



Impacts of Antenatal Educational Interventions base on BASNEF Model on Mothers' Breastfeeding Self-Efficacy: A Quasi-Experimental Study

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Abstract

Breast-feeding self-efficacy is defined as a mother's confidence in her ability to breastfeed her child. It is one of the variables affecting breastfeeding duration and consequently developmental indicators in child, which have been rarely studied. This study aimed to Impacts of antenatal educational interventions base on BASNEF Model on mothers' breastfeeding self-efficacy: a Quasi-experimental study. This was a quasi-experimental study done on 100 nulliparous mothers referred to the selected clinics in Shiraz. Sampling was done by random method. The intervention was held based on BASNEF components in four educational sessions besides a session on cognitive norms, while the control group received the routine education. The mean score of breast-feeding self-efficacy was measured both before and after the intervention by Fax and Dennis questionnaire besides its correlation with child physical developmental indicators. SPSS18 was applied to analyze the data through paired t-test, independent t-test, and Chi-square test. The mean age of participants was 23.86 ± 4.30 and 24.4 ± 4.18 in BASNEF and control groups, respectively. After the intervention, there was a significant difference in the mean score of self-efficacy in the intervention group compared to the control group ($p < 0/001$). In addition, there was a significant positive correlation between breast-feeding self-efficacy and infants' weight at the age of 3 months besides height at the age of 1 and 3 months ($p < 0.05$). BASNEF based breastfeeding training was related to the rise in breastfeeding self-efficacy in nulliparous pregnant women and subsequently improvement of children's physical growth indicators.

Keywords: *BASNEF Model; Breastfeeding Self-Efficacy; Infant Growth*

Introduction

Breast milk is a complex biological fluid and a proper food for infants, which can provide a very ideal nutritional balance with maximum quality and quantity (1). According to the World Health Organization, the exclusive breast-feeding is the best nutrition for children up to 6 months. In addition to providing physical and physiological needs, it can support the psychological needs in both child and mother (2, 3). The basic role of breast-feeding on prevention of infections (such as respiratory, gastrointestinal, and urinary infection) and consequently less hospitalization and mortality is obvious in infants, especially in poor countries (4). Despite the fact that breastfeeding benefit has been spread around the world, many mothers choose early breastfeeding cessation in different countries.

The World Health Organization and UNICEF (2007) announced the prevalence of exclusive breastfeeding less than 61% and 35% in infants aged less than four and six months, respectively in the Committee in East Asia to promote breastfeeding. According to the UNICEF report in the global performance monitoring, the prevalence of exclusive breastfeeding is 39% and 27% globally and in Islamic countries, respectively (5). According to the global researches, the factors affecting breast-feeding include mothers' knowledge and attitude about the benefits of breastfeeding, marriage age, and higher level of education, family income, first experiences of breastfeeding, maternal self-esteem, and self-efficacy during breast-feeding (2). Among them, breastfeeding self-efficacy is known as a modifiable factor to successful breast-feeding (6). Breastfeeding self-efficacy is defined as a mother's confidence in her ability to breastfeed her child. It is an important variable to predict the breastfeeding behavior and identify the mothers' self-esteem. Moreover, it helps to predict the duration of breast-feeding and identify the mothers who choose early breastfeeding cessation. Thus, it is necessary for breast feeding continuity (1, 7). According to the result of a study conducted to determine the relationship between self-efficacy and breastfeeding in mothers, self-efficacy is one of the most impressive factors on mothers' conception about her capabilities in breastfeeding and its continuation (8). McQueen proved the direct link of breast feeding self-efficacy and duration of breastfeeding in his study entitled "an intervention on breastfeeding self-efficacy in nulliparous"(9).

