



## EFFECT OF QUALITY OF SLEEP AND LEVEL OF FATIGUE ON THE BREASTFEEDING EFFICACY IN POSTPARTUM LACTATING MOTHERS—CROSS SECTIONAL STUDY

**Dr Shailaja Sandeep Jaywant\***

Assistant Professor, Occupational Therapy department & Registered International Board Lactation consultant, L.T.M. Medical College & L.T.M.G, Hospital, Sion, Mumbai, 400022. \*Corresponding Author

**Dr Dnyaneshvari Ramakant Giri**

IIIrd M.O.Th, Occupational Therapy department, L.T.M. Medical College & L.T.M.G. Hospital, Sion, Mumbai. 400022

**Dr Shrutika Patil**

M.O Th, Pediatric Occupational Therapist, Mumbai

**ABSTRACT** **BACKGROUND:** Primigravida mothers are more apprehensive about their ability to breastfeed their neonate and may have less confidence about the breastfeeding ability. Very few studies have been done on the effect of sleep & fatigue on breastfeeding efficacy in postpartum mothers, in India  
**OBJECTIVE:** To study the correlation between sleep quality & breastfeeding efficacy, fatigue & breastfeeding efficacy, postpartum depression & breastfeeding efficacy in primigravida lactating mothers.  
**MATERIALS AND METHOD:** Hospital based cross sectional study was conducted at the tertiary care hospital in Mumbai. Total assessment questionnaires, Pittsburgh Sleep Quality Index (PSQI), Insomnia Severity Index (ISI), Multidimensional Assessment of Fatigue (MAF) Scale, Breastfeeding Self Efficacy Scale (BSES), Edinburgh Postnatal Depression Scale (EPDS) were used to gather information from 84 primigravida lactating mothers attending anti-natal clinic during study period. Fifty-two mothers filled all the questionnaire and 32 mothers did not complete all questionnaires appropriately.  
**RESULTS:** The very weak negative correlation between BSFS with PSQI, BSES with ISI, BSES with MAF, BSES with EPDS, PSQI with MAF, ISI with MAF and MAF with EPDS. High correlation was observed in PSQI with ISI (0.794), PSQI with EPDS (0.732), ISI with EPDS (0.736) with 'p' value < 0.05. In analysis it was revealed that Quality of sleep, Insomnia and Postpartum depression has good correlation between them. These factors do not significantly correlate with the breastfeeding efficacy of postpartum lactating mothers  
**CONCLUSION:** Quality of sleep, level of fatigue, fatigue and postpartum depression does not impact directly on the perception of primigravida mothers on their breastfeeding ability.

**KEYWORDS :** Postpartum, Lactating, Fatigue, Primigravida, Breastfeeding

### INTRODUCTION

Onset of motherhood after child birth is a major life-changing event for any woman. The first few months postpartum is a dynamic time, while adjusting to her new role and responsibility of caring for her infant, mother is undergoing significant physiologic and psychological changes to recover from the stresses of pregnancy and childbirth. For infant care and feeding, much needed restorative sleep often interrupted with night waking.<sup>(1)</sup>

To satisfy nutritional, metabolic and psychological needs of the baby, breastfeeding is the most natural way of infant feeding. It protects the infant from early malnutrition and some infections. Breastfeeding has shown to ensure quality survival.<sup>(2)</sup> The World Health Organization (WHO) recommends that infants should be exclusively breastfed for the first 6 months.<sup>(3,4)</sup>

In spite of receiving antenatal breastfeeding education mothers face various challenges in postnatal period. It is a sensitive and stressful period which accompanied with fatigue, mood changes, and sleep disorder, which affects breastfeeding, family life, and social relationships.<sup>(5,6,7)</sup> Fatigue leads to increase the need for sleep. Lactating mothers often report drowsiness following breastfeeding.<sup>(8)</sup> However there is scarce evidence of correlation of breastfeeding efficacy, fatigue, sleep patterns in postpartum mothers.

The cross-sectional study was done to find the effect of quality of sleep and level of fatigue on the breastfeeding efficacy in primigravida postpartum lactating mothers.

