Mu'tah Lil-Buhuth wad-Dirasat, Natural and Applied Sciences Series Vol. 37. No.1, 2022.

Determinants of Not Breastfeeding and Delaying the Early Initiation of Breastfeeding in Aqaba City, Jordan: A Cross-Sectional Study

Ibrahim Rajab Dabbour *

Abstract

This study aimed to find out the determinants of not BF and delaying the EIBF in Aqaba city, Jordan. Determinants associated with not BF included the infant age ≤8th(OR:2.81;95% CI: 0.62-12.6),caesarean section (OR:2.52;95% CI: 1.61-3.95),mother smoking (OR:3.33;95% CI: 1.90-5.84),placement of the baby in a separate room (OR:1.98; 95% CI: 1.17-3.36), delaying BF by >1 h (OR:2.29; 95% CI: 1.46-3.61)and mothers who used a pacifier (OR: 3.14;95% CI: 2.03-4.88).While, the significant factors of the delaying EIBF were the infant age ≤8th month (OR: 2.44; 95% CI: 0.57-10.4), cesarean section (OR: 2.28; 95% CI: 1.47-3.54), formula feeding only (OR: 2.44; 95% CI: 1.50-3.98), mothers who used a pacifier (OR :0.49 (95% CI: 0.31-0.78) and uninformed mothers regarding the importance of BF (OR: 1.85; 95% CI: 1.16-2.93). In conclusion, there is a distinct need for promotion of BF, to increase the initiation, the exclusiveness, and the extended duration of BF.

Keywords: Breastfeeding,delaying the EIBF,formula feeding, Jordan

* **كلية الزراعة، جامعة مؤتة، الأردن.**

تاريخ تقديم: 7/21 /2020م. **تاريخ قبول البحث: 3/ 9/2020م.**

محددات عدم الرضاعة الطبيعية وتأخير البدء المبكر للرضاعة الطبيعية في مدينة العقبة، الأردن: دراسة مقطعية

ابراهيم رجب دبور

ملخص

هدفت هذه الدراسة إلى معرفة المحددات لعدم الرضاعة الطبيعية وتأخيرها بعد الولادة مباشرة في مدينة العقبة، الأردن. حيث تبين أن المحددات المؤثرة بعدم الرضاعة الطبيعية بقياس الانحدار اللوجستي الثنائي ونسبة الارجحية (odd ratio) بفاصل الثقة(CI) 95% هي: عمر الرضيع ≥8 أشهر (OR 2.81) والولادة القيصرية (2.52:OR) والأم المدخنة (3.33:OR) ووضع الطفل في غرفة منفصلة (OR: 1.98) والرضاعة الطبيعية بعد الساعة الاولى من الولادة (OR : 2.29) والأمهات الذين استخدموا اللهاية لأطفالهن (OR : 3.14)، بينما كانت العوامل المؤثرة لتأخير الرضاعة بعد الساعة الأولى من الولادة هي عمر الرضيع≥ 8 اشهر (OR: 2.44) والولادة القيصرية (OR: 2.28) والتغذية بتراكيب الحليب (OR: 2.44) والأمهات اللواتي استخدمن اللهاية لأطفالهن (OR: 0.49) والذين ليس لديهم معلومات عن الرضاعة الطبيعية (OR: 1.85). نستنتج بان هناك حاجة لتعزيز الرضاعة الطبيعية وذلك بزيادة تقديمها للطفل خلال الساعة الأولى من بعد الولادة وتشجيع الاستمرار بالرضاعة الطبيعية حصريا.

الكلمات الدالة: الرضاعة الطبيعية، تأخير البدء المبكر بالرضاعة الطبيعية، تراكيب حليب الأطفال، الأردن.

1. Introduction:

Breastfeeding (BF) is the first protection for infants that is attributed to the health and nutritional importance of breast milk throughout their lifetime (Black et al., 2013). Therefore, the American Academics of Pediatrics (AAP) and the World Health Organization (WHO) recommended that breast milk is taken from the delivery of the children until the age of 6 months. BF greatly benefits both the children and the mother. Children are breastfed have defense from a number of acute and chronic diseases during child hood (WHO, 2017; AAP, 2005). Also, there is aconfirmation that BF protects mothers by reducing risks of breast and ovarian cancer, two leading causes of death among women. Infants demand for breast milk regulates the milk deliver, the more the infant suckles at the breast, and the more the mother produces milk to satisfy baby's needs (UN, 2017).The first hours of BF for the infant are particularly important, so the infant should be placed directly on the mother's breast after birth to guarantee that the infant has the colostrum that contains all the necessary nutritional and immunological components of the infant's health and development. Therefore, the infant does not need any food, water or other liquids during the first 6 months of his life, as the AAP and WHO recommended during this period of life (Al-Jawaldeh & Abul-Fadl, 2018; WHO, 2017). Numerous studies have been conducted to assess the prevalence and duration of BF in several countries around the world. These studies vary among those countries. International monitoring indicates that only 41 % of all infants worldwide are BF. In developed countries, the rate of BF has been rising (UN, 2017). In the USA, the BF mothers were about 83% in most of the states with 24.9% of exclusive breastfeeding (EBF) at six months (UNICEF & WHO, 2017). While in England, one of the lowest rates of BF in Europe, the BF mother's rate for 2016-17 was 44.4% with1% of EBF at six months (Oakley et al., 2016; Khan et al., 2015).BF rates in the Middle East are poor and do not meet the target set by the WHO, with BF rates dropping from 30% in 1990 to 26% in 2006 (Black et al.,2013). A recent report conducted by UNICEF and WHO for the Middle East (2017) indicated that the rates of EBF for children at six months of age in this region have declined. In Oman the rates

