“Effectiveness of Kangaroo Mother Care on Behavioral Responses to Pain of IM Injection among Neonates of Selected Rural Hospital of Rajasthan”

Singh Navjyot¹ & Rani Manisha²
¹Lecturer, Rama college of nursing, Ghaziabad, UP. India
²Nursing Tutor, MM Institute of Nursing, Mullana, Ambala, India

Abstract:
Background: A variety of non-pharmacologic pain-prevention and relief techniques have been shown effective to reduce pain from minor procedures in neonates so, main objective of the study was to assess and compare behavioral responses to pain of IM injection after administration of KMC among neonates in the experimental and control group. Material and Method: A Quasi experimental (non- equivalent control group posttest only design) study was conducted with 60 neonates, i.e. 30 neonates in each experimental and control group selected by purposive sampling technique. Behavioral response was assessed using Standardized Neonatal Infant Pain Scale (NIPS). The concurrent validity of the tool was established by correlation, ranging from 0.53 to 0.84, Pearson's correlation ranged from 0.92 to 0.97 across successive minutes of observation. (Standardized Value). Cronbach’s Alphas were 0.95, 0.87 and 0.88 for before, during and after the procedures respectively. In experimental group, Kangaroo Mother Care was administered 10 min before and during the procedure of Hepatitis 'B' vaccine IM injection and Behavioral responses of pain was assessed by using NIPS. Results: There was a difference between the mean post-test pain scores of the neonates of the experimental group (2.23), and the control group (5.70). The calculated value of 't' (10.93) was found to be significant at 0.05 level of significance, So it was inferred from the findings that Kangaroo Mother Care was effective in reducing the pain level of neonates in the experimental group. Post-test pain scores of the neonates in the experimental and control group with weight and gestational age was found significant at 0.05 level of significance and there were no significant association between the post-test pain score of the experimental group with the demographic variables (Gender and education of mother) at 0.05 level of significance and were independent of each other. Conclusion: The Kangaroo Mother Care was found to be effective in decreasing the pain level of the neonates of experimental group.

Key Words: Effectiveness; kangaroo mother care; Behavioral responses of pain; IM injection; Neonate;

Introduction

“Children are the wealth of tomorrow take care of them if you wish to have a strong idea every day to meet various challenges.”
(Jawaharlal Nehru)

A newborn is an infant that is only hours, days, or up to a few weeks old. In medical contexts, newborn or neonate refers to an infant in the first 28 days after birth; the term applies to premature infants, post mature infants, and full-term infants. (Merriam-Webster online dictionary, 2007) This is the phase in life with the greatest risk of mortality as well as the maximum potential for long-term physical and neurocognitive development. Newborn health is indeed the key to child health and survival.¹ In India every year 20.22 babies born per 1,000 population. (Census of India, 2011)² Stevens B, et al., (2003), Management of pain must be considered an important component of the health care provided to all neonates, regardless of their gestational age or severity of illness. Immunizations are among the most aversive medical procedures for healthy infants and children and one of the commonest causes of childhood iatrogenic pain. Immunization is one of the most beneficial and cost-effective disease prevention measures to reduce the IMR.³ Johnston CC, et al., (2013), states that neonates which are 32 weeks’ postmenstrual age or older, Kangaroo Mother Care seems effective to decrease pain, and Kangaroo Mother Care is a potentially beneficial strategy for promoting newborn health.⁴ Several studies have done indicating the benefits of non-pharmacological management of pain. Skin to skin contact is the most feasible, cost-effective and easily applicable method of non-pharmacological pain management intervention. Hence the researcher felt the need to conduct a study to assess...
the effectiveness of Kangaroo Mother Care on behavioral responses to pain of IM injection and find their association with the demographic variables.

**Design and settings:** A quasi experimental (non equivalent control group post test only) design was selected to test participants. The study was conducted at CHC, Gotan, Rajasthan for experimental group and CHC, Khirod, Rajasthan for control group. Samples were selected by purposive sampling technique. Data was collected in February 2014 after obtaining clearance from the “institutional ethical committee”.

**Participants:** The study participants comprised of 60 neonates (30 in each experimental and control group) who were receiving IM injection selected by purposive sampling technique. Confidentiality was assured to parents and verbal consent taken from parents before starting the study.

**Assessment tools:**

The tools used for data collection consisted of two sections.

**Section I:** Socio demographic interview: It contains four questions, which include gestational age, Birth Weight, Gender and Mother’s Education.

**Section II:** Standardized NIPS

NIPS include six parameters:

1. Facial expression
2. Cry
3. Breathing pattern
4. Arms
5. Legs
6. State of arousal

Each behavioral indicator is scored with 0 or 1 except "cry", which has three possible descriptors. Therefore, being scored with a 0, 1 or 2. Infants should be observed for one minute in order to fully assess each indicator. Total pain scores range from 0-7. The suggested interventions based upon the infant's level of pain are listed below.

The concurrent validity of the tool was established by correlation, ranging from 0.53 to 0.84, between NIPS scores at each minute of observation and scores on the Visual Analogue Scale. (Standardized Value). Interrater reliability was high: Pearson’s correlation ranged from 0.92 to 0.97 across successive minutes of observation. (Standardized Value). The six component scores of the NIPS had high internal consistency: Cronbach’s Alphas were 0.95, 0.87 and 0.88 for before, during and after the procedures respectively.

