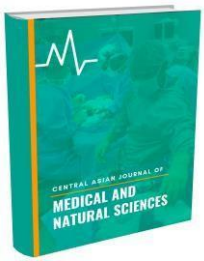

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Effectiveness of an Intervention Program on Nurses` Practice toward Care of Transition to Oral Feeding for Preterm Neonate

Ali Mohsin Rahman*, Afifa Radha Aziz

College of Nursing, University of Baghdad
* Correspondence: Amohsen344@gmail.com

Abstract: This study aimed to determine the effectiveness of the intervention program in nurses' practices toward care for transition to oral feeding for premature neonates. A quasi-experimental study conducted at Al-Batoul Teaching Hospital in Diyala Governorate for the period from October 1, 2023 to February 26, 2024. The study sample consisted of 60 nurses who were divided into two groups: the experimental and the control group. Data were collected through pretests, study group intervention sessions, and posttests at 2 weeks and 1 month. The control group underwent similar procedures without the intervention program. Data were analyzed by applying descriptive and inferential statistics. The results indicate that both the experimental and control groups showed similar practices with no statistically significant differences. However, in the first post-test period, the experimental group showed a significant improvement (2.53 ± 0.373) compared to the control group (1.43 ± 0.216), indicating the effectiveness of the educational program (t = 13.899; p = 0.000). This improvement continued over an extended period after the second test, with significant differences between the experimental (2.44 ± 0.453) and control (1.47 ± 0.280) groups, highlighting the sustained effectiveness of the educational program (t = 9.944; p = 0.000). The introduction of a specialized training program for nurses has significantly enhanced their skills, highlighting the effectiveness of such interventions. Evidence suggests that nurses in the intervention group benefited significantly from specialist training in the care of premature neonates during the transition to oral feeding. It is recommended to propose the implementation of specialized training programs for nurses focusing on the care of premature neonates during the transition to oral feeding. These programs should be tailored to meet the unique challenges of this stage.

Keywords: Instructional Program, Nurses, Oral Feeding, Neonate.

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Introduction

Enteral transition contributes greatly to neonatal preterm care by slowly shifting the exclusive supply of nutrition from intravenous means to oral feeding (1). At the time of preterm birth, the babies are less than 37 weeks, and their immature body systems have setbacks in addition their muscle system development is not fully achieved (2). As these babies evolve through their neonatal stay, healthcare providers have to find the right and individualized manner of path toward nursing and make sure the baby gets the best growth and development during such development (3).

The neonatal nurses provide care to preterm neonates, which is very important and requires certain specific knowledge and skills to ensure the ones faced by these infants are addressed (Mohammed, n.d). Advancing preterm neonates through tube feeding to oral feeding is the most important event in their development, which is key to optimal nutrition and growth (5). Nursing interventions are the core elements and they help in developing the preterm babies for oral feeding. This process requires a keen knowledge of neonatal physiology, with an assessment of the stages to determine how to feed. To bring nurses' capacity to a higher level while ensuring high-quality preterm neonate care during transfer, an intervention program should be customized to the particular needs of nurses as this step may potentially reduce the knowledge gaps and skill deficits among nurses (7). Through interventions, the researchers claim that the health of preterm neonates has improved, as more babies have good oral feeding and fewer complications after birth. It is this that demonstrates the potential of good intervention designs, both to elevate nursing practices and to positively impact patients' recovery (8).

Also, the establishment of effective intervention programs needs to acknowledge the difficulties and weaknesses of nurses in feeding preterm neonates, which is when they transit to oral feedings. By recognizing the organizational characteristics or environmental constraints that could affect nurses' performance, intervention can be designed to directly address them and implement a system that promotes resilience to challenges. The context-specific nature of the intervention is highlighted, and the significance of adopting relevant and sustainable approaches in the design and implementation of the intervention is emphasized (9). Therefore, this study aimed to determine the effectiveness of an intervention program on nurses` practice toward the care of transition to oral feeding for the preterm neonate.

