be altered as per patient's physiological needs. Our dietician recommends that the unused Ryle's tube feed is to be discarded after 6 h and a majority (62%) of SNs responded correctly. The method of tube feed in our ICU is intermittent boluses, which are considered to be more physiological. Everyone knew that the method of Ryle's tube feeding in their ICU is intermittent boluses, but majority of them were ignorant about continuous feeding. The backrest elevation rate was 100% in our ICU except in spine injury patients, as a part of ventilator bundle practice. Abdominal radiographs are currently regarded as the gold standard for checking the position of a feeding tube,[10,11] but our data suggest that the practice of auscultation and injecting air into the tube was the most commonly used method to check the placement of the nasogastric tube. The presence of gurgling sounds following an injection of air can be misleading as hearing these does not confirm that the tube is actually in the stomach.[12] Frequent radiographs can be costly and labor-intensive and are associated with the risk of radiation exposure.

The amount of the residual gastric volume for the next feed to be withheld also varied; 50% opined it to be 100 ml, 40% 200 ml, and 10% opined it to be 50 ml. Although the ASPEN guidelines stated that decreasing the cutoff value for gastric residual volume does not protect the patient from the complications, it often leads to inappropriate cessation and may adversely affect the outcome through the reduced volume of EN. Gastric residual volumes in the range of 200–500 ml should raise concern and lead to the implementation of measures to reduce the risk of aspiration, but automatic cessation of feeding should not occur for gastric residual volumes of 500 ml in the absence of other signs of intolerance. It is recommended that if abdominal distension is not increasing, EN can be continued although the quantity and frequency can be decreased.[13]

It is indeed encouraging that all SNs expressed a desire to update their knowledge of EN, although the preferred method varied. A majority (48%) preferred the ICU manual, while 33% wanted nursing tutorials and 19% preferred preprinted material to upgrade their knowledge of EN. A majority of SNs were experienced (>2 years), and having an experienced workforce in the ICU is an added advantage for the patient care.

There are several limitations attached to this study. It was conducted with a limited number of subjects. Various other important aspects such as withholding EN in the setting of hemodynamic compromise, accepting either gastric or small bowel feeding, dosing and calculation of EN, use of supplemental PN, addition of prokinetic agent, and use of adjunctive therapy (glutamine, probiotic, antioxidants vitamins, fibers) were not evaluated.

We conclude that the study helped improve the awareness of the staff about EN. After the study, there is greater involvement and participation of nurses in formulating the nutrition plans of the patients. A new teaching program for them has been initiated, where the rationale behind the current practices and changes is discussed.

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The questionnaire distributed

Appendix A

Evaluation of nurses' knowledge on enteral nutrition

Q1. Are you aware of any guidelines on enteral nutrition?
Yes No

Q2. Does your ICU have any protocol on nutrition?
Yes No

Q3. Which should be the preferred route of nutrition in ICU (unless contraindicated) ?
I. Enteral Nutrition
II. Parenteral nutrition

Q 4. Why so? Give two reasons:
I.
II.

Q 5. How early enteral nutrition should be started (unless contraindicated) ?
I. 24 – 48 hrs

II. After 1 week
III. After 15 days
IV. After 1 month

Q 6. Is absence of bowel sounds a absolute contraindication for enteral nutrition?
Yes No

Q 7. Is passage of flatus a must prior initiating enteral nutrition?
Yes No

Q 8. Do you give intermittent boluses or continuous ryles tube feed in your ICU?
I. Intermittent boluses
II. continuous infusion

Q 9. How do you confirm Ryles tube position in your ICU?
I. Auscultation
II. Chest X rays
III. None
IV. Both

Q 10. Do you elevate (30 to 40 degress) head end of the bed during feeds?
Yes No

Q 11. How is the ryles tube feed supplied in your ICU?
I. Blenderised feed
II. Pre manufactured feed

Q 12. Amount of residual gastric volume for ryles tube feed to be withheld?
I. 50 ml
II. 100ml
III. 200 ml
IV. 500 ml

Q 13. After how much time is the supplied bottle feed discarded(if left unused)?
I. 2hrs
II. 4hrs
III. 6hrs
IV. 24hrs

Q 14. Do you want to upgrade your knowledge on enteral nutrition?
Yes No

Q 15. Which way?
I. Nursing tutorials
II. Pre printed material
III. ICU manual

Designation

Years of ICU experience

Date

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