**Procedure:** - Formal administrative permission was obtained from the selected rural hospitals (CHC, Gotan & CHC, Khirod, Rajasthan). Data was collected from 13th February 2014 to 28th February 2014. Self-introduction given to parents of neonates. Introduction to the parents regarding the nature of study given to obtain their cooperation. Confidentiality was assured to parents and verbal consent taken from parents. Kangaroo Mother Care administered only to experimental group 10 min before and during the procedure of Hepatitis ‘B’ vaccine IM injection and

**Data analysis:** The sample characteristics such as weight, gestational age, gender and educational status of mother were recorded in a performa. Data were entered into Microsoft Excl 2007 and analyzed using SPSS 17.0. Categorical data are presented as mean (SD) or median based on the distribution of data. Statistical analysis was performed by using t test for continuous variables and Fisher test for categorical variables. A p value of 0.05 was considered significant.

**Results:** Maximum number of the samples of experimental group and control group were male, i.e. 18 (60%), and 16 (53.3 %).

- Most of the samples in the experimental group have weight 2001gm – 3000gm, i.e. 21 (70%), and only 6 (20%) had weight more than 3000gm, whereas the maximum number of samples in the control group has weight 2001gm - 3000gm, i.e. 14 (46.7%) and 9 (30%) has weight 1500gm – 2000 gm.

- Maximum number of the samples in the experimental group belonged to gestational age 37 weeks – 38 weeks & 39 weeks – 40 weeks, i.e. 11 (36.7%) & 11 (36.7%), whereas most of the samples in the control group belonged to gestational age 37 weeks – 38 weeks, i.e. 14 (46.7 %).

- Regarding the education status of mother’s maximum of the sample in the experimental group had Primary education 10 (33.3 %), whereas most of the sample in the control group had Secondary education 10 (33.3 %).

**Findings related to posttest pain score of the neonates of experimental group and control group as shown in Figure - 1**

This shows that, there was a striking difference between the mean post-test pain scores of the neonates of the experimental group and the control group, which explained that the Kangaroo Mother Care on behavioral responses to pain of IM
injection among neonates experimental group was effective in reducing their pain scores for the same.

INTERPRETATION OF PAIN SCORES:-
Frequency & Percentage Distribution of Pain Level of Experimental Group and Control Group as shown in table -1

Shows that in the experimental group most of the samples, i.e. 16 (53.3%) were perceived no pain to mild pain, whereas 13 (43.3 %) were perceiving mild to moderate pain and only 1 (3.3%) perceiving severe pain. In the control group majority of the samples, i.e. 23 (76.7%) were perceiving severe pain, whereas 6 (20.00 %) were perceiving mild to moderate pain and only 1 (3.3%) perceived no to mild pain.

It can be inferred that in the experimental group percentage of neonates perceived severe pain was less as compare to the control group.

In order to determine the significance of the difference between control group and experimental group pain score's Mean, Mean difference, standard deviation difference, standard error of mean difference and 't' value were calculated and presented in table – 2.

This table showed that the obtained mean difference (3.47) was a true difference and not by chance and the calculated value of 't' (10.93) was more than the table value of 't'(2.04) for df (29) at 0.05 level of significance, So It was inferred from the findings that Kangaroo Mother Care was effective in reducing the pain level of neonates in the experimental group

Findings related to the association between post-test pain scores and the selected demographic variables of neonates:

Post-test pain scores of the neonates in the experimental and control group with weight and gestational age was found significant at 0.05 level of significance and there were no significant association between the post- test pain score of the experimental group with the demographic variables (Gender and education of mother) at 0.05 level of significance and were independent of each other.

Discussion

Results of present study indicated that Kangaroo Mother Care was effective in reducing the pain of neonates. This result is in conformity with studies conducted by Somashekhar M. N, et al. (2013) and he reported that short duration Kangaroo Mother Care (15 min) was effectively decrease pain in neonates.5

Furthermore finding of the study demonstrated that Kangaroo Mother Care given before injection reduced behavioral pain responses in term neonates. This is in conformity to the findings of the study conducted by Okan F, et al., (2012) and Kashaninia Z, et al. (2008). They reported that Kangaroo care given before injection seems to effectively decrease behavioral pain responses in stable term neonates.

Conclusion:
Study concluded that Kangaroo Mother Care was found to be effective in decreasing the pain level of the neonates of experimental and there were a significant association between post-test pain score and Weight & gestational age of neonates in both experimental and control groups.

Limitation: The study was confined to the small sample and selected rural hospitals of Rajasthan.
Figures and tables:

Fig 1: bar graph showing the distribution of post-test pain scores of control group & experimental group

Table 1
Frequency & Percentage Distribution of Pain Level of Experimental Group and Control Group

<table>
<thead>
<tr>
<th>PAIN LEVEL</th>
<th>EXPERIMENTAL GROUP (N=30)</th>
<th>CONTROL GROUP (N=30)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>Percentage (%)</td>
</tr>
<tr>
<td>No pain to mild pain (0-2)</td>
<td>16</td>
<td>53.3</td>
</tr>
<tr>
<td>Mild to moderate pain (3-4)</td>
<td>13</td>
<td>43.3</td>
</tr>
<tr>
<td>Severe pain (&gt;4)</td>
<td>1</td>
<td>3.3</td>
</tr>
</tbody>
</table>

Table 2
Mean, Mean Difference, Standard Deviation Difference, Standard Error of Mean Difference and ‘t’ Value of Post-Test Pain Scores Between The Experimental Group and the Control Group

<table>
<thead>
<tr>
<th>PAIN SCORES</th>
<th>MEAN</th>
<th>MD</th>
<th>SDd</th>
<th>SEmd</th>
<th>‘t’ value</th>
</tr>
</thead>
<tbody>
<tr>
<td>POST-TEST SCORES</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimental Group (N=30)</td>
<td>2.23</td>
<td>3.47</td>
<td>1.74</td>
<td>0.32</td>
<td>10.93*</td>
</tr>
<tr>
<td>Control Group (N=30)</td>
<td>5.70</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Significant at 0.05 level

\( t (29) = 2.04, \ P < 0.05 \) level of significance
References: