

Effectiveness of an Education Program on Nurses Knowledge toward Enteral Nutrition Support for Unconscious Patients at Critical Care Unit in Imam Al-Hussein Medical City in Holy Karbala

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ABSTRACT

Background: Critically patients in the intensive care unit can suffer from malnutrition, which can have an adverse impact on patient outcomes. Nutrition, including enteral nutrition (EN), is largely neglected in clinical practice. As a result, dangers and safety issues for patients and healthcare professionals may arise.

Objectives: to Measure the Effectiveness of an Educational Program on Nurses Knowledge toward enteral Nutritional Support for Unconscious Patients

Methods: A quasi-experimental was conducted at the Critical Care Unit in Imam AL-Hussein Medical City in Holy Karbala for the period of November 24th, 2020 to April 27th, 2022. A non-probability "purposive sample" of (60) nurses who are working at critical care unit. the sample divided into two groups, control group consist of (30) nurses and study group consist of (30) nurses exposed to the nursing educational program. Data were collected by using Self-administered questionnaire form relevant to the nurses' knowledge and demographic data

Results: The study's findings indicate that the study group's knowledge of enteral nutrition support for unconscious patients in critical care units is greater to that of the control group at the post-test, as compared to the control group's knowledge, so the educational program was effective in increasing nurses' knowledge.

Conclusion: After a post-test for a study group on Nutritional Support for Unconscious Patients, there was an increase in nurses' knowledge. In comparison, the control group did not show any progress in their knowledge of Nutritional Support for Unconscious Patients at the pre and post-test.

Recommendation: Special and long continuing educational program should be established and applied for nurses who are working in intensive care units concerning Nutritional Support for Unconscious Patients, and Work on the principle of reward and punishment in the application the guidelines of nutritional support in intensive care units.

Keyword: Effectiveness, knowledge, enteral, nutrition, unconscious, patient critical.

INTRODUCTION

Most patients, even those in critical care, do not meet the recommended amount of nutrition unless they're in a normal setting. So, regular nutrition assistance is a vital intervention for critically ill patients in order to meet their nutritional and physiological requirements [1] [2] [3].

Critically patients in the intensive care unit (ICU) can suffer from malnutrition, which can have an adverse impact on patient outcomes. Nutrition, including enteral nutrition (EN) and parenteral nutrition (PN), is largely neglected in clinical practice. As a result, dangers and safety issues for patients and healthcare professionals may arise [4].

Nutritional care is an important aspect of successful medical treatment and nursing interventions. As a result, nurses have an important role in implementing the nutritional care plans for critically ill patients, such as arguing for the early start of enteral feeding, assessing calorie requirements, and initiating and giving nutritional formulas. Nursing knowledge inadequacies, a failure to follow nutritional standards, and an insufficient quality of practice all contribute to malnutrition and underfeeding in critically ill patients. [5] [6] [7]. Enteral nutrition is the principal way of feeding severely ill individuals who are unable to eat orally. early enteral nutrition has an effect on reducing infection complications, duration of hospitalization, and hospital costs. Despite developments in enteral nutrition techniques and equipment, poor feeding is still a major issue for critically patients. Malnutrition has a negative impact on the clinical outcomes of ICU patients, including delayed wound healing, longer mechanical ventilator, higher infection problems, prolonged stay in the ICU, and increased mortality [8].

MATERIAL AND METHOD

Design of the study: a quasi-experimental study design with pre and post-test approaches for both studied and controlled groups was used.

Study Sample: 86 nurses who worked in the intensive care unit during the study period, met the study criteria, and agreed to

participate. Six (6) nurses were banned from study (pilot study). In addition, (6) nurses for assessment need are not included. A (30) was assigned to the study group.

Inclusion Criteria nurses who are: working in intensive care unit, least one year of experience or more, work in the morning and night shifts, score less than 60% in pre-test and agree to participate in the study.

Exclusion Criteria nurses who are: selected for pilot study, refuse to complete the post-test. And included in the study's pre-test sample and transferred from the clinical unit or hospital during sample selection.

Study Instruments: To measure the effectiveness of education program on nurse's knowledge about enteral Nutritional Support for Unconscious Patients at Critical Care Unit, the researcher constructed a questionnaire format in order to reach the objectives of the study, consisted of (2) parts:

Part I: Self-administered questionnaire form relevant to the nurses' demographic data.

