

# “A Study To Assess The Effectiveness Of Informative Booklet On Knowledge Regarding Care Of Newborn During Phototherapy Among Nursing Students At Selected Institution Of Hosangabad (M.P.)”

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## Abstract

Introduction Phototherapy is one of the key procedures in the neonatal care setting. Most infants with physiologic jaundice do not have elevated bilirubin levels that require treatment. Phototherapy is an effective treatment to lower serum bilirubin levels in severe jaundice. Jaundice is an accumulation of bilirubin in the blood that is formed by the breakdown of red blood cells, naturally removed by the liver, and excreted in feces and urine. rises. Physiologic jaundice in newborns usually appears after 30 hours. Serum bilirubin peaks (up to 12 mg/dl) are reached on day 4 or 5, and jaundice resolves by days 7-14. Resolution within 14 days to 1 month (Wong's, 2006) Jaundice appears on the first day of life and is common in newborns, accounting for approximately 50-75% of this period, and all infants have higher plasma bilirubin than normal adults. It appears 72 to 96 hours after birth and usually disappears 1 to 2 weeks after birth. In term newborns, bilirubin levels rise for a few days, then reach high levels and then decline by the end of the first week of life. Premature babies may take more time to resolve as their normal elimination mechanisms mature (Paruldutta, 2009).

Hyperbilirubinemia refers to high serum bilirubin levels and treatment is based on elevated bilirubin levels. Phototherapy is the most common treatment for neonatal jaundice. Neonatal hyperbilirubinemia is a common problem in neonates with clinical manifestations of jaundice. Hyperbilirubinemia occurs in approximately 25-50% of newborns and in a higher proportion of preterm infants. Approximately 3% of babies born in Indian hospitals show significant jaundice levels above 15 mg/dL

(Meharban Singh, 2009).

Since the early 1970s, phototherapy has been used primarily to treat jaundice. Phototherapy is a non-invasive way to lower bilirubin levels by exposing your baby's skin to blue or cool white light. Light converts bilirubin into non-toxic, water-soluble compounds that are excreted in urine and feces. In addition to diapers, babies should be undressed to protect their gonads. To prevent colds, it is necessary to use external means of maintaining body temperature (Guptesuraj).

Obtain vital signs at least every 4 hours to monitor the baby's temperature. The eyes are covered to prevent damage to the retina. Place the baby under the phototherapy lamp at a distance of 45 cm from her and reposition the baby every 2 hours or after each feeding to maximize exposure. Phototherapy was discontinued and bilirubin returned to safe levels as planned. During phototherapy, neonates should be cared for appropriately to improve efficacy and minimize complications such as green stools, rashes, and electrolyte disturbances (Marilyn J. Huckleberry, 2005).). It has become the most widely used tool for the treatment of unconjugated pathological hyperbilirubinemia. Bilirubin exhibits maximum light absorption between 420 and 490 nanometers. Under light sources in this range, it is oxidized to biliverdin and excreted in bile or, to a lesser extent, urine. Phototherapy techniques are now generally considered superior to white light, but plain sunlight is also useful. Fluorescent tubes are very attractive as efficient sources of blue light. These tubes can be attached to reflectors inside the frame. The infant was placed 18 inches below her in the light. An exposure time

of 24-48 hours is sufficient to reduce serum bilirubin levels to safe limits. Serum bilirubin assessment was performed every 12 hours. Phototherapy discontinuation was indicated if results were less than 11 gm/dl from two consecutive doses 24 hours apart (Wong's, 2006)

Phototherapy is a simple, effective, inexpensive and acceptable method for lowering bilirubin in newborns. During phototherapy, bilirubin molecules in peripheral tissues are activated to biliverdin by absorbing photons. Accurate charting is another important nursing responsibility it includes times that phototherapy is started and stopped, proper shielding of the eyes, types of fluorescent lamps number of lamps, distance between surface of lamps and infant, use of phototherapy in combination with incubator or open bassinet, photometer measurement of light intensity, occurrence of side effects.

(Parulduitta, 2009).

Neonatal hyperbilirubinemia is the most common cause for hospital re admission in the first weeks of life. Bilirubin induced complication can be prevented by instituting a neonatal jaundice protocol to identify infants at risk for significant hyperbilirubinemia, by ensuring adequate parental education and preparedness, and by implementing a good neonatal tracking system for follow-up care. Hyperbilirubinemia is easily treated with phototherapy, which can be administered at home in selected infants

(SurajGupte, 2009).

