Journal of Research Administration
Society of Research Administrators International

A STUDY TO ASSESS THE EFFECTIVENESS OF ICT ENABLED TEACHING INTERVENTION ON KNOLWEDGE REGARDING EXCHANGE TRANSFUSION IN NEONATES AMONG PEDIATRIC NURSES AT SELECTED HOSPITAL IN KANPUR, UTTAR PRADESH.

Madhuri Kumari[1], Neha Pal[1], Neha Yadav[1], Ms. Ankita Trigunayat[2]
[1]Student Nurses, Faculty of Nursing, Rama University, Mandhana Kanpur, Uttar Pradesh, India.
[2]Lecturer of Department of Community Health Nursing, Faculty of Nursing, Rama University, Mandhana, Kanpur, Uttar Pradesh, India.

ABSTRACT

Exchange transfusion is thought to be a safe and successful technique, it is not without risks complication have been observed, and mortality rates from 0.5 to 3.3%. therefore, the current guidelines for doing the procedure are based on, balanced between the risk of encephalopathy issues linked to the procedure. The present study was conducted in Shyam children and maternity hospital, Vighnesh Hospital, Mercy Hospital, Narayan Hospital in Kalyanpur, Kanpur, Uttar Pradesh. The data was collected by using self-structured knowledge questionnaire and analyzed by using descriptive and inferential statistics. The study findings revealed that among 30 pediatric nurses (46.66%) had moderately adequate knowledge, (26.67%) had adequate knowledge and (26.67%) had inadequate knowledge in pre-test. Overall majority of (73.33%) had adequate knowledge, (0%) had inadequate knowledge and (26.67%) had moderately adequate knowledge in post-test. The pre-test score was (18.33) and post-test score was (26.06) suggesting that the ICT Enabled Teaching Intervention was effective in increasing the knowledge of pediatric Nurses. The post-test mean score was 26.06 that was more than the pre-test mean score 18.33 of knowledge. When the mean, SD of pre-test and post-test were compared, the obtained 't' value (9.06) was greater than table value at df 29 which was <0.05 level of significance, which shows that there is significant difference between pre-test and post-test knowledge regarding exchange transfusion in neonates. Demographic variable like age, gender, educational qualification, Marital status, previous knowledge and source of information regarding exchange transfusion in neonates were found non-significant at <0.05 level of significance. So, there was no association between the pre-test knowledge score and demographic variables.

Keywords: Exchange transfusion, pediatric Nurses, ICT Enabled Teaching Intervention.

INTRODUCTION

Alexander s. wiener invented exchange transfusion shortly after he identified the RH-factor. it was introduced in the late 1940s to lower neonate hemolytic disease mortality and prevent kernicterus in survivors of the disease. (3)

Exchange transfusion are a potential lifesaving procedure used to treat severe jaundice caused by RH- Incompatibility or blood changes brought on by conditions like sickle cell anaemia. An exchange transfusion that involves taking and replacing the patient blood. Each cycle of the

exchange transfusion last for a few minutes. A specific volume of the child blood is taken out and replaced with a normal saline solution, plasma (the clear liquid component of blood), or albumin conditions like neonatal polycythaemia. By doing so the body produce fewer blood cells overall an improve blood flow throughout the body. (4)

Haemolysis in the affected baby is also stopped by exchange transfusion. When Phototherapy wasn't able to stop bilirubin levels from raising to toxic levels, it was administered. Early signs of new-born with RH-Hemolytic disease requiring exchange blood transfusion include: 1. Level of haemoglobin cord blood 10gm/dl or less, 2. Level of cord blood bilirubin 5mg/dl or more, 3. Unconjugated serum bilirubin levels of 10mg/dl within 24 hrs, 15mg/dl within 48 hrs, an increase of more than 0.5mg/dl per hours. (7)

NEED FOR THE STUDY

In India clinical and laboratory characteristics of infants undergoing exchange transfusion. Hospital mortality could be determined for 1161/1252 (93%) infants. A total of 4% (42/1161) of infants receiving exchange transfusion died within 7 days following exchange transfusion. overall hospital mortality was 6% (65/1161). (16)

