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ORIGINAL ARTICLE

ICU Nurses' Knowledge about Enteral Feeding in Critically Ill Patients in Nemazee Hospital in Shiraz, Iran

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ABSTRACT

Background: Malnutrition is prevalent among critically ill patients. Previous studies confirmed calorie and protein intake inadequacy in ill patients. In this study, we evaluated the ICU nurses' knowledge about enteral feeding (EF) as a possible cause of inadequate intake in critically ill patients.

Methods: All 140 ICU nurses were asked to complete the questionnaire about EF knowledge, while the cut-off point of good knowledge was set at 75%.

Results: Out of 140 ICU nurses, 101 completed the questionnaire, while 9.9%, 38.6%, 45.5% and 6% of the nurses had <25%, 25-50%, 50-75% and <75% knowledge about EF, respectively.

Conclusion: Most of ICU nurses did not have a good EF knowledge and this can lead to inadequacy of calorie and protein intake in patients. Therefore, increasing the nurses' knowledge about the importance and correct method of EF through education as an interventional method is recommended.

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Introduction

Malnutrition is a prevalent consequence of hospitalization, especially in critically ill patients admitted to Intensive care units (ICU). According to Kubrak et al., the prevalence of malnutrition was 13-78% in acute care patients between 1996 and 2005 (1). Malnutrition has been associated with increased morbidity, mortality and prolonged length of ICU stay among patients (2). Nutritional inadequacy is one of the most important factors that can impair muscle protein turnover, which can cause muscle breakdown and malnutrition in the early phases of severe illnesses (3). Since malnutrition is a major risk factor for patients in ICUs, providing adequate dietary intake is an important intervention, hence nutritional support is considered as a valuable complementary therapy in critically ill patients. (2, 4)

For critically ill patients who cannot consume diet through oral feeding, enteral feeding is recommended which is preferred to parenteral feeding due to lower risk of infectious complications and reduction in economic burden. (4) Early administration of enteral nutrition (EN) restores intestinal motility, maintains gastro-intestinal integrity and function, minimizes the translocation of organisms, improves wound healing, decreases the risk of infections and supports other homeostatic processes. All of these result in

reduced complication rate, reduced length of ICU stay and decreased risk of mortality.(5)

The ICU staffs knowledge plays an effective role in achieving better outcomes in patients who need tube feeding. Previous studies have reported unawareness of ICU nurses about EN in different countries (6-8). Therefore, in this study, we attempted to evaluate the knowledge of our local ICU nurses about EF as a possible cause of inadequate intake in critically ill patients.

Materials and Methods

This study was conducted in Nemazee Hospital ICUs affiliated to Shiraz University of Medical Sciences in Shiraz, Iran. Out of all (n=140) ICU nurses, 101 filled the questionnaire about their knowledge of EF. The questionnaire had 15 questions about different and preference methods of feeding, appropriate time and placement of tube, awareness about different part of local EF guideline and so on. Participation in this study was voluntarily and they were assured that all the data would stay anonymous. The cut off point for having a good knowledge was considered knowledge of more than 75% of all the questions (Table 1). The content and face validity of the questionnaire were approved by fifteen clinical experts.

Results

In a cross sectional study, out of 140 questionnaires distributed among ICU nurses, 101 (72%) completed the questionnaires and returned to the researcher. Totally, 49.5% of ICU nurses figured out that they were aware about the nutrition guidelines for tube feeding and 90.5% knew about local nutrition protocols in their ICUs. Based on the questionnaire, 75.2% of ICU nurses chose enteral feeding as a preferable method of nutrition support in critically ill patients, but only 11.9% of them reported the reason.

With regards to appropriate time (within 24-48 hours of ICU admission), 83.2% of nurses had the knowledge to start enteral feeding, however, 35.6% of them illustrated that the absence of bowel sounds was the only limitation to initiate enteral feeding, and 44.6% of nurses believed that passage of flatus and stool was necessary to start enteral feeding. To confirm the right position of tube in gastrointestinal tract, 74.3% of nurses used auscultation. However, only 56.4% of the ICU nurses knew the name of tube

Table 1: The questionnaire that evaluates the knowledge of ICU nurses about enteral feeding