of BF at birth and EBF decreased significantly in 2012 where they recorded 94.9% and 9.1% compared to 2005 by 97.5 % and 31.3 % respectively, knowing that the Omani hospitals implemented the baby-friendly' hospital initiative (BFHI) since 1990 (Al-Nuaimi et al. ,2017). The poor outcome of the EBF rate in Lebanon, where a report showed that there was a remarkable drop in the rate reached 40% in 1-month-old infants and only 2% in 4-5 months old infants (Batal et al., 2006; Al-Akour et al., 2014).The same decline in Lebanon was recorded in Saudi Arabia through a study conducted in 2008 where it showed that the prevalence rate of EBF was extremely low 1.7% (Al-Hreashy et al.,2008).In Jordan, as a Middle Eastern country, most Jordanian mothers start BF their babies soon after delivery due to the religion and culture in Jordan support BF, but still, the BF practices are not optimal (Dabbour, 2019). In 2002, a study showed that only 40% of infants in Jordan were BF within the first hour of birth and 80% were BF during the first 24hours of delivery (DHS, 2012). We, therefore, conducted this study to provide new and comprehensive data that will be recorded for the first time regarding the possible determinants of not BF and the delay in the early initiation of BF in Aqaba city. Therefore, Knowledge about the type and importance of the determinants for BF is essential for building effective promotion programs.

2. Materials and Methods

2.1. Subjects and Study Design

A cross-sectional descriptive study was performed, between June 2018 and November 2019, in3 major primary health care centers in the Aqaba city, Jordan. A total of 448 Jordanian mothers visiting those centers were interviewed for their acceptance to participate in this study. The selected mothers, ranged in age from 18 to 48 years, had an infant for one year or less, were giving birth to a healthy newborn infant through normal vaginal delivery or cesarean section. The exclusion criteria was; infants with genetic diseases that interfere with the lack of BF. The study was accepted by the Research Ethics Committee of the College of Agriculture, Mut'ah

University and written informed consent was obtained from all mothers who agreed to participate.

2.2. Questionnaire:

A well designed and pre-tested questionnaire with closed-ended questions was used to collect data. The questionnaire was designed and discussed in a previous study by Dabbour (2019). The first section included information about demographic characteristics including age, weight, height, body mass index (BMI) of mothers, family size, mother's education level, occupation of the mother's and; the family income. The second section collected information about the reproductive health characteristics of mothers and infants(the current birth, the type of delivery, the age of birth, childbirth weight, the mother's diseases, and mother smoking).The last section included factors that describe BF practices and patterns like the immediate place of the infant after birth, feeding type for infants, beginning of BF (the time of the first BF) ,the use of a pacifier, and whether mothers were informed about the importance of BF or not.

2.3 Statistical analysis:

Data were analyzed using the Statistical Package for Social Sciences (SPSS) software version 22 (IBM Corp., Armonk, NY, USA). Descriptive statistics were performed using frequencies and proportions for categorical variables. The results of each variable were subjected to cross-tabulation and Chi-square test (χ 2) to find the association between categorical variables as the first-round test for regression analysis. Binary logistic regression was performed to find the possible determinants, independent variables, included (demographic characteristics, reproductive health characteristics of mothers and infants and breastfeeding practices and patterns of mothers and infants) of not BF and delayed early initiation of BF by estimate odds ratios (ORs) and associated 95% confidence interval for those different independent variables. A p-value of less than 0.05 was considered statistically significant.

3-Results:

A total of 448 mothers were included in the study. All characteristics (demographic, reproductive health and breastfeeding practices and patterns) of Jordanian mothers in the Aqaba city are presented in Table 1. As shown in this table, the mothers in the age category of 25–29 years were 144 (32.1%), the family size ranged from 1–11 members and 73.7% of their family size was ≤5 members, and 218 (48.7%) mothers had a university degree. The majority of the surveyed mothers were unemployed (n = 313; 69.9%). The low-income category was the majority, 37.1% at around 200–500 Jordanian Dinar (JD). The BMI for mothers ranged between normal weight (41.3%) and overweight (41.5%). Regarding the reproductive health characteristics of mothers and infants, 27.5%of mothers had the first infant, 93.1% of mothers had infants aged 9 months. A considerable proportion of births were normal (34.2%). The most common type of delivery was vaginal (70.5%) and most of the mothers (94.6%) do not have a chronic disease, also 86.6% of the mother's nons mokers. One of the important characteristics of this study is the patterns and practices of BF. The results showed that the infant's stay with their mother in the same room (Rooming-in) was 83.3 %. Infants with BF only were 334(74.6%) while 114 (25.4%) did not BF their children for any duration (formula feeding only) and the beginning of BF (≤ 1 hr) was 72.8% while 27.2% (>1 hr). Regarding the use of a pacifier for Children and important information to mothers about BF were 36.6% and 75.2 respectively.