Part II: Self-administered questionnaire sheet related to nurses knowledge about enteral nutritional support for unconscious patient (30) item. The questionnaire was to be completed in 30 minutes by the participants. The questions were graded as correct (2) and wrong (1).

Validity of the Questionnaire: Validity is one of the main concerns with research. Valid measures help reducing the probability of making type 2 error. The questionnaire was presented to (12) panel of experts in the area of competence to maintain the validity of the instrument

Pilot Study: A pilot study of six nurses is conducted to determine the questionnaire's reliability. Participants are submitted to test and after two weeks exposed to retest. Finally, educational program applicator after complete the retest. The participants in the pilot study are excluded from the main study.

Reliability of the instruments: On six nurses, reliability testing was utilized as a statistical analysis method to determine the concordance between the questionnaire items using the reliability coefficient. Cronbach's alpha 0.79

Methods of Statistic : Descriptive approach (Frequencies, percent , and Mean of scores "M.s."). Inferential approach(t-test Period t-test , Independent t-test and One Way ANOVA)

RESULTS

The study describes the sociodemographic characteristics of nurses in terms of frequency and percentages (control versus study). The nurses' ages ranged from 25–30 years, and it was reported that the majority (66.7 percent) of nurses in the study and control groups were male, with 70.3 percent of study group nurses were male and 53.3 percent of control group nurses were male. In terms of marital status, the majority of nurses are (60 percent are married in the study and control group). The most common educational level was that of a baccalaureate degree(53.3%) in the

study group and (40%) in the control group. In relation to the total number of service years in nursing, which ranged from 1–5 years, was 13, (43.3%) in the study group, and ranged from 6–11) years, (36.7%) in the control group. Most commonly, it showed that his years of experience in intensive care units ranged from 1–5 years, with 73.3 percent in the study group and 76.7 percent in the control group. Also The study's findings reveal that there is a highly significant difference in the overall responses of the study group throughout two measurement periods (pre- and post-test) with a p-value of less than 0.01, compared to the statistical mean. Additionally, the findings of the study show that there is an improvement in the nurses' knowledge at the post-test compared to the pre-test scores Table(1).

Table 1: Statistical distribution of the study group by their overall responses with Significant Difference between Pre-Test and Post-Test Scores Regarding to knowledge of Enteral Nutrition Support

Overall assessment of Enteral Nutrition Support for study group	Pre-test				Post-test			
	Freq.	%	M.s.	S.d	Freq.	%	M.s.	S.d
Fail	30	100	1.14	.113	0	0	1.69	.144
Pass	0	0			30	100		
t-value (-24.173), d.f. (29), p-value (.000)								

(M.s) mean of score 1.5 , (SD) stander deviation (P) pass, (F) fail ,(Ns): Non-significant (S): significant , (T value): t-test, (D f): degree of freedom

The study's findings indicate that there is no statistically significant difference between the control group's overall responses during two periods of measurement (pre- and post-test) at a p-value greater than 0.05 with respect to the statistical mean. Thus, the study's findings indicate that there is no improvement in the nurses' knowledge between pre- and post-test scores **Table(2)**.

Table 2: Statistical distribution of the control group by their overall responses with Significant Difference between Pre-Test and Post-Test Scores Regarding to knowledge of Enteral Nutrition Support

Overall assessment of for c Enteral Nutrition Support ontrol group	Pre-test				Post-test			
	Freq.	%	M.s.	S.d	Freq.	%	M.s.	S.d
Fail	28	93.3	1.20	.242	28	93.3	1.21	.237
Pass	2	6.7			2	6.7		
t-value(-.063), d.f. (29), p-value (.950)								

(M.s) mean of score 1.5 , (SD) stander deviation (P) pass, (F) fail ,(Ns): Non-significant (S): significant , (T value): t-test, (D f): degree of freedom

At a p-value greater than 0.05 in regard to the statistical mean, the study's findings indicate that there is no statistically significant difference between the overall responses of the control group during two periods of measurement (pre- and post-test) in comparison to the statistical mean. Thus, the study's results indicate that there is no improvement in the nurses' knowledge at the pre- and post-test scores Table(3) .

Table 3: Significant Difference between Study and Control Groups regarding Pre-Test of enteral nutrition support knowledge Scores.