Nurses play a important role in caring the newborn during phototherapy. Nurses are the ones with the newborn for 24 hours in NICU. So, I felt that, there is need to provide knowledge regarding care of newborn during phototherapy among future nurses and decided to administer structured teaching programme on care of newborn during phototherapy

(Wong's, 2006).

**Keyword: Effectiveness, Informative booklet, New-born, Phototherapy, hyperbilirubinemia**

### **Introduction:**

Phototherapy is one of the key procedures in the neonatal care setting. Most infants with physiologic jaundice do not have elevated bilirubin levels that require treatment. Phototherapy is an effective treatment to lower serum bilirubin levels in severe jaundice. This is an important procedure that, if done at the right time, can save the lives of many newborns. Special skills and techniques are required to complete the process. Students need special training to subtly assist with the procedure. Students should have a good knowledge of neonatal care during phototherapy to identify and prevent life-threatening neonatal complications (SurajGupte, 2009).

Jaundice is an accumulation of bilirubin in the blood that is formed by the breakdown of red blood cells, naturally removed by the liver, and excreted in feces and urine. rises. Physiologic jaundice in newborns usually appears after 30 hours. Serum bilirubin peaks (up to 12 mg/dl) are reached on day 4 or 5, and jaundice resolves by days 7-14. Resolution within 14 days to 1 month (Wong's, 2006)

### **Need of Study**

Hyperbilirubinemia is a common cause for brain death and encephalopathy in newborns. Over 9% of healthy term infants develop hyperbilirubinemia with serum bilirubin levels above 15 mg/dl. Jaundice in newborn is quite commonly affects nearly 70% of term and 80% of preterm neonates during first week of life. A study was conducted in Postgraduate Institute of Medical education and Research in 2012 shown that in India about 3% of all hospital born babies develop significant jaundice with serum bilirubin level more than 15mg/dl

(Guptesuraj 2004).

As per the National Neonatal Prenatal Database report (2019) 5% of all neonates in India develop significant jaundice with total serum bilirubin >15mg/dl. The mild jaundice which appears in 30-50% of normal newborns is usually self-limited. But in uncontrolled cases, serum indirect reacting

bilirubin concentration exceeding physiologic levels may results in acute or chronic bilirubin encephalopathy with seizure and cerebral palsy with hearing loss in surviving infants (SurajGupte, 2009).

Phototherapy has been found to be effective in treating hyperbilirubinemia in hemolytic as well as in non-hemolytic settings. It has dramatically reduced the need for exchange transfusion. Phototherapy is the noninvasive widely used modality for treatment of neonatal indirect hyperbilirubinemia as it is effective and relatively safe (Wong's, 2006)

**Objective Of Study:** The objectives of the study are to

1. Assess the pretest knowledge scores of Nursing students regarding care of newborn during phototherapy in BRD nursing college Hoshangabad M.P.
2. Assess the post test knowledge scores of Nursing students regarding care of newborn during phototherapy.
3. Find out the significant difference between pre test and post test knowledge scores of Nursing students regarding care of newborn during phototherapy.
4. Find the association between the post-test knowledge scores of students with their selected demographic variables.

### **Assumptions Of Study**

- Students may have varying level of knowledge regarding care of newborn during phototherapy.
- Informative Booklet may help to improve the knowledge of students regarding care of newborn during phototherapy.

### **Hypotheses**

The following hypotheses will be tested:

- H1-There will be significant difference between pre- test and post-test level of knowledge score of nursing students regarding care of newborn during phototherapy at 0.05 level.
- H2-There will be a significant association between post- test level of knowledge score of nursing students and selected socio demographic variables at 0.05 level.

### **Delimitations** ⇐

- The study is limited to Nursing students.
- The study is limited up to 4 weeks of period.

## **REVIEW OF LITERATURE**

### **Studies related to knowledge regarding care of newborn during phototherapy**

Rajashri. B et al. (2018) conducted a quasi-experimental study to assess the effectiveness of Informative Booklet on knowledge and practice regarding phototherapy application among student nurses in Krishna hospital. 50 students were selected for the study by purposive sampling technique, a structured questionnaire was administered. The study findings are pre-test mean value (13.3) post-test mean value (22.7) and no association between pre- test knowledge and demographic variables. Study concludes that significant gain in knowledge score after INFORMATIVE BOOKLET to nursing student

SM Hossain et al. (2017) conducted a cross sectional study on knowledge regarding neonatal jaundice management among mother in a tertiary level hospital of Dhaka city, samples of 150 mothers were selected for the study using non – randomized purposive sampling technique .a structured knowledge questionnaire was used to collect the data from the mothers. The study major finding was 7.3% had excellent level knowledge regarding neonatal jaundice, where as 40.0% had satisfactory knowledge and 34% had poor knowledge regarding neonatal jaundice. Hence awareness should be created among the mothers.

