

# Knowledge and practice of nursing personnel regarding the care of neonates under phototherapy at Paropakar Shree Panch Indra Rajyalaxmi Devi Prasuti Griha, Thapathali, Kathmandu

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## Abstract

**Background:** High neonatal mortality is a reflection of very poor neonatal care. Hence a specialist should be able to take up leadership role in neonatal care to prevent high mortality and morbidity rate. The study was carried out to determine the knowledge and practice of the nursing personnel regarding the care of neonates with phototherapy.

**Objectives:** To assess the knowledge and skills/practice of nurses regarding the care of neonates with phototherapy.

**Methods:** Descriptive and exploratory research design was adopted for the study from 15<sup>th</sup> to 30<sup>th</sup> April, 2007 for two weeks at Paropakar Shree Panch Indra Rajyalaxmi Devi Prasuti Griha, Thapathali, Kathmandu. A semistructured questionnaire was designed to collect the data from 50 respondents working in different wards and they were selected by using Purposive sampling technique. The data collected were analysed and interpreted based on descriptive and inferential statistics. The level of knowledge score was converted into percentage and overall adequacy of knowledge was graded according to the following criteria:-

**If score > 75%** highly knowledgeable

**If score 50 % to 75%** moderate knowledge

**If score <50%** inadequate knowledge<sup>1</sup>.

**Results:** The findings revealed that the majority of the respondents 28 (56%) were highly knowledgeable (the knowledge level of the respondents more than 75 %) and 22 (44%) respondents were with average knowledge (more than 50% and less than 75%). No respondents were below 50% level (below 50%).

**Conclusion:** The study attempts to determine the knowledge and practice of nursing staffs regarding the care of neonates with phototherapy. According to the data and information of the respondents the nursing personnel should be provided with in-service education training in relation to care of neonates with phototherapy. This study will be helpful for providing information about existing knowledge and practices of nursing personnel regarding phototherapy. It will help to provide knowledge about the strength and weakness of the services provided by the hospital regarding phototherapy for future researcher.

**Key words:** Knowledge, Neonates, Nursing personnel, Phototherapy, Practice and Skills

## INTRODUCTION

Neonatal period is the period within 28 days after birth for both preterm and full term baby. It is one of the crucial stages and needs more attention for better life. High neonatal mortality is also one of the important causes of high fertility rate, which has a direct bearing

on high maternal morbidity and mortality. Lack of any specific programs regarding care of the neonates is the main reason for high neonatal mortality contributing over 50% of infant mortality in the country<sup>2</sup>.

High neonatal mortality is a reflection of very poor neonatal care. Hence, a specialist should be able to take up a leadership role in neonatal care to prevent high mortality and morbidity rate. Jaundice is a clinical sign of Hyperbilirubinemia which has many causes in the new born within the first week of life. Jaundice has been observed approximately in 60% of infant<sup>3</sup>.

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The majority of these infants have nonunderlying disease and their Jaundice results from increased bilirubin production normally seen in the new born period (Physiological jaundice) in a minority. Jaundice indicates a more serious underlying pathology such as heterolysis septicaemia or metabolic diseases (non physiological jaundice)<sup>3</sup>.

Phototherapy effectively decreases the serum bilirubin in jaundice in new born infants and decreases the need for exchange blood transfusion. Phototherapy helps to decrease bilirubin but also produces effects like loose greenish stool, insensible water loss, thermal irregularity, electrolyte imbalance, bronze baby syndrome, retinal degeneration, Infertility etc<sup>4</sup>.

Therefore, in order to prevent from its effects on neonatal stage several precaution, careful assessment and continued observation is needed. Immediate identification and intervention must be instituted to prevent further complication. So while a neonate is under phototherapy special knowledge is needed to recognize such condition and nurses should be able to institute appropriate care which significantly affect neonates immediate survival and later development<sup>4</sup>.

## METHODS

The investigator selected the descriptive and exploratory research questionnaire designed for the study regarding knowledge and practice among nursing personnel about the care of neonates on phototherapy. The study was conducted at Paropakar Shree Panch Indra Rajya Laxmi Devi Prasuti Griha in Thapathali, Kathmandu. The sample size was fifty and the sampling technique was Purposive sampling technique. The data obtained was analyzed based on the objectives and hypothesis of the study using the descriptive and inferential statistics regarding the knowledge and practice of phototherapy among nursing personnel. Semi structured questionnaire was used to collect data. Data collection was done within a period of two weeks from 15<sup>th</sup> to 30<sup>th</sup> of April 2007 by the researcher herself. Participants of the study were fully informed about the nature of the study, the research objectives and were assured of confidentiality of data.. Both descriptive and inferential statistics were adopted to analyze the data and data were presented in frequency and percentage. The data was analyzed using SPSS version 11.