### METHOD

Hospital based cross sectional study was conducted at tertiary care hospital. After obtaining permission from the ethics committee of the institute, by using convenient sampling method 84 Primigravida lactating mothers attending vaccination clinic, with infants aged six weeks (at corrected age) & with present living infant included in the study. The mothers of infant with history of necrotizing enterocolitis, any history of gastrointestinal anomalies, any history of neurological abnormalities, any oral-motor congenital anomalies were excluded. Written consent was obtained from all the mothers who participated in the study. Total five questionnaires were administered. The Pittsburgh

Sleep Quality Index (PSQI), Insomnia Severity Index (ISI), Multidimensional Assessment of Fatigue (MAF) Scale, Breastfeeding Self Efficacy Scale (BSES), Edinburgh Postnatal Depression Scale (EPDS). Mothers were asked to fill all questionnaires as stated above. The questionnaires were filled by the therapist (if the mother is illiterate) as per mother's responses at the end of 6 weeks postpartum. All the questionnaires were translated in Marathi & Hindi language & validated before administration. Translated version for scales in Marathi shows inter-rater reliability 0.75 for Multidimensional Assessment of Fatigue (MAF) Scale, 0.71 for Insomnia Severity Index (ISI), 0.88 for Pittsburgh Sleep Quality Index (PSQI), 0.76 for Breastfeeding Self Efficacy Scale (BSES), 0.9 for Edinburgh Postnatal Depression Scale (EPDS). Translated version for scales in Hindi shows inter-rater reliability of 0.75 for Multidimensional Assessment of Fatigue (MAF) Scale, 0.8 for Insomnia Severity Index (ISI), 0.8 for Pittsburgh Sleep Quality Index (PSQI), 0.74 for Breastfeeding Self Efficacy Scale (BSES), 0.9 for Edinburgh Postnatal Depression Scale (EPDS). Only 52 mothers could fill all 5 questionnaire satisfactorily. Collected data was compiled in data sheet and it was analyzed. Statistical analysis was done using Statistical package for social sciences (SPSS v 21.0, IBM). Data obtained were compiled on a MS Office Excel Sheet (v 2010, Microsoft Redmond Campus, Redmond, Washington, United States). Mean, standard deviation and variance was calculated in descriptive statistics. Bivariate correlation was checked using Pearson correlation coefficient.

### RESULTS

All the mothers were primigravida with mean age 21.05 years, with minimum age of 17 years to maximum age of 26 years.

**Table 1 : demographic data of mother and infants. i.e. Mother's age group in years and no. of preterm and term infants in that age group**

Mother's Age group (in years)	No. of Preterm Infants	No. of Term Infants
17-19	1	1
19-21	6	11
21-23	10	9
23-25	5	6
25-27	2	1

**Table 2 :** shows the mean and standard deviation of the Pittsburgh Sleep Quality Index (PSQI), Insomnia Severity Index (ISI), Multidimensional Assessment of Fatigue (MAF) Scale, Breastfeeding Self Efficacy Scale (BSES), Edinburgh Postnatal Depression Scale (EPDS)

Table 2	Mean		Std. Deviation
		Std. Error	
PSQI	4.19	0.439	3.163
ISI	8.29	0.617	4.452
MAF	74.75	2.257	16.276
BSES	133.19	1.013	7.303
EPDS	6.98	0.868	6.258

In table 2, Descriptive statistics shows mean 4.19 and standard deviation of 3.163 for PSQI, mean 8.29 and standard deviation of 4.452, for ISI, mean 74.75 and standard deviation of 16.276 for MAF, mean 133.19 and standard deviation of 7.303 for BSES, mean 6.98 and standard deviation of 6.258 for EPDS.

**Table 3** shows the correlations between various outcome measures in postpartum lactating mothers. Bivariate correlation was checked using Pearson correlation coefficient.