Table 2 describes the effect of demographic characteristics associated with not BF among participants. All variables in this table were not significantly associated with not BF. Tables 3and 4 represent their productive health characteristics and BF practices and patterns of mothers and infants as determents for not BF, respectively. There were significant association ($p < 0.05$) between not BF and seven variables: age of the infant, delivery type, chronic disease(s) of mother, mother smoking, staying infant with mother (rooming-in), beginning of breastfeeding and the pacifier use. The ORs were 2.81(95% CI: 0.62-12.6) for infant age $\leq 8^{th}$,

2.52(95% CI: 1.61-3.95) for caesarean section, 4.53(95% CI: 1.95-10.5) for mother suffers from chronic disease(s), 3.33(95% CI: 1.90-5.84) for mother smoking, 1.98(95% CI: 1.17-3.36) for placement of the baby in a separate room immediately after birth, 2.29(95% CI: 1.46-3.61) for delaying BF by >1 h and 3.14(95% CI: 2.03-4.88) for mothers who used a pacifier during the first 6 months of the infant's life. Effect of demographic characteristics, the reproductive health and BF practices and patterns characteristics of mothers and infants associated with delaying the beginning of BF more than an hour among participants are highlighted in Tables5, 6 and 7, respectively. Table 5 describes the effect of demographic characteristics associated with delaying the beginning of BF more than an hour among participants. No significant differences were found between these characteristics and delaying the beginning of BF more than an hour. The most surprising aspect of the data in table 6 is the infant age and delivery type, where there was a strong association ($P<0.001$) between infant age ≤8th month (OR: 2.44; 95% CI: 0.57-10.4) and mothers who delivered cesarean (OR: 2.28; 95% CI: 1.47-3.54) with delaying the beginning of BF more than an hour. Moreover, in table 7, the same effects were observed for feeding type for children, mothers who did not breastfeed their infants immediately after birth (formula feeding only) were more likely to delay the beginning of BF more than an hour than those who did breastfeed only (OR: 2.44; 95% CI: 1.50-3.98). Also, mothers who used a pacifier for their children showed an OR of 0.49 (95% CI: 0.31-0.78) compared to mothers who did not use a pacifier. Interestingly, Data in Table 7 shows that mothers who did not receive information about the importance of BF (OR: 1.85; 95% CI: 1.16-2.93) was the significant factor ($p < 0.01$) associated with delaying BF by more than an hour.

4- Discussion:

The present study assessed the determinants and their association with not BF and delaying the beginning of BF (>1h) among mothers attending at 3 primary health care clinics in Aqaba city. Overall, 114 mothers (25.4%) did not breastfeed their infants for any duration, while 334(74.6%) breastfeed their infants, the early initiation of BF (≤1 h) was observed in

326 (72.8%) mothers and 122 (27.2%) mothers delayed the initiation of BF for >1 h. This result was comparable to recent data on BF indicators from 153 countries that showed the prevalence of early initiation of breastfeeding (EIBF) to range from 30% to 60% in low, middle, and high- income countries (UNICEF & WHO, 2017). In Jordan, and as in other Arab countries, the numbers about BF and EIBF are not well reported and most data are collected by cross-sectional studies. In 2017, Khasawneh and his colleague reported that 87% of Jordanian women-initiated BF after birthand 76 % had breastfeed. In Saudi Arabia, the rate of beginning of BF among Saudi mothers was around 90% (El Mouzan et al., 2009). While, in UAE; in total 88% of Emirati mothers initiated BF. Of mothers who tried to breastfeed in the hospital, 80.6% set their infants on their breast within one hour following delivery (Radwan, 2013). In the latest UNICEF report, among those countries, the data showed that the percentage of infants ever being breastfed was above 89%, nearly nine in ten in fants (UNICEF, 2018). In 2020, Chipojola and colleagues showed that the majority of Malawian mothers (95.4%) initiated BF within one hour after birth, and 71.3% sustained exclusive BF in the first 6 months. On the other hand, our results were not consistent with studies from the other countries, where BF rates remained far from the target set by the international health agencies. For example, in Bahrain, initiation and continued BF rates among infants below 6 and 20–23 months old were 34% and 41%, respectively (Al-Nuaimi et al., 2017).While, in Iran, a study reported that 42% of infants were exclusively breastfed during the first month of life, but this rate decreased to 44% and 2% at 4 and 6 months of age, respectively (Koosha et al., 2008).In general, when comparing our results with those studies, we consider that the percentage of BF is fairly good, but it did not reach the rates suggested by international health agencies. To clarify that, determinants related to not BF and the delay in the early start of BF were determined by binary logistic regression, and the odds ratio (OR) and 95% confidence interval (CI) were determined. Our results showed that the infant age (≤8th month),mothers who delivered cesarean section, chronic

