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Original Article

Evaluation of Breastfeeding in 6-24 Month Children in South of Iran

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Abstract

Background and aims: The World Health Organization (WHO) and the United Nations International Children's Fund have recommended that breastfeeding be continued until two years of age or over. This study aimed to investigate the duration of breastfeeding and weaning in children aged 6-24 months in south of Iran.

Methods: This cross-sectional study was conducted in 2017 on 1653 children aged 6-24 months in Fars province of Iran. A multi-stage sampling was used and the data were obtained using a questionnaire including questions about breastfeeding and some related factors, as well as demographic questions about the children and their parents. The required information was collected by visiting and interviewing those mothers who had children aged 6-24 months in their homes. Data were evaluated using SPSS software (version 20.0) and performing descriptive and analytical statistics such as independent samples *t* test and one-way ANOVA.

Results: On average, the children were breastfed up to 18.64 ± 7.40 months of age and the mean age of initiation of complementary feeding was 5.86 ± 1.04 months. Breastfeeding was stopped for 35.6% of children at the age of 24 months and higher. Mothers having had a normal vaginal delivery had a longer lactation period than mothers who had had cesarean delivery (19.27 and 18.05 months, respectively) ($P = 0.021$).

Conclusion: A decrease was observed in the mean duration of breastfeeding in this study compared to that obtained in the previous studies, and this decrease was found to be associated with the increase in the occurrence of cesarean delivery in mothers. Therefore, it was recommended that further comprehensive investigations be carried out in this regard.

Keywords: Breastfeeding, Complementary feeding, Weaning, Associated factors

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Introduction

Breastfeeding is a vital component of primary health care[1]; and it has many benefits for both mother and child.[2-4] Breastfeeding promotes not only the health during infancy, but also the human's vitality and safety in different stages of his life, including adolescence, adulthood, and even middle age.[5] Appropriate breastfeeding and proper complementary feeding can prevent 19% of mortalities in the children under 5 years of age.[6]

In 1990, the World Health Organization (WHO) and the United Nations International Children's Fund (UNICEF) issued the Innocenti Declaration aiming to protect, promote as well as support breastfeeding and recommended that the breastfeeding be continued until the age of two or higher.[7,8] The WHO recommends that complementary nutrition be started at the age of 6 months and the frequency of non-milk foods be gradually increased until the age of 24 months.[9-11] One of the main reasons for recommending the continuation of breastfeeding for two years or over is the fact that breastfeeding is an important source of vitamin A, calcium, and protein for the child during the second year of his/her life and protects him/her against the infectious agents.[8]

Studies from many developing countries have identified inappropriate infant-feeding styles and family characteristics as contributing factors causing malnutrition. According to WHO estimates, malnutrition can contribute to about 45% of the death in children under

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5 years of age.[9] Studies have also shown that improving nutritional methods to prevent or treat malnutrition can save lives of 800 000 children in years.[8]

According to the results from a study conducted in Nepal investigating the factors affecting complementary nutrition in children aged 6-24 months, only 15.82% of the mothers had ideally fed (sufficiently and appropriately) their children. It was also found that the proper nutrition was associated with several factors including mother's level of education, family type, and family religion.[10] According to the findings from a study examining the patterns of breastfeeding for children in developing country, the prevalence of exclusive breastfeeding for children aged 6 months or lower was 39%. [12]

The WHO and UNICEF consider the first 1000 days of life, including 270 days in the womb and the first 2 years after birth, as critical periods for nutritional interventions.[13] Another study in Iran revealed that breastfeeding in the first 24 hours of infant life was initiated by 96% of the mothers,[14] so the evaluation of breastfeeding patterns in the first 2 years after birth is necessary to check the breastfeeding continuity .

According to the results of several studies, malnutrition and growth retardation problems in children can occur when they discontinue exclusive breastfeeding and start auxiliary feeding, or when the mothers wean their babies.[9,15] Given the above discussion and the importance of breastfeeding during the first two years of life, this study aimed to investigate the breastfeeding and its associated factors in children aged 6-24 months in south of Iran.

Methods

This cross-sectional study was conducted in 2017 to examine the children aged 6 months to 2 years in urban and rural areas of Fars province located in the south of Iran. The sample size required for this study was determined to comprise 781 individuals, considering the ratio of 50.1% based on a similar study [15], the 95% confidence interval, and the power of 80%, as well as using the following formula:

$$n = \frac{\left(Z_{1-\frac{\alpha}{2}} + Z_{1-\beta}\right)^2 pq}{d^2}$$

Following the cluster sampling method, the design effect was considered equivalent to 1.5 and, therefore, the sample size was determined to include 1172 individuals; taking into account the potential problems and probability of the missing or withdrawal, however, 1653 children were enrolled.