According to Bandura's theory, breastfeeding self-efficacy is influenced by four main intelligence sources including enhancement of performance (such as previous experience of lactation), different experiences (such as watching the act of others' breastfeeding), the encouragement by effective people (such as friends, family and lactation consultants), and finally physiologic responses (such as pain, fatigue and stress) (6, 10). Bandura believes that we can increase the individuals' self-efficacy and empowerment by adopting appropriate strategies and educational intervention to attain the skills and knowledge in this regard (11). In addition, breastfeeding continuation strongly leads to child development. It can be measured easily besides child weight, height, and head circumference. World Health Organization announced children's physical growth as a desired parameter to assess community health. Regular measurement of the growth index and its proper charting leads to detection, prevention, and treatment of growth disorders in children (12). Several studies have proved the importance and impression of education on successful breast-feeding both globally and in Iran. However, no study was done by applying educational theories systematically in this issue. BASNEF is of the most comprehensive models that are used to identify the behavior and create new behavior in society (13, 14). BASNEF is a comprehensive model to change behavior in developing countries, which focuses on the impression of knowledge, attitudes, and interpersonal skills on behavioral change. This model was primarily presented by combining the components of reasoned action theory and precede part of proceed model. The components of BASNEF theory include beliefs, attitudes and conceptual norms of reasoned action theory besides enabling factors in proceed model (15). The value of health education depends on its effectiveness, which depends on the proper use of theory and models in health education. The effective application of this model leads to attitude change in breast-feeding self-efficacy (16, 17, 18). Sharifirad studied the effect of educational program based on BASNEF model structures on breast feeding behavior in mothers. He proved a positive association between these two variables (14). It seems important to apply proper

strategies regarding the breast-feeding promotion due to the importance of breast feeding self-efficacy and infants' development despite the reduction of breast feeding prevalence (23% in Iran). Furthermore, the attention of health care providers seems notable in this regard.

This study aimed to Impacts of antenatal educational interventions base on BASNEF Model on mothers' breastfeeding self-efficacy: a Quasi-experimental study

Method & Material

This was a quasi-experimental study done in 2012 during 5 months. The study setting was pregnancy clinics in Shoshtari and Hafez hospitals. The study sample included 100 nulliparous women selected by random sampling method. We determined the sample size ($n: 40$), for $\alpha = 5\%$ (confidence level was 95%) and $\text{power} = 0.8$, $\beta: 0.2$, and regarding the previous studies. Finally, it was assumed as 50 by considering the sampling loss.

Inclusion criteria were nulliparous and uncomplicated pregnancy, gestational age of 36-41 weeks, age range of 18-35 years, a minimum literacy of high school, no history of obvious and serious physical or mental illness during the study, Shiraz residency, willingness to cooperate in the study, and filling the consent. Exclusion criteria were irregular (not one time) maternal visits after several follow-up and her agreement to withdraw from the study. After obtaining the approval letter from research department and coordination of determined hospitals, the researchers referred to the pregnancy day care clinics to do random sampling. The subjects were allocated into case and control groups. Four weekly training sessions were held for 90 minutes using different methods of lecture, group discussion, role-playing, practical work, educational images, questions and answers, and pamphlets. The point of this method was the organization of educational content to improve both the knowledge and attitude on breast-feeding. The most impressive people (in the families) were identified at the second session by group discussion (detecting cognitive norms). Three educational sessions were held for mothers ($n: 20$), spouses ($n: 19$) and spouse mothers ($n: 15$), separately. An educational file on breast-feeding, a pamphlet about physical development skills, and an educational CD-ROM were provided for mothers. The phone number of the researcher was provided to mothers in the case of trouble in breast-feeding to be guided. In addition, an introductory letter was provided for the participants to ask their questions from the pre-educated health care providers. On the other hand, the control group received the routine education in pregnancy clinics after birth. The study instruments were Fax and Dennis breast-feeding self-efficacy questionnaire, which was done both before and after the intervention by self-reporting method in both groups. This questionnaire includes 33 items based on 5- Likert scale anchored from 1(strongly disagree) to 5(strongly agree). It was designed by Bandura in 1997 which was used in breast-feeding by Fax and Dennis primarily (19).

The sum score indicates the breast-feeding self-efficacy. The minimum and maximum score were 33 and 165, respectively. The score range was described as follows: 33-76, 77-120, and 121-165 state low, moderate, and high level of self-efficacy, respectively. SPSS₁₈ was applied to analyze the data via pair t-test, independent t-test, and Chi-square test

Results

The mean age was 23.86 ± 4.30 and 24.4 ± 4.18 in the study and control groups, respectively. According to independent t-test and Chi-square test results, there was no significant difference in terms of age, education and occupation between the intervention and control groups (Table 1). The mean age of the spouses was 28.16 ± 5.24 and 28.96 ± 2.89 in the intervention and control groups, respectively.