Table 3		PSQI	ISI	MAF	BSES	EPDS
BSES	Pearson Correlation (r value)	-0.020	-0.074	0.072	1	0.056
	P value	0.886	0.602	0.612		0.692
	N	52	52	52	52	52
PSQI	Pearson Correlation (r value)	1	0.794**	0.080	-0.020	0.732**
	P value		0.000	0.572	0.886	0.000
	N	52	52	52	52	52
ISI	Pearson Correlation (r value)	0.794**	1	-0.062	-0.074	0.736**
	P value	0.000		0.661	0.602	0.000
	N	52	52	52	52	52
MAF	Pearson Correlation (r value)	0.080	-0.062	1	0.072	-0.124
	P value	0.572	0.661		0.612	0.382
	N	52	52	52	52	52
EPDS	Pearson Correlation (r value)	0.732**	0.736**	-0.124	0.056	1
	P value 0	.000	0.000	0.382	0.692	
	N	52	52	52	52	52

'p' significant if  $\leq 0.05$  \*\* significant correlation

BSES- Breastfeeding Self Efficacy Scale,  
PSQI- Pittsburgh Sleep Quality Index,  
ISI- Insomnia Severity Index,  
MAF- Multidimensional Assessment of Fatigue Scale,  
EPDS- Edinburgh Postnatal Depression Scale.

In table 3, Weak negative correlation was observed between BSES with PSQI r value -0.020 and p value 0.886, BSES with ISI r value -0.074 and p value 0.602, BSES with MAF r value 0.072 and p value 0.612, BSES with EPDS r value 0.056 and p value 0.692, positive correlation was observed between PSQI with ISI r value 0.794 and p value 0.000, Weak negative correlation was observed between PSQI with MAF r value 0.080 and p value 0.572, again positive correlation was observed between PSQI with EPDS r value 0.732 and p value 0.000, Weak negative correlation was observed between ISI with MAF r value -0.062 and p value 0.661, positive correlation was observed between ISI with EPDS r value 0.736 and p value 0.000, and Weak negative correlation was observed between MAF with EPDS r value -0.124 and p value 0.384.

## DISCUSSION

Primigravida mothers are new for the experience of breastfeeding. They may take some time to get adjusted with new skills required as motherhood. Infants usually have sleep and wake cycle of half an hour to 2 hours. These new mothers reported to get fatigue due to frequent awakening for breastfeeding. This may affect the breastfeeding efficacy and quality of sleep in primigravida lactating mothers. The study was undertaken to analyse the effect of fatigability and sleep quality on breastfeeding efficacy of mothers. 6 weeks postpartum initial mothers have been given a chance to learn skills. i.e., breastfeeding and get adjusted to the change in routine, then the mothers were evaluated 6 weeks postpartum in this study.

While analysing the mean values Primigravida mothers showed moderate sleep quality indicating mean score 4.19 with SD of 3.16 for PSQI (the score than or equal to 5 indicates poor sleep quality). In the study by Laura Creti et. al, the authors noted that, at 2 months postpartum, the healthy new mothers reported sleeping about 6 hours at night and just half an hour during the day. The mothers in our study reported they were unable to sleep during day time due to the family routines, otherwise they were getting good sleep quality. On ISI, mothers showed insomnia with mean 8.29 and SD 4.452, but clinically insignificant values. In a study by Laura Creti et.al, for postpartum mothers between 2 to 6 months reported fatigability leading to feeling of sleepiness. lactating mothers, may experience early fatigability.<sup>9</sup> In this study only two mothers reported no complaints of fatigue or prolonged sleepiness. As per guidelines further analysis was stopped in these mothers, whereas other mothers attempted the full questionnaires.

Jane Hederson in her study indicated the significant risk of insomnia with fatigability and importance of family support.<sup>10</sup> In this study, on MAF mean value 74.75 with SD 16.27 shows indication of moderate fatigability in mothers, maximum percentage of mothers had good family support so had experienced less fatigue. Breastfeeding efficacy depends on the mother's perception of ability to breastfeed the baby with satisfaction. In our institution, prenatal breastfeeding counselling classes are conducted regularly to improve breastfeeding efficacy in the community. Most of the mothers attended these classes during the last trimester in antenatal OPD. The positive results of this program were observed in breastfeeding efficacy of mothers, in spite of fatigability mothers reported good breastfeeding ability (mean 133.19, SD 7.303). The study conducted by Archana Patel and Yamini Pusdekar 98.6% mothers started breastfeeding during the first 3 days, 88% mothers continued breastfeeding with confidence, even after 6 months the lactating women who had attended prenatal counselling classes. In our study, the mothers were demonstrated breastfeeding positions and attachments during antenatal & postnatal breastfeeding classes. This helped them to achieve self-efficacy. Postpartum depression may affect the breastfeeding efficacy in lactating mothers.<sup>11</sup> In our study, mothers shown mean score of 6.98 and SD of 6.258 for EPDS. Since the study was conducted 6 weeks postpartum, some of the mothers had shown a recovery from initial depression symptoms. Further when, correlations between fatigue level & sleep quality, Sleep quality & Breastfeeding efficacy, fatigue level & breastfeeding efficacy was analysed. Breast feeding efficacy score did not show significant correlation with sleep quality, as also seen in the earlier study by Jill Dimerci<sup>12</sup>. The mothers in this study had adequate sleep due to a good family support. Breastfeeding efficacy showed moderate positive correlation with sleep quality of the mothers. In present study only few mothers reported decreased sleep due to the infants frequent feeding time.

