



## EFFECT OF EARLY PHYSIOTHERAPY INTERVENTION VERSUS KANGAROO MOTHER CARE IN NEURODEVELOPMENT FOR PRETERM LOW BIRTH WEIGHT INFANTS

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Early Physiotherapy Intervention, Kangaroo Mother Care, Denver Development Screening Test, Pre intervention Score, Post intervention Score.

### ABSTRACT

**Background and Objectives:** It has been proposed that Early Physiotherapy Intervention and Kangaroo Mother Care relates to the best type of training approach for Neurodevelopment. The objective of this study was to assess, Effect of Early Physiotherapy Intervention versus Kangaroo Mother Care in Neurodevelopment for Preterm Low Birth Weight Infants.

**Methods:** After discharge of Preterm Low Birth Weight infants from hospitals, briefed the parents on the objective and contents of Early Physiotherapy Intervention and Kangaroo Mother Care, obtained their consent, give them a letter, explained to them the methods and materials of intervention and filled the registration form. After the collection of demographic data, infants will assess in DDST- II. Assessment of the initial performance is follow by the infants receive Early Physiotherapy Intervention and Kangaroo Mother Care for 1hour daily for 1 Month. Assessment will do after 1 Month. A sample of convenience of 30 infants fulfilling the inclusion criteria will take part in this research.

**Results:** Subject benefited maximally in improvement Neurodevelopment with Early physiotherapy Intervention as compared to Kangaroo Mother Care.

**Interpretation and Conclusion:** Early Physiotherapy Intervention shows better results on Improvement Neurodevelopment for Preterm Low Birth Weight Infants.

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### INTRODUCTION

Improving Perinatal and neonatal care has led to increased survival of infants who are at-risk for long term disabilities (Meena, 2012). Survivals of preterm Low Birth Weight Infants have resulted in an increased incidence of physical and mental disabilities (Meena, 2012). Survival of premature infants, especially low birth weight infants has resulted in an increased incidence of neurological squeals including cerebral palsy, epilepsy, deafness, blindness, mental retardation, language, and behavioral and learning disorder (Irma Alvarado-Guerrero, 2011). Early detection of infants at high risk is of paramount important to assess their developmental status and for planning intervention to avoid secondary problems (Meena, 2012). Thus, early detection of children at high-risk is of paramount importance for planning intervention and habilitation studies in an at- tempt to avoid secondary problems for these individual (Irma Alvarado-Guerrero, 2011).

Early intervention consists of providing continuous multidisciplinary services to infants from birth throughout the first year of life. It means interventional therapy specified for babies at risk for developmental delay and periodic developmental assessment of motor, cognitive function, language/adaptive functioning. Early interventions promote child health, minimize developmental delays, improve existing disabilities, prevent functional deterioration, and promote parent-child interaction (Meena, 2012). Kangaroo mother care (KMC) is care of preterm or low birth weight infants carried skin-to-skin with the mother. KMC was initially conceived as an alternative to the usual minimal in hospital care for stable LBW. Low birth weight, defined as weight at birth of less than 2500 grams irrespective of gestational age, has an adverse effect on child survival and development.<sup>12</sup>The Denver Developmental screening Test II is a simple, clinically useful tool for early detection of infants with developmental delay. The test comprised of 125 items, divided in to four domains: gross motor (32 items), fine motor /adaptive (29 items), language (39 items) and personal social (25 items).

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The levels of achievement were scored as Advanced, ok/pass, caution, and fail depending on the age line. The milestones assessment was done according to the corrected age, often calculated prior to developmental status. The date of assessment and the infant corrected age were mentioned against each milestone (Soheila Shahshahani, 2010; Meena, 2012).

## MATERIALS AND METHODS

After discharge of premature infants from hospitals, briefed the parents on the objective and contents of physiotherapy treatment obtained their consent, give them a letter, explained to them the methods and materials of Early Physiotherapy intervention and Kangaroo Mother Care, filled the registration form. After the collection of demographic data, infants will assess in DDST-II. A sample of convenience of 30 infants fulfilling the inclusion criteria will take part in this research. Assessment of the initial performance is follow by the 15 infants received Early Physiotherapy Intervention and 15 infants received Kangaroo Mother Care for 1hour daily for 1 Month. Assessment will do after 1 Month in DDST-II.

## RESULTS

This chapter deals with the results of data analysis of the PRE (pre intervention scores) and POST (post intervention scores obtained after one month of intervention) scores and thereby interpreting the effect in the subjects. Chi-square test was used to check the effect of the subjects after Early Physical therapy Intervention and Kangaroo Mother Care based on the scores of DDST-II.

The parameter analysis revealed significantly greater Amiel-Tison neurologic examination and Denver developmental screening test (DDST) in treatment group. The data suggest significant benefit of the use of EI program over NEI in the neurodevelopment outcome of preterm LBW infants at 6 months of corrected age (Meena, 2012). The present study also shows significant improvement with Early Physiotherapy Intervention in neurodevelopment of preterm low birth infants. Irma Alvarado- Guerrero, Adrian Poblano, the study was on Early Intervention in the neurodevelopment of premature infants during the first six months of life. The results found better performance of infants in Early Intervention ad modum katona than non-early intervention group after 6 months of treatment in neurologic and behavioral examination measurements, but found no differences in EEG comparisons.<sup>2</sup>The present study also shows significant improvement with Early Physiotherapy Intervention in neurodevelopment of preterm low birth infants.