According to Chi-square test, there was no significant difference in terms of spouse's age ($p: 0.617$), education ($p: 0.801$) and occupation ($p \geq 0.05$) between the intervention and control groups (Table 1). According to Table 2, there was no significant difference in the mean score of self-efficacy before and after the intervention in the control group ($p: 0.561$), but it was significant in the intervention group ($p < 0.001$). Before the intervention, the level of self-efficacy was moderate in both groups. After the intervention, about 95.9% had a high level of self-efficacy, while 4.1% were patients with moderate level. This score did not change significantly in the control group after the intervention. Table 3 displays the relationship between self-efficacy scores (after the intervention) with infants' weight, height, head, and arm circumferences at birth, and age of 1 and 3 months. According to Pearson correlation coefficients, there was no association between self-efficacy scores (before the intervention) with the infants' weight, height, head, and arm circumferences at birth, the age of 1 and 3 months ($p > .05$). However, there was a significant positive correlation between breast-feeding self-efficacy and infants' weight at the age of 3 months besides height at the age of 1 and 3 months.

Discussion

Adopting a proper teaching method fitted to the purpose, content, and culture of audience is of the most important steps in planning for education. Lack of educational theory in health education is similar to a structure without a foundation, so it seems necessary to apply educational theory in designing educational interventions aiming at behavioral change (15). This study showed the effect of BASNEF model on breastfeeding self-efficacy in nulliparous mothers referring to pregnancy clinics, which is consistent with the study conducted by Chan Man Yi DN (6), and Baghianimoghadam (20). According to McQueen, breast-feeding self-efficacy is significantly associated with mothers' self-esteem, more breast-feeding course in the intervention group rather than the control group (9). Noel-Weiss reached the conclusion that breast-feeding self-efficacy can be defined as maternal self-esteem during breast-feeding (21). Wu and colleagues also confirmed the impact of interventions aiming to increase breast-feeding self-efficacy to increase the efficacy of breastfeeding (22). In this regard, Zhu and colleagues have shown that maternal perceived social support, received attention from important people such as husband, mother, and friends, previous experience of lactation, and breastfeeding education acquired by the attention to breast-feeding approach by others could be associated with promotion of breastfeeding self-efficacy in Chinese women (23). According to the results, about 95.9% had a high level of self-efficacy and just 4.1% scored moderate after the intervention, which implies the positive effect of BASNEF based education on behavioral change. This is consistent with the results of the study done by Latifi. Therefore, breastfeeding acceptance (as a natural norm in individuals' life) and others' support can promote the efficacy of breast-feeding (24). In general, various studies have shown the impact of training on breastfeeding initiation and continuation. The present study was conducted based on BASNEF model, which confirmed its qualification as a method to improve breastfeeding self-efficacy since it is believed that people start to carry out a health behavior when they believe in its benefits (25). In addition, the link between breastfeeding self-efficacy and breastfeeding status has been proved in the study done by Varae and Jeni Nichols (8, 26). Successful performance is one of the most impressive factors on maternal perception about her breastfeeding ability and its continuation. According to self-efficacy theory, meeting the model related performance and receiving verbal encouraging by the acceptable others could increase the self-efficacy of health related behaviors to be more repeated. This point is important especially in nulliparous women who are faced with many troubles during lactation (27, 8). The results show a positive significant relationship between breastfeeding self-efficacy and infant's weight at three months and his height at one and three months. In other words, self-efficacy increases the infants' mean weight at three months along with his height at one and three months. According to several studies, measuring his weight, height, head and arm circumference is the best way to assess the child growth (28).

