

Impact Of The Educational Program On Nurses' Practices About Enteral Feeding Tube For Premature Neonates In Kirkuk City

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ABSTRACT

Background: Nurses who are members of the health care team manage the nutritional needs of newborns. Those caring for newborns in neonatal intensive care units (NICUs) must be well-versed in nutrition and feeding methods, and they must adhere to scientifically validated recommendations when doing their duties.

Objective: This aims to evaluate the impact of the educational program on nurses' practices about enteral feeding tube for premature neonates in the neonatal intensive care unit.

Methodology: A quasi-experimental design using test-retest approach for study group and control group participants employed in Kirkuk City Hospitals being, evaluated in three periods pre-test, post-test-1, and post-test-2. The educational program being delivered as classroom lectures for participant. Data collection is done by self-administrated questionnaire form, and it was given for nurses to answer after taking their agreement. A non - probability purposive sample selected from nurses who were working at the neonatal intensive care units. The sample was forty nurses, (20) nurses enrolled as a control group and (20) nurses enrolled as a study group.

Results: The findings in this table indicated that there is improvement in the nurses practice related to the insertion of the enteral feeding tube for the premature neonates and initiating continuous enteral feeding in the 1st period of (pretest and Posttest I) than (study group) in the 2nd period (pretest and posttest II) in item (number 1) by suggested sign score of assessment through the relative sufficiency.

Conclusion: The educational program demonstrated a favorite effect on nurses' practice regarding the insertion of enteral feeding tubes and initiation continuous enteral feeding tube for the premature neonates.

Keywords: Educational program, Nurses, practices, Enteral Feeding Tube, Premature Neonates.

INTRODUCTION

Nurses who are members of the health care team manage the nutritional needs of newborns. Those caring for newborns in neonatal intensive care units (NICUs) must be well-versed in nutrition and feeding methods, and they must adhere to

scientifically validated recommendations when doing so (Oznur et al., 2019) .

To ensure safe and successful enteral feeding, precise tube insertion in the stomach's body is critical. In fact, feeding tube malposition has been linked to gastric bleeding, aspiration, and gastro-oesophageal reflux problems. Mechanical

complications such as tube obstruction, displacement, or dislodgement, as well as infection-related complications, occur infrequently as a result of formula handling, storage, and administration (Thoene et al., 2018).

Because of these constraints, neonates are unable to obtain the nutrients necessary for growth, development, healthy bodily functioning, and organism renewal by natural means. It may be required to employ enteral or parenteral nutrition in certain circumstances. Pregnancy age, birth weight, the accessibility of food sources, nutritional strategy, the existence of development failures and metabolic changes generated by illnesses and medicines for newborns should be taken into consideration when selecting one of these ways (Oznur, 2019).

For high-risk infants, enteral feeding is the primary method of nutrition. As a result, nurses' perceptions and bedside observation of enteral feeding should be given special attention (Magda & Youssef, 2019).

Ensuring that critically ill patients receive adequate enteral nutrition lowers consequences and improved outcomes. Unfortunately, people who require feedings via oronasogastric feeding tubes rarely achieve their feeding goals (Parker et al., 2019).

METHODOLOGY

RESULTS OF THE STUDY

The study was designed as a quasi-experimental design using test-retest approach for study group and control group participants employed in Kirkuk City Hospitals being, evaluated in three periods pre-test, post-test-1, and post-test-2.

The study group participants are tested prior implementing the educational program, the educational program lectures started from (15th - 24th of February 2022 to the study group) then post-test-1 conducted for control and study group (in 23th – 24th February 2022) then one month the posttest-2 had been conducted (in 23th – 24th March 2022).

The educational program being delivered as classroom lectures for participant. Data collection is done by self-administrated questionnaire form, and it was given for nurses to answer after taking their agreement.

A non - probability purposive sample selected from nurses who were working in the neonatal intensive care units in Azadi Teaching Hospital, Kirkuk General Hospital, Pediatric Hospital, and Gynecology and Pediatric Hospital. The sample was 40 nurses, (20) nurses enrolled as a control group and (20) nurses enrolled as a study group. The study group participants were exposed to an educational program.

The data analysis approaches were used in order to analyze and assess the results of the study under the application of the statistical package (SPSS) ver. (22.0).