The primary used of exchange transfusion in neonates with newborn haemolytic disease is to lower bilirubin levels and remove offending antigen-positive RBCs. The need for an exchange transfusion is indicated by bilirubin level that are higher than 5mg/dl in the cord, higher than 1mg/dl/hr, or higher than 20mg/dl in indirect bilirubin. RBC components used in exchange transfusion need to be radiated, have their haemoglobin volume reduced, and have their hematocrit or reconstitute with plasma to around 50%. After an exchange transfusion, it's important to check your haemoglobin level as well as your platelet count, prothrombin, partial thromboplastin time, and fibrinogen levels. (18)

PROBLEM STATEMENT

"A study to assess the effectiveness of ICT enabled teaching intervention on knowledge regarding exchange transfusion in neonates among pediatric nurses at selected hospital in Kanpur, Uttar Pradesh."

OBJECTIVES

1. To assess the level of knowledge regarding exchange transfusion in neonates among pediatric Nurses.
2. To evaluate the effectiveness of ICT Enabled Teaching Intervention on knowledge regarding exchange transfusion in neonates among Pediatric Nurses.
3. To find out the association between pre-test score of ICT Enabled Teaching Intervention on knowledge regarding exchange transfusion in neonates with their selected socio demographic variables.

HYPOTHESIS

$H0_1$- There is no significant difference between pre-test and post-test knowledge score regarding exchange transfusion in neonates among pediatric Nurses.

$H0_2$- There is no significant association between pre-test level of knowledge on exchange transfusion in neonates with their selected socio demographic variables.

H_1- There is no significant difference between pre-test and post-test knowledge score regarding exchange transfusion in neonates among pediatric Nurses.

H_2- There is a significant association between pre-test level of knowledge on exchange transfusion in neonates with their selected socio demographic variables.

MATERIALS AND METHODS

Research approach

Quantitative Evaluatory Research approach chosen for the study.

Research designs

The research design adopted for this study was pre-Experimental one group pre-test post-test design.

VARIABLES

Independent variable

ICT Enabled Teaching Intervention on knowledge regarding exchange transfusion in Neonates.

Dependent variables

Knowledge level of pediatric nurses on exchange transfusion in Neonates.

Demographic variables

Age, Gender, Educational qualification, Marital status, Previous Knowledge, Source of Information regarding exchange transfusion in Neonates.

POPULATION

Target population

The target population of present study consist of 30 pediatric Nurses in selected hospital Kanpur, Uttar Pradesh.

Accessible population

Accessible population of present study was pediatric Nurses those who are present in Vighnesh hospital, Mercy hospital, Narayan hospital & Shyam children and maternity Centre in Kanpur, Uttar Pradesh.

SAMPLE

The sample used for this study was pediatric nurses who are meeting the inclusion criteria.

SIZE

The sample size of this study will consist of 30 pediatric nurses.

SAMPLING TECHNIQUE

Non-Probability Purposive sampling technique was used to select the sample.

INCLUSION CRITERIA

The study includes the pediatric Nurses who are-

- The pediatric Nurses who are available at the time of data collection.
- The nurses who are willing to participate in the study.

EXCLUSION CRITERIA

The study excludes the nurses who –

- Nurses who worked in other wards.
-

DEVELOPMENT OF RESEARCH TOOL

On the basis of develop framework to achieve the objectives of the study, A structured knowledge questionnaire was prepared to assess the level of knowledge regarding exchange transfusion in neonates in selected hospital, Kanpur Uttar Pradesh. The tools were initially prepared in English by the language expert.

There were two research tools involved

- Socio demographic variables
- Knowledge assessment: A Self structured knowledge questionnaire

DESCRIPTION OF THE TOOL

The researcher has developed structured knowledge questionnaire to assess the effectiveness of ICT Enabled Teaching Intervention on knowledge regarding exchange transfusion in neonates among pediatric Nurses at selected hospital in Kanpur, Uttar Prasdesh.