diseases of mother, mother smoking, placement of the baby in a split room immediately after birth, the pacifier use, initiation of bottle feeding and mothers who did not get information about the significance of BF were statistically the most significant factors, as other studies in the region supported that effect; Alzaheb concluded that delivering a preterm infant or low birth weight infant as well as cesarean section deliveries were among the main factors associated with high prevalence of BF in Saudi Arabia (Alzaheb,2016). More recently, another cross-sectional study involving 814 mothers from Saudi Arabia published by Azzeh and his colleagues (2018) about the factors affecting EIBF, found that start of bottle feeding, not rooming-in infants, uneducated mothers about the BF and cesarean sections were strong barriers to BF. Regarding the cesarean section and/or delivering a preterm infant, these studies have concluded that the delay in early beginning of BF was attributable to physiological and health reasons. It is likely that mothers who deliver through a cesarean section often experience postoperative pain, weakness, the use of anesthesia, and in some cases tend to perceive insufficient milk supply, in that way impeding BF; this also possibly explained by the hospital policy of separating infants from their mothers after cesarean section as reported in studies in south Sudan (Tongun et al.,2018) and Jordan (Khasawneh W. & Khasawneh A., 2017; Abu Shosha,2015).

The other determinant to not BF in our study was mother smoking. Mothers who were smoked were less likely to practice BF. This issue has been widely studied in the literature (Bailey &Wright, 2011; Leung et al., 2002; McInnes et al., 2001; Yang et al., 2004). One of the explanations founded in these literatures was that mothers who smoke were choosing to formula feed because of their belief that their breast milk is unsafe to the infant. Another important result reported in this study, the effect of initiation of bottle-feeding among 25.4 % of mothers on delay in the early initiation of BF(>1 hr), it could be linked to BF practices in Jordan such as the low rate (less than 36 %) of EBF up to 6 months of age, the lack of firm control system for registration and marketing of infant formulas from the Jordanian authorities, and the noncompliance with the world legislation of

Marketing Breast-Milk Substitutes (Dabbour, 2019; Khasawneh W. & Khasawneh A., 2017).

Moreover, the present study results found that infants who were placed in a split room after labor were more likely not to be BF when compared to infants roomed-in with their mother's immediately after birth. In the UAE a study informed that mothers who set aside their infants in the same room after delivery had a rate of BF 6 times higher than mothers who kept their infants in split rooms (Radwan, 2013). They explained that the rooming - in, number of BF at night and BF on demand were the most significant determinants affecting BF. Rooming - in promotes demand and night feeding, and this permits the practice of skin-to-skin care immediately after birth between the mother and the infant (Munn et al., 2016; Khanal et al., 2015); it also promotes the establishment of longer period of EBF(UNICEF & WHO, 2017; UN, 2017; Munn et al., 2016).

Finally, mothers who did not get information about the significance of BF had 1.85 times higher odds of delaying BF by more than an hour as compared to informed mothers. Our results were consistent with those found by Azzah et al. (2017) and Ahmad & Salih(2019), who reported that uneducated mothers regarding the importance of BF significantly resulted in delays in BF beginning. Therefore, it is critical that women at childbearing age in Aqaba city and generally in Jordan are targeted for BF educational campaigns to promote their awareness of the value of BF for them and their infants.

Additionally, this study highlights the importance of adopting the BFHI's policies in all Jordan hospitals to promote BF practices. The (BFHI) slowly gained momentum in Jordan. Four hospitals are currently certified as baby-friendly hospitals. These hospitals comprise 25% of public hospitals while they provide services to 40% of deliveries in the country (DOS, 2018; Abuidhail et al.2014). So, it seems to us, these hospitals require further assessment.

5. Conclusion:

In conclusion, it was found that the infant age (≤8th month), mothers who delivered cesarean section, mother smoking, placement of the baby in a separate room immediately after birth, and the pacifier use are determinants for not BF in Aqaba city. While, initiation of bottle feeding, mothers who did not receive information about the importance of BF, infant age (≤8th month), mothers who delivered cesarean section, and the pacifier use are the most determinants to delay in the EIBF more than an hour among participants. Those factors collectively with the lack of Baby-Friendly units at our hospitals diminish the likelihood to initiate BF in the first hour of life. Unfortunately, so far, there are no effective programs and laws in Jordan through which awareness, guidance, and follow-up of mothers of childbearing age is achieved. Therefore, lay the foundations of hospital policies and health staff training as a necessary action in improving BF practice.