Overall assessment of Enteral	Pre-test study				Pre-test control			
	Freq.	%	M.s.	S.d	Freq.	%	M.s.	S.d
Fail	30	100	1.14	.113	28	93.3	1.20	.242
Pass	0	0			2	6.7		
t-value(-1.450), d.f. (58), p-value (.152)								

(M.s) mean of score 1.5 , (SD) stander deviation (P) pass, (F) fail ,(Ns): Non-significant (S): significant , (T value): t-test, (D f): degree of freedom

With a p-value less than 0.01 in comparison to the statistical mean, the study's findings show that there is a highly significant difference in the overall responses of the study group over two measurement periods (pre- and post-test) relative to the statistical mean. Additionally, the study's findings reveal that the nurses' knowledge has improved from their pre-test scores to their post-test scores when compared to their pre-test scores Table(4)

Table 4: Significant Difference between Study and Control Groups regarding post-Test of enteral nutrition support knowledge Scores.

Overall assessment of Enteral	Post test case				Post-test control			
	Freq.	%	M.s.	S.d	Freq.	%	M.s.	S.d
Fail	0	0	1.69	.14431	28	93.3	1.21	.237
Pass	30	100			2	6.7		
t-value(11.247), d.f. (58), p-value (.000)								

(M.s) mean of score 1.5 , (SD) stander deviation (P) pass, (F) fail ,(Ns): Non-significant (S): significant , (T value): t-test, (D f): degree of freedom

Also the study demonstrates that there is no statistically significant relationship between nurses' knowledge and their age, level of education, marital status, total number of service years, and number of experience years in intensive care unit with a p-value of less than 0.05, respectively Table(5).

Table 5: Mean Differences (ANOVA) Between the Overall Assessment of the Nurses' Knowledge regarding Enteral Nutrition Support at Post (Study Group) test according to their Some Demographic Data

Demographic Data		Squares	df	Mean Square	F	Sig.
Age(years)	Between Group	242.400	8	30.300	2.004	.096
	Within Group	317.467	21	15.117		
	Total	559.867	29			

Level of education	Between Groups	8.350	8	1.044	1.834	.127
	Within Groups	11.950	21	.569		
	Total	20.300	29			
Marital status	Between Groups	2.733	8	.342	1.606	.183
	Within Groups	4.467	21	.213		
	Total	7.200	29			
Total Number of service's years	Between Groups	315.383	8	39.423	1.909	.112
	Within Groups	433.583	21	20.647		
	Total	748.967	29			
Number of experience years in intensive care unit	Between Groups	64.050	8	8.006	1.717	.153
	Within Groups	97.950	21	4.664		
	Total	162.000	29			

The study shows that there is a non-significant difference between the overall assessment of the nurses' knowledge regarding enteral nutrition support and their gender Table (6)

Table 6: Mean Differences (t-test) Between the overall assessment of the nurses' knowledge regarding enteral Nutrition Support at Post (Study Group) test according to their gender

Enteral nutrition Support		N	Mean	Std. Deviation	Std. Error Mean	t	df	sig
gender	male	21	1.7317	.10026	.02188	.285	28	.778
	female	9	1.7185	.15010	.05003			

DISCUSION

Nurses Demographic Characteristics: In agreement with Ramuada (2017), who reported in their study that the majority of nurses in intensive care units between the ages of 20 and 29 years [9]. Aziz and Ali(2020) discovered in their study Identification of the Intensive Care Nursing staff Knowledge Toward Enteral Feeding Tubes in AL-Hilla Teaching Hospitals, which was carried on (60) nurses divided into control and test groups at AL – Hilla Teaching Hospitals, They concluded that the majority of the study sample was male. This finding is due to the nature of the nursing profession: male nurses comprise the majority of nursing personnel, and all nurses working in intensive care units must be young in order to perform all jobs in these units [10]. Taha (2014) investigated critical care nurses' knowledge and practices about total parenteral nutrition. After interviewing 80 nurses who worked in critical care units at Menofiya and Benha University Hospitals, he discovered that the majority of nurses were married [11]. Al Kalaldehy and Mahmoud (2014) have found in their study that to surveyed Nurses' knowledge and responsibility towards nutritional support they using a self-administered questionnaire The study has conducted on 220 nurses they concluded The majority (71.4%) of the study, sample were have Bachelor degree . The researcher believes that the current outcome is related to the level of education, come Because the intensive care needs nurses with high knowledge to perform their duties to the fullest [6]. Faris and Huda (2016) showed in their study on Evaluation of Nurses Practices Regarding Sterile Procedures in Intensive Care Units, which has been conducted on 40 nurses, that 35% have 1-five years of clinical experience [12] Hammad et al., (2015) have reported in their study , which don on 147 critical care nurses who work in critical care units at Jordanian hospitals to evaluated Critical Care Nurses' Practices Regarding Enteral Nutrition, that maiory of study sample are have 1 to 19 years of experiences in nursing. [13]. Ahmed et al. (2018) investigated the impact of educational nursing guidelines on nurses' knowledge and practices regarding enteral feeding in an intensive care unit. Their study included (55 nurses) who provide nursing care for patients with enteral tube feeding and work in the previously mentioned setting. they concluded The majority, 69.1 percent, had 1 to less than 5 years of ICU experience [14].

