Interventional Nursing Program for Nurses Practices about Enteral Feeding Guidelines in Critical Units

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Abstract

Background: Malnutrition among critical ill patients is a common and serious problem followed by sever clinical results, nutrition is one of the most important principles in treating many diseases and directly intervenes in pathophysiological changes and critical results of the disease. Regular enteral feeding is an effective intervention for critically ill patients to meet their nutritional and physiological needs. Nursing care for enteral feeding patients plays a vital role in ensuring enteral feeding efficiency and adopting evidence-based methods to improve patients' feeding and clinical outcomes.

Objectives of the study: this study aims to find out the effectiveness of interventional program concerning enteral feeding guideline on nurses' practices in critical care units.

Methodology: A pre-experimental study design was carried out in the critical care units of Al Ramadi Teaching Hospital and Al Fallujah Teaching Hospital at Al-Anbar Governorate between the period 3rd of November 2020 to 25th of February 2021. A non-probability sampling method consists of 32 nurses was selected purposively based on the study criteria.

Results: The participants in present study was 87.5% were males and 12.5% were females and age between 20-30 years was 59.4% of sample. In addition to that, 40.6% of the patients were morning shift and 59.4% were night Shift and there were significant statistical differences between the pre and posttest for intervention program at $p \leq 0.05$ value, and there were a highly significant correlation between the effectiveness of interventional program and educational level of nurses, and time working at $p \leq 0.05$.

Conclusion: The study concluded that the interventional nursing program had a positive impact on nurses' practices regarding enteral feeding.

Recommendations: The study recommends to apply the guideline for Parenteral and Enteral Nutrition in order to avoid the complication of enteral feeding for critical patients and conducting continuous training programs about safe administration of enteral nutrition and medications as well as skills related to patients nutritional assessment to develop and improve nurses' knowledge and practices regarding the management of patients who are receiving enteral feeding.

Key Words: *Interventional, Nurses Practice, Evidence-Based Guidelines, Enteral Feeding, Critical Care Units.*

Introduction

Patients with critical illness are patients with severe life-threatening conditions with significant consequences, including malnutrition. Typically associated with increased hypermetabolic and lean body weight reduction leading to malnutrition [1].

Most patients including critical care patients fail to intake the required nutrition like normal people [2]. Regular enteral feeding is an important intervention for critically ill patients to meet their nutritional and physiological needs [3]. Enteral feeding is one of the most efficient nutritional methods in intensive care. In addition to its cost effectiveness, it has become more

popular with other methods of nutrition in the promotion of patient immunity and survival [4]. Nutrition support is now seen as an important part of the strategy for managing critically ill patients in the ICU [5]. Enteral feeding has a particular benefit in helping reduce some of the inflammatory responses to lack of nutrition. It can increase intestinal contractility, which helps control bacterial overgrowth [6]

Nutritional support is currently designed to limit catabolic response and systemic inflammation as well encouraging return to physiological baseline. Appropriate energy and protein consumption is related to better health outcomes in critical illness [7]. Evidences-based practices (EBPs), particularly in critically ill patients have substantial impact on reducing variations in clinical practice and ensuring standardized nutritional care. EBP allows healthcare professionals to make the best medical judgments, resulting in less harm being caused [8]. In recent studies, nutrition support guidelines have been shown to be effective in maintaining nutritional outcomes in a wide range of patients in intensive care. It is important to find methods to improve early enteral feeding delivery that meets requirements and encourages positive performance [7]. The American Society for Enteral and Parenteral Nutrition (ASPEN) is a major source of nutritional recommendations, and the nurse-centered guidelines included in this study are based on the most recent ASPEN guideline update[9].

Methodology

Design and setting of the study: A pre-experimental study design was carried out in the critical care units at Al Ramadi Teaching Hospital and Al Fallujah Teaching Hospital of Al-Anbar Governorate from the period 3rd of November 2020 to 25th of February 2021, in order to find out the effectiveness of the intervention program concerning enteral feeding on nurses' practices.

Sample of the study: a purposive sample was consists of (32) nurses was selected according to study criteria and after obtains verbal and written consent permission from them.