The mothers showing poor sleep quality with Insomnia, also reported borderline symptoms of depression. Tomfohr et al stated that, the postpartum mother, who experienced worst sleep quality are most likely to experience symptoms of depression postpartum.<sup>13</sup> Such symptoms are reported by a few mothers to us.

Fatigability (MAF) shows very weak correlation with breast feeding efficacy & depression, 90% of subjects reported fatigue and 66% reported moderate fatigue and 4% no fatigue at all. This study was conducted after six weeks postpartum or more in case of preterm babies. In another study on self-reporting questionnaire, maternal fatigue was assessed the primiparas mothers showed significantly higher-level fatigue than multiparas which was decreased after one month. The mothers in present study may have been adjusted to their family routine. Also, within 6 weeks these mothers may have acquired good breastfeeding skills. In present study, positive correlation found between insomnia index & Postpartum depression. We had also noticed the importance of proper counselling, which these mothers had received during postnatal period. The primigravida others in this study were well aware about the possible depressive thoughts in the initial post-partum period & had reported that they could overcome these feeling in few days, due to good family support.

In review article by Okun ML, Curr Opin on sleep and postpartum depression, it is reported that women with significant sleep disturbance, characterized by insomnia symptoms and/or poor sleep quality, are more likely to report an increase in depressive symptomatology or develop postpartum depression (PPD).<sup>14</sup> The

mothers in present study, though not reported about depression openly, they did complain about insomnia. When analyzing relationship between fatigue and sleepiness with general health of mothers in the postpartum period Nafiseh Khayamim, Parvin Bahadoran, and Tayebeh Mehrabi Stated that, the Hormonal changes and existence of an infant with an irregular sleep pattern lead to mother's shortage of sleep, in some mothers it may result in insomnia.<sup>15</sup> In this study, Sleep quality index with Insomnia index and insomnia index with postpartum depression showed strong positive correlation. Susan Liipfert Shelton, & Eileen Cormier, on analysis of depressive symptoms and influencing factors in low-risk mothers recommended holistic approach to postpartum care, with concern for both physical and mental well-being, may be a necessary shift to promote health in new mothers and families.<sup>16</sup> Study by Abbott et al. also supported the need for counselling in mothers upto 12 weeks postpartum<sup>17</sup>

During the study the therapist noted that, the most of the lactating postpartum mothers had a strong family support. This has minimized their difficulties. The breastfeeding counselling received in antenatal classes may have prepared them & helped them to be committed efficiently to breastfeeding program. Many needed help from the therapist to complete questionnaires. Some of the bias by examiner could not be negotiated. The therapist experiences a reluctance from some of the family members accompanying these mothers, whereas some reported to be very positive & compliant to provide information.

The sample was from the vaccination OPD of only one institute & data collected for short period, so did not include the sample from other areas, Sample size was small. Further the study can be done on larger sample size. The data was collected six weeks postpartum, so immediate Postpartum depression could not be screened.

#### CONCLUSION:

Postpartum period is usually sensitive in primigravida mothers. It may affect sleep patterns & experience of fatigue in early postpartum period. This in turn may have negative effects on, family life, and Breast feeding efficacy. Fatigue may result from loss of motivation and sleepiness. Level of fatigue does not impact directly on breastfeeding efficacy of postpartum lactating mothers. The quality of sleep has a positive correlation with breastfeeding abilities of postpartum mothers. The postpartum depression affects the perception of mother about her breastfeeding ability. Further research is needed considering different socio-cultural background of mothers in India.

