Patterns of breastfeeding practice during the first 6 months of life in Saudi Arabia

Fouzia A. Al-Hreashy, MD, Hani M. Tamim, PhD, Nadia Al-Baz, MD, Nora H. Al-Kharji, MD, Abeer Al-Amer, BSc, Haifa Al-Ajmi, MD, Alaa A. Eldemerdash, MD.

ABSTRACT

الهدف: لتقييم نمط الرضاعة الطبيعية في الستة الأشهر الأولى في الأطفال التابعين لمدينة الملك عبد العزيز الطبية للحرس الوطني بالرياض، المملكة العربية السعودية.

الطريقة: عملت دراسة مقطعية في مدينة الملك عبد العزيز الطبية عام 2005 م. أخذت عينة من 578 طفل من الذين أحضروا للتطعيم الخاص بفترة ستة أشهر من العمر في أربعة مراكز رعاية صحية أولية عيادة الطفل السليم بالمستشفى. تمت مقابلة الأمهات و جمع المعلومات عن الأمهات و االأطفال و نمط الرضاعة الطبيعية. استخدمت التعاريف الخاصة بالرضاعة لمنظمة الصحة العالمية لتحليل المعلومات.

النتائج: ظهرت نسبة الابتداء بالرضاعة الطبيعية في العينة المأخوذة في الدراسة (95%). معظم الأمهات أعطوا أطفالهم حليب صناعي (83.4%) أو سوائل (94%) خلال الستة الأشهر الأولى. كانت نسبة الرضاعة الطبيعية المطلقة (1.7%) و الرضاعة الطبيعية الجزئية (حليب الأم مع الحليب الصناعي) (78.8%). إنخفضت نسبة ممارسة الرضاعة الطبيعية عند عمر ستة أشهر إلى (50%). تمثلت العوامل المصاحبة لإدخال الحليب الصناعي في اليوم الأول بعد الولادة و أعذار الأمهات لعدم كفاية الحليب. وجدت علاقة وثيقة لاستعمال الحليب الصناعي مع عدد الأطفال عند الأم و عمل الأم و استخدام حبوب منع الحمل المحتوية على الأستروجين.

خاتمة: كان معدل انتشار الرضاعة الطبيعية المطلقة متدني جدا في العينة المدروسة. كانت الرضاعة الطبيعية الجزئية هي التوجه السائد للإرضاع في الستة الأشهر الأولى حيث صاحبه انحدار سريع لمدة الرضاعة الطبيعية.

Objective: To assess the breastfeeding practices in the first 6 months of infants at King Abdulaziz Medical City (KAMC), Riyadh, Kingdom of Saudi Arabia.

Methods: A cross-sectional study was carried out at KAMC in 2005. Infants who attended the primary care centers and well-baby clinic of the hospital for the 6-month's vaccine were included. Mothers were interviewed to collect information on the mothers, infants, and their breastfeeding practice. World Health Organization definitions were used for classification of infant nutrition patterns.

Results: Five hundred seventy eight infants were included in this study. The breastfeeding initiation among the sample was 95%. Most mothers supplemented the infants with milk formula (83.4%) or fluids (94%) during the first 6 months. The percent of exclusive breastfeeding was 1.7% and the partial breastfeeding (breast milk with formula) was the most common type of feeding (78.8%). Lactation duration dropped to 50% at 6 months of age. Factors favoring the milk formula use were introduction of the formula in the first day of life and maternal reasons of inadequate milk. Lactation duration and formula introduction were found to be significantly associated with mothers' parity, working status, and combined contraceptive pill use.

Conclusion: Prevalence of exclusive breastfeeding was extremely low in our population. Partial breastfeeding was the trend for feeding in the first 6 months of life, which was accompanied with rapid decline in lactation duration.

Saudi Med J 2008; Vol. 29 (3): 427-431

From the Departments of Family Medicine (Al-Hreashy, Al-Baz, Al-Kharji, Al-Amer, Al-Ajmi), Pediatrics (Eldemerdash), King Abdul-Aziz Medical City and the College of Medicine/Research Center (Tamim) King Saud Bin Abdul-Aziz University for Health Sciences, Riyadh, Kingdom of Saudi Arabia.

