Effectiveness of position change among infants during phototherapy in management of hyperbilirubinemia in late preterm and term neonate

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ABSTRACT

Neonatal jaundice is the yellowish staining of the white part of the eyes and skin in an infant because of high bilirubin levels. Untimely children have a lot higher occurrence of neonatal jaundice requiring remedial mediation than term infant. The present study aims to assess the effectiveness of position change among infants during phototherapy in the management of hyperbilirubinemia in late preterm and term neonate. A quantitative approach with a quasi-experimental design with non-randomized control research design was used to conduct the study in Thiruvallur District Head Quarter Government Hospital. Thirty samples were selected by using a convenience sampling technique and were grouped into an experimental and control group; each consist of 15 samples. A semi-structured questionnaire was used to collect information regarding demographic variables and variables related to clinical proforma. Bilirubin level was monitored and recorded in the hyperbilirubinemia chart for both the groups. The neonates in the experimental group were subjected to a position change for every 2 hrs and the neonates in the control group were given regular care. The study results show that position change among infants during phototherapy was found to be effective in the reduction of serum bilirubin level considerably among infants in the experimental group than the infants in the control group. At the level of p<0.001. This indicates that position change is effective in reducing the bilirubin level and have an impact on the early recovery of the neonates.

INTRODUCTION

A baby whose birth weight <2500 gms paying little mind to their gestational age is called low birth weight babies. Decrease infant and child mortality is a significant objective of the technique to accomplish well-being for all. The significant commitment of baby passing is by children which are a genuine worry since almost 5 million neonates die every year globally of which 96% are in the developing nations, a successful decrease of such high neonatal demise rate stays a significant worldwide test in the 21st century (Jagadeeswari et al., 2020). Neonatal jaundice is the yellowish staining of the white part of the eyes and skin in an infant because of high bilirubin levels. Different indications may incorporate abundance lethargy or helpless taking care of side effects may incorporate seizures, cerebral paralysis or kernicterus (Bhutani, 2011). Neonatal jaundice is the commonest unusual discovery during the initial seven days of life. Neonatal hyperbilirubinemia is a huge reason for neonatal morbidity and prolonga-
tion of medical clinic remain, which thus builds the odds of sepsis and mortality in the infant time frame. Jaundice is the commonplace unusual actual discovering during the primary seven day stretch of life. Hyperbilirubinemia is perceived as clinical jaundice in roughly 20-half of full-term and 80% of preterm children. Distinguishing proof of the danger factors and ideal discovery and ideal administration of NNH are in this manner significant to forestall cerebrum harm and ensuing neuromotor retardation because of bilirubin encephalopathy (Luca et al., 2009).

Untimely infants have a lot higher occurrence of neonatal jaundice requiring restorative mediation than term infant. Youngsters with untreated, extreme hyperbilirubinemia (characterized as serum complete bilirubin level >20mg/dL) can create indications of intense bilirubin encephalopathy. If not treated promptly, they may proceed to create Kernicterus, a persistent, neurologically obliterating condition because of bilirubin toxicity (Maisels and McDonagh, 2008). As per UNICEF, in India occurrence of NNH, shifted from 4.3% to 6.5% of all live conceived infants. As of late rate of huge hyperbilirubinemia is recorded as 10.5% in term live conceived children and 25.3% in close to term gathering. Rate of NNH is 16.67% of all live conceived infants in our clinic which has a yearly conveyance pace of roughly 4000 (Han et al., 2015). As indicated by WHO, about 0.75 million neonates die each year in India, the most noteworthy for any nation on the planet. The neonatal death rate (NMR) declined from 52 for every 1000 live births in 1990 to 28 for each 1000 live births in 2013. However, the pace of decay has been moderate and falls behind that of baby and under-five youngster mortality rates (World Health Organization, 2012).

The more slow decrease has prompted expanding commitment of neonatal mortality to the newborn child and under-five mortality. Among neonatal deaths, the pace of decrease in early neonatal death rate (ENMR) is a lot of lower than that of late NMR. The elevated level and moderate decrease in early NMR are additionally reflected in a high and stale perinatal death rate. The pace of decrease in NMR, and to a degree ENMR, has quickened with the presentation of National Rural Health Mission in mid 2005. Almost all states have seen this reality. However, there is as yet an immense dissimilarity in NMR between and even inside the states. The uniqueness is additionally compounded by provincial metropolitan, poor rich and sex differentials (Hunt, 2003). There is an interchange of a various segment, instructive, financial, natural and care looking for factors, which are answerable for the differentials and the high weight of neonatal mortality. Tending to a disparity in India is a significant cross-cutting activity that will decrease infant mortality (Djokomuljanto et al., 2006).

Djokomuljanto et al. detailed that serious jaundice spoke to 15.3% of neonatal confirmations, with a CFR of 6.7%, prompting 4.4% of the deaths identified with jaundice. An observational examination by Bang et al. announced that serious jaundice had a death pace of 7.3/1,000 live births in Indian rustic towns. In 2013, measurements from Myanmar government emergency clinics revealed that NNJ was liable for 46% of clinic affirmations nationwide and was a significant reason for neonatal bleakness and demise. An investigation of youngsters treated with phototherapy in 2 specific pediatric reference medical clinics recognized home-births, self-references and G6PD screening status as significant danger factors for introduction with ABE (Bhethanabhotla et al., 2013).