Materials and Methods

Study Design

A quasi-experimental research design was employed, utilizing an adopted pre-post-test I and II approach for both the study and control groups was conducted during the period from October 1st, 2023 to February 26th, 2024.

Study Sitting and Sample

The research was conducted only at Al-Batoul Training Hospital in the Diyala Governorate where that hospital was decided to be a primary place for collecting data. Non-probability "purposive" sampling which is the type of sampling method purposefully considering the accuracy and the representativeness of the data to be collected was employed. The nurses' sample was taken, and there was a total of 60 participants, where 30 for each groups. The research activity involved forming one group as the study group and forming the other as the control group.

Procedure

A study was carried out at Al-Batoul Teaching Hospital in Diyala Province, focused on evaluating nursing staff on how they can manage the transition of preterm newborns to cp feeding. A questionnaire was used in an answer-close form, and upon interrogating a group of 10 nurses, it was discovered that 70% of them had suboptimal practices of anti-infective care. While indicating to the targeted interventions the urgency is also indicated. The program is then be instigated after a careful study of the needs and review of relevant literature, including expert suggestions. The program went through a series of revisions resulting in best practice the expert group considered that the program was a perfect fit for nurses who provide care to preterm babies transitioning to oral feeding. The program's deliberate targeted approach of defining areas for improvement, as well as improvements of the practice, is very critical for the nursing system in this specialized field.

Study Instruments

This questionnaire consists of two part include the followings.

Part I: Socio-demographic characteristics include nurses age, gender, education level, years of experience, duration of work in NICU and number of training courses.

Part II: A constructed questionnaire composed of 35-items measured on a 3-level Likert Scale, yielding a potential score range of 35-105. A higher average indicates a adequate nurses practices. The questionnaire was validated by experts and then its reliability was verified through a pilot study.

Data Collection

The nurses in the present investigation were split into both experimental and control groups so as to gather the needed information. Demographic data was entered, and a pre-test was conducted to be able to

analyze individual routines. The experimental group started an intervention program in 60-90 minutes lesson sessions, each in a class room. The group of students that participated in the experiment was administrated a comprehensive test about the nursing care for pre-term neonates. At two weeks and one month it was conducted to make sure that the short-term and permanent effects of instruction were evaluated. The control group went through the same steps as the experimental group except that they did not receive the program that they tested. This was accomplished through various teaching methods for example, lectures, a whiteboard, a computer, data show, booklets, and demonstrations.

Statistical Analysis

Data collection from the sample was carried out using SPSS-24 and MS Excel (2010), which were later analyzed using the statistical analysis tool. The presentation was descriptive and was done through tables, averages and standard deviation whereby data was presented and analyzed. To determine the average scores, the researcher also created categories using the mean as the foundation and used such terms as poor, moderate, and good. The inferential strategy entailed performance of the statistical analysis tools including the ANOVA, independent sample t-test, chi square, Pearson's correlation coefficients, and eta square. Using these tests, the researchers initiated the analysis of the relation between variables, determining differences in statistical values, checking against nominal standards, calculating effect size, and predicting relationships. The most common significance level most tests were set to be 0.05.

Results

Table 1. Socio-Demographic Characteristics

SDVs	Classification	*Study Group*		*Control Group*		χ^2	p-value	CS*
		n	%	n	%			
Age	20 to less than 25	6	20.0	3	10.0	11.488	.854	NS
	25 to less than 30	21	70.0	19	63.3			
	30 and more	3	10.0	8	26.7			
	Min.- Max.	24-39		24-41				
	Mean± SD	29.76±11.07		30.01±12.07				
Gender	Male	3	10.0	6	20.0	0.324	.442	NS
	Female	27	90.0	24	80.0			
Education level	School Nursing	7	23.3	6	20.0	10.070	.757	NS
	Diploma Nursing	20	66.7	15	50.0			
	B.Sc Nursing	3	10.0	9	30.0			