## RESULTS

The findings of the study reveal that, out of fifty respondents all (100%) respondents were female and 25 (50 %) respondents were between the ages of 20 years

to 25 years. 46 (92%) respondents were Hindu and four (8%) were Buddhist. 17 (34%) respondents were Newar. 41 (82%) passed Proficiency Certificate Level (PCL) and 9 (18%) respondents passed Bachelor Level in Nursing.

**Table 1: Distribution of respondents according to demographic variables. (n=50)**

Variables	Respondents	
	Frequency	Percentage%
<b>Age</b>		
20 years to 25 years	25	50
26 years to 30 years	6	12
31 years to 35 years	9	18
Above 35 years	10	20
<b>Religion</b>		
Hindu	46	92
Buddhist	4	8
<b>Ethnic Group</b>		
Brahmin	16	32
Chhetri	14	28
Newar	17	34
Others	3	6
<b>Level of Nursing Education</b>		
Certificate Level	41	82
Bachelor in Nursing (BN)	9	18

**Table 2: Distribution of respondents according to work experience and working areas. (n=50)**

Description	Respondents	
	Frequency	Percentage%
<b>Working Areas</b>		
Labour Room	9	18
Neonatal intensive Care Unit (NICU)	8	16
Post Operative Ward	2	4
Maternity Intensive Care Unit (MICU)	6	12
Antenatal Ward (A)	1	2
Antenatal Ward (B)	5	10
New paying Ward	10	20
Postnatal Ward	9	18
<b>Work Experience (Year)</b>		
0 to 5 years	25	50
5 to 10 years	10	20
10 to 15 years	3	6
15 years and above	12	24

10 (20%) respondents were from new paying ward, Nine (18%) respondents were from labour room and postnatal ward, eight (16%) respondents were from NICU, six (12%) respondents were from MICU, five (10%) respondents were from antenatal ward (B), two (4%)

respondents were from post operative ward and only one (2%) respondent was from antenatal ward (A).

Regarding work experience majority 25 (50%) of the respondents had work experience in their respective field for about 0 to 5 years, 12 (24%) respondents had an experience for about 15 years, 10 (20%) respondents between 5 to 10 years and 3 (6%) respondents between 10 to 15 years. All (100%) of the respondents did not have any inservice training related to phototherapy.

**Table 3: Respondents' knowledge on signs of jaundice. (n = 50)**

Signs of jaundice	Respondents	
	Frequency	Percentage%
The sclera, Nails, Skins, Palms, Soles and mucus membrane (Correct)	48	96
Others (Incorrect)	2	4

The above table shows majority, 48(96%) respondents knew about the signs of jaundice. And other 2 (4%) of the respondents gave wrong answer for diagnosing jaundice.

**Table 4: Respondents' knowledge regarding promotion of accuracy of blood test. (n=50)**

To promote accuracy of blood test	Respondents	
	Frequency	Percentage%
Phototherapy light should be turned off while drawing blood. (Correct)	46	92
Others (Incorrect)	4	8

The above table shows majority 46(92%) of the respondents gave correct answer that phototherapy light should be turned off while drawing blood. And four (8%) of the respondents gave incorrect answer i.e, other than turning off light (phototherapy) while drawing blood.

According to the assessment of knowledge of the staffs about the covering of eyes of the baby during phototherapy majority (37) 74% of the respondents expressed right answer which is dark/black opaque pad used during phototherapy but according to the observation in the NICU the researcher found that they did not cover the eyes of the baby during phototherapy.

- » Which is the most appropriate eye pad used for baby during phototherapy?
- Dark/black opaque pad.
  - White transparent pad

- Pad with many pores
- White opaque pad

Majority (45) 90% of the respondents expressed that the duration of position change is two hourly and they also maintained two hourly position change during phototherapy treatment in the NICU ward. The 70% of the respondents know that the appropriate height should be 18 inches (45cm). During the observation the researcher found nurses were maintaining the appropriate height of phototherapy light from the body of the baby. Majority (38) 76% of the respondents expressed that the genital part of the male is necessary to cover during phototherapy and they also maintained it in their practical.

