

Factors associated with breastfeeding patterns in women who recourse to health centres in Zahedan, Iran

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ABSTRACT

Introduction: The practice of breastfeeding, an important need for infants, can be affected by several factors that need to be investigated. This study was designed to survey the patterns and period of breastfeeding and its associated factors in women.

Methods: The study was performed in Zahedan, southeast Iran, in 2004–2005, with a sample of 450 mothers via a questionnaire to collect information about the period of breastfeeding and some important factors concerning both mothers and children.

Results: The exclusive breastfeeding ratio obtained from this study was 98 percent. The proportion of breastfeeding in months 1, 3, 6, 12 and 24 after birth were 92 percent, 85 percent, 69 percent, 56 percent and 8 percent, respectively. The median breastfeeding period was 15 months, with a standard error of 1.17. The period of breastfeeding showed a significant relationship with the age of the children and mothers, the mothers' education level, night breastfeeding, breastfeeding to an ill child, breastfeeding during a mother's illness and the frequency of breastfeeding per 24 hours. The Cox regression also confirmed a significant relationship between the period of breastfeeding and the above-mentioned variables, except for mother's education level and breastfeeding to an ill child.

Conclusion: Young pregnant women need to be aware of the importance of breastfeeding and of avoiding the reduction or interruption of the breastfeeding period. It is recommended that the health authorities incorporate training and education programmes as well as healthcare measures to their family health programmes in order to overcome the problems of insufficient breastfeeding.

Keywords: breastfeeding patterns, breastfeeding period, health programme, pregnancy

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INTRODUCTION

The physical and mental growth of children is mostly completed within the first two years of life, particularly in the first six months. During this period, they are especially sensitive to bacterial and viral infections which can cause mental diseases, incurable disabilities or mortality.⁽¹⁾ Breastfeeding not only provides required nutrients to infants, but also has many other benefits, such as a reduction in respiratory and gastrointestinal diseases and acute respiratory infections.^(2,3) In addition, the immunisation of children is incomplete without breastfeeding.⁽³⁾ Breastfeeding reduces the risk of urine infection, increases the infant survival rate and aids in the development of their nervous system;⁽⁴⁾ it also reduces the potential risk of diabetes mellitus. Some research has shown that breastfeeding might even protect mothers against breast cancer as well as some types of ovarian cancers.⁽⁵⁾ Furthermore, breastfeeding for a period of two years is more cost-effective than the alternative of having to purchase artificial or animal milk, which contributes to about 15%–20% of the health budget in some countries.⁽⁶⁾

The length of breastfeeding in some regions of Iran has been reported to be 18.1 months in Zahedan city,⁽⁴⁾ 19.7 months in the rural and urban areas of Zabol,⁽⁶⁾ and 17.6 months in Shiraz.⁽⁷⁾ There have been considerable efforts in several countries, including Iran, to encourage young mothers to breastfeed their children; however, it is necessary to evaluate the effectiveness of these efforts. The present study was, therefore, aimed at investigating the period of breastfeeding and the factors with a possible impact on breastfeeding patterns in the women of Zahedan, southeast Iran. The information obtained from this study can be considered in healthcare programmes that focus on mothers and children.

METHODS

The present study was performed in 2004–2005 in the city of Zahedan, in the southeast of Iran. There are 23 healthcare centres in different parts of Zahedan, covering almost equal numbers of the population. The city is divided into five parts, North, South, East, West and Central; each part includes a number of healthcare centres as clusters. A total of five centres, each representative of the five regional parts of the city, were chosen through