## STUDIES RELATED TO MANAGEMENT AND COMPLICATION OF PHOTOTHERAPY

Sridhar N.L et al. (2018) were conducted a study on calcium concerns in neonates undergoing phototherapy. Study group included 50 neonates with term and late pre term neonates (35-37 weeks) receiving phototherapy for neonatal jaundice were included in the study. At the end of phototherapy in study group, a significant fall in calcium levels in 64% of term and 76% of late preterm neonates was observed, but almost all expect one remained asymptomatic. The efficacy of phototherapy in the prevention of treatment of hyperbilirubinemia in newborn and infants well established. The researcher concludes that duration of phototherapy may influence the severity of hypocalcaemia.

Venktamurthy M et al. (2016) was conducted a prospective comparative study on effect of phototherapy on platelet count in neonatal hyperbilirubinemia in tertiary care hospital at Karnataka. Samples of 100 neonates were selected for the study with neonates receiving phototherapy. Before starting phototherapy platelet count was checked at 0 hours and discontinuation of phototherapy (second sample). the first sample was considered as control group. The study concludes that mean platelet 23 count (2.23 +/- 0.28 lakh) by phototherapy and (1.82 +/- 0.01 lakh) after phototherapy. There was a decline in platelet count after phototherapy, it was not statistically expect for low birth weight babies.

## CONCEPTUAL FRAMEWORK

The investigator has adopted Imogene king's goal attainment theory based upon personal and interpersonal systems including perception, action, interaction and transaction. The investigator adopted this basic theory for conceptual framework, which is aimed to find out the effectiveness of Informative Booklet on level of knowledge regarding care of newborn during phototherapy among Nursing students. This involves interaction between the researcher and the students.

There are 6 major components:

**Perception:** It refers to student's representation of reality. It is non- observable but it can be interfered. Hence the investigator has the perception for the assessment of demographic variables and pre -test assessment about the level of knowledge regarding care of newborn during phototherapy among Nursing students at ICH, BRD nursing college Hoshangabadm.p.

**Judgement :** The investigator found that student has inadequate knowledge regarding care of newborn during phototherapy thus decided to give education to students, to improve their knowledge about phototherapy.

**Action:** Action refers to the matter, energy and information that enter into the system through its boundary. Action involves preparation of structured teaching programme on care of newborn during phototherapy.

**Reaction:** The investigator's reaction is to set goal which is increasing the knowledge Regarding care of newborn during phototherapy.

**Interaction:** Interaction refers to the processing where the system transforms the energy matter. Interaction involves in introducing the Informative Booklet through lecture method by using AV aids such as powerpoint and information booklet regarding care of newborn during phototherapy.

**Transaction:** It refers to the matter, energy and information in the environment that are in an altered state. Transaction is the awareness among students regarding care of newborn during phototherapy by care of eyes, skin care, and maintenance of temperature, breast feeding and duration of exposure.

**Feed back:** It refers to the environment response to the stimuli. Feedback is the evaluation of teaching programme by using the same semi structured

**Result:**

Findings of the study revealed 69% of the students not had exposure on care of newborn during phototherapy. During pre-test score of knowledge regarding care of newborn during phototherapy of Nursing students. They were having maximum knowledge in General information (58.67%) and minimum knowledge score in adverse effects of phototherapy (38.29%). Overall knowledge score is 44.83%. During post-test score of knowledge regarding care of newborn during phototherapy among Nursing students. They were having maximum knowledge in General Information (90.67%) and minimum knowledge score in Diagnostic Evaluation (81.50%). Overall knowledge score is 84.15% among nursing students. The study findings suggest that informative booklet is found to be effective in improving the knowledge of the students. It is also evident that informative booklet is effective in empowering students with adequate knowledge and helps them in providing quality care by preventing complications among newborn during phototherapy. The findings of present study may be helpful for such future studies. In this context the findings of the study has valuable implications in different areas of nursing practice, nursing administration, nursing education and nursing research.

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