Nurses knowledge towards enteral nutrition support for unconscious patients in critical care units at (Pre Test) for control and study groups :According to the findings of this study., it was revealed that the study sample responses were assessed at the pre-test for the study-control groups. At the pre-test, the study group failed to present adequate knowledge of enteral feeding support for unconscious patients in intensive care units . Al-Qalah , et al., (2020) assessed the level of knowledge of ICU nurses regarding EN management. was done on 174

nurses from 4 government hospitals in Yemen's capital city, they discovered that 68 percent of the study sample had an inadequate degree of knowledge regarding EN pre-administration. Concerning the participants' level of knowledge on EN administration, the results revealed that the majority (94.20 percent) of them had an inadequate degree of knowledge on EN administration. In terms of the level of knowledge of EN after administration, the results showed that the majority (90.70 percent) of ICU nurses had an inadequate level of knowledge, as well as concerning EN management after administration [16].Aziz and Ali(2020) demonstrated this in their study Investigation of Intensive Care Nurses' Knowledge Regarding Enteral Feeding Tubes at AL-Hilla Teaching Hospitals, which involved (60) nurses divided into a control and a test group. To determine the efficacy of nasogastric tube tube feeding protocol sessions in regards of nursing knowledge. they concluded that the most of answer of nursing regarding to amount and method of feeding, nurses' knowledge about feeding are with mean scores with low . and their assessment is low, other regarding to delivering feeding and prepare formula are of low -mean scores with ., and regarding managing blockage tube to administering is low -mean scores [10]. . Morphet, et al., (2016) investigate the enteral nutrition knowledge and sources of information of Australian nurses, their study conducted on 359 nurses, they concluded that the study has shown It was discovered that there were significant gaps in knowledge in the area of enteral nutrition [17]. Jamshidi , et al., (2020) have examined Nurses' Knowledge in intensive care unit about Enteral in Nemazee Hospital in Shiraz, Iran they found in their study that The majority of intensive care unit nurses lacked adequate knowledge of nutrition , which might result in inadequate calorie and protein intake in patients. To this purpose, education is suggested as an interventional technique to increase nurses' understanding of the significance and proper procedure of EF administration and administration [18]. Ludin, et al., (2021) They conducted a study on 82 critical care nurses to examine the impact of the knowledge transfer program on nurses' knowledge and nursing care skills on enteral nutrition in the care of critically ill patients. They found a clear deficiency nurses' knowledge of enteral nutrition. The following were identified as specific knowledge deficiencies: Enteral nutrition was defined incorrectly by 21% of respondents. 57 percent were unaware of the benefits and limitations of enteral feeding. 92 percent were unaware of the benefits and limitations of enteral feeding. 95% were unaware of the complications and risks associated with enteral feeding. The nursing administration of enteral nutrition was not understood by 68 percent of those study [19].

Nurses knowledge towards nutrition support by enteral method for unconscious patients in critical care unit at Post Test for control and study groups :The findings revealed that