The study instrument: Part one, included the study sample's socio-demographic characteristics, and Part two focused on the nurses' practices regarding enteral feeding, the instruments consist of 30 items of practical knowledge and 46 items of observational checklist based on American Society for Parenteral and Enteral Nutrition guideline (ASPEN 2017), includes two domains: First domain concerning nurses' practices regarding enteral feeding administration which contain (26) items, Second domain: concerning nurses' practices regarding medications Administration via enteral feeding tube which of (20) items.

Statistical Analysis: The IBM Statistical Package of Social Sciences (SPSS) Version 22 was used to analyze the results. Both descriptive statistical analysis and inferential statistical analysis approaches were used in order to investigate or predicts the relationships between variables.

Results

Table (1): Distribution of the Study Sample by their Socio-demographic Characteristics (n=32).

Variables	Classification	Frequency (F)	Percentage (%)
Age/ years	20-30 years	19	59.4
	31-40 years	10	31.3
	41-50 years	2	6.3
	51-60 years	1	3.1

Cont... **Table (1): Distribution of the Study Sample by their Socio-demographic Characteristics (n=32).**

Gender	Male	28	87.5
	Female	4	12.5
	Total	32	100
Level of Education	Nursing School	5	15.6
	Nursing Institute	26	81.3
	College of Nursing	1	3.1
Years of Experience in nursing	1-5 years	14	43.8
	6-10 years	11	34.4
	11-15 years	5	15.6
	16-20 years	1	3.1
	31-35 years	1	3.1
Years of Experience in Critical Care Unit	1-5 years	28	87.5
	6-10 years	3	9.4
	11-15 years	1	3.1
Time Working	Morning Shift	13	40.6
	Night Shift	19	59.4
Training course about Enteral Feeding	Yes	-	-
	No	32	100
Self-Learning	Yes	32	100
	No	-	-
Type of Self-Learning	Internet: Social Media	17	53.1
	Internet: Scientific Websites	9	28.1
	Personal reading (library)	6	18.8

F=Frequency; %=Percentage.

Table (1) shows that the high percent (87.5%) of nurses were males at age group (20-30) years old which of (59.4%), high percent of them (81.3%) was graduated from nursing institute, (43.8%) of them have (1-5) years of experiences, 87.5% of them have experiences in critical care units, and 100% of the nurses not participant in a training courses related to enteral feeding.

Table (2): Statistical Differences between Pre and Posttest for Interventional Program

Paired Samples Statistics							
Program Domains		**Mean**	**N**	**SD**	**T**	**Df**	**Sig. P≤ 0.05**
Pair 1	pre practical nurses knowledge	44.125	32	5.097	12.986	31	0.00 H.S
	post practical nurses knowledge	55.781	32	1.773			
Pair 2	Pre applying to administration of nutrition	43.968	32	2.822	19.602	31	0.00 H.S
	Post applying to administration of nutrition	63.281	32	4.017			
Pair 3	pre applying to administration of medication	34.468	32	2.199	22.220	31	0.00 H.S
	post applying to administration of medication	48.718	32	2.997			

T. = T.test, Df. = Degree of freedom, Sig. =Significance (≤0.05=significant, ≤0.001=high significant & ≥ 0.05=no significant).

Table (2) presented that there were significant differences between Pre and Posttest practical nurses knowledge, practices applying to administration of nutrition, and their practices applying to administration of medication according to guideline at **P≤ 0.05.**

Table (3): Statistical Differences between Pre and Posttest for Interventional Program

Paired Samples Test								
Sig. P≤ 0.05	**Df.**	**T**	**Paired Differences**					**Periods of program**
			95%Confidence Interval of the Difference		**Std. Error Mean**	**Std. Deviation**	**Mean**	
			Upper	**Lower**				
.000 H.S.	31	29.806	73.287	63.900	2.301	13.018	68.593	Pre- post Program