1. Are you aware of any guidelines on enteral nutrition?
a. Yes b. No c. Somewhat
2. Does your ICU have any protocol on nutrition?
a. Yes b. No
3. Which is the preferred method of nutrition in ICUs? (unless contraindicated)
a. Enteral nutrition b. Parenteral nutrition
4. Why so? Give 2 reasons
1…….. 2……
5. When should enteral nutrition be started? (unless contraindicated)
a. Within 24-48 hours b. after 1 week c. after 15 days d. after 1 month
6. Is absence of bowel sounds an absolute contraindication of enteral nutrition?
a. Yes b. No
7. Is passage of flatus a must prior initiating enteral nutrition?
a. Yes b. No
8. How do you confirm the position of GI tube in your ICU?
a. Auscultation b. Chest x ray c. None d. Both
9. Which method do you use in your ICU?
a. Bolus b. continuous c. both (more……)
10. What is the maximum time to reach the target volume of feeding?
a. 48 hours b. 72 hours c. 1 week d. 2 weeks
11. Do you elevate (30 to 40 degrees) head end of the bed during feeds?
a. Yes b. No
12. Amount of residual gastric volume for GI tube feeding to be withheld?
a. 50 ml b. 100ml c. 200ml d. 500 ml
13. How is the GI tube feed supplied in your ICU?
a. Blenderised feed b. Pre manufactured feed c. Standard powder
14. How much standard powder and water needed to mix for preparation of nutritional feeding?
a. Yes (water…….+ powder…… , name the product:……) b. No
15. After how much time is the supplied bottle feed discarded if left unused?
a. 2 hours b. 4hours c. 6hours d. 24 hours

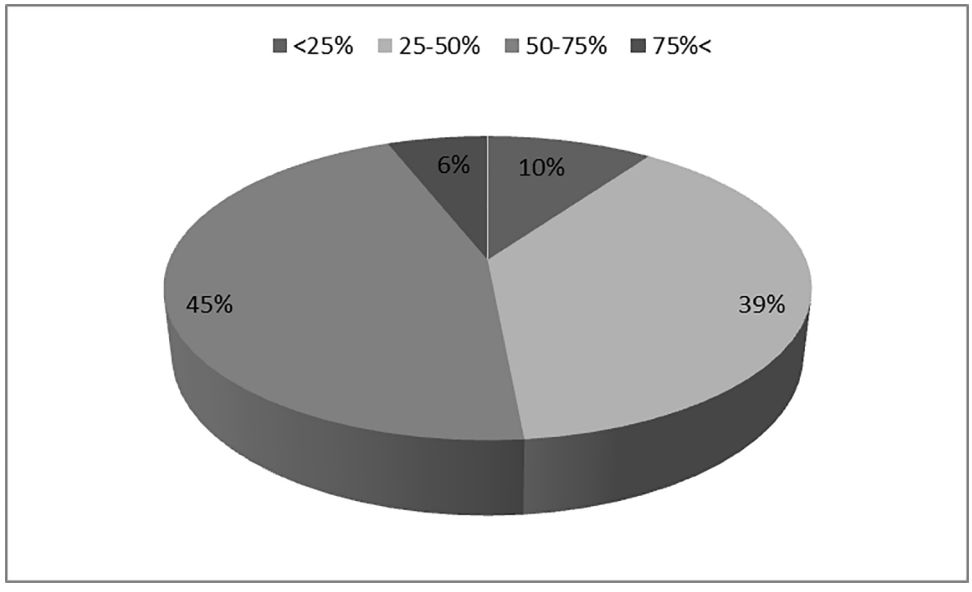

Figure 1: Distribution of ICU nurses' knowledge about enteral feeding.

feeding method (bolus, continuous or both) that they used in their units.

Only 42.6% of the ICU nurses had information about the maximum duration (72 hours) to reach feeding volume goal in patients after initial enteral nutrition. Among all nurses who completed the questionnaire, 98% knew about the right physical position of patients during enteral feeding, but only 25.7% of them reported the exact residual gastric volume to stop enteral feeding. Nurses' knowledge about enteral feeding formulas had been checked in 3 questions and 90.1% of the nurses preferred standard powder formulas compare to others.

However, only 37.6% of them knew about the exact proportion of water and powder to prepare the formula. Furthermore, only 25.7% of the nurses were familiar with the maximum time to discard prepared formula which was not used. According to the results, only 9.9% of all nurses had the knowledge of <25% and 38.6% had the knowledge of 25-50%. In addition, 45.5% and 6% of the nurses had the knowledge of 50-75% and <75% about enteral feeding, respectively (Figure 1).