#### REFERENCES

1. Blackburn S. Postpartum period and lactation physiology. In: Maternal, Fetal, & Neonatal Physiology: A Clinical Perspective. 2nd ed. Saunders, 2003:158-77.
2. Mohite RV1 , Mohite VR2 , Kakade SV Knowledge of breast feeding among primigravida mothers Bangladesh Journal of Medical Science Vol. 11 No. 04 Oct'12 312-316
3. Department of Nutrition for Health and Development (NHD) World Health Organization (Available on :[https://www.who.int/nutrition/topics/infantfeeding\\_recommendation/en/](https://www.who.int/nutrition/topics/infantfeeding_recommendation/en/)) (Cited on 19th Nov 2019)
4. Arun Gupta, Radha Holla, J P Dadnich, Shoba Suri, Marta Trejos, Joyce Chanetsa The status of policy and programmes on infant and young child feeding in 40 countries. *Health Policy and Planning*. Volume 28, Issue 3, May 2013, Pages 279–298. (Available on :<https://academic.oup.com/heapol/article/28/3/279/553219>) (Cited on :15 Oct 2019)
5. Hunter LP, Rychnovsky JD, Yount SM. A selective review of maternal sleep characteristics in the postpartum period. *J Obstet Gynecol Neonatal Nurs*. 2009;38:60–8.
6. Khayamim N, Bahadoran P, Mehrabi T. Relationship between fatigue and sleepiness with general health of mothers in the postpartum period. *Iran J Nurs Midwifery Res*. 2016;21(4):385–390. doi:10.4103/1735-9066.185580
7. Dunning MJ, Giallo R. Fatigue, parenting stress, self-efficacy and satisfaction in mothers of infant and young children. *J Reprod Infant Psychol*. 2012;30:145-59.
8. Kathleen Kendall-Tackett, Zhen Cong, Ph.D. The Effect of Feeding Method on Sleep Duration, Maternal Well-being, and Postpartum Depression; *Clinical Lactation*, 2011, Vol. 2-2, 22-26.
9. Laura Creti, et.al, Sleep in the Postpartum: Characteristics of First-Time, Healthy Mothers. *Hindawi, Sleep Disorders j*. Volume 2017, Article ID 8520358, 1-10
10. Henderson J, Alderdice F, Redshaw M. Factors associated with maternal postpartum fatigue: an observational study. *BMI Open* 2019;9:e025927. :1-
11. Archana Patel, Yamini Pusdekar, Antenatal and Postnatal Counseling Support for Improving Breastfeeding Practices. *Indian Paediatrics* volume 56 (2) february 15, 2019: 107-108
12. Jill Radtke Demirci, Betty J. Braxter, Eileen R. Chasens, Breastfeeding and Short Sleep Duration in Mothers and 6 to 11 Months Old Infants. *Infant Behav Dev*. 2012 December; 35(4): 884–886.
13. L. M. Tomfohr, E. Buliga, N. L. Letourneau, T. S. Campbell, and G. F. Giesbrecht, "Trajectories of sleep quality and associations with mood during the perinatal period," *Sleep*, vol. 38, no. 8, pp. 1237–1245, 2015.
14. Okun, Michele L. "Sleep and postpartum depression." *Current opinion in psychiatry* 28.6 (2015); volume 28(6):0951-7367; 490-496.
15. Nafiseh Khayamim, Parvin Bahadoran, Tayebeh Mehrabi, Relationship between fatigue and sleepiness with general health of mothers in the postpartum period. *Iranian J Nursing Midwifery Res* 2016;21:4; 385-90.
16. Susan Liipfert Shelton, Eileen Cormier, Depressive Symptoms and Influencing Factors in Low-Risk Mothers, *issues in mental health nursing j*. volume 39, 2018, 3:251-258
17. Insana PS, Montgomery-Downs HE. Maternal postpartum sleepiness and fatigue: Associations with objectively measured sleep variables. *J Psychosom Res* 2010;69(5) 467-73.