References:

Abuidhail, J., Al-Modallal, H., Yousif, R., & Almresi, N. (2014). Exclusive breast feeding (EBF) in Jordan: Prevalence, duration, practices, and barriers. Midwifery, (30): 331–337.

http://dx.doi.org/10.1016/j.midw.2013.01.005

Abu Shosha, G. (2015). The Influence of Infants' Characteristics on Breastfeeding Attitudes among Jordanian Mothers. Open Journal of Nursing. (5) 295-302, http://dx.doi.org/10.4236/ojn.2015.54032

Adam, E. Ahmed1,2 & Osama, A. Salih.(2019). Determinants of the early initiation of breastfeeding in the Kingdom of Saudi Arabia, International Breastfeeding Journal,14 (13), 2-13. https://doi.org/10.1186/s13006-019-0207-z

Al-Akour, N., Okour A., & Aldebes, R. (2014). Factors Associated with Exclusive Breastfeeding Practices among Mothers in Syria: A Cross-sectional Study. British Journal of Medicine & Medical Research,4(14),2713-2724. (http://creativecommons.org/licenses/by/3.0)

Al-Hreashy, F., Tamim, H., Al-Baz N, Al-Kharji NH., Al-Amer A, & Al-Ajmi H, (2008). Patterns of breastfeeding practice during the first 6 months of life in Saudi Arabia. Saudi Med J.,29(3),427 –31.

https://pubmed.ncbi.nlm.nih.gov/18327373/

Al-Jawaldeh, A. & Abul-Fadl, A. (2018). Assessment of the baby friendly hospital initiative implementation in the eastern Mediterranean region. Children, 5(3),41-47. https://doi: 10.3390/children5030041

Al-Nuaimi, N., Katende& G., & Arulappan, J. (2017). Breastfeeding Trends and Determinants Implications and recommendations for Gulf Cooperation Council countries. Sultan Qaboos University Med J, 17(2), e155–161 https:// doi: 10.18295/squmj.2016.17.02.004

Alzaheb, R. (2016). Factors associated with the initiation of breastfeeding within the first 48 hours of life in Tabuk, Saudi Arabia. Int. Breastfeed J., 11:21. Available from:

http://www.ncbi.nlm.nih.gov/pubmed/27446231

American Academy of Pediatrics. (2005). The changing concept of sudden infant death syndrome: Diagnostic coding shifts, controversies regarding the sleeping environment, and new variables to consider in reducing risk. Pediatrics, 116, 1245–1255.

https://doi.org/10.1542/peds.2005-1499

Azzeh, F., Alazzeh, A., Hijazi, H., Wazzan, H., Jawharji, M., & Jazar, A. (2018). Factors associated with not breastfeeding and delaying the early initiation of breastfeeding in Mecca region, Saudi Arabia. Children., 5(1),8. http:// doi:10.3390/children5010008

Bailey, B, & Wright ,H. (2011). Breast feeding initiation in a rural sample: predictive factors and the role of smoking. J. Hum. Lact., 27:33–40. Available from: http://www.ncbi.nlm.nih.gov/pubmed/21177987

Batal, M.; Boulghoujin, C.; Abdallah, A & Afifi, R. (2006). Breastfeeding and feeding practices in a developing country: A national survey in Lebanon. Public Health Nutr., 9, 313–319. doi: 10.1079/phn2006860

Black, R., Victora, C, Walker, S., Bhutta Z., Christian P., & de Onis, M. (2013). Maternal and child undernutrition and overweight in low-income and middle-income countries. Lancet ,382,427–51. doi: 10.1016/S0140-6736(13)60937-X.

Chipojolaa, R., Gabrielle T., Leeb , Hsiao-Yean Chiua , Pi-Chen Changa & Shu-Yu Kuo.(2020). Determinants of breastfeeding practices among mothers in Malawi: a population-based survey. International Health, 12, 132–141.

Dabbour, I, (2019). Study of Factors Affecting Exclusive Breast feeding and Early Introduction of Complementary Food to Infants in the

Aqaba Region of Jordan. Current Research in Nutrition and Food Science, 7(3),862-875. http://dx.doi.org/10.12944/CRNFSJ.7.3.25

Department of Statistics (DOS) and ICF. Jordan Population and Family and Health Survey 2017-18: Key Indicators. Amman, Jordan, and Rockville, Maryland, USA: DOS and ICF; 2018.

Department of Statistics [Jordan] and ICF International. 2013. Jordan Population and Family Health Survey 2012. Calverton, Maryland, USA: Department of Statistics and ICF International.

El Mouzan, M., Al Omar A., Al Salloum A., Al Herbish A., & Qurachi M. (2009). Trends in infant nutrition in Saudi Arabia: compliance with WHO recommendations. Ann Saudi Med, 29,20–3.

http:// doi: 10.4103/0256-4947.51812

Khan, J., Vesel, L., Bahl, R. & Martines, J. (2015). Timing of breastfeeding initiation and exclusivity of breastfeeding during the first month of life: effects on neonatal mortality and morbidity a systematic review and meta-analysis, Matern Child Health J., 19(3), 468–79. https://doi: 10.1007/s10995-014-1526-8