Studies have shown mother's self-efficacy, an effective factor in the continuation of lactation, effort and ability of mother to do breastfeeding (29). In our study, mother's training based on the BASNEF program has been effective on maternal self-efficacy. The researcher thinks it is possible; one of the reasons for the lack of a no significant relationship between the self-efficacy and some of the baby's growth parameters is the duration of breastfeeding. The study period is 3 months and all mothers had breastfeeding exclusivity, It may be, If the study lasted longer (eg 6 months or more) due to the increasing self-efficacy mother, with growth parameters were also statistically significant.

UNICEF also believes that millions of deaths will be prevented annually in the case of mothers' responsibility to their child breastfeeding. Health-care providers should educate mothers and families about the wide range of positive health outcomes in children and mothers besides its socio-economic advantages and its role in developmental indicators (30). According to Wandera, education on nutrition has a positive impact on children's anthropometric factors (31). In addition, Alidoosti proved the impact of maternal nutrition education on the child's growth and development at 5-7 months. Education on nutritional leads to weight gain in children, while height, head and arm circumference are not affected (32). Breast milk leads to ideal growth in children up to 3 months of age, but gaining weight is reduced from 3 to 6 months, especially in developing countries. This was consistent with the results of others, for example a study done by Imam Qureshi in Jahrom, 2005. Those who were breast-fed had a prominent weight and height rise in the first few months while it dropped gradually followed by supplementary nutrition (33).

Study limitations were the possibility of no cooperation to participate in the educational classes or timely visits to measure the growth criteria in infants, which was addressed by enough explanation.

Conclusion

BASNEF based breastfeeding training was along with the rise in breastfeeding self-efficacy in nulliparous pregnant women and subsequently improvement of children's physical growth indicators. In addition, the findings of this study have a significant implication for health care professionals, especially midwives and nurses to do their educational mission.

Breastfeeding self-efficacy is a key factor contributing to the preservation and promotion of breastfeeding, so theory-based interventions (aimed to promote the efficacy of breastfeeding) can be a means to promote breastfeeding well. According to the results of this study, it is suggested that theory based programs (such as BASNEF) should be applied as a method of improving self-efficacy in the health care system and along with traditional teaching methods, the educational models are also used. In this regard, it is recommended to carry out further studies on the effectiveness of the BASNEF model as an educational technique in health promotion in other target groups, taking into account cultural, ethnic, social and economic characteristics and differences.