Received 21st August 2007. Accepted 26th January 2008.

Address correspondence and reprint request to: Dr. Fouzia Al-Hreashy, Department of Family Medicine, King Abdul-Aziz Medical City, PO Box 22490, Riyadh 11426, Kingdom of Saudi Arabia. Fax. +966 (1) 2520088 Ext. 46580. E-mail: fouziaalhreashy@yahoo.com

Breastfeeding has innumerable benefits that are not only reflected on infants and mothers but on society as a whole.[1] International health agencies such as the World Health Organization (WHO), United Nation Children's Fund (UNICEF), and American Academy of Pediatrics recommend exclusive breastfeeding during the first 6 months of infant life, and introduction of complementary food at approximately 6 months.[1-3] The prevalence of breastfeeding in developed countries such as the United States of America and United Kingdom is increasing.[4,5] In spite of great advances in health services in the Kingdom of Saudi Arabia (KSA), recent studies have reported a downward trend in breastfeeding practice.[6-8] Breastfeeding is associated with a reduction in the risk of otitis media, gastroenteritis, respiratory tract infection, atopic dermatitis, asthma (young children), obesity, type 1 and type 2 diabetes, childhood leukemia, sudden infant death syndrome, and necrotizing enterocolitis. Lactation has also favorable maternal outcomes such as reduction of type 2 diabetes, breast and ovarian cancer. Early cessation of breastfeeding was associated with increasing risk of maternal postpartum depression.[9] The breastfeeding promotion program at King Abdulaziz Medical City (KAMC), National Guard Health Affair, Riyadh started in 2003. The theme of the breastfeeding world week in 2004 was "exclusive breastfeeding is the gold standard". There is no data on practice of breastfeeding in this area of KSA, for these reasons this study was carried out. We aim to assess the breastfeeding prevalence during the first 6 months of infants' life at KAMC in Riyadh, KSA.

Methods. A cross sectional study was carried out at 4 primary care centers and a hospital well-baby clinic at KAMC between January 1 and June 30, 2005. An Arabic questionnaire was developed for the purpose of data collection, which was pilot-tested and modified accordingly. Information related to mothers, infants, and breastfeeding practice were included in the questionnaire. The WHO definitions for breastfeeding were adopted for classification of infant feeding patterns.[10] Infants currently attending these clinics for their 6 months vaccination were included. Infants below 6 months of age were excluded from the study. Informed consent was obtained from the mothers. Trained health professionals carried out the interviews. Ethical approval was received from the Institute's Family Medicine and Pediatric Departments.

Descriptive analyses were used to describe the different variables included in the study. Odds ratios (OR) and the 95% confidence interval (CI) were calculated to assess the association between the outcomes (breastfeeding at 6 months or formula feeding) and the different variables. Multivariate analyses (using logistic regression) were carried out to evaluate the association between the outcomes and different variables simultaneously. The Statistical Package for Social Sciences version 11 was used for data management and analyses.

Results. A total of 578 infants were included in the study. The majority of the participants were from the primary care setting (91.6%). The infants' and mothers' characteristics are presented in **Table 1**. The mean age of the mothers was found to be 29.4 years (standard deviation=6.2), 88.7% were housewives, and 25% were illiterate. Moreover, estrogen-containing pills (34.9%) was the most commonly used method of contraception. The majority of the infants (89.6%) were 6 to 7 months old, most of whom were born at term (94.9%) by

Table 1 - Mothers' and infants' characteristics.

