

Educational Program on Nurses Knowledge about Blood Exchange Transfusion in Neonatal Care Units

Amwaj Saad Aldeen Ahmed¹, Nasir Muwfaq Younis²

¹Oncology Hospital, Nineveh Health Directorate, Iraq

²Prof, PhD. College of Nursing / University of Mosul/IRAQ

ABSTRACT

Background: Exchange transfusion entails the sequential drawing and injecting of blood aliquots via peripheral or central venous and arterial lines. Notably, arterial lines—either peripheral or umbilical—should not be used for donor blood injections; rather, they should only be used for baby blood withdrawal. To ascertain the Nurses' Knowledge of Blood Exchange Transfusion in Neonatal Intensive Care Units Educational Program.

Methods: Designing a quasi-experimental using (non-probability) To ascertain the impact of a training program on nurses' performance with regard to blood exchange transfusion, purposeful sampling was used. The "Statistical Package for Social Science (SPSS) software for Windows (Version 26)" is used to analyze data .

Results: This result showed that 33.3%(10) of the study's nurses and 33.3%(10) of the control group's nurses were between the ages of 31 and 35.The study's findings regarding the gender of the nursing staff showed that 53.3% of the participants (19) were female. and of the fifteen participants, 63.3% were men. 50% of the participants are nurses.had a Nursing Institute (15) In terms of general years of experience, 33.3% (10) of the sample had six to ten years of experience, and 3.0% worked in the pediatric department.

Conclusion: The study concluded that the nurses' knowledge about the blood transfusion process before giving the educational program to the patients was poor, and through the intervention and giving the nursing program, their knowledge became good. The reason is due to the effectiveness of the effective programs.

KEYWORDS: Educational Program, Nurses Knowledge, Blood Exchange Transfusion, Neonatal Care Units.

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INTRODUCTION

Blood exchange transfusions are intended to treat severe anemia and lower serum levels of unconjugated bilirubin, which may be neurotoxic. Exchange transfusions eliminate free maternal antibody in the plasma and replace a significant portion of sensitized red blood cells with antigen-negative red blood cells that should have normal in vivo survival, in addition to treating anemia and jaundice in alloimmune HDN patients. Exchange transfusion has been advised to lower bilirubin levels and stop additional hemolysis in infants with severe hyperbilirubinemia brought on by T activation-induced hemolysis. Donor cells that do not express the cryptantigen are used to replace T-activated RBCs in these patients ⁽¹⁾.For newborns with severe HDN, "early"

exchange transfusions are administered between nine and twelve hours after birth. Commonly used criteria for early exchange transfusions include cord hemoglobin levels ≤ 10 g/L, cord bilirubin levels ≥ 5.5 mg/dL, and rapidly rising bilirubin levels ≥ 0.5 mg/dL/h despite phototherapy. "Late" exchange transfusions are given to term infants with severe HDN when serum bilirubin levels threaten to reach 20 mg/dL, which is the point at which kernicterus risk is roughly 10%. Lower bilirubin levels are used for exchange transfusions in premature babies, especially in those with hypoxemia, acidosis, and hypothermia ⁽²⁾.Exchange transfusions are frequently used to lower high blood bilirubin levels, which, if untreated, can result in kernicterus. Bilirubin accumulation in kernicterus, a rare but dangerous condition, can lead to brain

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damage, and to eliminate antigen-positive offending RBCs. Indirect bilirubin levels >20 mg/dL, cord bilirubin levels >5 mg/dL, and bilirubin levels rising more than 1 mg/dL per hour are Little amounts of the baby's blood are extracted during the procedure and replaced with donor blood or blood components. The objective is to either remove the infant's impacted red blood cells and circulating maternal antibodies in order to reduce red cell destruction or gradually replace the baby's blood with healthy blood in order to lower the levels of bilirubin⁽³⁻⁶⁾.

METHODS AND MATERIALS

A non-probability purposeful sampling technique was used in a quasi-experimental design to assess the impact of an educational program on nurses' performance in relation to blood exchange transfusion. The study was conducted in the northern Iraqi city of Mosul, which serves as the capital of the Nineveh Governorate. The second-biggest city in Iraq, Mosul is situated roughly 404 kilometers north of Baghdad. Six neonatal care units from six hospitals spread out on both sides of the Tigris River in Mosul City were the study's subjects. Three of the six hospitals—Al Salam Teaching Hospital, Ibn

Al Atheer Pediatric Teaching Hospital, and Al Khansa'a Teaching Hospital—are educational institutions, and they are all on the left side of the city. The six hospitals are all connected to the Nineveh Health Department and the Iraqi Ministry of Health. The other two hospitals, the Al Batool Teaching Hospital and the Mosul General Hospital Ibn Sina Teaching Hospital, are situated on the right side of the city; one is general and the other is educational. A questionnaire with three sections was used to collect the data for this study: section I describes the socioeconomic demographic features of the employees, such as age, gender, educational attainment, and participation in training programs; section II is related to nurses' knowledge of nursing documentation in pediatric wards at Mosul hospitals; and section III is related to nurses' practice of nursing documentation in pediatric wards at Mosul hospitals. The "Statistical Package for Social Science (SPSS) software for Windows (Version 26)" is used to analyze data⁽⁷⁻¹⁰⁾. The newly established Ethics Committee of the Ministry of Health has approved this study (Study code 433/6521). The review panel concluded that there was no need for individual informed consent.

