

Comparison of Recovery Time in Breast Feed and Formula Feed Neonates with Neonatal Sepsis

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Recovery in Breast Feed and Formula Feed with Neonatal Sepsis

ABSTRACT

Objective: To compare recovery time between breast feeding and formula feeding in neonatal sepsis.

Study Design: Randomized control trial

Place and Duration of Study: This study was conducted at the DHQ Teaching Hospital, DG Khan from February 2020 to January 2021 for a period of one year.

Materials and Methods: A total of 30 patients with neonatal sepsis were included in study. Patients were divided into two groups (A and B) by lottery method. Group A was fed with breast feeding during treatment and group B was fed with formula feeding. Mother education and recovery time were main variables of study. SPSS version 23 was used for data analysis. Test of significant were applied and p value ≥ 0.05 was taken as significant.

Results: Thirty neonates were included in this study, both genders. The mean age, weight and height of breast feed neonates was 11.53 ± 5.04 days, 432.41 ± 26.37 gram and 0.85 ± 0.56 cm, respectively. The mean recovery time of formula feed neonates was greater than the mean recovery time of breast feed, 12.19 ± 3.95 days and 7.87 ± 1.88 days, respectively. The difference was statistically significant, ($p=0.001$).

Conclusion: Exclusive breast feeding is associated with shorter duration of hospital stay/ recovery time as compare to formula feeding when given with recommended treatment protocol for neonatal sepsis.

Key Words: Recovery time, Breast feeding, Formula feeding, Neonatal sepsis

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INTRODUCTION

Breast feeding and colostrums are two initial sources of infant feeding; both these sources have all nutrients, immunity developing components and growth factors¹. All these ingredients are essential for newborn's health and fitness. Time duration of breast feeding and start of solid food are two key factors that may influence development of allergy. Child's health and survival are strongly associated with breast feeding which ensure about healthy life of child².

Over one million child deaths occur every year due to failure to breast feed during initial first six months of life, this rate of death is preventable³. Child's mental growth and development of immune system are well established advantages of mother feed, not only for child but it is also beneficial for mother.

World Health organization recommends that newborn should be breast fed exclusively for 6 months and after

that for two years along with solid diet (supplemental food⁴.

Worldwide below 40% of newborns exclusively breast fed for 6 months. Increase in rate of breast feeding can be achieved by giving awareness about benefits of breast feeding and supporting mothers and families financially and morally⁵. In Pakistan rate of early initiation of breastfeeding is 18% and rate for exclusive breast feeding for 6 months is only 37.7% that shows 44% of Pakistani children are poorly cognitive and low heighted⁶.

In United Kingdom incidence of breast feeding was observed 81% in recent years, this ratio increased from 76% in year 2005. In 1990 this rate was 62% only. The term breastfeeding is also known as feeding of young mothers, nursing or milk from female breast to the young children⁷.

Breastfeeding should be started after one hour of birth or as baby wishes to feed and after that within few days babies may feed 8-12 times a day⁸. Duration of feeding should be 10-15 minutes from each side. This duration and frequency of feeding decreases as child becomes older⁹. In some cases, mothers pump milk to feed child by other care takers. On the other hand, formula feed not have sufficient benefits when compared with breast feed. A study was conducted in 2017 and reported mean increase in breast feed group as 0.86 ± 64.46 and in formula feed 0.88 ± 64.59 ¹⁰.

Since the day of management of neonatal sepsis was introduced no study was conducted on comparison of

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breast feed and formula feed in reduction of recovery time in neonatal sepsis in South Punjab region, so this study will be planned to fulfill the local reference gap and to choose the better feeding method during sepsis treatment.

MATERIALS AND METHODS

This study was conducted at DHQ Teaching Hospital, DG Khan from February 2020 to January 2021 in one-year duration. Study was started after obtaining ethical approval from hospital ethical board. Informed written consents was taken from the parents, (father/mother, which one available) of those babies fulfilling the inclusion criterion. Demographic variables (name, age, gestational age at birth, contact number) will also be obtained. General physical examination will be done on all patients. Routine investigations Total leukocyte count, DLC, Hb, and if needed complete blood count, urine complete examination and chest X-ray were also done. Non probability consecutive sampling technique was used. Patients were divided into two groups (group A and group B) by lottery method. Patients in group A were given breast feed along with treatment of sepsis according to ward protocol. Group B were given formula feed along with sepsis treatment protocol of ward. Weight of neonate was measured by digital weighing scale. Neonate's length was measured (cms) using an infant meter. All the data was entered on the Performa for each patient.

Data was analyzed by using SPSS version 23. Mean and SD was calculated for age, weight, height and recovery time. Frequency and percentages were calculated for qualitative variables e.g; gender and groups (A, B). Effect modifiers like age, weight, height and gender was assessed. Post stratification independent t test was applied. P value ≤ 0.05 was taken as significant.

RESULTS

Thirty neonates were included in this study, both genders. The study neonates were equally divided into two group i.e. breast feed n=15 (50.0%) and n=15 (50.0%) formula feed. The mean age, weight and height of breast feed neonates was 11.53 \pm 5.04 days, 432.41 \pm 26.37 gram and 0.85 \pm 0.56 cm, respectively. There was n=8 (53.3%) males neonates and n=7 (46.7%) females neonates. Socio-economic status observed as class I n=8 (53.3%), n=4 (26.7%) class II and n=3 (20.0%) class III. n=7 (46.7%) mothers were uneducated, n=2 (13.3%) were matriculation, n=3 (20.0%) mothers were graduate and n=3 (20.0%) mothers were master's degree. While, the mean age, weight and height of formula feed neonates was 13.06 \pm 4.72 days, 433.25 \pm 24.54 gram and 0.86 \pm 0.32 cm, respectively. There was n=6 (40.0%) males neonates and n=9 (60.0%) females neonates. Socio-economic status observed as class I n=6 (40.0%), n=3

(20.0%) class II and n=6 (40.0%) class III. n=8 (53.3%) mothers were illiterate, n=2 (13.3%) were matriculation, n=3 (20.0%) mothers were graduate and n=2 (13.3%) mothers were master's degree. The differences were statistically insignificant, (p>0.05). (Table 1).