The knowledge of the respondents with the relationship of experience was measured according to the knowledge level of the respondents in different categories.

**Table 5: Respondents' level of knowledge. (n= 50)**

Knowledge level of the respondents	Respondents	
	Frequency	Percentage%
Highly knowledge level (More than 75 %) yes.	28	56
Average knowledge level (50% to 80%)	22	44
Below knowledge level (Less than 50%)	0	0

The above table shows the majority 28 (56%) of the respondents are highly knowledgeable (above 75 %) and 22 (44%) of the respondents are with average knowledge level (50% to 75 %). No any respondents are below 50% of knowledge level.

**Table 6: Respondents experience and knowledge level. (n=50)**

Experience of the staffs	Highly Knowledge level	Average knowledge level	Total
Below 5 years	15 (30%)	11 (22%)	26 (52%)
Over 5 years	13 (26%)	11 (22%)	24 (48%)
<b>Total</b>	<b>28 (56%)</b>	<b>22 (44%)</b>	<b>50 (100%)</b>

The above table shows the experience and knowledge level of the respondents.

- 15 (30%) respondents are highly knowledgeable with working experience of less than 5 year where

as 13 (26%) respondents are highly knowledgeable with working experience for over 5 year.

- 11 (22%) respondents are with average knowledge with working experience of less than 5 year where as 11 (22%) respondents are also with average knowledge with working experience for over 5 years.

## DISCUSSION

In this study 46(92%) had knowledge about not to use lotions or ointment on the skin of the baby during the time of phototherapy whereas 45 (90%) had knowledge that the infants should be turned every 2 hourly as condition allows during phototherapy. During the observation of two weeks interval, staffs of NICU were aware of changing the position of neonates under phototherapy two hourly. According to the study carried out by Schwoebeletal (1999), no lotions or ointment should be used on the skin as burns may occur and the infants should be turned every 2 hourly as condition allows<sup>5</sup>.

According to D.J Grunhagenetal (2002), transepidermal water loss occurs during halogen spotlight phototherapy in preterm infants. The data shows that transepidermal water loss increases by approximately 20% during phototherapy despite constant skin temperature with relative humidity. Maintenance of fluid for preterm infants should be increased by 0.35 mL/kg/hr during exposure to halogen spotlight phototherapy. The findings of the present study also showed that forty four(88%) respondents had knowledge about requirement of extra fluid during phototherapy<sup>6</sup>.

The findings of the present study showed that the majority 98% of the respondents had knowledge on the importance of breast feeding to the infant during phototherapy. Nursing personnel were found to have encouraged mothers for breast feeding to their baby in NICU. According to David K Stevenson etal (1999), newborn not feeding adequately probably have

increased enterohepatic circulation of bilirubin because fasting causes increased accumulation of bilirubin in animals. Since increasing the number of oral feeding allows more rapid excretion of bilirubin, early frequent nursing or supplemental feeding with formula may be effective in reducing serum bilirubin concentrations in breast fed infants under phototherapy<sup>7</sup>.

According to Spengler et al (2002), retinal damage has been observed in some animal models during intense phototherapy. In the NICU environment, infants exposed to higher level of ambient light were found to have increased risk of retinopathy. Therefore eyes of infants under phototherapy must be covered with eye patch slip. The present study showed majority(96%) of the respondents had knowledge about covering the eyes of baby during phototherapy<sup>8</sup>.

According to Doonlen and Budd (1983), it is stated that loose green stool occurs because the treatment increases bowel motility and decreases the activity of the enzymes that aids in the digestion of lactose. The present study showed the majority (98%) of the respondents had knowledge about the complication of dehydration and drying which may occurred during the treatment of phototherapy<sup>9</sup>.

This type of study can be carried out with the large number of sample in different hospitals. A comparative study can be done in two different hospitals and between general and special wards. It would be better if participatory approach is used to observe the practice and to assess the knowledge of staffs.

## CONCLUSION

In overall assessment of knowledge and practice of nursing personnel regarding phototherapy, the study revealed that most of the nurses had high level of knowledge and they had also applied good practice during the care of the baby with phototherapy.

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