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References

- 1- karimi Z, Bagheri S, Tara F, et al. The effect of Kangaroo care on breastfeeding self-efficacy in primary para mothers 3 months after delivery. *IJOGI*.2014;17:1-8. DOI: [10.22038/ijogi.2014.3517](https://doi.org/10.22038/ijogi.2014.3517)
- 2- Ansari S, Abedi P, Hasanpoor Sh, et al. The Effect of Interventional Program on Breastfeeding Self-Efficacy and Duration of Exclusive Breastfeeding in Pregnant Women in Ahvaz, Iran. *Int Sch Res Notices*.2014;19:1-6. PMID: [PMC4897444](https://pubmed.ncbi.nlm.nih.gov/26893208/). DOI:[10.1155/2014/510793](https://doi.org/10.1155/2014/510793)
- 3- de Jesus PC, de Oliveira MI, Fonseca SC. Impact of health professional training in breastfeeding on their knowledge, skills, and hospital practices: a systematic review. *J Pediatr*.2016;92:436-50. PMID:26893208 , DOI:[10.1016/j.jpeds.2015.09.008](https://doi.org/10.1016/j.jpeds.2015.09.008)
- 4-Hinic K. Predictors of Breastfeeding Confidence in the Early Postpartum Period. *J Obstet Gynecol Neonatal Nurs*. 2016; 45:649-60. PMID:27472996 , DOI:[10.1016/j.jogn.2016.04.010](https://doi.org/10.1016/j.jogn.2016.04.010)
- 5- World Health Organization Regional Office for the Western Pacific, WHO and UNICEF (2007). Call for renewed commitment to breast feeding. www.wpro.who.int
- 6- Chan MY, Ip WY, Choi KC. The effect of a self-efficacy based educational programme on maternal breastfeeding self-efficacy, breastfeeding duration and exclusive breastfeeding rates: A longitudinal study. *Midwifery*. 2016; 36:92–98. PMID:[27106949](https://pubmed.ncbi.nlm.nih.gov/27106949/) , DOI:[10.1016/j.midw.2016.03.003](https://doi.org/10.1016/j.midw.2016.03.003)
- 7- Song SM, Park MK. Effects of Breastfeeding Empowerment Program on Breastfeeding Self-efficacy, Adaptation and Continuation in Primiparous Women. *J Korean Acad Nurs*. 2016 ; 46 : 409-19. PMID:[27411768](https://pubmed.ncbi.nlm.nih.gov/27411768/) DOI:[10.4040/jkan.2016.46.3.409](https://doi.org/10.4040/jkan.2016.46.3.409)
- 8-Varae Sh, Mehrdad N, Bohrani N. Relationship between breastfeeding self-efficacy and breastfeeding status in mothers.*Hayat*.2010;15:31-38. (Persian) <http://fa.journals.sid.ir/ViewPaper.aspx?ID=100356>
- 9- McQueen KA, Dennis CL, Stremler R, Norman CD. A pilot randomized controlled trial of a breastfeeding self-efficacy intervention with primiparous mothers. *J Obstet Gynecol Neonatal Nurs*. 2011; 40: 35-46. PMID:[21244493](https://pubmed.ncbi.nlm.nih.gov/21244493/) , DOI:[10.1111/j.1552-6909.2010.01210.x](https://doi.org/10.1111/j.1552-6909.2010.01210.x).
- 10- Otsuka K, Taguri M, Dennis CL, et al. Effectiveness of a Breastfeeding Self-Efficacy Intervention: Do Hospital Practices Make a Difference? *Matern Child Health J* .2014; 18:296–306. PMID:[23592322](https://pubmed.ncbi.nlm.nih.gov/23592322/) , PMID:[PMC3880483](https://pubmed.ncbi.nlm.nih.gov/23880483/) , DOI:[10.1007/s10995-013-1265-2](https://doi.org/10.1007/s10995-013-1265-2)
- 11- Tuthill EL, McGrath JM, Graber M,etal. Breastfeeding Self-efficacy: A Critical Review of Available Instruments.*J Hum Lact*.2016;32:35-45.PMID:[26319113](https://pubmed.ncbi.nlm.nih.gov/26319113/)-PMCID:[PMC4882127](https://pubmed.ncbi.nlm.nih.gov/4882127/).DOI:[10.1177/0890334415599533](https://doi.org/10.1177/0890334415599533)
- 12- Nguyen HT, Eriksson B, Nguyen LT, et al. Physical growth during the first year of life. A longitudinal study in rural and urban areas of Hanoi, Vietnam. *BMC Pediatr*. 2012; 12: 1-9. DOI: [10.1186/1471-2431-12-26](https://doi.org/10.1186/1471-2431-12-26)