The mean recovery time of formula feed neonates was greater than the mean recovery time of breast feed, 12.19 \pm 3.95 days and 7.87 \pm 1.88 days, respectively. The difference was statistically significant, (p=0.001). (Table 2).

Table No.1: Demographic variables of the study groups

Variable	Breast feed n=15 (50.0%)	Formula feed n=15 (50.0%)	P-value
Age (days)	11.53 \pm 5.04	13.06 \pm 4.72	0.485
Weight(gram)	432.41 \pm 26.37	433.25 \pm 24.54	0.994
Height (cm)	0.85 \pm 0.56	0.86 \pm 0.32	0.880
Gender			
Male	n=8 (53.3%)	n=6 (40.0%)	0.464
Female	n=7 (46.7%)	n=9 (60.0%)	
Socio-economic status			
Class-I	n=8 (53.3%)	n=6 (40.0%)	0.490
Class-II	n=4 (26.7%)	n=3 (20.0%)	
Class-III	n=3 (20.0%)	n=6 (40.0%)	
Mother Education			
Illiterate	n=7 (46.7%)	n=8 (53.3%)	0.966
Matriculation	n=2 (13.3%)	n=2 (13.3%)	
Graduate	n=3 (20.0%)	n=3 (20.0%)	
Masters	n=3 (20.0%)	n=2 (13.3%)	

Table No.2: Mean recovery time of the study groups

Recovery time	Breast feed n=15 (50.0%)	Formula feed n=15 (50.0%)	P-value
Recovery time (days)	7.87 \pm 1.88	12.19 \pm 3.95	0.001

DISCUSSION

Breast milk plays a best preventive and protective role for babies. In 1991 WHO designed global data bank on human breast feeding which was renamed as "global data bank on infant and young child feeding" after multiple revisions¹¹. According to data bank only 38% of infants were exclusively breast fed till 6 months and 27.6% fed till 4-5 months of age. Long term efforts and community awareness programs were launched by WHO to achieve 50% breastfeeding goals till 2025¹²

In a study by Tiewsoh et al¹³ reported in his study that lack of breast feeding or breast feeding below 6 months associated with prolonged hospital stay in neonates admitted for treatment of severe pneumonia. About 86% neonates remain admit for more than 5 days in lack of breast fed group and in exclusively breast fed group only 14% remain admitted for more than 5 days.

In another study by Cushing et al¹⁴ hospital admission of infants was observed in US population who were followed up for 6 months. This study was conducted on 1202 healthy infants and observed that incidence of respiratory infection like wheezing, cough or both is much higher in poorly breast fed infants they have mean hospital stay of 6 days as compare to 5 days in exclusively breast fed infants. Results of this study were statistically significant with 95% confidence interval.

Li YW et al¹⁵ conducted a study on comparison of formula feed and breast feed on preterm infants who were admitted in neonatal intensive care with gestational age 28=33 weeks. This study concluded that infants with breast feeding have shorter length of hospital stay, incidence of feeding intolerance is also less and body growth is much higher as compare those infants who were formula fed and having gestational age of 28-33 weeks.

Ajetunmobi al¹⁶ completed a study on Scotland population and compared formula feeding and breast feeding in terms of hospital stay. Mean hospital stay in formula feeding was 3.25 days and in breast feeding group it was 2.81 days. Length of hospital stay was not observed in individual diseases but it was hypothesized that in all infectious diseases recovery time is directly associated with exclusive breast feeding.

Bachrach et al¹⁷ conducted a meta-analysis on protective effect of breast feeding and concluded that hospitalization due to respiratory diseases can be prevented by exclusive breast feeding. Seven studies from different regions were included in this meta-analysis and concluded that formula feeding is 3.6 folds more risky for infants to be admitted in hospital because of respiratory diseases as compare to 4 months of breast feeding.

Similarly, Duijts al¹⁸ conducted a study on comparison of formula feed and mixed formula and breast feed. He concluded that mixed feeding infants were younger and remains admitted for long time when hospitalized for some infection. Breast feed promotes the health and development of neonates which provides a healthy start to the child for a healthy life. As increased cases of childhood hospitalization were reported in United Kingdom because of formula feeding¹⁹.

Oddy al²⁰ conducted a study on benefits of breast feeding and reported that there was a greater risk of hospitalization due to formula fed and prolonged hospital stay in cases of upper and lower respiratory tract infections. In contrast breast feeding associated with lower hospitalization. In another study Eidelman et al²¹ reported similar findings in cases of gastroenteritis and otitis media.

CONCLUSION

Exclusive breast feeding is associated with shorter duration of hospital stay/ recovery time as compare to

formula feeding when given with recommended treatment protocol for neonatal sepsis.

Limitations: Our study had limitation of being conducted at single center of South Punjab on 30 neonates but results were statistically and clinically relevant. Other environmental and treatment factors which can influence hospital stay were not included.

Recommendations: Further studies on larger sample size and multi center analysis recommended to analyze role of breast more precisely.

Author's Contribution:

Concept & Design of Study: Ayaz Ali
 Drafting: Shakeel Ahmad
 Data Analysis: Mukhtar Ahmad
 Revisiting Critically: Ayaz Ali, Shakeel Ahmad
 Final Approval of version: Ayaz Ali

Conflict of Interest: The study has no conflict of interest to declare by any author.

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