Khanal, V., Scott, J., Lee, A., Karkee, R. & Binns, C. (2015). Factors associated with early initiation of breastfeeding in Western Nepal. Int. J. Environ. Res. Public Health, 12, 9562–9574. https://dx.doi.org/10.3390%2Fijerph120809562

Khasawneh, W. & Khasawneh A. (2017). Predictors and barriers to breastfeeding in north of Jordan: could we do better?. International Breastfeeding Journal, 12(49), 1-7. http:// DOI 10.1186/s13006-017-0140-y

Koosha, A., Hashemim F. & Mousa vinasab N. (2008). Breastfeeding patterns and factors determining exclusive breastfeeding. Singapore Med J,49,1002–1006 https://europepmc.org/article/med/19122951

Leung, G., Ho L. & Lam, T. (2002). Maternal, paternal and environmental tobacco smoking and breast feeding. Paediatr.Perinat.Epidemiol., 16,236-245. https://doi.org/10.1046/j.1365-3016.2002.00426.x

McInnes, R, Love, J, & Stone, D. (2001). Independent predictors of breastfeeding intention in a disadvantaged population of pregnant women. BMC Public Health.,1:10.

https://bmcpublichealth.biomedcentral.com/articles/10.1186/1471-2458-1-10

Munn, A., Newman, S., Mueller, M., Phillips, S. & Taylor, S. (2016). The impact in the United States of the Baby Friendly Hospital Initiative on early infant health and breastfeeding outcomes. Breast feed. Med., 11, 222–230.

https://doi.org/10.1089/bfm.2015.0135

Oakley, L., Renfrew, M., Kurinczuk, J & Quigley, M. (2013). Factors associated with breastfeeding in England: An analysis by primary care trust. BMJ Open, 3, e002765.

http://dx.doi.org/10.1136/bmjopen-2013-002765.

Radwan, H. (2013). Patterns and determinants of breastfeeding and complementary feeding practices of Emirati mothers in the United Arab Emirates. BMC Public Health, 13: 171, 2-11.

Tongun, J. Mohammed, B, David, M, Grace, N, Victoria, N, Thorkild, T & Tumwine. K. (2018). Factors associated with delayed initiation of breastfeeding: a cross-sectional study in South Sudan. International Breastfeeding Journal, 13(28), 2-7. DOI

https://doi.org/10.1186/s13006-018-0170-0

United Nations, Department of Economic and Social Affairs, Population Division. World Population Prospects: The Revision, 2017.

https://www.un.org/development/desa/publications/world-population-prospects- the-2017- revision.html

United Nations Children's Fund (UNICEF) & the World Health organization (WHO). Country experiences with the Baby-friendly Hospital Initiative: Compendium of case studies of the Baby-friendly Hospital Initiative. New York: UNICEF, Nutrition Section; 2017. [Online] Available at: https://www.

unicef.org/nutrition/files/BFHI_Case_Studies_FINAL.pdf.

United Nations Children's Fund (UNICEF). World Health Organization. Capture the moment, early initiation of breastfeeding: The best start for every newborn. New York: UNICEF; 2018. http:// doi:10.1093/inthealth/ihz034.

World Health Organization. Breastfeeding [cited 13 Mar 2017]. Available from: http://www.who.int/maternalchildadolescent/topics/newborn/nutrition/breastfeeding/en/

Yang, Q., Wen S. & Dubois, L. (2004). Determinants of breast-feeding and weaning in Alberta, Canada. J ObstetGynaecol Can. 26, 975-981doi: 10.1016/s1701-2163(16)30419-4

Table(1) The study characteristics of Jordanian mothers in the Aqaba city

characteristics		Total (N= 448)	
		Frequency	%
- Demographic characteristics: Age category (years)	≤ 18	16	3.6
	19-24	88	19.6
	25-29	144	32.1
	30-34	97	21.7
	≥ 35	103	23.0
Family size	≤ 5	330	73.7
	> 6	118	26.3
- Mother's education			
Illiterate		1	0.2
Read and Write		25	5.6
Intermediate		204	45.5
University degree		218	48.7
- Mother works	Yes	135	30.1
	No	313	69.9
- Income of family (JD)	< 200	22	4.9
	200-500	166	37.1
	500-800	163	36.4
	>800	97	21.7
- BMI category(Kg/m^2)	Underweight	7	1.6
	Normal	185	41.3
	Overweight	186	41.5
	Obese	70	15.6
- Reproductive health characteristics of mothers and infants:			
Current birth	1^{st}	123	27.5
	2^{nd}	118	26.3
	3^{rd}	85	19.0
	4^{th} or more	122	27.2

Age of infant (month)	≤8th	17	3.8
	9th	417	93.1
	≥10th	14	3.1
Childbirth weight (Kg)	≤ 2.5	106	23.7
	2.6-3	126	28.1
	3.1-3.5	153	34.2
	≥3.6	63	14.1
Delivery type	Caesarean section	132	29.5
	Normal	316	70.5
Chronic disease(s) of mother	Yes	24	5.4
	No	424	94.6
Mother smoking	Yes	60	13.4
	No	388	86.6
- Breastfeeding practices and patterns: Staying with mother (Rooming-in)			
In the same room		373	83.3
Separate room		75	16.7
Feeding type for infants			
Breastfeeding only		334	74.6
Formula feeding only		114	25.4
Beginning of breastfeeding	≤ 1 hr	326	72.8
	>1 hr	122	27.2
The pacifier uses	Yes	164	36.6
	No	284	63.4
Mother knowledge about breastfeeding importance	Yes	337	75.2
	No	111	24.8

