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Evaluation of Clinical Nutritional Knowledge in Iranian Critical Care Nurses.

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ABSTRACT

The nurses who care for the critically ill patient have to know about all aspects of the patients' needs; the nutritional knowledge to the patients is one of them, accordingly, there are a lack of studies about this issue in the critical care units in order to establish the proper educational programs to the nurses. The purposes of this study were to examine: (1) the nutritional knowledge of critical care nurses and (2) factors that affect on nutritional knowledge. All intensive care nurses in a university teaching hospital of Kermanshah (n=53) responded to a reliable and valid questionnaire. Nutritional knowledge assessed in two parts: basic and practical. Then, descriptive and analytic statistics used for data analysis. The mean nutritional knowledge score for all nurses was 59.4% and mean score of basic and practical nutrition knowledge was 59.1% and 59.6% respectively. In basic part, mean knowledge score about essential nutrients, energy requirement, nutritional status and malnutrition was 61.6%, 55%, 20% and 80% respectively. Also, mean knowledge score for clinical part including nutritional support, special diet and roles of nutritional team and nurses was 57.5%, 80% and 60%. There wasn't statistically significant association between years of graduation, age, gender, ICU work experience and passed ICU course with nutritional knowledge. The nutrition knowledge of intensive care nurses was insufficient. Therefore, there are still some spaces for improvement. An increase in quality and quantity of nurses student curriculum and continue education even after graduation is recommended. Also, training professional nurses for ICU is suggested.

Keywords: intensive care unit, knowledge, nurses, nutrition assessment

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INTRODUCTION

Nutrition is an essential part of disease prevention in ICU [1], Critically ill patients are in hypermetabolic and hypercatabolic condition that prone them to loss of lean body mass, negative nitrogen balance and malnutrition[2-4]. Malnutrition is a most common and unfavorable finding in ICU, that is associated with wide variety of adverse outcomes such as delayed wound healing, pressure ulcers, infections, slower ventilator weaning, increased length of hospitalization, increased morbidity and mortality[5,6]. Therefore appropriate nutritional support can effectively improve patients' outcome [7,8].

Providing optimal nutrition support needs a teamwork care [9,10]. Nurses play unique role to meet the patient's nutritional needs because they have continuous and most contact with critically ill patients [11,12]. In ICU, the nurses deliver nutritional supports and counsel with dietitian and physician to supplying best possible nutritional outcomes. Also critical care nurses need to have enough knowledge about indications, administration, complications and managing various types of nutritional supports; in addition, ICU nurses had to be familiar with energy requirements calculations, daily caloric delivery analyzing and early enteral nutrition advocating [13-15].

Knowledge about nutrition is a vital part of nursing knowledge and practice. In the clinical cares, Nutrition knowledge of nurses will be able to set nutritional goals and dietary advice to patients or their families[16]. Also enough nutritional knowledge can prevent from numerous complications such as inadequate delivery of nutrition, that in prolong time result weight loss and malnutrition[17]. However, findings of many studies have highlighted deficiencies in nutritional knowledge and practice among healthcare workers and nurses[16-19].

Facing with insufficient data regarding the nutritional knowledge of critical care nurses in Iran, this study was conducted to determine the knowledge level of such group in main teaching hospital in west of Iran, Kermanshah.

MATERIALS AND METHODS

A descriptive analytic study designed to evaluate nutritional knowledge of intensive care nurses of Kermanshah city, Western province of Iran. This study was part of greater investigation about nutritional support in ICU department. All critical care nurses (n=53) who were working in intensive care units of Taleghani hospital, the main center for injured patients in western of Iran included for this investigation. The method of sampling was Census. Data were collected from September 2010 to March 2011. Overall, 47 critical care nurses of two trauma ICU completed the questionnaires. Exclusion criteria was incomplete response to questionnaire (n=4) and absence for two weeks or longer in workhouse (n=2).

Instrument

Data gathering tools was a two-part researcher-made questionnaire, included demographic information and nutritional knowledge. The demographic part concerned with questions about age, gender, graduation year, years of working, duration of working in ICU as well as education level. The nutritional knowledge questionnaire consisted of 28 multiple choice questions about basic and practical nutrition knowledge. Correct answers scored one and incorrect or no response answers scored zero. Basic nutrition knowledge evaluated by 10 questions consisted of 3 questions about nutrients, 2 questions on energy expenditure, 2 questions on assessment of nutritional status and 3 questions on malnutrition. The practical nutrition knowledge assessed by 18 questions including 16 questions about nutritional support regarding goals, types, benefits and complications, indications, nursing cares and managements, one question about special nutritional diet and one question related to nutritional team and nursing role in improvement of nutritional status of critical ill patients. The nutritional knowledge of nurses were classified as 'very low' if they answered less than 24% of questions, 'low' if they answered 25-39% of questions, 'moderate' if they answered 40-59% of question and 'good', if they answered 60- 79% of questions and 'excellent' if they answered 80-100% of all questions.

The content validity of the questionnaire was established by thirteen experts in the field of nutrition, critical care and nursing. A pilot study was conducted to test reliability and clarity of questions through thirty

critical care nurses in a pretest- posttest exam with a two week interval and 76% α Cronbach coefficient was obtained for internal consistency.

Data were analyzed with STATA software version 11. Descriptive statistics including frequencies, percentages and appropriate statistics were used to evaluate the critical care nurses knowledge of nutrition. Independent t test was used to compare the knowledge score of participants in two separated groups of sex, year of graduation, ICU work experience, passed ICU course and nutrition workshop. One-way Analysis of variance (ANOVA) used to compare knowledge score for groups of age and work experience among participants. The level of significant was set at less than 0.05.