Tool Consist of two parts

Section A – Demographic variables

Section B– Self structured knowledge questionnaire

Section A- A Self structured knowledge questionnaire consists of demographic data of the subjects.

It consists of socio demographic information such as age, gender, educational qualification, Marital status, previous knowledge and source of information regarding exchange transfusion in neonates.

Section B- self structured knowledge questionnaire

RESULTS AND FINDINGS

SECTION A

The major findings of the present study were:

- Majority of the pediatric nurses 17(56.66%) in age of 17 years.
- Majority of the pediatric nurses 28(93.33%) were female.
- Majority of the pediatric nurses 15(50%) were from GNM.
- Majority of the pediatric nurses 20(66.67%) were married.
- Majority of the pediatric nurses 23(76.67%) were have previous knowledge regarding exchange transfusion in neonates.
- Majority of the pediatric nurses 17(56.67%) were have source of information from demonstration.

SECTION B

Table no 1: distribution of pediatric nurses according to the pretest and post-test level of knowledge on exchange transfusion in neonates.

n= 30

S. No	Level of knowledge	Pre-test		Post test	
		F	%	F	%
1.	Inadequate knowledge (0-15)	8	26.67%	0	0%
2.	Moderately adequate knowledge (16-22)	14	46.66%	8	26.67%
3.	Adequate knowledge (23-30)	8	26.67%	22	73.33%
	Total	30	100%	30	100%

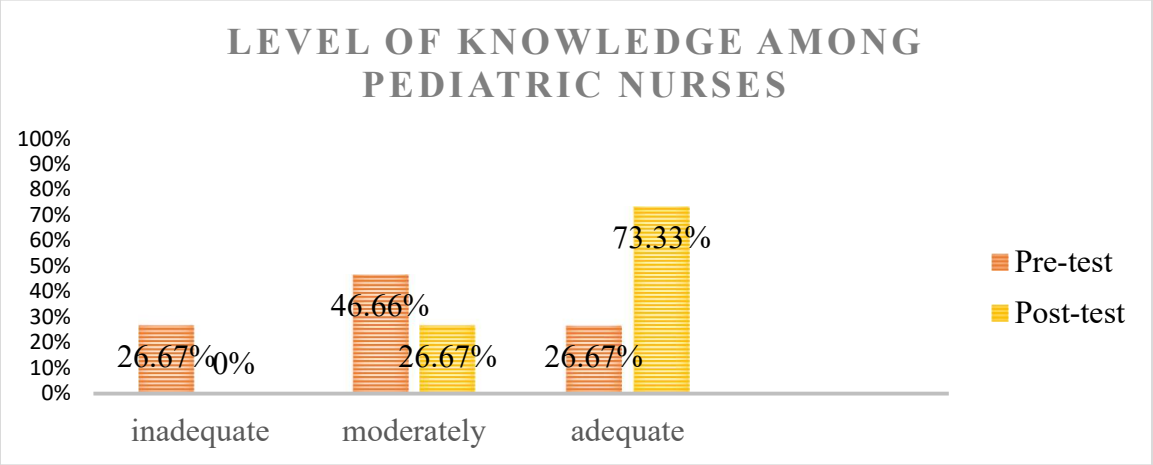

Fig 1: column bar diagram showing percentage wise distribution of pediatric nurses according to their level of knowledge in pre-test and post-test

(Table no.11, diagram no.8) column bar diagram shows that comparison of pre-test and post-test level of knowledge. In pre-test among the 30 sample 8(26.67%) had inadequate knowledge, 14(46.66%) had moderately adequate knowledge, and 8(26.67%) had adequate level of knowledge. In post-test among 30 sample No one had inadequate level of knowledge, 8(26.67%) had moderately adequate knowledge and 22(73.33%) had adequate level of knowledge.

SECTION 'C'

COMPARISON OF PRE-TEST AND POST-TEST LEVEL OF KNOWLEDGE REGARDING EXCHANGE TRANSFUSION AMONG PEDIATRIC NURSES.