Table 1: Distribution of the study and control group sample by their demographic characteristics

Variables		Control group		Study group		Significant
		Frequenc y	Percent	Frequenc y	Percent	
Age	(20-25)	12	60.0	12	60.0	$\chi^2 = 3$ P=0.55 NS
	(26-30)	4	20.0	4	20.0	
	(31-35)	3	15.0	1	5.0	

	(36-40)	1	5.0	1	5.0	
	(41-45)	-	-	2	10.0	
	Total	20	100.0	20	100.0	
Gender	Male	3	15.0	4	20.0	$\chi^2 = 1.55$ P=0.21 NS
	Female	17	85.0	16	80.0	
	Total	20	100.0	20	100.0	
Level of education	High nursing school graduate	11	55.0	9	45.0	$\chi^2 = 0.45$ P=0.79 NS
	Institute graduate	7	35.0	9	45.0	
	Bachelor degree	2	10.0	2	10.0	
	Total	20	100.0	20	100.0	
Years of service	1-5	14	70.0	14	70.0	$\chi^2 = 4$ P=0.26 NS
	6-10	6	30.0	3	15.0	
	16-20	-	-	2	10.0	
	21 and more	-	-	1	5.0	
	Total	20	100.0	20	100.0	
Hospital	Pediatric hospital	5	25.0	5	25.0	$\chi^2 = 0$ P=1 NS
	Kirkuk hospital	5	25.0	5	25.0	
	Azadi teaching	5	25.0	5	25.0	
	Gynecological and pediatric	5	25.0	5	25.0	
	Total	20	100.0	20	100	
Years of experience	1-5	16	80.0	15	75.0	$\chi^2 = 2.17$ P=0.53 NS
	6-10	4	20.0	3	15.0	
	11-15	-	-	1	5.0	
	20 and more	-	-	1	5.0	
	Total	20	100.0	20	100.0	
Time of work	1-8 hrs.	15	75.0	14	70	$\chi^2 = 0.12$ P=0.72 NS
	24 hrs.	5	25.0	6	30	
	Total	20	100.0	20	100	

Training sessions	Inside Iraq	7	35.0	10	50	$\chi^2 = 0.92$ P=0.33 NS
	Out side Iraq	-	-	-	-	
	Non	13	65.0	10	50.0	
	Total	20	100.0	20	100.0	
Number of training sessions	Non	13	65.0	10	50.0	$\chi^2 = 0.92$ P=0.63 NS
	1-2	5	25.0	7	35.0	
	3-5	2	10.0	3	15.0	
	Total	20	100.0	20	100.0	
Source of information	Yes	9	45.0	10	50.0	$\chi^2 = 0.1$ P=0.75 NS
	No	11	55.0	10	50.0	
	Total	20	100.0	20	100.0	

This table shows that 60% of the control and study group at age 20-25 years, 85% and 80% of sample were females for control and study group respectively, 55% Graduate Nursing High School for control and 45% of study group Graduate Nursing High School and nursing institute, 70% of the control and study group had (1-5) years of service in nursing, 80% & 75% of the control and study

group had (1-5) years of experience respectively, 75% & 70% of the control and study group had (1-8) hrs of work per day respectively, 65% 50% of the control and study group not participated in training session related to enteral tube feeding respectively, 54% & 50% of control study group had read source about enteral tube feeding respectively

Table 2: Comparison among Three Periods (pre, post-I and post II tests) for Nurses' practice toward insertion of the enteral feeding tube for the premature neonates Control Group

Questions Related to practice	Pre-Test		Post I Test		Post II Test		ANOVA		
	Me an	Ev a.	Me an	Ev a.	Me an	Ev a.	F	P-value	C.S .
Putting instructions for contraindications and explanatory signs on the door of the room of the premature neonates	1	L	1	L	1.1	L	1	.374	NS
Provide clarification on the steps and actions that must be taken to complete the intervention	1.1	L	1.1	L	1.15	L	.078	.925	NS
Washing hands with soap and other disinfectants using standard sterile technology	1.1	L	1	L	1.05	L	.600	.552	NS
Wear medical gowns before starting any procedure with the premature neonates	1	L	1.15	L	1.2	L	1.27	.290	NS