the study sample responses were assessed at the post-test for the study group in the study. The study's findings indicate that the study group's knowledge of enteral feeding support for unconscious patients in critical care units is greater to that of the control group at the post-test, as compared to the control group's knowledge of the same topic. The results of testing the significance of questionnaire items revealed a majority of highly significant differences with a p-value of 0.01, indicating the effectiveness of the studied educational program by increasing the knowledge levels of the study group's nurse staff, and thus confirming the importance or success of implementing the suggested program. The nurses' level of knowledge was significantly higher post-implementation of the specified educational program than pre-implementation. The educational program was effective in increasing nurses' knowledge, which was found to be positively associated with enteral feeding support for unconscious patients comprehend among the study group of nurses. It is advised that intensive care units be supplied with continual education training. Kim and Sun (2019) have study impact of an education program on nurses' knowledge of enteral feeding in intensive care units. They concluded that an enteral nutrition education program could be an effective strategy to increase critical care nurses' assistance for the critically ill after conducting a study on 205 nurses selected from nine Intensive care unit from four tertiary hospitals in South Korea. This education program are included into hospital education or in-service training for critical care nurses in order to improve their perspectives and knowledge of nutritional support in the ICU. This has the potential to improve the clinical outcomes of ICU patients [8]. Shahin (2012), who examined the impact of a designed instructional program on the nurses' knowledge and practices regarding enteral nutrition in the critical care department of Al-Manial University Hospital which conducted on 85 nurses, he discovered that nurses in the intensive care unit lacked of knowledge and practices about enteral feeding; nonetheless, the educational program had a beneficial influence on increasing nurses' knowledge and practices about enteral nutrition in the intensive care unit [20]. Ahmed, et al., (2018) they discovered that there was a highly statistically significant difference ($p < 0.001$) in mean scores of total knowledge between pre, post, follow up implementation of educational nursing guidelines regarding enteral feeding on nurses' knowledge and practices in intensive care units after the guidelines were implemented. The findings reveal that there is a non-statistically significant difference. between nurses knowledge and their age, level of education, marital status, Total Number of service's years and Number of experience years in intensive care unit at (post-test) educational program follow up p -value ≤ 0.05 , also shows that there is a non-significant difference between the overall assessment of the nurses' knowledge regarding enteral nutrition support and their gender [14]. Shahin (2012), who examined the The impact of a specially planned educational program on the knowledge and practices of nurses in the intensive care unit of Al-Manial University Hospital's, which conducted on 85 nurses and found that no relationship between the participants' age, years of experience and gender with their total scores of knowledge [20]. Aziz and Ali(2020)They established this in their study Evaluation of the Intensive Care Nurses Knowledge Regarding Enteral Feeding Tubes at AL-Hilla Teaching Hospitals, which was done on (60) nurses divided into two groups: the control group and the trail group at AL-Hilla Teaching Hospitals to measure the effectiveness of enteral tube feeding protocol sessions, on nurses knowledge and practices, They found that there is a non-statistical significant relationship between nurses' knowledge and their age, gender, level of education, marital status, service's years and experience years in intensive care unit with their total scores of Enteral Nutrition Support knowledge [10].

Mean Differences Between the Overall Assessment of the Nurses' Knowledge regarding Enteral Nutrition Support at Post (Study Group) test according to their Some Demographic characteristic :Findings shows that there is statistical significant

between nurses knowledge and their age, service, and Total Number of service's years at (post-test) educational program follow up p -value ≥ 0.05 , since no significant different are accounted at p -value ≤ 0.05 , among nurses their level of education, marital status and gender. Manal et al., (2018) have assessed the nurses knowledge and practices regarding total parenteral nutrition, the study was conducted on (60) ICU nurses from many units with more than one year of experience who are working in Cairo University Hospitals, they have concluded that no significant relationship were found between age, years of experience, marital status and their level of knowledge about TPN nutrition. Also they founded that were significant correlations between Gender and education level [21].

CONCLUSION

After a post-test for a study group on Nutritional Support for Unconscious Patients, there was an increase in nurses' knowledge. In comparison, the control group did not show any progress in their knowledge of Nutritional Support for Unconscious Patients at the pre and post-test. Nurses working in intensive care Unit have inadequate knowledge concerning nutrition support for Unconscious Patients and need specific educational program and training session.

Ethical Considerations: Nurses were informed that their participation was voluntary in the study. The purpose and the benefits of the study was explained by the researcher. After they agreed to participate in the study.

Recommendation

1. Developing the educational program about Nutritional Support for Unconscious Patients during academic educational program for nursing students.
2. Special and long continuing educational program should be established and applied for nurses who are working in intensive care units concerning Nutritional Support for Unconscious Patients
3. Designating and distributing a booklet to all nurses, those who are working in intensive care units about Nutritional Support for Unconscious Patients
4. Emphasize nutrition as a therapy for critically ill patients because of its importance in improving their outcomes.

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