

Maternal factors associated with the duration of breast feeding in Jeddah, Saudi Arabia

Sherine Shawky and Bahaa A. Abalkhail

Department of Family and Community Medicine, Faculty of Medicine and Allied Sciences, King Abdulaziz University, Jeddah, Saudi Arabia

Summary

Correspondence:

Dr Sherine Shawky, PO Box 115, Jeddah 21411, Saudi Arabia.
E-mail: shshawky@hotmail.com

Recently, there has been increasing concern about the decline in breast-feeding pattern in developing countries. The objectives of this study were to document the recent breast-feeding trends in Jeddah during the first year of an infant's life and identify the probable maternal risk factors implicated in breast-feeding cessation. Data were collected from six randomly selected primary health care centres in Jeddah City. All married women with an infant ≤ 12 completed months of age were interviewed, and information on socio-demographic characteristics, breast feeding and contraceptive use were collected. Cox proportional hazard regression model was used to calculate the adjusted odds ratios for the various maternal risk factors related to breast-feeding cessation.

A total of 400 women were enrolled in the study. Their mean age at delivery was 28.0 years (SD = 4.1 years). Approximately 40.0% had never attended school, 43.0% had at least five children and 13.8% were smokers. Deliveries by caesarean section were reported by 13.0% of women and contraceptive use by 44.7%, among whom oral contraceptives were the commonest method. Around 94.0% of women ever initially breast fed their infants, and this proportion dropped to 40.0% by the infant's 12th month. Women who delivered by caesarean section (OR = 1.9 [95% CI 1.3, 2.8] $P = 0.001$) and those who used oral contraceptives (OR = 1.5 [95% CI 1.1, 2.2] $P = 0.031$) were at higher risk of stopping breast feeding and lower probability of maintaining breast feeding to the 12th month post partum than those who delivered vaginally and did not use oral contraceptives.

Breast-feeding practice seems to decline rapidly during the first year of the infant's life. Health care professionals should promote breast-feeding practice as early as the antenatal period. They should also take into consideration the impact of caesarean section deliveries and early oral contraceptive use to avoid their negative impact on breast-feeding practice.

Introduction

Breast feeding is a meritorious practice because of its innumerable benefits that are not only reflected on the infant and mother but on society as a whole. Because of its nutritive and immunological benefits, breast feeding has a protective effect against morbidity mainly during infancy.¹⁻⁴ Regular breast feeding helps the maternal uterus to regain its original size and minimises post partum blood loss.^{5,6} High-quality breast feeding increases the duration of post partum amenorrhoea, anovulation and infecundity resulting in longer

birth intervals that ultimately improve maternal and infant health.⁷ Studies have shown that breast feeding for up to 2 years among mothers in their early twenties may reduce the risk of breast and ovarian cancer,⁸⁻¹⁰ in addition to the fact that lactation is an easy, safe, inexpensive and effective tool that lowers rates of population growth.^{11,12}

Recently, there has been increasing concern about a decline in breast-feeding duration in developing countries especially in urban areas where well-to-do mothers resort to bottle feeding early in the postnatal

period.^{13–15} In Saudi Arabia, breast feeding has been customary and prevalent all over the kingdom. Past studies have reported breast-feeding duration exceeding 2 years.^{13,16} Introduction of solid foods was reported to be as late as the age of 12–18 months and complementary to breast milk.¹³ More recent studies have reported a downward trend in breast-feeding practice and duration especially for young mothers in urban areas.^{17–20} Early introduction of bottle feeding was recently reported to replace lactation.^{17,18} Also, solid foods were shown to be introduced earlier than before, at between 3 and 6 months.²¹

The objectives of this study were to document the recent breast-feeding trend in Jeddah during the first year of an infant's life and identify the maternal risk factors that could be related to breast-feeding cessation.

Methods

Site

Saudi Arabia comprises most of the Arabian Peninsula with a population of ≈ 18.8 million. Jeddah City is one of the largest cities in the kingdom with a population of 2.1 million. In Jeddah, primary health care centres attract the majority of the population of low and medium social class. They provide promotive, preventive and curative services that offer essential care to the population of Jeddah City and affiliated regions.

Data collection and analysis

Data were collected from six primary health care centres selected with a simple random sampling technique from 40 centres in Jeddah City during March–June 1997. All married mothers who attended the well-baby clinic with an infant of ≤ 12 completed months were included in the study. A structured questionnaire was completed for every woman who was interviewed by trained medical students under the supervision of medical staff during the study period. The questionnaires included the socio-demographic characteristics of the mother, as well as information on breast feeding and contraceptive methods after the last pregnancy. The quality of the information collected was ascertained using the woman's medical record in the antenatal clinic and her child's medical record in the well-baby clinic. Duration of contraceptive use was calculated by subtracting the infant's age when the

mother started using a contraceptive method from the infant's age on stopping lactation. For mothers who stopped lactation, contraceptive use was only considered as a possible contributing risk factor if the intake preceded breast-feeding cessation by at least 1 month. Cessation of breast feeding was defined as complete cessation of lactation, and duration was calculated until the last completed month of breast feeding. If the mother lactated only or breast fed together with bottle or solid foods, breast feeding was considered to be still continuing.