T. = T.test, Df. = Degree of freedom, Sig. =Significance.

Table (4): Relationship between Effectiveness of Interventional Program and Nurses Years experiences in nursing, Experience in critical care unit, Time working, and Level of Education

program	Level of education	Time working	Experience in critical care	Years experiences	setting	Variables	
.189	-.139	-.250	.250	1	-.092	Pearson Correlation	Years experiences in nursing
.300	.449	.167	.168		.615	Sig. (2-tailed)	
32	32	32	32	32	32	N	
.044	-.235	-.284	1	.250	-.092	Pearson Correlation	Experience in critical care unit
.810	.195	.115		.168	.618	Sig. (2-tailed)	
32	32	32	32	32	32	N	
-.347	.365	1	-.284	-.250	.214	Pearson Correlation	Time working
.051 (S.)	.040		.115	.167	.241	Sig. (2-tailed)	
32	32	32	32	32	32	N	
-.389	1	.365	-.235	-.139	.078	Pearson Correlation	Level of education
.028 (HS)		.040	.195	.449	.672	Sig. (2-tailed)	
32	32	32	32	32	32	N	

According to table (3), there were high significant statistical differences between the pre and posttest for intervention program at $p \leq 0.05$ value.

Sig. =Significance (≤ 0.05=significant, ≤ 0.001=high significant & ≥ 0.05=no significant)

The findings of table (4) revealed that there were significant statistical correlation between the effectiveness of interventional program and education level and time working of the study sample at $p<0.001$. While there was no significant statistical correlation between the effectiveness of interventional program andtheir setting, years of experience in nursing field and experience in critical care unit.

Discussion

Applying the standard of enteral feeding for critical patients is very important procedure must be used by nurses to avoid complication and other feeding disorder. For these reason the researchers conduct the present study to apply the standard guideline of (ASPEN) version 2017 for nurses, which includedthirty two nurse working in critical care units in order to find out the effectiveness of the intervention program concerning enteral feeding on their practices. There were 87.5% of them was males at age group (20-30) years old, graduated from nursing institute which of 81.3%, 59.4% of them working at night shift, 43.8% of them have (1-5) years of experiences in nursing and 87.5% of them had 1 to 5 years of experience in critical care units especially in ICU and 100% of the nurses had no participant in a training courses related to enteral feeding.

This socio-demographic data of the study participants consistent with the study in Uganda which conducted at International Hospital Kampala/Uganda, the participants in the study was 62.5% at age group (20-30) years old [10]. Another study that was done inYemen to assess the level of ICU nurses' knowledge regarding the management of enteral nutrition conducted on 174 nurses in Yemen's capital city showed that more than half of ICU staff have a nursing diploma degree and work experience of five years or less in nursing[3], as well as study in Saudi Arab which assess the effect of educational nursing guidelineson nurses' knowledge and practices regarding enteral feeding in critical care units among 55 nurses at Benha University Hospital, reported that more than two thirds of nurses had 1 to less than 5 years of experience in ICU [11].

According to findings of present study, the practical knowledge of nurses related to mechanism of enteral feeding was 52.91% incorrect answer at pretest, while the correct answer of total practical knowledge of them was improved after applying the nursing interventional program at posttest to 85.73% . Regarding the nurse's practice about enteral feeding, the nurses practice not applying the correct guideline for enteral feeding administration at pretest was 22.22%, while the correct applying of enteral feeding administration was improved at 66.82%. On the other hand, nurses Practice regarding the correct applying to administration of medication according to guideline at pretest was 23.125%, and their practices was improved in posttest at 67.03%. The present study findings revealed that there were highly significant statistical differences between the pre and posttest intervention program at ($p<0.05$). Bedier, et al., (2016) conducted a study on 60 nurses working in intensive care units to assess their performance in providing nutrition support, they reported that the total mean practice score regarding caring of patients receiving nasogastric tube feeding were improved as good score was 40.18±3.30 pre-program, while it reached 87.09±14.55 after implementation of their educational program[12]. A study which was done in South Korea that was documented the designed education program was having an effective impact on improving nurses' knowledge and practice about enteral feeding in the critical care unit[13], Khalil, (2017) As well also reported that there was significant and positive correlation between subjects' knowledge and skills before providing them education program about enteral feeding and their knowledge and skills after health education program at ($p<0.001$)[14].

The results of present study revealed that there were highly significant relation between the effectiveness of interventional program and demographic characteristics regarding education level and time working of the study sample at $p<0.001$, Bedier, et al., (2016), reported that there were no significant association was found between nurses knowledge and practice regarding nutritional support and their socio-demographic characteristics. Similarly Mula, (2014) conducted a study on 51 nurses to assess competency and determine challenges experienced in enteral feeding practice in the intensive care unit in Malawi, reported that there was no significant association between nurses age and their knowledge level[12],[15].