Years of Experiences	1 to less than 5 yr	17	56.7	15	50.0	12.463	.752	NS
	5 to less than 10 yr	13	43.3	12	40.0			
	> 10 yr	0	0.0	3	10.0			
Duration of work in NICU	1 to less than 3 yr	25	83.3	21	70.0	12.782	.625	NS
	3 to less than 5 yr	3	10.0	5	16.7			
	>5 yr	2	6.7	4	13.3			
Training Courses	No	24	80.0	23	76.7	0.568	.868	NS
	Once	6	20.0	7	23.3			

No.= Number; %= Percentage; χ^2=Chi-square

The study provides a detailed overview of characteristics among nurses involved in the care of preterm neonates during the transition to oral feeding. The study and control groups had nurses with an average age of approximately 29.76 and 30.01 years, respectively, with both groups predominantly composed of females (90.0% in the study group and 80.0% in the control group). In terms of educational attainment, a higher percentage of diploma graduates was observed in both groups. More than half of the nurses in both groups had less than 5 years of overall experience, and a significant portion had less than 3 years of experience specifically in the Neonatal Intensive Care Unit (NICU). Notably, the majority of nurses in both groups had not undergone specific training courses.

Table 2. Comparison the Nurses Practices between Pre-post I tests and Post Test II in Study Group

Group	Periods	No	M	SD	F	η^2	Sig.
Study Group	Pre-test	30	1.40	.207	90.690	0.82	0.000
	Post-test I	30	2.53	.373			
	Post-test II	30	2.44	.453			

The analysis of variance detected statistically significant variations in nurses' practices concerning the care of preterm neonates during the transition to oral feeding across distinct phases: pre-test (1.40 ± 0.207), post-test phase I (2.53 ± 0.373), and post-test phase II (2.44 ± 0.453) (F=90.690; p=.000). These observed differences exhibited a substantial effect size, indicative of the significant impact of the instructional program ($\eta 2$ = 0.82).

Table 3. Comparison the Nurses Practices between Pre-post I tests and Post Test II in Control Group

Group	Periods	No	M	SD	F	η^2	Sig.
Control Group	Pre-test	30	1.41	.203	0.585	0.01	0.559
	Post-test I	30	1.43	.216			
	Post-test II	30	1.47	.280			

The analysis of variance revealed that there were no statistically significant differences in the practices among nurses in the control group regarding the care of preterm neonates during the transition to oral feeding across various phases, including the pre-test phase (1.41 ± 0.203), post-test phase I (1.43 ± 0.216), and post-test phase II (1.47

± 0.280) (F=0.585; p=.559). The absence of observed differences indicated a small effect size between periods of measurement (η2 = 0.01).

Table 4. Comparison of Nurses Practices between Study and Control Groups

Periods	Groups	M	SD	t-value	d.f	η^2	Sig
Pre-test	Study	1.40	.207	0.36	58	*0.00*	*0.972*
	Control	1.41	.203				
Post-test I	Study	2.53	.373	13.899	58	*0.76*	*0.000*
	Control	1.43	.216				
Post-test II	Study	2.44	.453	9.944	58	*0.63*	*0.000*
	Control	1.47	.280				

Discussion

Socio-Demographic Characteristics of the Study Sample

The current research not only to assesses the role the demography of nurses plays in one's ability to care for or support preterm neonates during the transition to the oral feeding period. An age distribution analysis was performed on the subjects used in the study which varied from 24 to 39 years with an average age of 29.76±11.07 years. In the same way, the group of controls showed an age spanning from 24 to 41 years, with an average age of 30.01±12.07 years. However, these findings show something significant, and that is the highly young age of the nursing group, which is revealing that the growing number of professionals in the age scale are more interested in joining neonatal care nowadays. This trend mirrors the case in a correlated study done on nurses taking care of premature infants in Baghdad City which reiterates the presence of adults as a dominant segment of the nursing workforce (10). The synchronicity proposes that the same young professionals are deeply involved in this critical field of examination, drawing attention to the necessity for individualized strategies and approaches towards neonatal care, a constantly evolving field of healthcare [24].

