

How Do Breastfeeding Pillows Influence Mother Fatigue and Mother and Baby Response During Breastfeeding?

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Abstract

Background: Postpartum fatigue has a negative effect on the physical and mental conditions of a mother and mother and baby interactions. The process of breastfeeding is often the cause of postpartum fatigue. This study aimed to determine the effect of breastfeeding pillows on maternal fatigue and the mother and baby response during breastfeeding (MBA).

Methods: This research was a quasi-experimental study with nonequivalent (pretest and posttest) with a control group design. The research was conducted between July – February 2017 in the areas of Mantrijeron and Umbulharjo 1 Public Health Centers in Yogyakarta, Indonesia. Determination of samples was based on a screening process that was done purposively. The number of research samples were 60 respondents for the intervention and control group, ethical approval number was with Ref: KE/FK/0888/EC/2017.

Results: There were significant differences in MBA values ($p = 0.000$), and fatigue ($p = 0.002$) pretest and posttest in the intervention group compared to the control group. The mean difference between the pretest and posttest MBA scores in the intervention group was higher (1.93) than in the control group (0.53). The mean difference in the value of the pretest and posttest for fatigue in the intervention group was higher, which was equal to (5.16) than in the control group (1.93).

Conclusions: There is a positive influence the use of breastfeeding pillows on the value of maternal fatigue and the response of the mother and baby during breastfeeding.

Keywords: *breastfeeding, fatigue, mother and baby response during breastfeeding (MBA)*

Background

According to the 2012 IDHS data, the average Indonesian woman will have 2.6 children during her lifetime. The delivery period will be followed by the postpartum, breastfeeding and period of child care¹. A longitudinal study states that 62% of women experience fatigue and 18.3% experience severe fatigue on several postpartum days². Postpartum fatigue has a negative effect on the physical and mental condition of the mother, baby care activities, mother and baby interactions and response to breast feeding (MBA)³.

Women with caesarean section have a higher level of fatigue compared give birth normally women. The high rate of postpartum fatigue has a significant relationship with the difficulty of caring for the baby,

and results in maternal infant attachment weakness⁴. One of the factors that influence of postpartum fatigue is breastfeeding³. The 2012 IDHS data showed that only 27 percent of infants aged 4-5 months received exclusive breastfeeding⁵. Discontinuing the process of breastfeeding is caused by various factors such as pain in the breast and nipples; breast milk is not enough, shame give a breastfeeding in public places, and lack of health education about breastfeeding⁶.

Maternal and infant responses are objective evidence of the mother's and baby's comfort during breastfeeding. Lumbiganon⁷ concluded that one method supporting the breastfeeding process is not enough to increase the sustainability of exclusive breastfeeding. Breastfeeding pillows are designed to help nursing mothers in a sitting

position, mother's arms can support the baby better and make breastfeeding position more suitable for both the mother and baby. The pillows are safe and comfortable avoiding causing allergies and irritation to the mother's and baby's skin. Breastfeeding pillow is expected to be an alternative to reduce fatigue and increase closeness with the baby during breastfeeding.

This research was conducted in the area of Mantrijeron and Umbulharjo 1 Health Centers (*Puskesmas*), in Yogyakarta Indonesia. This study aimed to determine the effect of breastfeeding pillows on maternal fatigue and the response of mothers and infants during breastfeeding (MBA).

Research Methods

This research was a quasi-experimental study with nonequivalent (pretest and posttest) with control group design. The research was conducted between July – February 2017. The research was conducted in the areas of Mantrijeron and Umbulharjo 1 Public Health Centers in Yogyakarta, Indonesia. The study population was all postpartum mothers who gave birth at that place. The sampling technique was purposive sampling with inclusion criteria:

- a. Postpartum mother who gave birth with vaginal delivery (days 7 to 30 days);
- b. Infants aged 1 week to 30 days
- c. Healthy mothers and babies currently breastfeeding.

Exclusion criteria:

- a. Postpartum mother with complications such as postpartum blues, hemorrhage, and anemia.
- b. Babies who experience health problems as newborns, such as hyperbilirubinemia, palatoschisis, congenital heart disease, and other health problems.

Based on sample calculations with α 95% and β 90%, the minimum number of samples is 29.05 minimum of 30 samples per group.