- 13- Akbarzadeh M, Moatari M, Bahmani N,etal. Comparison of the effects of educational programs on the development of infants aged 1-3 months based on the BASNEF model and application of acupressure on the GB-21 point. IJN.2015;7:20-27. DOI: [10.22038/ijn.2016.7112](https://doi.org/10.22038/ijn.2016.7112)
- 14- Sharifirad GR, Golshiri P, Shahnazi H, et al. The impact of educational program based on BASNEF model on breastfeeding behavior of pregnant mothers in Arak. Arak Med Uniy J. 2010; 13: 63-70. http://amuj.arakmu.ac.ir/browse.php?a_code=A-10-544-1&slc_lang=en&sid=1&sw=Educational
- 15- Kashfi SM, Khani Jeihooni A, Rezaeianzade A. Effect of health workers' training programs on preventive behavior of leishmaniosis based on BASNEF model. J Res Health Sci. 2012; 13 , 12:114-8. PMID: [23241523](https://pubmed.ncbi.nlm.nih.gov/23241523/)
- 16- Sharifirad G, Najimi A, Hassanzadeh A, et al. Application of BASNEF educational model for nutritional education among elderly patients with type 2 diabetes: improving the glycemic control. J Res Med Sci. 2011;16:1149-58. PMID: [22973383](https://pubmed.ncbi.nlm.nih.gov/22973383/) PMCID:[PMC3430039](https://pubmed.ncbi.nlm.nih.gov/PMC3430039/)
- 17- Shahnazi H, Bee Koon P, Abd Talib R, et al. Can the BASNEF Model Help to Develop Self-Administered Healthy Behavior in Iranian Youth? Iran Red Crescent Med J. 2016; 18:1-9. PMID: [27231582](https://pubmed.ncbi.nlm.nih.gov/27231582/). PMCID: [PMC4879761](https://pubmed.ncbi.nlm.nih.gov/PMC4879761/) DOI:[10.5812/iremj.23847](https://doi.org/10.5812/iremj.23847)
- 18- Sarayloo K, Moghadam ZB, Mansoure JM, etal. The impact of an educational program based on BASNEF model on the selection of a contraceptive method in women. Iran J Nurs Midwifery Res. 2015;20:171-8. PMID:[25878691](https://pubmed.ncbi.nlm.nih.gov/25878691/). PMCID:[PMC4387638](https://pubmed.ncbi.nlm.nih.gov/PMC4387638/)
- 19- Blyth RJ, Creedy DK, Dennis CL, et al. Breastfeeding duration in an Australian population: the influence of modifiable antenatal factors. J Hum Lact. 2004; 20:30-8. PMID:[14974698](https://pubmed.ncbi.nlm.nih.gov/14974698/). DOI:[10.1177/0890334403261109](https://doi.org/10.1177/0890334403261109)
- 20- Baghianimoghadam MH , Rahae Zohreh, Morowatisharifabad MA,etal. Effects of education on self-monitoring of blood pressure based on BASNEF model in hypertensive patients. J Res Med Sci. 2010; 15: 70–77. PMCID: [PMC3082790](https://pubmed.ncbi.nlm.nih.gov/PMC3082790/)
- 21- Noel-Weiss J, Bassett V, Cragg B. Developing a prenatal breastfeeding workshop to support maternal breastfeeding self-efficacy. J Obstet Gynecol Neonatal Nurs.2006; 35: 349-57. PMID:[16700684](https://pubmed.ncbi.nlm.nih.gov/16700684/) DOI:[10.1111/j.1552-6909.2006.00053.x](https://doi.org/10.1111/j.1552-6909.2006.00053.x)
- 22- Wu DS, Hu J, McCoy TP, et al. The effects of a breastfeeding self-efficacy intervention on short-term breastfeeding outcomes among primiparous mothers in Wuhan, China. J Adv Nurs. 2014; 70:1867-79. PMID:[24400967](https://pubmed.ncbi.nlm.nih.gov/24400967/) DOI:[10.1111/jan.12349](https://doi.org/10.1111/jan.12349)
- 23- Zhu J, Chan WC, Zhou X, et al. Predictors of breast feeding self-efficacy among Chinese mothers: A cross-sectional questionnaire survey. Midwifery.2014;30:705-11. PMID:[24439394](https://pubmed.ncbi.nlm.nih.gov/24439394/) DOI:[10.1016/j.midw.2013.12.008](https://doi.org/10.1016/j.midw.2013.12.008)
- 24- Latifi M, Sagar R, Seyyedghasemi NS, etal. Investigating of Breast Feeding Situation in Mothers Who Have 8-24 Months Infant and its Related Factors Based on BASNEF Model Constructs in Aq Qala city. J of Prevention and Health, 2015; 1: 64-73. http://www.hpjournal.ir/browse.php?a_code=A-10-25-1&slc_lang=en&sid=1&sw=