The purpose of the study [1] To assess the level of bilirubin among infants during phototherapy in the experimental and control group.[2] To assess the effectiveness of position change among infants during phototherapy. [3] To find the association of post-test level of bilirubin among infants with selected demographic variables.

MATERIALS AND METHODS

A quantitative approach with a quasi-experimental design with non randomized control research design was used to conduct the study in Tiruvallur District HeadQuarter Government Hospital. Thirty samples were selected using a convenience sampling technique. The criteria for sample selection are late-term and term neonates with hyperbilirubinemia and undergoes phototherapy, mothers who are willing to participate in the study and neonates with bilirubin level 5 to 10 mg/dl. The exclusion criteria for the samples are mothers who are not willing to participate in the study, neonates who do not have hyperbilirubinemia, preterm neonate, neonates with RDS and other neurological problems and neonates with bilirubin level more than 10 mg/dl.

The data collection period was done with prior permission from the medical officer. The purpose of the study was explained to the mothers and written informed consent was obtained from them. A semi-structured questionnaire was used to collect information regarding demographic variables and variables related to clinical profoma. Bilirubin level was monitored and recorded in the hyperbilirubinemia chart for both the groups. The neonates in the experimental group were subjected to a position change.
Table 1: Level of bilirubin among infants during phototherapy among neonates N = 30 (15+15).

<table>
<thead>
<tr>
<th>Group</th>
<th>Test</th>
<th>Normal No</th>
<th>Normal %</th>
<th>Mild No</th>
<th>Mild %</th>
<th>Moderate No</th>
<th>Moderate %</th>
<th>Severe No</th>
<th>Severe %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>Pretest</td>
<td>0</td>
<td>0</td>
<td>15</td>
<td>100.0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Post-test</td>
<td>7</td>
<td>46.67</td>
<td>8</td>
<td>53.33</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Control</td>
<td>Pretest</td>
<td>0</td>
<td>0</td>
<td>15</td>
<td>100.0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Post-test</td>
<td>3</td>
<td>20.0</td>
<td>12</td>
<td>80.0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Table 2: Effectiveness of position change among infants during phototherapy in the management of hyperbilirubinemia N = 30 (15+15).

<table>
<thead>
<tr>
<th>Group</th>
<th>Pretest Mean</th>
<th>Pretest SD</th>
<th>Post Test Mean</th>
<th>Post Test SD</th>
<th>Paired ‘t’ test value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>7.97</td>
<td>1.41</td>
<td>5.95</td>
<td>1.41</td>
<td>t = 23.407</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>p = 0.0001 S***</td>
</tr>
<tr>
<td>Control</td>
<td>7.84</td>
<td>1.39</td>
<td>6.53</td>
<td>1.56</td>
<td>t = 9.543</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>p = 0.0001 S***</td>
</tr>
</tbody>
</table>

RESULTS AND DISCUSSION

Sample characteristics
The present study shows that in the experimental group, most of the newborns 7(46.6%) were in the age group of 4 to 7 days, 10(66.7%) were born by vaginal delivery, 8(53.3%) were weighing 2 to 2.5 Kg, 6(40%) were in the gestational age group of 32 to 36 weeks and ≥37 weeks respectively, 8(53.3%) were preterm, 10(66.7%) had direct breastfeeding, 8(53.3%) had a serum bilirubin level of 5 to 8mg/dl, 15(100%) had physiological jaundice, had 2 to 4 hours of phototherapy and had a position change during phototherapy.

Level of bilirubin among infants during phototherapy among neonates
The results show that in the pretest of the experimental group, all the newborns 15(50%) had mild jaundice. Whereas in the post-test, 8(53.33%) had mild jaundice and 7(46.67%) were normal. It also portrays that in the pretest of a control group, all the newborns 15(50%) had mild jaundice. Whereas in the post-test, 12(80%) had mild jaundice and 3(20%) were normal Table 1.

The current examination is upheld by Brits et al. directed an examination on Infants Position during phototherapy on serum bilirubin. Position changing of the newborn children during traditional phototherapy for hyperbilirubinemia is utilized in numerous medical clinics. In a randomized clinical preliminary 40 term embittered youngsters who
were admitted to the neonatal ward of Moϑid Children Hospital. No measurably huge contrasts in TSB following 24 hours were seen between two gatherings. Be that as it may, a decline in TSB was essentially connected with position change. Diminishing in serum bilirubin level was more prominent in newborn children with position change following 24 hours. As indicated by results changing the situation of term newborn children with hyperbilirubinemia during phototherapy could build the adequacy of this treatment (Fakhraee et al., 2011).

The study shows that none of the demographic variables had shown statistically significant association with posttest level of bilirubin level among infants during phototherapy in the interventional gathering.

CONCLUSIONS

This indicates that position change is effective in reducing the bilirubin level and have an impact on the early recovery of the neonates. Early recovery helps to reduce hospitalization that in turn, prevents nosocomial infection.

Funding Support

The authors declare that they have no funding support for this study.

Conflict of Interest

The authors declare that they have no conflict of interest for this study.

REFERENCES