The instrument used is a questionnaire which included:

- a. Fatigue symptom checklist

This instrument was developed by Corwin et al⁸. The Modified Fatigue Symptom Checklist (MFSC) consists of 30 statements that measure symptoms of physical and psychological fatigue. A concurrent validity instrument score was done by looking at the significance of the correlation, $r = 0.64$ and $p < 0.01$, compared to the VAS scale. Construct validity showed a significant correlation value ($p < 0.05$), compared to other instruments, Depressive Symptomatology Scale and the Spielberger State-Trait Anxiety Inventory. The internal consistency and reliability (Kuder-Richardson formula) of this instrument was 0.82-0.85 with Cronbach's alpha reliability of 0.81-0.91.

- b. MBA (Mother-Baby Assessment Scoring System Tool)

The Maternal-Baby Assessment (MBA) tool was used to assess the response of mothers and infants during breastfeeding. The MBA tool was developed by Mulford. In addition, this MBA instrument has also been used in Yulianti⁹. Before this observation checklist was used, observer agreement was conducted. The observers consisted of 5 people who observed the same 5 films about nursing mothers, followed by completing the observation checklist. An agreement was made with the analysis of Kruder Richardson with the result between the 5 observers having a high agreement. For the MBA instrument the Kappa test results = 0.692.

The intervention group was given a nursing pillow, and taught how to use it as well with correct breastfeeding methods and attachment techniques. Whereas, for the control group only the correct breastfeeding techniques and attachment techniques were taught. Measurement of pretest and posttest (one week after intervention) for the experimental group and the control group, observation of the mother and baby response, and assessment of the level of maternal fatigue. Data analysis was conducted with t tests and if the data was not normal then an alternative test was done.

Result

1. Characteristics of respondents

Table 1 show that all respondent characteristics homogeneous between the intervention group and control group, except the characteristic of experience in

getting health education about breastfeeding.

Table 1. Characteristics of respondents

Characteristics of respondents	intervention group (n = 30)		control group (n = 30)		p-value
	frequency	(%)	frequency	(%)	
Maternal age (mean)	29.5 years		30 years		0.640
Infant age (mean)	14.96 days		14.80 days		0.880
Maternal weight (mean)	63.58 Kg		61.86 Kg		0.569
Infant weight (mean)	3.32 Kg		3.15 Kg		0.078
Pregnancy experience					0.795
< 2 times	17	56.7	16	53.3	
≥ 2 times	13	43.3	14	46.7	
Maternal education					0.488
<Senior high school	4	13.3	6	20.0	
≥Senior high school	26	86.7	24	80.0	
Number of children born alive					0.592
< 2	20	66.7	18	60.0	
≥ 2	10	33.3	12	40.0	
Experience health education about breastfeeding					0.024
Never	5	16.7	13	43.3	
Ever	25	83.3	17	56.7	
Average number of hours sleep a day					0.448
< 6 hours	27	90.0	25	83.3	
≥ 6 hours	3	10.0	5	16.7	
Type of delivery					0.781
SC	9	30.0	10	33.3	
Normal	21	70.0	20	66.7	
Experience of breastfeeding					0.347
< 2 times	5	16.7	8	26.7	
≥ 2 times	25	83.3	22	73.3	
Mothers works					0.161
Yes	1	3.3	4	13.3	
No	29	96.7	26	86.7	

Cont... Table 1. Characteristics of respondents

Mother activities in housework					
Yes	24	80	25	83.3	0.739
No	6	20	5	16.7	
The presence of household assistant					
Yes	22	73.3	20	66.7	0.573
No	8	26.7	10	33.3	

2. Analysis MBA and Fatigue pre-test and post-test, in each group

Table 2 shows there are significant differences between the mean scores of the pretest and posttest MBA intervention groups ($p = 0.000$) and the control group ($p = 0.000$), but the average increase in MBA scores was higher in the intervention group. The average fatigue value in the group using breastfeeding pillows the value of fatigue was much lower than the group that did not use breastfeeding pillows.