Discussion

This study showed that most of the ICU nurses had inadequate knowledge about enteral feeding in critically ill patients with less than 75% correct answers to all questions. Our previous cohort study in critically ill patients who stayed more than seven days in ICUs showed that 16% of severe ill patients did not receive any form of feeding throughout the entire period of ICU stay. Although 79.2% of our patients received enteral feeding, but the average time to initiate enteral feeding was 4.27 days and the intake of calorie and protein from nutrition therapy were 26.26 and 26.48 percent of their energy and protein prescription respectively (1).

Lack of enteral feeding knowledge among ICU nurses can be one of the most important reasons for inadequate intake in these patients, which was confirmed by the result of the present study too (1). Enteral nutrition has been recommended by international guidelines as precedent route of feeding in ICU patients. In comparison to the parenteral feeding, this method provides better preservation of gastrointestinal epithelium and motility, lower risk of infection as well as its economic benefits (5, 9, 10). The result of this study showed that almost all ICU nurses considered enteral nutrition as the preferred method of feeding, but most of them did not know the reason for that.

Early supplemental nutrition (24-48 hours after admission to ICU) has been recommended in critically ill patients in ESPEN guidelines. Previous studies have shown that undernourishment and delay in enteral feeding increased the rate of malnutrition, risk of morbidity and mortality in ill patients (1, 11). In addition, ASPEN guidelines recommend that "neither the absence of bowel sounds nor the evidence of passage of flatus and stool was required for the initiation of enteral feeding". In this study, most of the nurses knew the best time to start enteral feeding, but more than half of them did not know the real contraindications, which prevented them from early feeding (12).

Bolus, continuous and intermittent infusions are three techniques to administer enteral alimentation (13). Each technique has special benefits and complications, but bolus feeding is the only method of feeding in our adult ICUs due to lack of appropriate equipment and formulas for other methods. However,

ICU nurses in this study were not familiar with the name of enteral infusion method that they used. It seems that unawareness and working based on previous experiences were the two main reasons for this.

Correct insertion of gastrointestinal tube is another concern during enteral nutrition. Though many nurses believed that simple auscultation was reliable for assessing tube place, but the golden standard was abdominal radiograph. Using auscultation to distinguish the position of tube in gastrointestinal (GI) tract or tracheobronchial tree or pleural space was not peremptory. Testing the pH of aspirated fluid after tube insertion can be used as a route before requesting abdominal radiograph (14-17). However, most of the nurses in this study used auscultation to check the correct place of tube in GI tract.

Less than 50% of the ICU nurses did not know the maximum duration to reach feeding volume goal, whiles enteral guidelines recommend reaching the goal within 72 hours after initial feeding (18, 19). Nieuwenhoven et al.'s study showed endotrachial aspiration of gastric content after using radioactive labeled enteral formula in supine position in comparison to the semirecumbent status (20). Some guidelines have recommend to place patients in the position with the head of bed elevated to 30-45 degrees for 30 minutes after feeding (21). A total of 200-250 mL of gastric residual volume is considered the cutoff point to stop enteral nutrition by most guidelines (13, 22, 23).

In this study, the ICU nurses' awarness about patients' position was not associated with their approach about residual gastric volume. In addition, ASPEN guideline suggested discarding prepared formula after 4 hours, however, in this study, most of the ICU nurses did not know how to prepare and preserve the formula before infusion (24). It seems that ICU nurses' unawareness was related to lack of sufficient education. Insufficient equipment and educational booklets/CDs were the other causes.

The limitation in the present study was that we recruited nurses from one hospital. In addition, we did not record their work experience. We suggested registering other causes of inadequate dietary intake in addition to ICU nurses' knowledge in future studies. Conducting a clinical trial study about nutritional intake in severe ill patients after educational intervention in ICU nurses is also recommended.

Conclusion

Most of the ICUs nurses did not have a suitable knowledge about EF, which can be a cause of inadequate intake in these patients. Increasing ICU nurses' knowledge about the importance and correct method of enteral feeding through different educational methods as an interventional study seems necessary.

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Conflict of Interest

None declared.

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