Anu Thukral, Deepak Chawla, study with Kangaroo Mother Care an alternative to conventional care .The term kangaroo mother care (KMC) is derived from practical similarities to marsupial care-giving, i.e. the premature infant is kept warm in the maternal pouch and close to the breasts for unlimited feeding. It is a gentle and effective method that avoids agitation routinely experienced in a busy ward with preterm infants. An important main stay of kangaroo mother care is breastfeeding encouragement. Observational studies have shown reduction in mortality after institution of KMC. Preterm babies exposed to skin to skin contact showed a better mental development and better results in motor tests. It also improves thermal care and with a lesser risk of hypothermia. All stable LBW babies are candidate for KMC.

Groups	Frequencies in Groups	Sub Categories					p Value
		a (s-s)	b (s-n)	c(u-s)	d(n-n)	e (u-u)	
Early Physiotherapy Intervention	Observed	1	8	2	2	2	0.040427682*
	Expected	3	6	1	1	4	
Kangaroo Mother Care	Observed	5	4	0	0	6	
	Expected	3	6	1	1	4	

\*Chi square Test in Categorical Variables p value <0.05 (Statistically Significant)

It is observed that the p value of data is 0.040427682 which is less than 0.05 and statistically significant. So there is significant difference between the Early Physiotherapy Intervention and Kangaroo Mother Care. The observed frequencies of Early Physiotherapy Intervention for sub categories Suspected to Normal & Untestable to Suspected are more in numbers than Kangaroo Mother Care. The p Value showed a significant improvement after Early Physiotherapy Intervention as compared to Kangaroo Mother Care. Thus an overall analysis showed that maximally improvement occurred with Early Physiotherapy Intervention.

## DISCUSSION

Neurodevelopment and their improvement have been studied for many years; however comparatively little work has been conducted to study the effect of early physiotherapy intervention versus Kangaroo Mother Care on neurodevelopment in pre term low birth weight infants. The assessment was taken on Denver Development Screening Test II is commonly used for the identification for neurodevelopment and their improvement. The recordings were analyzed through chi-square. N. Meena, Dr V K. Mohandas kurup demonstrated impact of early physiotherapy intervention on neurodevelopment in preterm low birth weight infants.

Often this is desirable, until the baby's gestation reaches term or the weight is around 2500 g. The mother and family members are encouraged to take care of the baby in KMC and should be counseled to come for follow-up visits regularly. The present study also shows significant improvement with Kangaroo Mother Care on neurodevelopment in preterm low birth weight infants (AnuThukral, 2008). Selvam Ramachandran and Sudip Dutta study with on Early Development Care Intervention of Preterm Very Low Birth Weight Infants. The preterm very low birth weight infants are at high risk of developing neurodevelopmental delay despite little or no medical complications at the time of birth. The care and interventions of such infants have an impact on the pre-existing risk. The Developmental Care Interventions (DCI) is the range of treatment strategies aiming to alleviate the risk thereby improving neurodevelopmental outcomes. The objective of this review is to appraise the range of such interventions for preterm very low birth weight infants reported in the literature. This review will help clinicians to adopt developmental intervention strategy to improve the neurodevelopmental outcomes of their NICU graduates and conclude that DCI mostly reports positive effects on neurodevelopmental outcomes, physiological and behavioral states (SelvamRamachandran, 2013).

The present study also shown to improve the neurodevelopmental outcomes in preterm low birth weight infants. Sheila Shahshahani, Roshanak Vameghi evaluated validity and reliability determination of Denver developmental screening test- II in 0-6 Year olds in Tehran and this research showed that Persian version of DDST- II has good validity and reliability, and they used as a screening tool for developmental screening of children in Tehran City. The present study also shows significant improvement in neurodevelopment in DDST- II of preterm low birth weight infants (Soheila Shahshahani, 2010). Marcia Wanderley de Moraes, Ana Paula Rodrigues Denver II evaluation of the development of children treated in the outpatient clinic of project Einstein in the community. They used Denver Developmental Screening Test II for evaluate the neuropsychomotor development of children and they find Although most of the children (68.6%) presented normal development in the test, they point out that in the remaining children (31.4%), the number of items classified as "delay" or "attention", and tests classified as "risk" or "untestable" suggest impairment in neuropsychomotor development. The present Study also show the some impairment in preterm low birth weight Infants. So, the present study suggested that the early physiotherapy intervention is effective in improving neurodevelopment of pre term low birth weight infants as compared with the Kangaroo Mother care.

### Conclusion

The results show that Early Physiotherapy Intervention definitely improves the Neurodevelopment in Preterm Low Birth Weight Infants. From the study done it can be interpreted that Early Physiotherapy Intervention shows better results as compare to Kangaroo Mother Care and thus the hypothesis holds true.

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### Ethical Clearance

Permission for doing the study was obtained from the MHRC, Bhandu.

**Conflict of Interest:** There was no conflict of interest among the authors with regards to the above study.

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