Table 2. Baseline screening pre test and post test MBA, and Fatigue in each group

Research variables	Pre test (n = 30)	Post test (n = 30)	p-value
	Mean ± SD	Mean ± SD	
The mean scores MBA in intervention group	7.86±1.33	9.80±0.48	0.000
The mean scores MBA in control group	8.33±1.49	8.66±1.19	0.000
The mean scores for fatigue in the intervention group	12.70±3.75	7.53±4.29	0.000
The mean scores for fatigue in the control group	13.16±1.66	11.23±4.29	0.003

3. Analysis of the effect of nursing pillows on the MBA and Fatigue

Table 3 shows there are significant differences between MBA values ($p = 0.000$), and fatigue ($p = 0.002$). The mean difference between the pretest and posttest MBA scores in the intervention group was higher (1.93) than in the control group (0.53). The mean value difference between pretest and posttest fatigue in the intervention group was higher (5.16) than in the control group (1.93). The decrease in fatigue in the intervention group was higher than the control group.

Table 3. Mean difference post test and pre test MBA, and fatigue

Research variables	Intervention group (n = 30)	Control group (n = 30)	p-value
	Mean ± SD	Mean ± SD	
Mean difference score MBA	1.93±1.33	0.53±0.68	0.000
Mean difference score fatigue	5.16±4.16	1.93±3.30	0.002

Discussion

The MBA includes an assessment of the initial signaling of breastfeeding and the introduction of signs by the mother and baby in breastfeeding process¹⁰. Table 3 shows the mean difference between MBA scores in the intervention group was higher (1.93) than in the control group (0.53) p value ($p = 0.000$). These results are in accordance with Muliarthini et al¹¹ that showed use of ergonomic pillows can help increase a baby's motivation, satisfaction and optimize on the breastfeeding process. The position of the baby's, and attachment are very important to increase the success of breastfeeding and prevent nipple blisters, pain, and mastitis. One sign of true attachment is the presence of effective baby suction, which is slow, deep, and there is a pause¹². The sign that the baby is suckling properly is mother feels the sensation in breast being attracted, the baby sucks with rounded cheeks, does not appear to be suffocating, the baby's jaw moves smoothly while sucking, and the baby swallows¹³. The use of nursing pillows helps support the baby's body, so that the baby's mouth is in a position that is in accordance with the nipple¹⁴. Positioning and attachment of infants during breastfeeding is one of the recommendations to reduce nipple pain, increase the duration of breastfeeding, and reduce breastfeeding problems¹⁵.

Kent et al¹⁶ study stated attachment and positioning of the baby will help optimize the flow of breast milk and encourage increased milk production. There are three recommendations to optimize the flow of breast milk: 1) earlier skin-to-skin contact, 2) ensure that the mother is physically and psychologically comfortable, and 3) ensure that the baby is supported in a comfortable

position. Rahim et al¹⁷ stated that success of the breastfeeding process depends on accuracy of position and attachment of baby to mother's breast and the ability of the baby to suck.

Maternal fatigue is a feeling of lack of energy, continuous fatigue, and decreased capacity for physical and mental work at the usual level. Researchers identified signs of physical and psychological fatigue over the past 2 weeks postpartum. Table 3 shows that the mean value difference between pretest and posttest fatigue in the intervention group was higher (5.16) than in the control group (1.93) p value ($p = 0.002$). In the group that uses a breastfeeding pillow the level of fatigue is lower than the group that does not use a breastfeeding pillow, this proves the nursing pillow is very important to maintain a comfortable position during breastfeeding so that fatigue can decrease. Study Reshmi¹⁸ also proves that breastfeeding position intervention can reduce fatigue during breastfeeding, post test score vs pre test score (54.6% vs 85.2%) with a mean difference of 30.6%.

Breastfeeding is a physiological function in the reproductive cycle because newborns are very dependent on a mother¹⁹. Postpartum fatigue is influenced by the breastfeeding process and the baby's condition²⁰. According to WHO criteria, the correct position of the mother when breastfeeding is relaxed/comfortable. Mother should sit in comfortable chair and have backrest¹². The position and duration of breastfeeding causes fatigue, shoulder muscle tension and stiffness because the mother sometimes only uses her limbs to support the baby's body¹¹.

The Colson et al study²¹ Optimal maternal position for the release of primitive neonatal reflexes that stimulate breastfeeding several aspects that must be fulfilled are maternal posture, maternal comfort, body support, pain-free and tension-free during breastfeeding. Positioning at the breast has recently been defined as the relationship between the baby's body and the mother's, whereas attachment is the relationship between the baby's mouth and the mother's breast²².

