

A Study to Assess the Effectiveness of Protocol on Care of Newborn in Phototherapy on Knowledge and Practice among Nurses at Selected Hospitals in South India

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Abstract

Background: The present study assess the Effectiveness of Protocol on Care of Newborn in Phototherapy on Knowledge and Practice among Nurses at Selected Hospitals in South India

Method and Material: A pre - experimental one group pre and post test study design was used to collect all the necessary and relevant data from nurses. The study was conducted in the maternity ward and phototherapy unit of two hospitals. Based on inclusion criteria 50 nurses were selected and non probability convenient sampling techniques were used.

Results: In pre test level of knowledge of nurses regarding care of newborn in phototherapy, 17 (34%) had inadequate knowledge, 19 (38%) had moderately adequate knowledge and 14 (28%) had adequate knowledge. In post test majority of 44(88%) had adequate knowledge, 6 (12%) had moderately adequate knowledge and no one had inadequate knowledge. The improved mean value for knowledge was 10.43 with “t” value of 13.47 and improved mean value for practice was 6.78 with “t” value of 17.26. This results shows the high statistical significance at $p < 0.001$.

Conclusion: The study concludes that there was a significantly improvement of knowledge and practicable in post test after administration of protocol. Thus protocol was observed to an effective tool to improve the knowledge and practice on care of newborn in phototherapy and it may be useful to implement future reference.

Keywords: Protocol, Nurses, Newborn, Knowledge, Practice, Hospital and south India.

Introduction

Newborns are considered to be tiny and powerless beings, completely dependent on others for their adaptation in the external environment. Within one minute of birth the normal newborn adapts from the

dependent fetal existence to an independent being capable of carrying on the physiological processes. This transition, in many babies takes place in a smooth, uneventful way.

In controversy to the above, a few newborns face some minor disorders. During the process of physiological adaptation for its survival, the neonate has to face many life threatening problems, such as asphyxia, hypothermia, hyperbilirubinemia, infections etc.

One of the most important minor disorder that occur in the newborn during the transition phase is hyperbilirubinemia. It is the yellow discoloration seen

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in the skin and sclera due to an increase in the serum bilirubin level. Excess amount of bilirubin in the blood that causes hyperbilirubinemia. (Halliday, H. L. 1989)

Globally, 65% of the newborns develop hyperbilirubinemia making it one of the most common problems in the majority of the newborn. (William, W. Hay., 2009). In India approximately 4 million babies are born every year. Of them, 60 to 70% of the newborns develop hyperbilirubinemia. These statistics indicate that hyperbilirubinemia is a very common condition.

Stokowski, L. A.³ (2006) said that proper nursing care enhances the effectiveness of phototherapy and minimizes complications. Nursing responsibilities include ensuring effective irradiance delivery, minimizing skin exposure, providing eye protection and eye care, carefully monitoring thermoregulation, maintaining adequate hydration, promoting elimination and supporting parent-new born interaction.

Nurses play a vital role in providing comprehensive care for neonates on phototherapy based on their needs. Meticulous and appropriate nursing care during phototherapy is the best way to prevent the complications.

Newman & Esterling⁴ (2000) stated that according to the British Columbia Reproductive Care Program of Neonates, hyperbilirubinemia is a common neonatal problem especially during the 1st week of life when approximately 50 percent of all newborns have visible jaundice, of them 8-20 percent of term neonates exceed the total serum bilirubin values of 13 mg/dl, and need phototherapy.

All the above studies tell about the various complications that occur due to phototherapy, and stress that prevention can be possible with good care of the newborn. Neonates need close monitoring and careful nursing measures to improve their health status and to prevent complication.

During this time nurses play a very vital role in preventing complications and maintaining the well being of the newborn. With growing technology in the health sciences and increasing specialization of the Nursing profession, more rigorous control is required to ensure that nurses should possess sound scientific knowledge and skills to deliver safe and quality care.

Asha P. Shetty⁵ (2003) conducted an experimental study, to assess the effect of photo therapy among full

term newborn with a view to develop a nursing care protocol. The study concluded that, most often newborns with hyperbilirubinemia are treated with phototherapy which was effective. It was noted that development of a valid protocol for care of newborns in phototherapy would help practicing nurses to act promptly and independently.

Many studies in this area have been conducted in the western countries and protocols have been developed. But in India the investigator has observed that there is no specific protocol used by nurses while caring for babies in phototherapy. Hence the care provided was observed to be inadequate and many complications arose for the newborns. Having this in mind the investigator took up the responsibility of preparing a protocol to be followed while providing care for babies in phototherapy and also decided to test the effectiveness of the protocol through a pre- experimental study. The investigator tries to focus the effectiveness of the protocol which is cheap and resourceful intervention to care for the newborn during phototherapy and to assess the knowledge and practice among nurses for the same.