The need to notice the peculiar gender compositions seen in both groups will be underlined. It should be highlighted that the respondents of the study group were predominantly female, and they made up 90.0% of the group, in contrast to the females of the control group, who constituted 80.0% of them[25] Despite this, the pattern of gender distribution in women holding the majority of pediatric jobs in the teaching hospitals of AL Ramadi city in Iraq doesn't seem to be so much different. Women mostly work as doctors or nurses there. Recognizing these gender imbalances can be one of the factors that determine treatment or the way caregivers act

toward patients, so it requires deeper research to determine their effect on patient outcomes (11).

The results of the study show that educational background is very crucial, opening the curtains on the qualification level of the nurses in both cases (study group attaining 66.7% and control group 50.0%) most of them having a diploma. Through an analysis of the influence of nurses' educational background on neonatal care, the paper poses a query of whether the nurses' varied educational upbringing has any implications on the emerging outcome[26]. This aspect can be further investigated by researching the link between medical qualifications, and the success of care that is being given to preterm neonates. An agreement is found with Al-Basrah Hospital for the maternal and children, whereby a considerable number of pediatric nurses holding diploma degrees is common. This indicates the high level of such qualifications; it is possibly caused by the many institutions specializing in the graduation of nurses with diploma degrees (12).

In the study, the authors as well as the sampled nurses demonstrated a typical feature where more than 50 % of both the study group (56.7%) and control group (50.0%) had less than five years' career background. Thus, these noteworthy findings highlight the significance of the experience gap which could lead to poor quality of care given to preterm infants due to the critical transition from nipple feeding to oral. Research into whether the skill level or experience of nurses is related to their final care and the health outcomes of patients or not is a wonder that it can provide necessary information for better neonatal nursing practices. This investigation would attempt to shed light on the linkage between actual practice and the effectiveness of the services provided in this important stage of the disease course[27]. The same phenomenon was verified in multiple studies, such as the one by the General Surgery Hospital of Ghazi al-Hariri (13), as well as findings from four hospitals in Baghdad (14). This demonstrates that nurses with less experience, frequently a result of their young age, could be a common trend. This multifaceted view highlights the urgency of providing a complete evaluation of the effects of inexperience on cancer care and positive patient outcomes, anchoring the ground for comprehensive innovation[28].

The study shows that NICU nurses have been in their profession for a certain amount of time as the primary activity among the nurses taking part in the study. The overwhelming majority of respondents from the research group (83.3%) as well as the control group (70.0%) have been working in

the NICU for less than 3 years. The common factor may call into question whether the competence of nurses working with preterm neonates who have little NICU experience to handle the complexities of preterm neonatal care is not challenged, specifically the critical switch to oral feeding. This is consistent with the observations made in other healthcare settings such as Al Amara hospitals, Al Diwaniyah Maternity and Pediatric Hospital, and Critical Care Units from Basra hospitals which are reported by (15-17). Unfortunately, it seems that the phenomenon of nurse rotation is also an essential factor in the increase of this trend, and this means that the transfer or re-assignment of nursing staff could only be one of the reasons that prevent staff from accumulating enough experience in the special field of Neonatal Intensive Care[29].

The research has identified a considerable shortcoming in training, as evidenced by the fact that more than 80 percent of the nurses both in the study group and in the control group have not taken specialized courses which are designed for this kind of training. This realization helps make lifelong learning using targeted training modules and educational programs that effectively deal with the unique aspects of preterm neonatal care critical periods more significant. The recognized gaps in nursing skills outline the need to develop long-term solutions to ensure comprehensive and high-quality nursing care.