In Saudi Arabia, the well-baby clinics receive all children up to the age of 5 years. The birth certificate is only given to children who complete the obligatory vaccination requested up to the age of 12 months. Consequently, all mothers with their infants are expected to attend the well-baby clinic at regular intervals during the first 12 months of the infant's life. A total of 567 mothers attended the well-baby clinics during the study period. In all, 478 (84.3%) were eligible for the study (mothers with an infant ≤ 12 months), of whom 400 women (83.7%) agreed to participate. The protocol was approved by the members of the Department of Community Medicine and Primary Health Care, Faculty of Medicine and Allied Sciences, King Abdulaziz University. All the study subjects gave their consent to be included in the study.

Statistical analysis

Statistical analysis was carried out using SPSS for Windows. The Cox proportional hazard regression model was fitted to analyse the data. An observation was considered complete if it ended up with breast-feeding cessation and was censored if the woman was still lactating or the infant was younger than the considered age. The hazard ratio was used to indicate the adjusted odds ratio (OR) for the various maternal risk factors related to breast-feeding cessation. Adjustment was made for maternal age and parity at delivery as continuous variables; nationality, education, working status, mode of delivery, smoking habits and oral contraceptive (OC) were used as discrete variables. The survival function measured the cumulative probability of lactation by month.

Results

A total of 400 married women with at least one infant ≤ 12 completed months of age were enrolled in the

Table 1. Characteristics of mothers attending primary health care units in Jeddah

	No.	%
Age at childbirth (years)		
<16	4	1.0
16–19	42	10.5
20–24	78	19.5
25–29	117	29.3
30+	159	39.8
Nationality		
Saudi	267	66.8
Non-Saudi	133	33.3
Education		
Never attended school	158	39.5
Primary school	85	21.3
Intermediate school	109	27.3
Secondary school	45	11.3
University and higher	3	0.8
Working status		
Housewife	351	87.8
Working	49	12.3
Parity		
Para 1	67	16.8
Para 2	61	15.3
Para 3	48	12.0
Para 4	52	13.0
Para 5+	172	43.0
Mode of delivery		
Vaginal	348	87.0
Caesarean	52	13.0
Smoking habits		
None	345	86.3
Cigarette only	8	2.0
Water pipe only	30	7.5
Cigarette and water pipe	17	4.3
Contraceptive method		
None	225	56.3
IUDs	51	12.8
Oral contraceptives	103	25.8
Others ^a	21	5.3

^aOthers, safe period, condom.

study (Table 1). Their age at delivery ranged from 15 to 45 years (mean 28.0 years, SD 4.1 years). The majority were of Saudi nationality (66.8%) and housewives (87.8%). Approximately 40.0% had never attended school, and only 0.8% had reached university level. Parity ranged from 1 to 12 with a mean of four children, and 43.0% of women had at least five children. Also, 13.8% of women were smokers especially water pipe (shesha) smoking. Contraceptive use was reported by 43.8%; OCs were the most widely used and were reported by 25.8% of women.

Table 2. Number and proportion of mothers who ever breast fed their infant among mothers attending primary health care units in Jeddah

Infant's age	Mothers who ever breast fed (n, %)
At birth	376 (94.0)
One month	371 (92.8)
Three months	316 (79.0)
Six months	216 (54.0)
Twelve months	160 (40.0)

The proportion of mothers who ever initially breast fed their infants was 94.0% (Table 2). Approximately 92.8% of mothers continued breast feeding up to 1 month, after which the proportion of lactating mothers declined to reach 40.0% by the 12th month post partum. The median duration of breast feeding was 6 months. Introduction of solid foods was as early as the 4th month of the infant's life. Breast feeding was mostly reported to be on demand.