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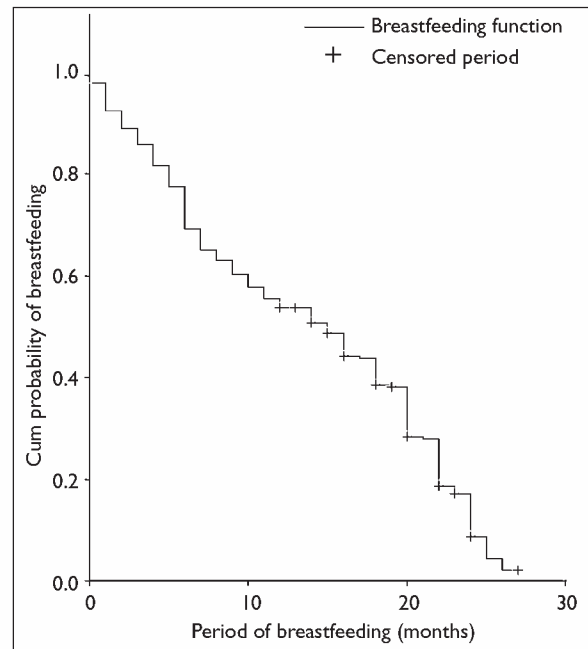
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Table I. The demographics and distribution of the study population.

Variables	No. (%)
Mother's occupation	
Housewife	415 (92.2)
Others	35 (7.8)
No. of children	
1	168 (37.3)
2	115 (25.6)
3	70 (15.6)
4	44 (9.8)
≥ 5	53 (11.7)
Motherhood status	
Nursing	282 (62.7)
Pregnant	24 (5.3)
Nursing and pregnant	20 (4.4)
Neither nursing nor pregnant	124 (27.6)
Infant's age at start of complementary feeding (months)	
< 4	35 (7.8)
4-6	263 (58.4)
> 6	152 (33.8)
Delivery mode	
Normal	373 (82.9)
Caesarean	76 (16.9)
Others	1 (0.2)

random sampling. Nearly all the mothers, particularly those with children younger than three years of age, were referred to the centres several times a year for various purposes, such as to visit a doctor (for themselves or their children), for vaccination of the children (five times in the first year of birth, once at the age of 18 months and once again at the ages of two and four years), for prenatal care and to seek family planning services.

450 mothers with children aged under three years, i.e. 90 mothers from each healthcare centre, were selected via random sampling. Informed consent was obtained from each subject before they participated in the study. For data collection, questionnaires were completed through interviews, where mothers were asked about the period of breastfeeding of their child as well as some associated factors concerning both mother and child. These included the ages of the child and mother, the mother's occupation and education level, number of children, mode of the last delivery, bottle-feeding and type of milk used, frequency of breastfeeding at night and every 24 hours, age at start of complementary feeding, breastfeeding to an ill baby, breastfeeding during the mother's illness, and stage of motherhood (i.e. pregnant, nursing, etc.). Since some of the children were still being breastfed at the time of the study, the period of breastfeeding for them was considered as right censored data. For mothers with more than one child aged below three years, the information collection was based on the youngest child. The data was analysed using the Kaplan-Meier's method, log-rank test and Cox regression in the Statistical Package for Social Sciences version 15 (SPSS Inc, Chicago, IL, USA).

**Fig. 1** The Kaplan-Meier curve shows the breastfeeding period of infants aged 0 to 36 months in Zahedan, southeast Iran.

RESULTS

Based on the questionnaire results, it was found that most of the mothers (92.2%) were housewives. 168 out of 450 mothers (37.3%) had only one child. 282 women (62.7%) breastfed their children. Complementary feeding started earlier than four months postnatally for 35 (7.8%) children (Table I). Fig. 1 shows the Kaplan-Meier curve of the breastfeeding period. 98% of the children were exclusively breastfed at birth and 92% were still being breastfed at the age of one month. The proportion of breastfeeding at the ages of three, six, 12 and 24 months were 85%, 69%, 56% and 8%, respectively. Using the Kaplan-Meier's method, the median and standard error (SE) of the breastfeeding period was 15 ± 1.17 (range 0-27) months.