Characteristics		n (%)
Mothers' characteristics		
Age (years)	≤ 20	38 (6.8)
	21-25	141 (25.1)
	26-30	167 (29.7)
	31-35	114 (20.3)
	36-40	87 (15.5)
	≥40	15 (2.7)
Education	Illiterate	143 (24.8)
	≤ High school	323 (56.1)
	> High school	110 (19.1)
Working status	Housewife	510 (88.7)
	Working	65 (11.3)
Parity	1	121 (20.9)
	2-4	210 (36.7)
	≥ 5	241 (42.1)
Mode of delivery	Vaginal	479 (84.5)
	Cesarean section	88 (15.5)
Contraceptive use	None	248 (43.6)
	Oral combined	202 (34.9)
	Progesterone only pills	72 (12.5)
	Progesterone injection	22 (3.8)
	IUCD	18 (3.1)
	Others	7 (1.2)
History of chronic disease	Yes	75 (13.9)
	No	464 (86.1)
Infants' characteristics		
Age (months)	6	395 (69.7)
	7	113 (19.9)
	8	33 (5.8)
	9	10 (1.8)
	≥10	16 (2.8)
Gender	Male	285 (49.6)
	Female	290 (50.4)
Maturity	Term	542 (94.9)
	Preterm	29 (5.1)
History of chronic disease	Yes	63 (11.1)
	No	506 (88.9)

IUCD - intrauterine contraceptive device

Table 2 - Pattern of nutrition practice in the first 6 months.

Type of feeding			n (%)
Milk	Breast milk	Ever	548 (95)
		Never	29 (5)
	Milk Formula	Yes	482 (83.4)
		No	94 (16.3)
Other	Whole milk	Yes	20 (3.7)
		No	522 (96.1)
	Liquid	Yes	532 (94.0)
		No	32 (6.0)
	Solid	Yes	497 (88.9)
		No	62 (10.1)

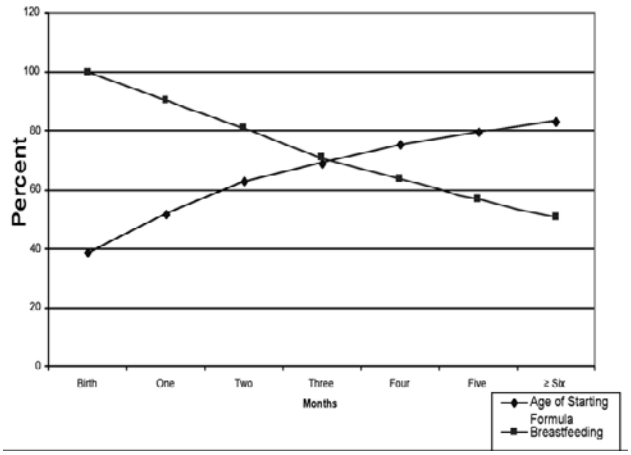

Figure 1 - The cumulative frequency of the duration of breastfeeding and age of starting the milk formula among the total number of infants.

Table 3 - Maternal reasons of feeding the milk formula to their infants.

Reasons	n (%)
Inadequate milk	226 (49.6)
Breast feeding problems	53 (11.6)
Neonatal hospitalization / baby sickness	26 (5.7)
Mother sickness	25 (5.5)
As helper	23 (5)
Contraceptive issues	22 (4.8)
Teaching the baby to get used to the bottle	19 (4.2)
Working mother	15 (3.3)
Doctor advise / hospital gave it	10 (2.2)
Others	30 (6.6)

vaginal mode (84.5%). The nutrition patterns in the first 6 months of infants' life are summarized in **Table 2**. The frequency of ever breastfeeding was 95% regardless of the duration of lactation. However, most of the study sample (83.7%) introduced milk formula during the first 6 months to their infants. The most common period for introduction of the formula was the neonatal period (75.7%). Furthermore, the first day of life represented the most common instant to introduce the formula (46%). Most of the infants in this survey (94.3%) were supplemented by liquid within the first 6 months. Water, baby tea, herbs, dates with water and sugar were the most frequently used liquids. The majority of the mothers (89.2%) had already started complementary feeding to their infants at the time of the interviews, mostly by the age of 4-6 months. **Figure 1** illustrates the relation of lactation duration with timing of introducing the milk formula to the infants. It shows an inverse relationship between the formula introduction and the lactation duration. It also illustrates that half of the mothers who initially breastfed stopped lactation at 6 months postpartum. Mothers were asked an open-ended question on their own reasons for giving their babies the milk formula and answers were grouped and presented in **Table 3**. "Insufficient milk" was the most common maternal reason for adding formula (49.6%) which was

Table 4 - Logistic regression model for the association between the lactation duration and milk formula feeding with different maternal and infant factors.