Ethical approve was obtained from the Ethical Committee of Kermanshah University of Medical Science (KUMS). The administrators of Taleghani hospital and intensive care unit agreed to conduct the study. The consent was taken from the Participation to recruiting in the study.

RESULTS

In this study, the response rate was 88%. The average age of respondents was 30 ± 6.3 years. Most of nurses in two ICUs were women (70.2%, n=33). Most participants graduated on 2000-2009(76.6%, n=36). Mean number of work experience for all participants was 6.5 ± 6.5 years and most of nurses had a work experience of less than 5 years (53.2%, n=25). Also, most of them have been working less than 5 years in ICU department (78.7%, n=37) and mean ICU work experience was 3.7 ± 4.4 years. All of participants were registered nurse (100%, n= 47). Only 4 nurses have passed in-service course about ICU (8.51%). All participants didn't passed nutritional workshop (n=0)(see Table-1 for demographic characteristic of participants).

Table 1: Demographic characteristic of participants

Demographic characteristics	values	Total (N=47)	
		number	Percent
Age	20-29	30	63.8
	30-39	11	23.4
	40-49	5	10.6
	≥ 50	1	2.1
Gender	Male	14	29.7
	Female	33	70.2
year of graduation	≤ 1990	2	4.3
	1991-1999	8	17
	2000-2009	36	76.6
	≥ 2010	1	2.1
Work experience (year)	0-4	25	53.2
	5-9	10	21.3
	> 10	12	25.5
ICU work experience (year)	0-4	37	78.7
	5-9	4	8.5
	>10	6	12.8
Passed ICU course	Yes	4	8.5
	No	42	89.3
	No response	1	2.1

The overall nutrition knowledge score for critical care nurses was between 35.7 to 85.7 percent (10 to 24 scores out of 28) and mean score was 59.4% (16.65 ± 3.5 out of 28). The nutritional knowledge score for about half of critical care nurses (48.9%, n= 23) was between 40-59%, that recognized into moderate class (see Table-2 for classification the nutritional knowledge of critical care nurses).

The questionnaire consisted of two parts; mean score for basic and practical nutritional knowledge was 59.1% (5.9 out of 10) and 59.6 % (10.7 out of 18) respectively. The study showed that knowledge of intensive care nurses regarding principle of nutrition was lower than application of nutrition science in ICU (59.1% versus 59.6%), but this difference wasn't statistically significant. In basic part or principle of nutrition science including essential nutrients, energy requirement, nutritional status and malnutrition mean knowledge

score was 61.6%, 55%, 20% and 80% respectively. In clinical part including nutritional support, special diet and roles of nutritional team and nurses mean nutritional knowledge was 57.5%, 80% and 60%.

Table 2: nutritional knowledge of critical care nurses

Nutrition knowledge	basic		practical		total	
	number	percent	number	percent	number	percent
Very low	1	2.1	0	0	0	0
Low	1	2.1	2	4.3	3	6.4
Moderate	18	38.3	21	44.7	23	48.9
Good	17	36.2	20	42.6	18	38.3
Excellent	10	21.3	4	8.5	3	6.4

Results of this study revealed that only half of critical care nurses (51%, n=24) recognized essential nutrients. More than half of participants didn't know the amount of energy supplying from one gram of macronutrients (53.1%, n=25). In our study most of participants (78.7%, n=37) couldn't able to calculate caloric requirement of critically ill patients. Also, knowledge about nutritional assessment tools evaluated, findings revealed that 55.3 % (n=26) of nurses did not response to this question correctly. Knowledge of intensive care nurses related to malnutrition, clinical features and adverse outcomes was better than other parts of basic nutrition science, so that 82.2 % (n=39) of participants provided correct answer. In practical part, 87.2 % (n=41) of critical care nurses answered correct response to question about special diet. Finally, only about half of nurses (61.7%, n=29) were familiar with their roles in nutritional team and nurses that aims improving outcomes of critically ill patients.

In this study there wasn't significant relationship between nutritional knowledge and age, gender, year of graduation, work experience, ICU work experience, educational level and passed ICU course.

DISCUSSION

Results of this study showed insufficient nutritional knowledge among the critical care nurses because the mean of obtained scores was less than 60%. These findings are similar to results of previous studies that indicated nutritional knowledge of nurses and other healthcare workers is inadequate[16-22]. Possible reason for this finding may be related to low priority of nutritional science among nursing students and educational programs of nursing schools. Another reason may be inadequate continuing education courses and in-service educations for critical care nurses who were working in ICU.

The results revealed that the basic nutritional knowledge was lower than the practical knowledge, while only half of critical care nurses recognized essential nutrients that are very common and basic information in nutrition science. Finding was accordance with results of other researchers found nurses, dietitians and physicians had a fairly low knowledge about principle of nutritional science[17;19;20]. Also, some researchers realized that intensive care nurses knowledge related to any aspects of enteral nutrition was inadequate[18;21;22].

This study showed not significant relationship between nutritional knowledge, age, gender, work experience, ICU work experience, and education level and passed ICU course. Schaller et al. found that older nurses with more experience and general training scored higher average nutrition knowledge score[16]. Reason of this result may be related to lack of continuing education sessions for older critical care nurses. Therefore we recommend more in-service educational course for nursing staffs.

CONCLUSION

The nutritional knowledge of intensive care nurses was insufficient for optimal therapeutic goals and nursing care of critically ill patients. According to hospitals and training methods in Iran to employ registered nurses in ICU departments, it is necessary to modify nursing students' curriculums and training to educate professional nurses for ICU. Continuous education and promotional factors need to apply for improving nutritional knowledge and health care in ICU.

Limitations

The sample size of our study was relatively low, so it is recommended the other studies with more participants.

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