The mean and standard deviation (SD) of the mother's and child's ages were 25.5 ± 6.2 years and 15.7 ± 10 months, respectively. There was a significant relationship between the period of breastfeeding and the mother's age based on the log-rank test (log rank = 9.63, $p = 0.008$). Mothers older than 38 years of age had a longer breastfeeding period. The above test also showed a significant relationship between the period of breastfeeding on the one hand and the child's age (log rank = 40.81, $p = 0.000$) and the mother's education level (log rank = 7.9, $p = 0.048$) on the other (Table II). There was also a significant relationship between the period of breastfeeding and night feeding (log rank = 68.78, $p = 0.000$), implying that night feeding increases the period of breastfeeding. Furthermore, the period of breastfeeding was longer in mothers who breastfed their ill child (log rank = 33.53, $p = 0.000$) and during the mothers' illnesses (log rank = 26.31, $p = 0.000$).

Table II. Analysis results of the associated variables of breastfeeding in the study population.

Variables	Frequency	Median \pm SE	95% CI	p-value
Mother's age (years)				
< 18	38	9 \pm 1.30	6.46–11.54	0.008
18–35	374	15 \pm 1.24	12.57–17.43	
\geq 36	38	22 \pm 1.98	18.11–25.89	
Infant's age (months)				
1–12	234	7 \pm 0.73	5.56–8.44	0.000
13–24	142	18 \pm 1.62	14.82–21.18	
25–36	74	20 \pm 0.86	18.32–21.68	
Mother's education				
Uneducated	158	10 \pm 2.12	5.84–14.16	0.048
Primary & secondary*	204	15 \pm 1.41	12.23–17.77	
High school	66	19 \pm 1.35	16.36–21.64	
Tertiary	22	16 \pm 2.98	10.16–21.84	
Breastfeeding at night				
Yes	425	16 \pm 1.10	13.84–18.16	0.000
No	25	2 \pm 1.62	0–5.17	
Breastfeeding to ill infants				
Yes	431	16 \pm 1.36	13.34–18.66	0.000
No	19	1 \pm 0.72	0–2.41	
Breastfeeding during mother's illness				
Yes	411	16 \pm 1.18	13.68–18.32	0.000
No	39	6 \pm 1.40	3.25–8.75	
Frequency of breastfeeding in 24 hours				
< 5	103	6 \pm 0.73	4.56–7.44	0.000
5–8	188	18 \pm 0.84	16.34–19.66	
> 8	159	18 \pm 1.8	14.46–21.54	

*Length of primary and secondary education is five and three years, respectively.
SE: standard error of the mean.

Table III. Results of the Cox regression and odds ratio for the breastfeeding period and other associated factors.

Variable	Regression coefficient (B)	p-value	Odds ratio (OR)	95% confidence interval for OR
Mother's age	-0.04 \pm 0.01	0.000	0.96	0.94–0.98
Infant's age	-0.04 \pm 0.008	0.000	0.96	0.95–0.98
Breastfeeding at night	1.22 \pm .257	0.000	3.38	2.04–5.59
No. of times breastfeeding in 24 hours	-0.09 \pm 0.021	0.000	0.91	0.87–0.95
Breastfeeding during mother's illness	0.92 \pm 0.206	0.000	2.51	1.67–3.35

The mean and SD of breastfeeding frequency per 24 hours were 7.3 and 3.4, respectively. A significant relationship was seen between the period and frequency of breastfeeding per 24 hours (log rank = 62.34, $p = 0.000$) (Table II). No relationship was observed between the period of breastfeeding and other variables, i.e. mothers' occupation and motherhood status, number of children, mode of delivery and the infant's age at the start of complementary feeding. Cox regression was used to investigate the effects of the variables on the period of breastfeeding. The effective variables, including the mother's and infant's exact ages (without grouping), breastfeeding frequency per 24 hours, mother's education, breastfeeding at nights, breastfeeding to ill children and during mother's illnesses, entered into the model as covariates. Table III shows that the mother's age ($p = 0.000$), the infant's age ($p = 0.000$), frequency of breastfeeding per 24 hours ($p = 0.000$), breastfeeding at night ($p = 0.000$) and breastfeeding during the mother's illness ($p = 0.000$) are variables that affected the period of breastfeeding.