Infant and maternal factors		Lactation duration (< 6 months) OR (95% CI)	Formula feeding (1st 6 months) OR (95% CI)
Infant gender	Male	Reference	Reference
	Female	1.16 (0.78-1.72)	0.85 (0.52-1.39)
Delivery	Vaginal	Reference	Reference
	C-Section	0.81 (0.45-1.43)	0.93 (0.45-1.92)
Maturity	Mature	Reference	Reference
	Pre-mature	2.64 (0.84-8.25)	0.5 (0.11-2.29)
Maternal age	<30 years	Reference	Reference
	>30 years	1.34 (0.79-2.29)	0.6 (0.32-1.12)
Parity	1 child	Reference	Reference
	2-4	0.36 (0.21- 0.64)*	2.1 (1.06-4.86)*
	5+	0.18 (0.09-0.35)*	2.9 (1.14-6.79)*
Education	Illiterate	Reference	Reference
	<high school	1.5 (0.9-2.52)	0.6 (0.35-1.05)
	>high school	1.5 (0.7-3.1)	0.5 (0.18-1.47)
Contraception	None	Reference	Reference
	Combined pills	4.6 (2.8-7.3)*	0.22 (0.1-0.4)*
	Other	0.71 (0.42-1.2)	0.98 (0.62-1.74)
Mothers' work	Housewife	Reference	Reference
	Working	2.69 (1.26 to 5.7)*	Not calculated

OR - odd ratio, CI - confidence interval, Reference - comparison group

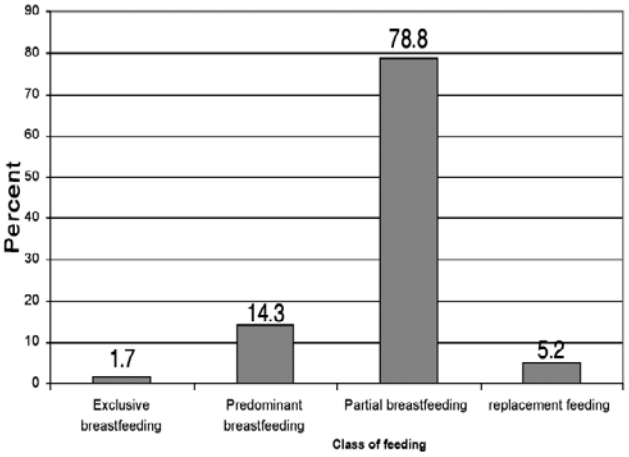

Figure 2 - Breastfeeding pattern in the first 6 months among the study sample according to WHO classification.

derived from answers such as: "no milk in the early days after birth", "milk was not enough", "baby crying a lot", "baby looking hungry", and "breast milk alone is not enough for general health of the infant". The second set of reasons for adding formula was breastfeeding problems (11.6%), which were derived from answers such as: "refusal of the breast", "improper latch on", "sore nipple", "pain" and "infection". The adjusted analyses for the association between lactation duration and milk formula introduction with maternal and infant factors using logistic regression are summarized in **Table 4**. It shows that the primiparous mothers, work status, and oral "combined pill" use were the main factors associated with shortened lactation duration and formula introduction. On the other hand, maternal age, education, gender, mode of delivery, and maturity were not found to be significantly associated with the feeding patterns. The frequency of ever breastfeeding was different for healthy babies (96.1%) as compared to those with chronic diseases (85.7%). Similarly, ever breastfeeding in the healthy mothers was found to be 95.7% compared to 89.3% for those who had chronic diseases (such as asthma, diabetes and hypothyroidism). Based on the WHO definition for breastfeeding, the survey shows very low percentage of exclusive breastfeeding (1.7%) in the first 6 months among the sample, whereas the partial feeding was the most common mode of feeding (78.8%) (**Figure 2**).