From findings that were conducted in Delivery Rooms and Baghdad City Maternity Hospitals to Primary Health Care Centers, Baquba that the large majority of nurses at various healthcare providers DON'T undergo essential training courses within the workplace is now slowly being upheld (18, 19). Undoubtedly, we can highlight the issue's widespread nature, and through this, call for the systematic and comprehensive change in the education system currently employed within the nursing profession. The established gap is a strong basis for advocating for the health care providers to practice strategic interventions and policy alterations to resolve the training deficits of neonatal nurses, and hence this will boost the quality of care for preterm infants.

Nurses` in study group

Markedly, nurses' participation in the process of oral feeding of preterm neonates underwent a great change during the transition after each intervention. Compared to the other nurses, the initial assessment conducted in the pretest stage has proved to have deficiencies in their practices whereby the average score shows poor performance (49.29 ± 7.26). It may be noted that this is the first point of the discussion about the

spotlight on the urgent need for focused approaches promoting the best standards of care for preterm neonates during delivery. The intervention utilized in the research produced a very meaningful effect on the nurses' performance. The post-test data reveal the fact that the nurse's performance shows a positive difference, with the nurses having a tangible increase in the mean score (88.75 ± 13.08). The change in nurses' practice implies that the intervention, whether it was the training or other support program, the guidelines, or other support, was able to identify the need and map them directly to the change in the nurse's approach. Strikingly, the beneficial influences remained in effect up to post-test II as well. The formative stage witnessed the nurses who delivered commendable performance in the sense of being consistent and effective in the nursing intervention, as indicated by the average score of (85.55 ± 15.88). This is highly motivation because it confirms the fact that the improvements that had been witnessed in the post-test I were not just a temporary blessing but had long-lasting impacts and had a potential of sustaining during the critical transition period. The result of the study corroborates with earlier findings highlighting the relevance of the implementation of target-oriented interventions for doctors and the provision of continuous education, in the context of neonatal care, in particular. Studies conducted before revealed a positive relationship between the effectiveness of structured programs and the ongoing support provided to healthcare providers in the betterment of their knowledge and practices; thereby, leading to better patient outcomes (20, 21).

Comparison of nurses practices between study and control groups

In this study comparing the practices of nurses dealing with oral feeding of preterm neonates, the initial assessment revealed no statistically significant differences between the study and control groups in terms of effectiveness ($t = 0.36$; $p = 0.972$). The effect size was extremely minimal ($\eta 2 = 0.00$), suggesting that, initially, both groups exhibited similar practices. This aligns with previous research findings indicating no differences in practices between experimental and control groups in factors administration (22).

However, during the post-test I evaluation period, significant differences emerged. The study group demonstrated an improvement in practices ($M=2.53\pm0.373$), while the control group did not show any notable changes ($M=1.43\pm0.216$). Statistical analysis confirmed the effectiveness of the instructional program ($t=13.899$; $p=0.000$), with a substantial effect size ($\eta 2=0.76$), indicating a significant enhancement in nurses' performance

during the oral feeding transition. Similar findings were reported in a study conducted at the Hematology Center in Baghdad City (23).

The long-term effects of the instructional program were evident in the post-test session, where the experimental group's test score was significantly higher than that of the control group (2.44±0.453 vs. 1.47±0.280; t=9.944; p=0.000) with a large effect size (η2=0. The results suggest that the educational intervention not only had short-term impacts but also shaped nurses' pastoral care for preterm babies in the long run. This corresponds with findings from Pediatric Teaching Hospitals in Iraq's capital, Baghdad (24). The data underscore the lasting, positive impacts of the instructional plan on nursing practices during the critical period of neonatal development, highlighting its potential to bring about significant improvements in the care of premature newborns.

Conclusion

The introduction of a specialized training program for nurses has significantly enhanced their skills, highlighting the effectiveness of such interventions. Evidence suggests that nurses in the intervention group benefited significantly from specialist training in the care of premature neonates during the transition to oral feeding.

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