Table 2: comparison of pretest and post-test knowledge level regarding exchange transfusion in neonates among pediatric nurses.

n=30

S. No	Knowledge level	Mean	Mean difference	Mean percentage	Standard deviation
1.	Pre-test	18.33	7.73	61.1%	5.48
2.	Post-test	26.06		86.87%	2.79

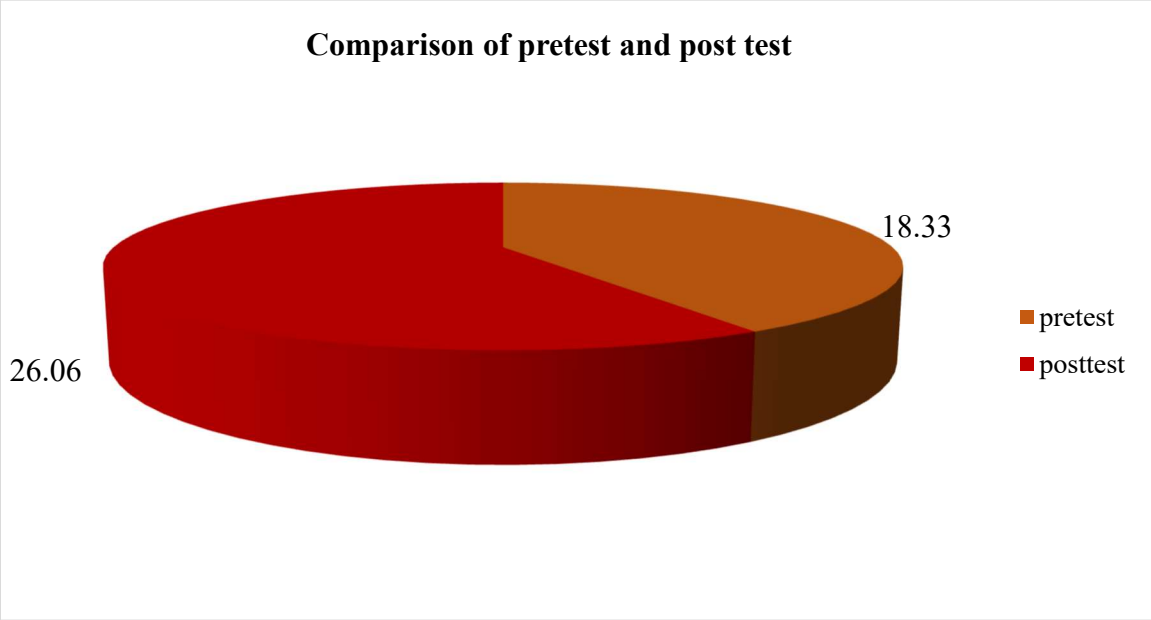

Fig 2: bar diagram showing percentage wise comparison of pre-test and post-test knowledge level regarding exchange transfusion in neonates among pediatric Nurses

(Table no.12, Diagram no.9) bar diagram shows that mean of pre-test (18.33) and post- test (26.06).

SECTION 'D'

EFFECTIVENESS OF ICT ENABLED TEACHING INTERVENTION ON KNOWLEDGE REGARDING EXCHANGE TRANSFUSION IN NEONATES AMONG PEDIATRIC NURSES.

Table 3: frequency, mean, mean difference, paired "t" test of structured questionnaire

S. No	Level of knowledge	Mean	Mean difference	SD	"t" value	Level of significance

1.	Pre-test	18.33		5.48		
			7.73		9.06	0.05 Significant
2.	Post-test	26.06		2.79		df= 29

(Table no.3) shows that the pre-test mean score were 18.33 and post-test mean score were 26.06. The calculated 't' value which shows significant at the 0.05 level of significance.

Therefore, the findings implied that the ICT Enabled Teaching Intervention had significant effect in the improvement of pediatric nurses regarding exchange transfusion in Neonates. Hence, the formulated research **hypothesis H_1** was accepted because there were significant differences between the pre-test and post-test knowledge score regarding exchange transfusion in Neonates.