Discussion. Muslim communities are expected to support, promote, and protect breastfeeding based on religious recommendations. The ever breastfeeding history was high (95%) among the study population in Riyadh, indicating high breastfeeding initiation rate. This finding is similar to recent studies in Greece.[11] In contrast to other studies, the initiation rates for other study populations were: Boston (74%), Netherlands (78%), and Perth (89%).[12-14] Unfortunately, lactation in our survey dropped significantly to 50% at 6 months. This was mainly due to the introduction of milk formula early on in the neonatal stage particularly in the first day of life. This finding is in agreement with other Saudi studies.[6,7,15,16] The reasons for this feeding pattern (formula and breast milk) are many including social modernization, hospital practices, lack of health care system support and infant formula advertisements. The most common maternal reason for formula supplementation was "inadequate breast milk". The interviewers observed variable beliefs in this aspect as some mother's response was "less quantity of milk", and others think, "Breast milk alone is not enough for the health of the baby". Inadequate milk is the major reason given by the mothers worldwide. Whether the low milk supply is real or perceived, this needs careful history and assessment.[17]

Our study showed that primiparous mothers had shorter duration of breastfeeding, and increased introduction of formula. Recent studies reported inconsistent relationship between parity and breastfeeding.[14,18] "Working mother" is a well-known barrier to breastfeeding. All working mothers in this survey supplemented formula to their infants. Actually, this study showed that the higher the level of maternal education, the more likely that she would be working. This possibly could be the real reason behind the reduction of lactation among the educated women. This is in contradiction to developed countries where higher maternal education is associated with longer duration of breastfeeding, but consistent with Bahrain studies.[19,20] The combined (estrogen-progesterone) oral contraception can cause decreased milk production, and this effect varies among women.[21] In agreement with the Jeddah study,[8] our study showed that use of the oral combined contraceptive was the most common contraceptive method used, and is significantly associated with a decrease in breast feeding duration. The data lacks information on reasons for choosing the method of contraception in lactating mothers, or their starting time. The percentage of cesarean section (15%) in our population is higher than that reported elsewhere in the Kingdom.[8] Delivery by cesarean section is usually a risk factor for difficulties in breastfeeding, and it also demands an effective contraception. In contrast to the Jeddah study, our survey did not find significant association between lactation and cesarean section. Further studies are needed to elucidate this finding.

Most families of the National Guard have moved to the city from rural areas, where breastfeeding is culturally normative. Surprisingly, this survey showed

extremely low percentage of exclusive breastfeeding (1.7%) compared to the previous reports from KSA (30%).[8] Partial breastfeeding was the most common type of infant feeding in the first 6 months. This low percentage of exclusive breastfeeding may have contributed to the reduction of lactation duration. We recommend health authorities at National Guard Health Services in particular, and other sectors in Saudi Arabia in general, to implement the WHO/UNICEF mother-baby friendly initiatives at both primary care, and hospitals. Protection of breastfeeding is highly mandatory by following the Saudi marketing code for breast milk substitutes, and mandates the infant formula to be sold in pharmacies only. Involvement of other sectors of the community such as education, medical, and paramedical colleges, media, and religious sectors are highly needed. Studies on the current social changes, which endanger the breast feeding dyad are also needed. The Ministry of Commerce need to be involved to limit the high number of milk formula trades in the KSA.

There are certain limitations to this study, first, it is the population of the study not representative of the KSA infant population, and is limited only to 6 months duration, where the ideal duration of lactation is 2 years.