Conclusions

The study concluded that the interventional nursing program had a positive impact on nurses' practices regarding enteral feeding.

Recommendations:

According to results of presents study the researcher's recommended

• Tray to apply the guideline for Parenteral and Enteral Nutrition in critical units to avoid the complication of enteral feeding .

• Establishing a written update protocol regarding enteral feeding to ensure sufficient and safe nurses knowledge and practice.

• Conducting Continuous training programs about safe administration of enteral feeding and medications as well as skills related to patients nutritional assessment to develop and improve nurses' knowledge and practices regarding the management of patients who are receiving enteral feeding.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

Conflict of Interest: The authors declare that they have no conflict of interest.

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References

1. Koontalay A, Sangsaikaew A & Khamrassame A. Effect of a Clinical Nursing Practice Guideline of Enteral Nutrition Care on the Duration of Mechanical Ventilator for Critically Ill Patients. ANR. 2020 Feb 1;14(1):17-23.
2. Babapour SK, Esmaeili R, Esteki T, Naderiravesh N, Pourhoseingholi MA, Marzangu SM. Nurses' practice about performance of nasogastric tube feeding in intensive care unit. IJABR2016;7(5):1585-1594.
3. Al-Qalah TA, Alrubaiee GG. Intensive care nurses' knowledge of enteral nutrition at public hospitals in Sana'a, Yemen: a cross-sectional survey. F1000Research. 2020 Jul 22;9(759):759.
4. Al Kalaldeh MT. Enteral Nutrition in the Critically Ill: A Mixed-methods Study of Adherence to Evidence-based Protocols, NRT. 2012 Jan.
5. Marik PE. Enteral nutrition in the critically ill: myths and misconceptions CCM 2014 Apr 1;42(4):962-969.
6. McClave SA, Taylor BE, Martindale RG, Warren MM, Johnson DR, Braunschweig C, McCarthy MS, Davanos E, Rice TW, Cresci GA & Gervasio JM. Guidelines for the provision and assessment of nutrition support therapy in the adult critically ill patient: Society of Critical Care Medicine (SCCM) and American Society for Parenteral and Enteral Nutrition (ASPEN). JPEN. 2016 Feb 1;40(2):159-211.
7. O'Leary-Kelley C & Bawel-Brinkley K. Nutrition support protocols: enhancing delivery of enteral nutrition. CCNC 2017 Apr;37(2):e15- e 23.
8. Kalaldeh MA & Shahin M. Implementing evidence-based enteral nutrition guidelines in intensive care units: a prospective observational study. GN 2015 Nov 2;13(9):31-39.
9. Boullata JI, Carrera AL, Harvey L, Escuro AA, Hudson L, Mays A, McGinnis C, Wessel JJ, Bajpai S, Beebe ML, Kinn TJ. ASPEN safe practices for enteral nutrition therapy. JPEN2017 Jan;41(1):15-103.
10. Nalukenge J. Knowledge Attitude and Practices Towards Nasogastric Tube Insertion Among the Nurses in International Hospital Kampala (Doctoral dissertation, International Health Sciences University.).2016.
11. Ahmed F, Ahmed O, Albitar E, Ghoneim S. Effect of Educational Nursing Guidelines Regarding Enteral Feeding on Nurses ' Knowledge and Practices at Critical Care Units. JNHS. 2018 Oct;7(5):69–75.
12. Bedier N, Diab AE-H, Abo EL-Ata A. Assessment of Nurses's Performance Regarding Nutritional Support for Mechanically Ventilated Patients. Port Said Sci J Nurs. 2016 June;3(1):57–73.
13. Kim H, Chang SJ. Implementing an educational program to improve critical care nurses' enteral nutritional support.ACC. 2019 May 1;32(3):218-222.
14. Khalil N. Impact of implementing an educational program regarding care of nasogastric tube feeding on nurses' knowledge and performance. JNHSJ2017;6(1):101-109.
15. Mula C. Nurses' competency and challenges in enteral feeding in the intensive care unit (ICU) and high dependency units (HDU) of a referral hospital, Malawi. Malawi Med J. 2014 September;26(3):55–59.