JD: Jordanian dinar; BMI, body mass index

Table (2) Effect of demographic characteristics associated with not BF among participants

Characteristics	BF (N =334)		Not BF (N =114)		x^2 p-Value OR(95%CI)
	N	%	N	%	
Age category(years)					1.58 0.811
≤ 18	10	3.0	6	5.3	1.777 (0.588-5.36)
19-24	66	19.8	22	19.3	0.987 (0.512-1.90)
25-29	110	32.9	34	29.8	0.915 (0.509-1.64)
30-34	71	21.3	26	22.8	1.08 (0.576-2.04)
≥ 35	77	23.1	26	22.8	1
Family size					
≤ 5	239	71.6	91	79.8	2.99 0.084
> 6	95	28.4	23	20.2	1.573 (0.939-2.63) 1
Mother's education					
Illiterate	1	0.3	0	0.0	1.83 0.608
Read and Write	17	5.1	8	7.0	0.00(0.00)
Intermediate	157	47.0	47	41.2	1.26 (0.520-3.09)
University degree	159	47.6	59	51.8	0.807 (0.518-1.25) 1
Mother works					
Yes	94	28.1	41	36.0	2.46 0.116
No	240	71.9	73	64.0	1.43 (0.914-2.251)1

Income of family (JD)					5.84 0.119
< 200	17	5.1	5	4.4	0.725(0.244-2.15)
200-500	134	40.1	32	28.1	0.588(0.328-1.05)
500-800	114	34.1	49	43.0	1.05(0.610-1.84) 1
>800	69	20.7	28	24.6	
BMI category(Kg/m^2)					1.63 0.652
Underweight	5	1.5	2	1.8	1.24 (0.23- 6.63)
Normal	140	41.9	45	39.5	1
Overweight	141	42.2	45	39.5	0.99 (0.61-1.59)
Obese	48	14.4	22	19.3	1.42(0.77-2.61)

x^2: chi- square; CI: confidence interval; OR: odds ratio

Table (3) Effect of Reproductive health characteristics of mothers and infants associated with not BF among participants

Characteristics	BF (N =334)		Not BF (N =114)		x^2 p-Value OR(95%CI)
	N	%	N	%	
Current birth					
1st	88	26.3	35	30.7	1.19 0.754
2nd	87	26.0	31	27.2	1.33(0.751-2.37)
3rd	65	19.5	20	17.5	1.19(0.664-2.15)
4th or more	94	28.1	28	24.6	1.03(0.536-1.98) 1
Age of infant (month)					
≤8th	8	2.4	9	7.9	7.17 0.028
9th	316	94.6	10	88.6	2.81(0.62-12.6) *1
≥10th	10	3.0	14	3.5	0.79 (0.24-2.60)
Childbirth weight (Kg)					
≤ 2.5	77	23.1	29	25.4	1.73 0.630
2.6-3	90	26.9	36	31.6	1.31(0.634-2.74)
3.1-3.5	118	35.3	35	30.7	1.40(0.689-2.84) 1
≥3.6	49	14.7	14	12.3	1.03(0.514-2.09)
Delivery type					
Caesarean section	81	24.3	51	44.7	17.1 < 0.001
Normal	253	75.7	63	55.3	2.52(1.61-3.95) ** 1

Chronic disease(s) of mother					
Yes	10	3.0	14	12.3	14.4 < 0.001
No	324	97.0	100	87.7	4.53(1.95-10.5) **1
Mother smoking					
Yes	31	9.3	29	25.4	19.1 < 0.001
No	303	90.7	85	74.6	3.33(1.90-5.84)** 1

x^2: chi- square; CI: confidence interval; OR: odds ratio; * Statistically significant at level P< 0.05; * * statistically significant at level P< 0.01

Table (4) Effect of breastfeeding practices and patterns characteristics of mothers and infants associated with not BF among participants.