Prepare all the tools needed to perform the intestinal feeding tube for the premature neonates	1	L	1.0 5	L	1.1	L	1.04	.361	NS
Choosing the right size of the enteral feeding tube for a premature neonates	1.1	L	1.1	L	1.1 5	L	.078	.925	NS
Determining the method of introduction through the nose or through the mouth	1	L	1.1	L	1.1 5	L	1.53	.226	NS
Determining the length of the tube on the body of the premature neonates, by measuring the distance from the stomach trench to the ear loop and then to the place of insertion (nose or mouth)	1.1	L	1.0 5	L	1.1	L	.145	.865	NS
Gently examine the nostrils to check that they are clear if the tube was inserted through the nose into the stomach	1.8	M	1.5 5	L	1.6	L	.444	.644	NS
Wetting the tube head before insertion	1	L	1.0 5	L	1.1	L	1.04	.361	NS
Supporting the head of the premature neonates by placing the hand behind his neck	1	L	1.1	L	1.1	L	.500	.609	NS
The enteral tube is placed perpendicular to the face of the premature neonates	1.1	L	1.1 5	L	1.2	L	.247	.782	NS
Inserting the intestinal tube in a gentle way while monitoring the condition of the premature neonates	1	L	1.0 5	L	1.1	L	.600	.552	NS
Monitoring the level of oxygen and the number of heartbeats with the state of consciousness of the premature neonates	1.1	L	1.1 5	L	1.1 5	L	.107	.899	NS
Monitoring the state of respiration with monitoring of the number of breaths per minute After completing the enteral tube insertion	1	L	1.1 5	L	1.2 5	L	1.47	.239	NS
Ensure that the tube is placed in the correct place by pushing a few ml of air into the syringe Put the stethoscope on the stomach trench and make sure to hear gurgling sounds	1.	L	1	L	1.0 5	L	1	.374	NS
Intake of air using the same syringe and make sure that gastric juice appears	1.	L	1	L	1.0 5	L	1	.374	NS
Fixation of the enteral tube by placing a plaster on the enteral tube	2	M	1.8 5	M	1.9	M	.127	.881	NS
Put a piece of plaster on it, the size of the tube and the date of insertion	1	L	1.0 5	L	1.1	L	1.04	.361	NS
Remove medical paws in the appropriate manner and wash hands	1.1	L	1.1	L	1.2	L	.352	.705	NS

ANOVA= Analysis of Variance, Eva= evaluation, p: probability, C.S. : Comparison, Significant , NS : Non Significant at $P > 0.05$, Eva.= evaluation level of mean score, L=low level (1-1.66), M=moderate level (1.67-2.33), H=high level (2.34-3).The finding in this table revealed that nurses (control group) have low level of practice toward insertion of the enteral feeding tube for the premature neonates at the pretest, posttest I & posttest II at mean in the low level of practice class (1-1.66). Also, there is no significant statistical different between then mean score of nurses practice at three period of test. This is indicated that nurses level of practice in the control group had not improved because they were not received the training session of the educational program.

Table 3: Comparison among Three Periods (pre, post-I and post II tests) for Nurses' practice toward insertion of the enteral feeding tube for the premature neonates study Group

Questions Related to practice	Pre-Test		Post I Test		Post II Test		ANOVA		
	Me an	Ev a.	Mea n	Eva.	Mea n	Ev a.	F	P-value	C.S
Putting instructions for contraindications and explanatory signs on the door of the room of the premature neonates	1.3	L	2.4	H	2.35	H	10.1	.000	HS
Provide clarification on the steps and actions that must be taken to complete the intervention	1	L	2.95	H	2.95	H	670	.000	HS
Washing hands with soap and other disinfectants using standard sterile technology	1	L	2.5	H	2.45	H	27.6	.000	HS
Wear medical paws before starting any procedure with the premature neonates	1	L	2.6	H	2.70	H	45.1	.000	HS
Prepare all the tools needed to perform the intestinal feeding tube for the premature neonates	1.1	L	3.0	H	3.00	H	361	.000	HS
Choosing the right size of the enteral feeding tube for a premature neonates	1.6	L	3.0	H	3.00	H	44.3	.000	HS
Determining the method of introduction through the nose or through the mouth	1	L	2.3	M	2.25	M	23.8	.000	HS
Determining the length of the tube on the body of the premature neonates, by measuring the distance from the stomach trench to the ear loop and then to the place of insertion (nose or mouth)	1	L	2.7	H	2.40	H	49.4	.000	HS
Gently examine the nostrils to check that they are clear if the tube was inserted through the nose into the stomach	1.6	L	3.0	H	2.90	H	33.8	.000	HS
Wetting the tube head before insertion	2.4	H	3.0	H	2.95	H	7.12	.002	HS
Supporting the head of the premature neonates by placing the hand behind his neck	1.7	M	3.0	H	2.95	H	32.3	.000	HS
The enteral tube is placed perpendicular to the face of the premature neonates	2.3	M	3.0	H	2.95	H	9.08	.000	HS