Mother's posture while breastfeeding is risky. Fatigue in postpartum mothers can cause stress in parents, feelings of inadequacy and dissatisfaction, high sensitivity, loneliness, disruption of communication between parents and babies, depression, stress, maternal anxiety, slow growth of babies, delay in mothers returning to normal function, and the early cessation of the breastfeeding process²³.

Conclusions

There is a positive influence the use of breastfeeding pillows on maternal fatigue and the response of the mother and baby during breastfeeding.

Suggestions

The use of ergonomic pillows can help the mother to support the baby, help attachment, increase motivation and satisfaction of the baby, reduce fatigue and musculoskeletal complaints in the mother, and optimize the process of the mother in breastfeeding, so that the mother and baby will feel comfortable.

Conflict of Interest - None declared

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Reference

1. Ministry of Health. *Indonesia Health Profile 2013*. 2014. Jakarta. Available from: <https://www.kemkes.go.id/resources/download/pusdatin/profil-kesehatan-indonesia/profil-kesehatan-indonesia-2013.pdf>
2. Rychnovsky J.D, & Hunter L. The relationship between sleep characteristics and health postpartum women, *Women Health Issue*. 2009 19(1). 38-44, <http://dx.doi.org/10.1016/j.whi.2003.07.015>
3. McQueen A, Mander R, Tiredness and fatigue in the postnatal period. *J Adv Nurs*. 2003; 42. 463-9
4. Ling lai Y, Hung C.H, Stoker J, Chan T F, Liu Y, Postpartum fatigue, baby care acvtivities, and maternal-infant attachment of vaginal and cesarean births following rooming-in, *Applied Nursing Research* 2015 (28) : 116-120
5. BPS, B., Kemenkes, Measure DHS, ICF International. (2012). Laporan Pendahuluan SDKI 2012. Jakarta Indonesia. Available from: <http://www.measuredhs.com>.
6. Kramer, M. S., & Kakuma, R. Optimal duration of exclusive breastfeeding (Review). *The Cochrane Library*, 2012(8). doi: DOI: 10.1002/14651858.CD003517.pub2. This is a reprint of a Cochrane review
7. Lumbiganon P, Martis R, Laopaiboon M, Festin MR, Ho JJ, Hakimi M, Antenatal breastfeeding education for increasing breastfeeding duration *Cochrane Database of Systematic Reviews* 2016, Issue 12. Art. No.: CD006425.www.cochranelibrary.com
8. Corwin, E.J., Brownstead, J., Barton, N., Heckard, S., Morin, K. The Impact of Fatigue on the Development of Postpartum Depression. *JOGNN* September/October 2005. Available from: http://www.fruitoflifeca.com/uploads/4/3/3/5/43358595/impact_fatigue_ppd.pdf
9. Yulianti, T, Effects of skin-to-skin contact early on the success of the breastfeeding process in newborns in the PKU Muhammadiyah Bantul hospital. Thesis. Nursing Science Study Program. 2008, Faculty of Medicine, Gadjah Mada University, Yogyakarta.
10. Hill, P.D. & Johnson, T.S. Assessment of breastfeeding and infant growth. *J Midwifery Womens Health* 2007;52:571–578 © 2007 by the American College of Nurse-Midwives.
11. Muliarthini, N.W., Sutjana, I.D.S., Adiatmika, I.P.G. Use of redesign breastfeeding pillow to improve motivation of breastfeeding mothers and babies satisfaction, also reduce fatigue and musculoskeletal complaints on post partum