NURSING IMPLICATION

The finding of the study has several implications which are discussed here.

These are following – nursing research, nursing education, nursing administration, community health nursing and nursing services.

Nursing research-

It has been provided the first-hand experience to the researcher who will be able to conduct and participate in future research project. It has generated a piece of nursing literature for reference for future research. Finding of this study will act as catalyst to carry out more extensive research on larger sample in different setting.

Nursing education

The nursing curriculum provides clinical experience regarding ICT Enable Teaching Intervention of exchange transfusion in neonates in various settings. Present study emphases that the health education about exchange transfusion in neonates and its benefits is the key to prevent so many killers' disease and can save lives of women in order to educate the other it is essential that nurse should be competent and should have sound knowledge to improve the level of understanding on exchange transfusion in neonates and its benefits. The knowledge can be reflected to public through education provision should be made for development of appropriate posters, pamphlets and ICT for educating patients.

Nursing administration

Nurses have to play multi-dimensional role and their skills have to be combined, with the specialized knowledge on exchange transfusion in neonates in hospitals.

Recommendations

Based on findings, the following recommendations were offered for future research-

- The study needs to replicate on a large sample to validate and generalize its findings.
- A similar study can be conducted in hospitals to assess the knowledge regarding exchange transfusion in neonates.

- A similar study can be applied in nursing practice to increase their knowledge, practice and attitude regarding exchange transfusion in neonates.
- The similar study can be conducted by using experimental group and control group.

CONCLUSION

A total of 30 pediatric nurses were selected. According to their age group, 2 nurses were between 18-20 years of age (6.67%), 6 nurses were between 21-22 years of age (20%), 17 nurses were between 23-24 years of age (56.66%) and 5 nurses were 24 above years of age (16.67%). According to their gender, Majority (93.33%) were from female and (6.67%) were from male. According to their educational qualification 6 nurse were from ANM (20%), 15 nurses were from GNM (50%), 9 nurses were from B.sc nursing (30%) and no one from Post basic nursing. According to their marital status Majority (66.67%) were married and (33.33%) were Unmarried. According to their previous knowledge about (23.33%) was no and (76.67%) had knowledge regarding exchange transfusion in neonates. According to source of information, majority (56.67%) was from demonstration, (20%) was from clinical and no one from classroom and mass media. Overall majority of (46.66%) had moderately adequate knowledge, (26.67%) had adequate knowledge and (26.67%) had inadequate knowledge in pre-test. Overall majority of (73.33%) had adequate knowledge, (0%) had inadequate knowledge and (26.67%) had moderately adequate knowledge in post-test. The pre-test score was (18.33) and post-test score was (26.06) suggesting that the ICT Enabled Teaching Intervention was effective in increasing the knowledge of pediatric Nurses. Demographic variable like age, gender, educational qualification, Marital status, previous knowledge and source of information regarding exchange transfusion in neonates were found non-significant at <0.05 level of significance. So, there was no association between the pre-test knowledge score and demographic variables.

REFERENCES

1. Reid, Marion E. (2008). "Alexander S. Wiener: The Man and His Work". Transfusion Medicine.Reviews.22(4):300–316.
2. Gupte Suraj “THE SHORT TEXTBOOK OF PEDIATRICS” Incorporating National and international Recommendations. 13TH edition, Jaypee Brothers medical publisher, The health science publisher, New Delhi/London; page no: -864.
3. Dutta Parul “PEDIATRIC NURSING” 5TH edition, Jaypee Brothers medical publisher, The Health Science Publishers. New Delhi/London 2007. Page no: - 96-97.
4. Wolf, M.F., Childers, J., Gray, K.D. et al. Exchange transfusion safety and outcomes in neonatal hyperbilirubinemia. J Perinatol 40, 1506–1512 (2020). Published on 9 march 2020.
5. Patricia E. Zerra MD, ... Cassandra D. Josephson MD, in Transfusion Medicine and Hemostasis (Third Edition), 2019.