Inserting the intestinal tube in a gentle way while monitoring the condition of the premature neonates	1	L	2.95	H	2.90	H	296	.000	HS
Monitoring the level of oxygen and the number of heartbeats with the state of consciousness of the premature neonates	2	M	3.0	H	2.85	H	13.5	.000	HS
Monitoring the state of respiration with monitoring of the number of breaths per minute After completing the enteral tube insertion	1	L	2.95	H	2.95	H	760	.000	HS
Ensure that the tube is placed in the correct place by pushing a few ml of air into the syringe Put the stethoscope on the stomach trench and make sure to hear gurgling sounds	1.2	L	3.0	H	2.90	H	106	.000	HS
Intake of air using the same syringe and make sure that gastric juice appears	1	L	2.95	H	2.90	H	296	.000	HS
Fixation of the enteral tube by placing a plaster on the enteral tube	1.6	L	2.6	H	2.65	H	9.96	.000	HS
Put a piece of plaster on it, the size of the tube and the date of insertion	1	L	2.4	H	2.40	H	25.2	.000	HS
Remove medical paws in the appropriate manner and wash hands	1.4	L	2.75	H	2.6	H	22.8	.000	HS

ANOVA= Analysis of Variance, Eva= evaluation , p: probability, C.S. : Comparison, Significant , NS : Non Significant at $P > 0.05$, Eva.= evaluation level of mean score, L=low level (1-1.66), M=moderate level (1.67-2.33), H=high level (2.34-3)The finding in this table revealed that nurses (study group) have low level of practice insertion of the enteral feeding tube for the premature neonates at

DISCUSSION

The results of the present study revealed that more than half of the study and control group sample is 12 (60%) were aged (20 -25) years old, and only one fifth of the sample is 4 (20%) were aged (26-30) years old (Table 4-1). These findings contradict with those of Uysal et al. (2012), who stated that there were no statistically significant differences in age between groups. The research group's mean age was approximately fifty-five years, while the control group's mean age was fifty-one years. These findings corroborate those of Fareed et al. (2021), who reported a mean age of fifty-five years for their sample

the pretest, at mean in the low level of practice class (1-1.66). While, in the posttest I and posttest II nurses had high level of practice (2.34-3). Also, there is highly significant statistical different between then mean score of nurses practice at three period of test. This is indicated that nurses level of practice in the study group had improved due to the training session of the educational program.

(Fareed et al., 2021).Concerning participants' age, the current study agrees with Nayef & Neamah (2019), since the majority of study participants are between the ages of 20 and 29, followed by nurses between the ages of 30 and 39. This finding is consistent with previous research indicating that less than two-thirds of the nurses surveyed were between the ages of 20-30 years, and is confirmed by a recent study indicating that more than half of the nurses studied had an age range of (20-25) years (Zaki, 2014). Discussion of nurses' practice toward insertion of the enteral feeding tube for the premature neonates in the control and study group: Through using

results from the pretest, posttest I, and posttest II, it can be concluded that the nurses in the control group have a poor degree of practice when it comes to inserting an enteral feeding tube for premature newborns. Nurses' mean scores during three periods of testing show no statistically significant difference (Table 1). This shows that the control group's level of nursing practice did not improve as a result of not participating in the interventional program's training sessions. Using Table (3), it was discovered that nurses (study group) have a low level of practice insertion of the enteral feeding tube for premature infants at the pretest, with an average level of practice falling into the low level of practice class. However, nurses demonstrated a high level of practice in both the posttest I and posttest II. Additionally, there is a statistically significant difference in the mean score of nurses' practice at each of the three periods of the test. Consequently, it can be concluded that the training session of the interventional program had an influence on the level of practice of the research group's nursing staff. All clinicians inserting NG/NE tubes should get sufficient training and undergo competency testing to provide the best possible patient outcomes. This is

CONCLUSION

The educational program demonstrated a favorable effect on nurses' practice regarding the insertion of enteral feeding tubes and initiation continuous enteral feeding tube for the premature neonates, as nurses' practice in the control group had not improved after the educational program because they were not received the training sessions. While the study group's nurses' practice has increased because of the educational program's training sessions.

Recommendation:

Adopting such educational programs to be taught for nurses in different hospitals nationally and internationally. Printing the educational program and publishing it as hard and e-copies to hospitals in different Iraqi provinces .

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- merely a guideline that should be used appropriately to each institution, but a systematic approach to tube placement is critical (Powers et al., 2021) .We discovered that after participating in the interventional program, neonatal intensive critical care nurses' practices regarding enteral feeding dramatically improved. Other researchers corroborate this conclusion, observing an improvement in nurses' parenteral nutrition practice following a four-session instruction program (Al-Rafay & Al-Sharkawy, 2012) . This was in contrast to the findings of Ameri et al. (2016) , who discovered no change in nursing practice following a single session of parenteral feeding training. These findings indicate that further research on the duration, nature, and manner of an education program is necessary. The large change in a number of individual practices items in this study indicates that critical care nurses require additional education about these practices, particularly given their low pre-test scores. As a result, it is recommended to provide a comprehensive in-service education program to help bridge the gap between evidence-based nutritional practice and actual practice (Kim & Chang, 2018) .
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