RESULTS

Table(1):Distribution of the sample according to demographic data

	Categories		Number	Percentage
Age	20-25	Study	5	16.7%
		Control	4	13.3%
	26-30	Study	6	20%
		Control	6	20%
	31-35	Study	10	33.3%
		Control	10	33.3%
	36-40	Study	5	16.7%
		Control	9	30%
	≥41	Study	4	13.3%
		Control	1	%3.3
Gender	Male	Study	15	53.3%
		Control	11	36.7%
	Female	Study	14	46.7%
		Control	19	63.3%
Educational level	School nurse	Study	7	23.3%
		Control	3	10%
	Nursing Institute	Study	11	36.7%
		Control	15	50%
	College of Nursing	Study	12	40%
		Control	12	%40
Experience	1-5	Study	9	30%
		Control	4	13.3%
	6-10	Study	7	23.3%
		Control	10	33.3%
	11-15	Study	7	23.3%
		Control	8	26.7%
	16-20	Study	7	23.3%
		Control	8	26.7%

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	Categories		Number	Percentage
Duration of work within Newborn care unit/year	Study	Study		3.30
		Control		2.60
Have you participated in training courses	Yes	Study	12	40%
		Control	12	40%
	No	Study	18	60%
		Control	18	60%
Number of courses	0	Study	18	60%
		Control	18	%60
	1	Study	8	26.7%
		Control	7	23.3%
	2	Study	4	13.3%
		Control	4	13.3%
	3	Study	0	0%
		Control	1	3.3%
Do you have information about the blood transfusion process	No	Study	6	%20
		Control	7	23.3%
	Books and magazines	Study	8	%26.7
		Control	7	23.3%
	Communication Web-sites	Study	6	20%
		Control	6	20%
	Colleagues	Study	10	33.3%
		Control	10	33.3%

Table 1 showed that 33.3%(10) of the study's nurses and 33.3%(10) of the control group's nurses were between the ages of 31 and 35. The study's findings regarding the gender of the nursing staff showed that 53.3% of the participants (19) were female. and of the fifteen participants, 63.3% were men. 50% of the participants are nurses.had a Nursing Institute (15) When general years of experience were taken into account, 33.3% (10) of the sample had six to ten general years of

experience, and 3.0% worked in the pediatric department. The results of this study demonstrated that the majority of nurses—60% or 18—had not attended prior blood exchange transfusion training courses. When the number of courses was taken into consideration, it was found that 60% or 18 had attended prior courses. , Lastly. This study show 3.33 % (10) were have previous information about blood exchange transfusion.

Table (2) Nurses knowledge before and after educational program

Type of knowledge	Total score average		Evaluation
Nurses knowledge about neonatal jaundice	Pre	3.233	Bad
	Post1	8.767	Good
	Post2	7.200	Good
Nurses knowledge about blood exchange transfusion	Pre	2.467	Bad
	Post1	9.100	Good
	Post2	7.500	Good
Nurses knowledge about nursing care during blood exchange transfusion	Pre	2.667	Bad
	Post1	9.167	Good
	Post2	7.800	Good

Measuring nurses' knowledge before and after the educational program In this paragraph, we will evaluate the nurses before and after taking the educational program and for the three knowledge under study in this table (2) table show the nurses' knowledge before and after the program

DISCUSSION

Table 1 of this study displays the homogeneity and distribution of the two samples (control and study). This study includes 60 nurses from Mosul neonatal care units, whose ages range from 20 to 40 years or more. Of these, 30 nurses

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are in the study group and 30 nurses are in the control group. This is a socio-demographic research sample. In addition to the Fisher's exact test, which is based on the ratio value, the (p-value) according to the Levenes test for (age, gender, experience, workplace experience, number of training, and information's) show that there are no significant variances and that the sample is homogeneous. Comparatively, every result demonstrated that every probability value was higher than (0.05), which leads us to accept the null hypothesis that the two samples are homogeneous. According to the researcher, because all of the participants in the two groups (the study and the control) are from the same hospital and work in the same units, they are homogeneous. Based on the criteria of the study sample, the majority of them are recent graduates with over a year of experience working in neonatal care units. Their average age is approximately thirty-nine years old. However, because most of the participants prefer to work in neonatal care units, the majority of them are female. The study's statistical findings about the nurses' understanding of neonatal jaundice indicate that they were at a bad level in the second pre-test (3,233), a good level in the first post-test (8,767), and a good level in the second post-test (7,200). According to the researcher, the outcomes displayed in the same table demonstrate the efficacy of the educational program, which produced favorable outcomes by raising the nurses' awareness of neonatal jaundice between the pre-test and post-test1 and post-test2. The research carried out in India by Sharma et al. (2020). were in agreement with this study, which found that the mean post-test-1 Self-esteem score in the experimental group (16.10 ± 1.85) was higher than the mean pre-test score (14.57 ± 2.09), while the mean score in the comparison group was 10.30 ± 1.93 . Additionally, it was noted that the comparison group's mean post-test scores were lower than those of the experimental group^(11,12).

CONCLUSION

Through the results of the study, the researcher concluded that the nurses' knowledge about the blood transfusion process before giving the educational program to the patients was poor, and through the intervention and giving the nursing program, their knowledge became good. The reason is due to the effectiveness of the effective programs.

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