- mothers. *Jurnal Ergonomi Indonesia (The Indonesian Journal of Ergonomic)*.2016 Vol.2, No.2 : 1 Available from: <http://ojs.unud.ac.id/index.php/jei/article/view/25472/16576>[Cited on Tuesday, February 14, 2017].
12. Goyal R. C, Banginwar A.s, Ziyoo F, Toweir A.A. Breastfeeding positioning and attachment study in Libya. *Journal of Family and Community Medicine*,2011. Vol 18, Issue 2. Available from: http://uob.edu.ly/assets/uploads/pagedownloads/d2055-jfamcommunitymed18274-2770561_074145.pdf [Cited on Tuesday, February 14, 2017].
 13. Lowdermilk, D.L., Perry, S.E., Cashion, K. *Keperawatan Maternitas* 2013. Edisi 8. Singapura: Elsevier.
 14. La Leche League Canada. Breastfeeding a Baby with Down Syndrome [Brochure]. La Leche League Canada Breastfeeding. Breastfeeding a Baby with Down Syndrome. 2009. La Leche League Canada Box 700, Winchester, Ontario K0C 2K0. http://www.ndscenter.org/wp-content/uploads/CDSS_breastfeeding_brochure.pdf [Cited on Sunday, February 26, 2018].
 15. Kent, J.C., Ashton, E., Hardwick, C.M., Rowan, M.K., Chia, E.S., Fairclough, K.A., Menon, L.L., Scott, C., Mather-McCaw, G., Navarro, K., Geddes, D.T. Article Nipple Pain in Breastfeeding Mothers: Incidence, Causes and Treatments. *Int. J. Environ. Res. Public Health* 2015, 12, 12247-12263; doi:10.3390/ijerph121012247. www.mdpi.com/1660-4601/12/10/12247/pdf[Cited on Sunday, February 26, 2018].
 16. Kent, J.C., Prime, D.K., and Garbin, C.P. Principles for Maintaining or Increasing Breast Milk Production. *Association of Women's Health, Obstetric and Neonatal Nurses. JOGNN*, 41, 114-121; 2012. DOI: 10.1111/j.1552-6909.2011.01313.x.[http://www.jognn.org/article/S0884-2175\(15\)31026-1/pdf](http://www.jognn.org/article/S0884-2175(15)31026-1/pdf) [Cited on Sunday, February 26, 2018].
 17. Rahim, F., Muhammad, J., Ali, S., Amir, S. Breastfeeding practices in neonatal units. *J. Med. Sci. (Peshawar, Print)* October 2014, Vol. 22, No. 4: 159-163. <https://pdfs.semanticscholar.org/ae3f/b9293d2386a7f3cb093711beaa2aa89824c9.pdf> [Cited on Sunday, February 26, 2018].
 18. Reshmi G, Chandy M, A study to assess the effectiveness of breastfeeding positioning interventions to minimize fatigue among primi postnatal mother during breastfeeding in selected hospital at Bangalore, Dissertation submitted to the Rajiv Gandhi University of Health Sciences, Karnataka, Bangalore, 2007. <http://52.172.27.147:8080/jspui/bitstream/123456789/4273/1/CDNNOBG00020.pdf>
 19. Lawrence, R.A. & Robert, M.. *Breastfeeding: A Guide for the Medical Profession*. 2011. USA: Elsevier.
 20. Dunning, M., Seymour, M., Cooklin, A., & Giallo, R. Wide Awake Parenting: study protocol for a randomised controlled trial of a parenting program for the management of post-partum fatigue. *BMC Public Health* 2013, 13:26. Available from: http://download.springer.com/static/pdf/512/art%253A10.1186%252F1471-2458-13-26.pdf?originUrl=http%3A%2F%2Fbmcpublihealth.biomedcentral.com%2Farticle%2F10.1186%2F1471-2458-13-26&token2=exp=1487832226~acl=%2Fstatic%2Fpdf%2F512%2Fart%25253A10.1186%25252F1471-2458-13-26.pdf*~hmac=9eddaca3f88d1aaa09f2e0105100d1fc11e00c6a4f86e77eb61db15b2020d54f [Cited on Tuesday, February 14, 2017].
 21. Colson S. D, Meek J H , Hawdonb J M, Optimal positions for the release of primitive neonatal reflexes stimulating breastfeeding, *Early Hum Dev*. 2008, doi:10.1016/j.earlhumdev.2007.12.003
 22. Inch S, Law S and Wallace L. Confusion surrounding breastfeeding terms “positioning” and “attachment”. *BJM*, 2003, 11 (3): 148
 23. Kyahamim, N., Bahadoran, P., Mehrabi, T. Relationship between fatigue and sleepiness with general health of mothers in the postpartum period. *Iranian Journal of Nursing and Midwifery Research* 21 (4). 2016 . DOI 10.4103/1735-9066.185580 Available from: http://www.ijnmrjournal.net/temp/IranianJ_NursingMidwiferyRes2143856196049_014316.pdf [Cited on Tuesday, February 14, 2017].