Method and Material

The study was designed to assess the the effectiveness of protocol on care of newborn in phototherapy on knowledge and practice among nurses at selected hospitals, Madurai. Investigator obtained formal permission from the administrative officer of Kasthuriba hospital and from the medical director of Leonard hospital, Madurai prior to the initiation of the study

Study Design: A quantitative research approach includes the research design in this study was pre experimental one group Pretest – Post test study design was considered to be the most appropriate to achieve the set of objectives in this study. The objectives were to assess the pre & post test level of knowledge and practice of nurses regarding care of newborn in photo therapy. To compare the pre and post test level of knowledge and practice of nurses regarding care of newborn in photo therapy. To correlate the mean improvement level of knowledge and practice among nurses regarding care of newborn in phototherapy. To associate the mean improvement knowledge and practice scores on care of newborn in phototherapy with selected demographic variables. The study was conducted in maternity ward and photo therapy units of two hospitals viz...

Kasthuriba hospital and Leonard hospital, Madurai. Kasthuriba hospital is a 200 bedded hospital which has well established maternity ward and photo therapy unit. Totally 35 - 40 newborns were admitted per month for the treatment of hyperbilirubinemia. Leonard hospital is a 250 bedded hospital. The phototherapy unit has 15 phototherapy machines in which 25-30 newborns were admitted per month for the treatment of hyperbilirubinemia. Totally 25 nurses are employed, all of them are posted in the maternity ward and phototherapy unit in a rotation.

Study Population: Fifty nurses who are qualified and working in maternity ward and phototherapy unit were included in this study

Inclusion Criteria: The nurses were working in photo therapy units and maternity wards and nurses were qualified as Diploma, B.Sc (N) Postbasic and B.Sc Basic (N).

Description of the Tool: A non probability convenience sampling technique was used in this study. The tool of the study has three section. **Section A:** The demographic variables which includes age, gender, professional education, year of experience in service, total year of experience in phototherapy unit and source of information.

Section B: A structured knowledge questionnaire, it's consists of 30 multiple choice questions with 4 options and a single correct answer. Correct answer carries 1 mark and wrong answer carries-0 mark. The Questions covered the following aspects -Knowledge about hyperbilirubinemia-13, Knowledge about phototherapy - 7 and Care of newborn in phototherapy - 10.

The knowledge and practices score range as follows

Range	Score
> 75 %	Adequate knowledge
50 – 75 %	Moderately adequate knowledge
< 50 %	Inadequate knowledge

Section C : The observation check list has 25 items. The items were in the 'Yes' or 'No' form. The score for yes is 'one' and No 'Zero'.

Content Validity and Reliability of the Tool

Content validity of the tool and protocol was got from three nursing experts in the field of obstetrics and gynecological nursing and two medical (DGO) experts. The reliability of the tool was established by using test-retest method to assess the reliability for knowledge with the same samples at different timings. The reliability score $r=0.9$. To assess the reliability for the observational check-list, inter -rater method was used. The r value was 0.87. It indicated highly positive correlation.

Data Collection Procedure: The formal permission was obtained from the administrative officer and from the medical director of hospital, Madurai. The data for the study was collected with in the period of 4 weeks. During data collection period the investigator worked from 8 am to 4 pm for 5 days a week. The investigator covered 3-4 nurses per day. After getting their oral consent the investigator collected the pre test data using structured questionnaire to assess the knowledge and observational check list for assessing the practice. Each nurse took 30 – 40 minutes to answer all the questions. The investigator spent 25-30 minutes for assessing the nurses' practice on care of newborn in phototherapy. After the completion of the pre test data collection, the protocol on care of newborn in phototherapy was administered to the nurses. After 7 days post test was conducted by using the same structured questionnaire and observational check list for the same samples. The data obtained were analyzed using both descriptive and inferential statistics.

Findings

The findings from the study are tabulated, analyzed and interpreted below. In relation to demographic variables, the majority of 14 (28%) were in the age group of more than 31 years, 40 (80%) were females, 28 (56%) had completed GNM.

Table 1 : Frequency and percentage distribution of the Pre test & Post test level of knowledge of nurses regarding care of newborn in phototherapy.

N=50

VARIABLES	Pre Test						Post Test					
	Inadequate (< 50%)		Moderately Adequate (50 – 75%)		Adequate (> 75 %)		Inadequate (< 50%)		Moderately Adequate (50 – 75%)		Adequate (> 75 %)	
	NO	%	NO	%	No	%	NO	%	NO	%	NO	%
Knowledge about hyperbilirubinemia	16	32	25	50	9	18	-	-	-	-	50	100
Knowledge about phototherapy.	19	38	26	52	5	10	-	-	6	12	44	88
Care of Newborn in phototherapy	13	26	19	38	18	36	-	-	-	-	50	100

Table 2: Frequency and percentage distribution of the Pre & Post test level of practice of nurses regarding care of newborn in phototherapy.