- 25- Charkazi A, Miraeiz SZ, Razzaghnejad A, et al. Breastfeeding status during the first two years of infants' life and its risk factors based on BASNEF model structures in Isfahan. *J of Educ and Health Prom.*2015;2:10-15. PMID:[24083259](#) PMCID:[PMC3778647](#) DOI:[10.4103/2277-9531.107938](#)
- 26- Nichols J, Schutte NS, Brown RF, et al. The Impact of a Self-Efficacy Intervention on Short-Term Breast-Feeding Outcomes. *Health Education & Behavior.*2009; 36: 250-259. PMID:[17893124](#) DOI:[10.1177/1090198107303362](#)
- 27- Sibel Küçükoğlu, Ayda Çelebioğlu. Effect of Natural-Feeding Education on Successful Exclusive Breast-Feeding and Breast-Feeding Self-Efficacy of Low-Birth-Weight Infants. *Iran J Pediatr.* 2014; 24: 49–56. PMCID: [PMC4359604](#)
- 28- Hosseini SM , Maracy MR, Sarrafzade Sh , et al. Child Weight Growth Trajectory and its Determinants in a Sample of Iranian Children from Birth until 2 Years of Age. *Int J Prev Med.* 2014; 5: 348–355. PMCID: [PMC4018645](#)
29. Chan MY1, Ip WY2, Choi KC3. The effect of a self-efficacy-based educational programme on maternal breast feeding self-efficacy, breast feeding duration and exclusive breast feeding rates: A longitudinal study.*Midwifery.*2016 May;36:92-8. doi:10.1016/j.midw.2016.03.003.Epub 2016 Mar 8.
- 30- Vaaler ML, Stagg J, Parks SE, et al. Breast-feeding Attitudes and Behavior Among WIC Mothers in Texas. *Journal of Nutrition Education and Behavior* 2010;42: 30-8. PMID:[20399407](#) DOI:[10.1016/j.jneb.2010.02.001](#)
31. Wandera M, Astrøm AN, Okullo I, et al. Determinants of periodontal health in pregnant women and association with infants' anthropometric status: a prospective cohort study from Eastern Uganda. *BMC Pregnancy Childbirth.* 2012; 12: 1-10. doi: [10.1186/1471-2393-12-90](#)
- 32-Alidoosti Shahraki k, Hosseinasab A, Forohari S. Effectiveness of complementary feeding and developmental skills to mothers on growth and development of children 5 to 7-Month-V referred to health centers in Shiraz. *Hakim.*2009;11:33-38. <http://hakim.hbi.ir/article-1-441-fa.pdf>
- 33- Heydari T, Imam Qureshi F, Amini M. Study of the growth of children under the age of two years in Jahrom and compare it with the NCHC criteria. *Horizon of knowled.* 2005; 11: 42-8. http://www.sid.ir/fa/VEWSSID/J_pdf/65013840308.pdf

Table 1. Comparison of Demographic Variables of the Subjects in The Control and BASNEF Groups

Demographic variable		BASNEF group	Control group	p-value
Mean ± SD of age		23.86±4.30	24.40±4.17	0.786*
Minimum		18.00	18.00	
Maximum		34.00	34.00	
Education(%)	Primary school educated	32%	26%	0.852**
	Secondary school educated	54%	54%	
	Higher education	14%	20%	
Job	Housekeeper	96%	98%	p>.05**
	Employed	4%	2%	

* Independent t-test, ** Chi-square test

Table 2. The Mean Score of Breastfeeding Self-Efficacy of the Subjects in The Control and BASNEF Groups Before and After the Intervention

	Mean \pm SD Before intervention	p-value*	Mean \pm SD After intervention	mean difference within group	p-value*
BASNEF group	104.8 \pm 5.92	0.561	128.5 \pm 3.76	21.89 \pm 6.08	<0.0001
Control group	105.5 \pm 5.84		106.7 \pm 4.61	1.47 \pm 9.7	
mean difference between group	1.8 \pm 5.7		23.6 \pm 7.5	<0.001	<0.001

* Independent t-test

Table-3: The association between breast-feeding self-efficacy and infants' weight, height, head and arm circumferences at birth, the age of 1 and 3 months

		Birth weight	The weight of one month	The weight of 3 month	Birth height	The height of one month	The height of 3 month	Birth HC *	The HC of one month	The HC of 3 month	Birth AC**	The AC of one month	The AC of 3 month
Breastfeeding Self- efficacy	Pearson correlation coefficients	-.030	.178	.212	.183	.212	.298	.109	.072	.109	.099	.039	.013
	p- value	.772	.084	.039	.076	.039	.003	.292	.486	.294	.341	.706	.898

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