References

1. American Academy of Pediatric Policy Statement. Breast milk and the use of human milk. ***Pediatrics*** 2005; 115: 496-506.
2. World Health Organization. The optimal duration of exclusive breastfeeding: report of an expert consultation, Geneva, Switzerland 28-30 March 2001. Who/NHD/O1.09.Geneva: World Health Organization; 2002.
3. Kramer MS, Kakumar R. Optimal duration of exclusive breastfeeding. Cochrane Database of Syst Rev 2007, issue 4. John Wiley & Sons DOI; 10.1002/1465/858. CD 003517.
4. Li R, Zhao Z, Mokdad A, Barker L, Grummer-Strawn L. Prevalence of breastfeeding in the United States: the 2001 National Immunization Survey. ***Pediatrics*** 2003; 111: 1198-1201.
5. United Nations Children's Fund (UNICEF). Available from: URL: http://www.babyfriendly.org.uk/ukstats.asp
6. al-Sheri SN, Farag MK, Baldo MH, Al-Mazrou YY, Aziz KM. Overview on breastfeeding pattern in Saudia Arabia. ***J Trop Pediatr*** 1995; 41 Suppl 1: S38-S44.
7. Ogbeide DO, Siddiqui S, Al-Khalifa IM, Karim A. Breast feeding in Saudi Arabian community. Profile of parents and influencing factors. ***Saudi Med J*** 2004; 25: 580-584.
8. Shawky S, Abalkhail BA. Maternal factors associated with the duration of breastfeeding in Jeddah, Saudia Arabia. ***Pediatr Perinat Epidemiol*** 2003; 17: 91-96.
9. Evidence report breast. Feeding and maternal and infant health outcomes in developed countries. Agency for Healthcare Research and qualitym, US: Tufts-New England Medical Center Evidence-Based Practice Center Boston, Massachusetts; 2007. AHRQ Publication No. 07-E007.
10. World Health Organization. Available from: URL: http://www.who.int/reproductive-health/publications/RHR_01_12/RHR_01_12_chap3_4.en.html
11. Pechlivani F, Vassilakou T, Sarafidou J, Zachou T, Anastasiou CA, Sidossis LS. Prevalence and determinants of exclusive breastfeeding during hospital stay in the area of Athens, Greece. ***Acta Paediatr*** 2005; 94: 928-934.
12. Philipp BL, Malone KL, Cimo S, Merewood A. Sustained breastfeeding rates at US baby friendly hospital. ***Pediatrics*** 2003; 112: 234-236.
13. Lanting CI, Van Wouwe JP, Reijneveld SA. Infant milk feeding practices in the Netherlands and associated factors. ***Acta Paediatr*** 2005; 94: 935-942.
14. Binns C, Gilchrist D, Gracey M, Zhang M, Scott J, Lee A. Factors associated with the initiation of breastfeeding by Aboriginal mothers in Perth. ***Public Health Nutr*** 2004; 7: 857-861.
15. Al-Jassir MS, El-Bashir BM, Moizuddin SK. Surveillance of infant feeding practices in Riyadh City. ***Ann Saudi Med*** 2004; 24: 136-140.
16. Gagnon AJ, Leduc G, Waghorn K, Yang H, Platt RW. In-hospital formula supplementation of healthy breastfeeding newborns. ***J Hum Lact*** 2005; 21: 397-405.
17. Marsha Walker. Core curriculum for lactation consultant practice. 1st edition. USA: Jones and Partle publisher and international consultant association; 2002.
18. Grjibovski AM, Yngve A, Bygren LO, Sjostrom M. Socio-demographic determinants of initiation and duration of breastfeeding in northwest Russia. ***Acta Paediatr*** 2005; 94: 585-594.
19. Ong G, Yap M, Li FL, Choo TB. Impact of working status on breastfeeding in Singapore: evidence from the National Breastfeeding Survey 2001. ***Eur J Public Health*** 2005; 15: 424-430.
20. Musaiger AO, Abdulkhalek N. Breastfeeding and weaning practices in Bahrain: the role of mother's education. ***Nutr Health*** 2000; 14: 237-263.
21. Breastfeeding Basic. Available from: URL: http://www.breastfeedingbasics.org/cgi-bin/deliver.cgi/content/Drugs/contraception.html