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EFFECTIVENESS OF CHANGING POSITIONS UPON THE SERUM BILIRUBIN LEVEL AMONG NEWBORNS UNDER PHOTO THERAPYAT GOVERNMENT RAJAJI HOSPITAL, MADURAI

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ABSTRACT:

Neonatal jaundice is a common condition among full-term newborns, and photo therapy is the standard treatment to reduce serum bilirubin levels. Optimising photo therapy by simple nursing interventions, such as position change, may enhance treatment effectiveness.

To assess the effectiveness of changing positions upon the serum bilirubin levels of newborns under photo therapy at Government Rajaji Hospital, Madurai.

An experimental study design was used with purposive sampling. A total of 60 full-term newborns with physiological jaundice and serum bilirubin levels between 12–19 mg/dL were selected. The sample included 30 newborns in the control group receiving standard photo therapy and 30 in the experimental group, where infants were repositioned at regular intervals during photo therapy. Pre- and post-intervention serum bilirubin levels were measured. Both groups showed a reduction in bilirubin levels after photo therapy. However, the experimental group exhibited a significantly greater decrease in serum bilirubin compared to the control group. Statistical comparison indicated that position-changing during photo therapy enhanced bilirubin reduction. No significant association was found between demographic or obstetrical variables and bilirubin reduction.

Changing positions during photo therapy is an effective nursing intervention that enhances the reduction of serum bilirubin levels among full-term newborns with physiological jaundice. This low-cost, non-invasive strategy can be integrated into routine neonatal care to improve treatment outcomes.

Keywords: Newborn, Phototherapy, Serum bilirubin, Position change, Neonatal jaundice, Experimental study.

Introduction:

The birth of an individual baby is unique and unrepeatable. Newborns are considered to be tiny, powerlee and completely dependent on others for their adaptation in the external environment.During the process of physiological adaptations, the newborn faces many life threatening problems such asasphyxia, hypothermia, hyperbilirubinema, infection etc. Among these problems hyperbilirubinemia is the most commonest problem during neonatal period. Bilirubin is the pigment that causes jaundice. During 1950's, the discovary was made that infants exposed to sunlight were less jaundiced than their non exposed conterparts. It was belived that the light acts to decompose bilirubin by the process of photo oxidation.

Phototherapy is effective in preventing or reducing an incease in bilirubin levels. The effectiveness of phototherapy was determined by the amount of skin exposed to wave length spectrum of light. So the whole body should be exposed to the light which can be achieved changing positions while the neonates on phototherapy (Graph, 2000). A comparative study was conducted in Gulhane Military Medical Academy, at Turkey bu Sarici et al.,(2000) to compare the efficacy of double phototherapy with the single conventional phototherpy.They concluded that the overall bilirubin decline rate was significantly greater with larger body surface area exposure to phototheapy. These factorsand the direct observation of the same fact in the clinical areas motivated the researcher to select this problem for the study.

In the aspect of nursing care, changing positions helps to expose the large surface area to light.So there is need of changing positions which reduces the serum bilirubin level rapidly and can prevent the further complications (Deorari, 2002).

Objectives:

1. To assess the serum bilirubin level of newborns under phototherapy in control and experimental groups before and after changing positions.

2. To compare the serum bilirubin levels of newborns in the experimental group before and after position change.

3. To determine the association between selected demographic variables and serum bilirubin levels.

4. To determine the association between selected clinical variables and serum bilirubin levels.

5. To determine the association between selected obstetrical variables of mothers and serum bilirubin levels of newborns.

Conceptual Framework:

Katherine Bernard's Parent–Child Interaction Model.

Methodology:

An experimental design was adopted with purposive sampling technique to select the accessible population. Systemic Random sampling used to assign the control and experimental group. Newborns under phototherapy were divided into control and experimental groups.

Term newborns (getational age 38 - 40weeks) with physiological jaundice and bilirubin level ranging between 12 - 19mg/dl were included in the study. Mother with the history of jaundice, low birth weght babies, pre term babies, babies with other illnesses other than jaundice, newborns with pathological jaundice were excuded from the study.

Baseline demographic, clinical, and maternal obstetrical variables were collected. Serum bilirubin levels were measured before and after intervention. The experimental group received scheduled position changes in every 30 minutes during phototherapy.

Results:

Most newborns in the control group were in the 4th day of life (57%), whereas nearly half in the experimental group were in the 5th day (47%). Majority in both groups were born in the hospital via normal vaginal delivery with birth weight 2.5–3.0 kg (73%, 67%). Most newborns initiated breastfeeding early (43%, 27%), and none had birth injuries. Majority of the mothers not have any infection in antepartum period (87%,83%).

Mean and standard deviation of serum bilirubin level in control group were low in post test (M=12.8, SD=0.56) in comparision with the serum bilirubin livel of pre test (M+14.3,SD=0.72). In experimental group the serum bilirubin level of posttest was low (M=11.7, SD=0.69) in comparision with serum bilirubin level of pre test (M=15.0, SD= 0.77). The difference was found statistically significant at 99.9% level of significance and can be attributed to the effectiveness of changing positions.The differences were statistically significant at $p < 0.001$.

Significant associations were found with birth order , nature of jaundice before phototherapy, dermal zone bilirubin, previous history of hyperbilirubinemia, maternal drug exposure during pregnancy, frequency of PV examinations, rupture of membranes, color of liquor, and onset of labor following PROM.

Conclusion:

Changing the newborn's position during phototherapy was found to be effective in reducing serum bilirubin levels.

This simple, easy to implement, most acceptable way to cope up physiological jaundice of newborns under phototherapy. Changing positions during photo therapy is the best and cost-effective nursing intervention can be included in routine phototherapy protocols.

Recommendations:

Conduct the study on a larger sample for generalization.

Compare the effect among term vs. preterm babies.

Conduct studies in varied hospital settings.

Compare position changing with other non-pharmacological interventions.

Extend the study to newborns with pathological jaundice.

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