N-50

PRACTICE VARIABLES	Inadequate (< 50%)		Moderately Adequate (50 – 75%)		Adequate (> 75 %)	
	NO	%	NO	%	NO	%
Pre test	2	4	38	76	10	20
Post test	-	-	6	12	44	88

Table 3 : Comparison of pre test and post test level of Knowledge and practice among nurses regarding care of newborn in phototherapy.

N= 50

Variables	Knowledge			Practice		
	Mean	SD	't' value	Mean	SD	't' value
Pre test	17.78	6.67	13.47 ***	16.24	2.55	17.26 ***
Post test	28.12	2.88		23.02	2.48	

*** P < 0.001

Table 4 : Correlation between the overall mean improvement level of knowledge and practice of nurses regarding care of newborn in phototherapy.

N = 50

VARIABLES	POST TEST		
	Mean	S.D	'r' Value
Knowledge	28.12	2.88	0.813 ***
Practice	23.02	2.48	

*** P < 0.001

With regard to level of knowledge the post test mean score was 28.12 and S.D was 2.88. With regard to level of practice, the mean was 23.02 and S.D. was 2.48 .The calculated 'r' value was 0.813 which show that there was a positive correlation between the overall mean improvement level of knowledge and practice at a statistically significant level of p < 0.001.

The present study supported by Milly **Mathew (2003)** on the topic can the self instructional module improves the nurse's knowledge on neonatal hyperbilirubinemia. The findings revealed that the self instructional module was effective in increasing the knowledge level of nursing personal with a t value of t=15.68 at p<0.5 level. The correlation r value between the knowledge and practice was r=0.93 which showed a good positive correlation.

Discussion

The present study was done to assess the effectiveness of protocol on care of newborn in phototherapy on knowledge and practice among nurses at selected hospitals, Madurai. The implementation of protocol was effective intervention during phototherapy on the nurses and the overall health profession. Data were analyzed from 50 nurses. The overall pre test mean score was 16.24 with S.D was 2.55 and the post test mean was 23.02 with S.D was 2.48 and the calculated 't' value was 17.26 which had statistically high significance at P < 0.001 level. The protocol was found to be effective in improving the practice of nurses regarding phototherapy

Regarding association of mean improvement level of knowledge of nurses regarding care of newborn in phototherapy with selected demographic variables of

source of information at p<0.05. The other demographic variables have no significant association with the knowledge of nurses. Regarding practice the results revealed that there was no statistically significant association of the mean improvement level of practice with the selected demographic variables.

Conclusion

The present study was conducted to assess the effectiveness of protocol on knowledge and practice regarding care of newborn in photo therapy among nurses in maternity ward and photo therapy unit of Kasthuriba and Leonard hospitals at Madurai, 2009. From the results of the study it was concluded that protocol on care of newborn is an effective method to improve the knowledge and practice level of nurses. The findings revealed that the nurses, who had good knowledge about care of newborn in photo therapy, will have good practice too.

Implications:

Nursing Practice:

Nurses working in maternity ward and photo therapy unit should have adequate knowledge and practice about care of newborn in photo therapy . The nurses should update their knowledge by in service education and continue nursing education programs. Nurses who have good knowledge and practice regarding care of newborn in photo therapy will be able to promote the newborns health and thereby reduce the neonatal morbidity and mortality.

Nursing Administration:

The administrator has important role in creating awareness to increase the knowledge about care of newborn in photo therapy. In order to develop professional knowledge she has to make arrangements to conduct regular in-service education and continue nursing education programs on care of newborn in photo therapy.

Nursing Education:

The nursing curriculum should be strengthened to enable nurses to excel in knowledge and practice of care of newborn in photo therapy. Students should be encouraged to have hands on experience in photo therapy units. Monitoring and assessing the newborn condition during photo therapy should be included as a clinical procedure.

Nursing Research:

The findings of study can be disseminated to clinical nurses and student nurses through web site, literature, journals etc. The findings of the study will help the professional nurses and nursing students to improve their knowledge and practice

Recommendations:

– The protocol can be placed in the maternity and phototherapy units for the nurses to read and follow.

– A similar study can be conducted by increasing the samples size in different setting for better generalization.

– A comparative study can be done at various setting.

– A comparative study can be done on knowledge and practice between diploma nurses and B.Sc nurses.

Limitation:

- The investigator faced difficulty in seeking permission in selected hospitals.

- The investigator faced ample difficulty in collecting related literature as there was an only limited study on knowledge and practice among nurses.

Ethical Clearance- Taken from institutional ethical committee faculty members

Source of Funding- Self funding

Conflict of Interest – Nil

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