The risk factors that were significantly related to breast feeding were mode of delivery and OC use (Table 3). Mothers who delivered by caesarean section (OR = 1.9 [95% CI 1.3, 2.8] $P = 0.001$) and those who used OCs (OR = 1.5 [95% CI 1.1, 2.2] $P = 0.031$) were at

Table 3. Cox model showing the relation between maternal risk factors and breast-feeding cessation among mothers attending primary health care units in Jeddah

Maternal risk factors	Hazard ratio [95% CI]	<i>P</i>
Age at delivery	1.0 [0.9, 1.1]	0.461
Nationality		0.442
Saudi	1.1 [0.8, 1.5]	
Non-Saudi	1.0 Reference	
Education		0.294
Never attended	1.2 [0.9, 1.1]	
Ever attended	1.0 Reference	
Working status		0.772
Housewife	1.0 Reference	
Working	1.1 [0.7, 1.6]	
Parity	1.0 [0.9, 1.0]	0.464
Mode of delivery		0.001
Vaginal	1.0 Reference	
Caesarean	1.9 [1.3, 2.8]	
Smoking habits		0.180
Non-smoker	1.0 Reference	
Current smoker	1.2 [0.9, 1.7]	
Oral contraceptives		0.031
No	1.0 Reference	
Yes	1.5 [1.1, 2.2]	

higher risk of breast-feeding cessation than those who delivered vaginally and did not use OCs. Those who delivered by the vaginal route reported median duration of 6 months breast feeding compared with 4 months among caesarean section deliveries. Only 7.0% of mothers who delivered by caesarean section continued breast feeding to the 12th month. OC users reported a median duration of 4 months compared with 6 months among non-users, and only a quarter maintained lactation to the 12th month.

Although Saudis, working mothers, current smokers and those who had never attended school were at higher risk of stopping breast feeding, the results did not reach statistical significance. There was no significant relationship between breast feeding and either age of mother or parity at delivery.

Discussion

Successful breast feeding is dependent on a multiplicity of factors related to the mother, infant and supportive environment. Our results have shown that 94.0% of mothers ever initially breast fed their infants, and the probability of breast feeding showed a rapid decline during the first year of the infant's life. Only 40.0% of mothers continued breast feeding by the 12th month post partum. These results confirm the previously reported decline in breast-feeding practice in the kingdom.^{12-20,22-24}

The main risk factors that were significantly related to breast-feeding cessation were caesarean section deliveries and OC use. Caesarean section deliveries were reported by 13.0% of mothers, a percentage that is higher than the previously published rate (9.9%) for the kingdom.²⁵ Mothers who delivered by caesarean section were at 1.9 times ([95% CI 1.3, 2.8] $P = 0.001$) more risk of stopping breast feeding and showed shorter duration of lactation than those who delivered vaginally. This could be for several reasons related to the mother's and infant's health after delivery which influences the decision to breast feed and maintain lactation. In addition, the mother's feeling that she has failed to deliver normally by the vaginal route and her fear of harming her infant through insufficient milk intake make her support the use of artificial feeding. Previous studies have reported that caesarean section delivery was a risk factor for not initiating breast feeding,²⁶ and that infants delivered by caesarean section started suckling later and were given bottles more often during the first days of life.²⁷ Our results have

shown that infants born by caesarean section tended to stop breast feeding earlier than those born vaginally. This, in addition to lack of antenatal and post-natal education to guide the mother into initiating lactation and maintaining it through regular and extensive breast feeding, certainly influences the infant's feeding pattern. In spite of the previously published relationship between caesarean section deliveries and breast feeding,^{26,27} the incidence of caesarean section deliveries is showing an increasing trend in the kingdom.^{25,28,29}

OCs were the most commonly used contraceptive method and were reported by 25.8% of women. OC users were at 1.5 times ([95% CI 1.1, 2.2] $P = 0.031$) more risk of stopping breast feeding and showed shorter duration of lactation than non-users. This result coincides with previous studies that revealed the impact of OCs in reducing the length of lactation.^{30,31} Biologically, it seems plausible that hormonal contraceptives, especially those containing oestrogen, may inhibit lactation.^{32,33} OC use during lactation, previously documented to be the most common contraceptive method used in the kingdom,³⁴ is becoming a more frequent practice in developing countries,^{7,32,33} despite the fact that among the main benefits of breast feeding is its contraceptive effect, and that there is evidence that lactation is associated with prolongation of post partum amenorrhoea and that, even after menstruation resumes, conception rates are lower in mothers who continue breast feeding than in those who stop.

In conclusion, the results of this study suggest that breast-feeding practice declines rapidly during the first year of an infant's life. The main contributors to breast-feeding cessation were caesarean section deliveries and OC use. Health professionals should concentrate their efforts on encouraging breast-feeding practice as early as the antenatal period. During antenatal care, attention should be directed to the mother's plans for breast feeding and its duration. Mothers should learn more about the benefits of breast feeding and how to breast feed their infants correctly. They should be motivated to activate the onset of lactation and maintain it through frequent and intense infant suckling. Breast feeding should be promoted to all mothers at delivery and especially to those who deliver by caesarean section. Early introduction of bottle feeding to infants and oral contraceptives to mothers should be discouraged to ensure high-quality breast feeding.

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