Characteristics	BF (N =334)		Not BF (N=114)		x^2 p-Value OR(95%CI)
	N	%	N	%	
Staying with mother (Rooming-in)					
In the same room	287	85.9	86	75.4	6.70 0.010
Separate room	47	14.1	28	24.6	1 1.98(1.17-3.36) *
Beginning of BF					
≤ 1 hr	258	77.2	68	59.6	13.2 <0.001 1
>1 hr	76	22.8	46	40.4	2.29(1.46-3.61) **
The pacifier uses					
Yes	99	29.6	65	57.0	27.4 <0.001
No	235	70.4	49	43.0	3.14(2.03-4.88) ** 1
Mother knowledge about breastfeeding importance					
Yes	252	75.4	85	74.6	0.036 0.850 1
No	82	24.6	29	25.4	1.04(0.64-1.71)

x^2: chi- square; CI: confidence interval; OR: odds ratio; * Statistically significant at level P< 0.05; * * statistically significant at level P< 0.01

Table (5) Effect of Demographic characteristics associated with delaying the beginning of BF by >1 h among participants

Characteristics	≤ 1 hr (N=326)		>1 hr (N=122)		x^2 p-Value OR (95%CI)
	N	%	N	%	
Age category(years)					
≤ 18	11	3.4	5	4.1	7.25 0.123
19-24	67	20.6	21	17.2	1.77 (0.55-5.66)
25-29	94	28.8	50	41.0	1.22 (0.61-2.42)
30-34	72	22.1	25	20.5	2.07 (1.15-3.74)
≥ 35	82	25.2	21	17.2	1.35 (0.70-2.62) 1
Family size					
≤ 5	231	70.9	99	81.1	4.84 0.058
> 6	95	29.1	23	18.9	1.77(1.06-2.95) 1
Mother's education					
Illiterate	1	0.3	0	0	1.48 0.687
Read and Write	17	5.2	8	6.6	0
Intermediate	153	46.9	51	41.8	1.15(0.47-2.81)
University degree	155	47.5	63	51.6	0.82(0.53-1.26) 1
Mother works					
Yes	92	28.2	43	35.2	2.08 0.149
No	234	71.8	79	64.8	1.38(0.88-2.15) 1
Income of family (JD)					
< 200	20	6.1	2	1.6	9.41 0.062
200-500	128	39.3	38	31.1	0.27(0.06-1.25)
500-800	107	32.8	56	45.9	0.81(0.45-1.44)
>800	71	21.8	26	21.3	1.42(0.82-2.48) 1
BMI category (Kg/m^2)					
Underweight	5	1.5	2	1.6	4.42 0.219
Normal	125	38.3	60	49.2	0.83(0.15-4.42) 1
Overweight	143	43.9	43	35.2	0.62(0.39-0.99)
Obese	53	16.3	17	13.9	0.66(0.35-1.25)

x^2: chi- square; CI: confidence interval; OR: odds ratio

Table (6) Effect of Reproductive health characteristics of mothers and infants associated with delaying the beginning of BF by >1 h among participants

Characteristics	≤ 1 hr (N=326)		>1 hr (N=122)		x^2 p-Value OR(95%CI)
	N	%	N	%	
Current birth					5.14 0.161
1st	87	26.7	36	29.5	1.60(0.89-2.88)
2nd	79	24.2	39	32.0	1.91(1.06-3.43)
3rd	63	19.3	22	18.0	1.35(0.70-2.60)
4th or more	97	29.8	25	20.5	1
Age of infant (month)					14.6 < 0.001
≤8th	6	1.8	11	9	2.44(0.57-10.4) **
9th	312	95.7	105	86.1	1
≥10th	8	2.5	6	4.9	0.44(0.15-1.32)
Childbirth weight (Kg)					2.82 0.419
≤ 2.5	80	24.5	26	21.3	
2.6-3	90	27.6	36	29.5	1.53(0.74-3.16)
3.1-3.5	106	32.5	47	38.5	1.70(0.84-3.43)
≥3.6	50	15.3	13	10.7	1
					1.25(0.58-2.65)
Delivery type					13.9 < 0.001
Caesarean section	80	24.5	52	42.6	2.28(1.47-3.54) **
Normal	246	75.5	70	57.4	1
Chronic disease(s) of mother					4.42 0.035
Yes	13	4	11	9	2.38(1.03-5.48) *
No	313	96	111	91	1
Mother smoking					0.53 0.466
Yes	46	14.1	14	11.5	0.78(0.41-1.49)
No	280	85.9	108	88.5	1

x^2: chi- square; CI: confidence interval; OR: odds ratio; * Statistically significant at level P< 0.05; * * statistically significant at level P< 0.01

Table (7) Effect of breastfeeding practices and patterns characteristics associated with delaying the beginning of BF by >1 h among participants

Characteristics	≤ 1 hr (N=326)		>1 hr (N=122)		x^2 p-Value OR (95%CI)
	N	%	N	%	
Staying with mother (Rooming-in)					2.51 0.113
In the same room	277	85	96	78.7	1
Separate room	49	15	26	21.3	1.53(0.90-2.59)
Beginning of BF					13.7 0.001
≤ 1 hr	258	79.1	76	62.3	1
>1 hr	68	20.9	46	37.7	2.44(1.50-3.98) **
The pacifier uses					9.05 0.003
Yes	133	40.8	31	25.4	0.49(0.31-0.78) *
No	193	59.2	91	74.6	1
Mother knowledge about breastfeeding importance					
Yes	256	78.5	81	66.4	1
No	70	21.5	41	33.6	1.85(1.16-2.93)

x^2: chi- square; CI: confidence interval; OR: odds ratio; * Statistically significant at level P< 0.05; * * statistically significant at level P< 0.01.