DISCUSSION

The median period of breastfeeding is similar to that in Taiwan⁽⁸⁾ and Saudi Arabia,⁽⁹⁾ but shorter than that in Shiraz and Rwanda.⁽⁸⁾ The breastfeeding ratio for children who were nursed right after the birth is similar to the studies done in Sudan in 1993⁽¹⁰⁾ and Zahedan in 2005.⁽⁵⁾ The breastfeeding frequency in month six was reduced to 69%, which is less than that in other studies done in Shiraz⁽⁸⁾ and Zahedan.⁽⁵⁾ The frequency was further reduced to 56% and 8% at 12 and 24 months of age, respectively, also lower than that of Shiraz⁽⁸⁾ and Zahedan.⁽⁵⁾ Similar to the findings by Rakhshani et al (2005)⁽⁵⁾ and Scott et al (1999),⁽¹¹⁾ the breastfeeding period in older mothers was significantly longer than that of younger mothers. The result could be due to the successful experience of older mothers in breastfeeding their earlier children. In another study performed in Takistan, Iran, by Eshraghian et al (2000),⁽¹²⁾ it was shown that the breastfeeding period in older mothers in urban areas was significantly shorter than in rural areas.

According to the Cox regression, increasing the mother's age by one year reduces the risk of weaning by 0.04.

The Cox regression also showed that increasing the infant's age by one month reduces the risk of breastfeeding cessation by 0.04. One of the reasons for this could be adherence to a religious custom in Islam, where mothers are recommended to breastfeed their children for at least two years. Another reason could be due to advice provided by healthcare service staff to nursing mothers. Cox regression showed no significant relationship between the level of the mother's education and the period of breastfeeding. The breastfeeding period is longer in mothers with a higher education level with the exception of mothers with a tertiary education. Novotny et al (2000),⁽¹³⁾ Riva et al (1999)⁽¹⁴⁾ and Mani Kashani and Azimian (1995)⁽¹⁵⁾ have shown that the period of breastfeeding increases with the education level of the mother. Our results showed that night breastfeeding significantly increases the period of breastfeeding, consistent with the findings of Rakhshani et al.⁽¹⁶⁾ The odds ratio of night breastfeeding suggests that the risk of breastfeeding cessation in mothers who breastfeed at night is 3.38 times compared to those who do not. The period of breastfeeding in children who were nursed during their illness appeared to be longer; however, it was not significant based on the Cox regression. In a recent study, it was shown that only 50% of children who were separated from their mothers due to their illness at birth were exclusively breastfed.⁽¹⁷⁾

The mothers who were ill and breastfed their child during their illness did so for a longer period of time. This was advantageous for both mother and child.⁽¹⁸⁾ The odds ratio of breastfeeding during the mother's illness shows that the risk of breastfeeding cessation during the illness of the mother is 2.51 times compared to others. The period of breastfeeding is significantly increased with the number of feedings per 24 hours. A one-time increase in breastfeeding frequency per 24 hours resulted in a decrease in the risk of breastfeeding cessation by 0.09. This result is similar to that of another study in Zahedan.⁽¹⁶⁾ The period of breastfeeding was not associated with the mother's occupation; this corresponds with the findings by Rakhshani et al,⁽⁵⁾ but not with those by Eshraghian et al⁽¹²⁾ and Foroodnia et al.⁽¹⁹⁾ No relationship was found between the breastfeeding period and the number of children, motherhood status, the delivery mode and the age of complementary feeding. In contrast with our findings, the relationship between the age of complementary feeding and the breastfeeding period was significant in other studies.^(5,16)

The present study showed that the breastfeeding period of mothers has decreased in Zahedan over the last

three years, requiring the consideration of some measures to overcome this problem. These measures include teaching and highlighting the benefits of breastfeeding to both healthcare staff and mothers, especially those who are young and pregnant. We also recommend that the healthcare authorities provide relevant training and produce informative programmes for broadcasting via the television, radio and other media, as well as provide more public facilities for mothers to breastfeed their children.

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