In the present study, multi-stage sampling was used. Initially, all provincial cities were considered as strata and the health centers were taken as cluster. After determining the number of relevant clusters in urban and rural areas, samples were selected from the target areas. The cluster sizes for each rural and urban area was considered to be 10 individuals and, therefore, 166 clusters were examined. Then the clusters were randomly selected and the sampling was started in each cluster from the right side of each health center and continued until the sample size was completed.

The data collection tool was a questionnaire designed by a researcher. The questionnaire included demographic questions about the children and their parents as well as questions about breastfeeding and predictive variables such as age, education, job, place of residence, ethnicity of the parents, child sex, and the method and site of the delivery. The questionnaire's validity was confirmed by three pediatric, nutritionist, and epidemiologists; and its reliability was assessed by a pilot study. The results of the test-retest showed a relatively good reliability ($r<0.7$). The required information was collected by the trained staffs through visiting and interviewing those mothers who had children aged 6-24 months at home. All data were entered into SPSS software version 20 and were analyzed using descriptive and analytical methods. For comparing the breastfeeding duration among different groups, the independent samples *t* test and one-way ANOVA were applied. Significance level was considered to be below 0.05.

Results

In this study, 1653 children aged 6 to 24 months were investigated. As for the gender of children and the families' places of residence, 808 of children (51.05%) were males and 960 families (58.1%) lived in the urban areas. Most parents had high-school diplomas (41.8% of the mothers and 35.5% of the fathers). Occupation-wise, the mothers were mostly housewives (92%) and the fathers were mainly self-employed (80%). According to our study findings, 777 of the mothers (47.2%) had a normal vaginal delivery, and 1375 of the children (83.4%) were delivered in public hospitals (Table 1). Out of the total number of the investigated deliveries, 5 cases (0.3%) were performed at home.

The mean age for children's mothers was 30.21 ± 5.36 years, while it was 34.95 ± 5.94 years for their fathers. The average weight and height of these children at birth were 3152.84 ± 528.46 grams and 49.62 ± 3.03 centimeters, respectively. According to our study findings, the studied children on average were breastfed until 18.64 months and the mean age of onset of complementary feeding was 5.86 months (Table 2). Weaning was performed in 35.6% of children at 24 months of age and upper. The most common foods given to children for the first time were porridge (62.2%) and almond porridge (22.5%), respectively (Table 3).

As shown in Figure 1, the main reason reported by the mothers for weaning before 24 months was inadequacy of the breast milk (26.5% of cases). Findings also showed that the type of delivery ($P=0.021$) and maternal education ($P=0.006$) had a significant effect on the duration of breastfeeding, so that the mothers with normal vaginal delivery and those with lower literacy levels had longer breastfeeding periods. Other variables such as child sex, parents' places of residence, mother's job, and family

Table 1. Demographic characteristics of 6-24 month-old children in the south of Iran

Variable		Number (%)
Child gender (1584 children)	Boy	808 (51.0)
	Girl	776 (49.0)
Residence (1653 individuals)	Urban	960 (58.1)
	Rural	693 (41.9)
Mother's education (1653 individuals)	Illiterate	58 (3.5)
	Elementary	253 (15.3)
	Middle school	285 (17.3)
	High school	691 (41.8)
	Academic/University	366 (22.1)
Father's education (1653 individuals)	Illiterate	47 (2.9)
	Elementary	194 (11.7)
	Middle school	444 (26.9)
	High school	587 (35.5)
	Academic/University	381 (23.0)
Mother's job (1653 individuals)	Housewife (only)	1520 (92.0)
	Employee	133 (8.0)
Father's job (1643 individuals)	Unemployed	45 (2.8)
	Governmental employee	283 (17.2)
	Non-governmental employee	1315 (80.0)
Family income per month (1646 individuals)	Less than 15 million IRR (<410 USD)	1216 (73.9)
	15- 30 million IRR (410–820 USD)	392 (23.8)
	More than 30 million IRR (>820 USD)	38 (2.3)
Type of delivery (1647 individuals)	Normal vaginal delivery	777 (47.2)
	Cesarean delivery	870 (52.8)
Site of delivery (1649 individuals)	Public hospital	1375 (83.4)
	Private hospital, and etc.	274 (16.6)

Table 2. Mean and standard deviation of variables related to breastfeeding status of 6-24 month-old children in the south of Iran

Variable	Total	Mean ± SD	Median	Minimum	Maximum
Mother's age (y)	1641	30.21±5.36	30.00	16	46
Father's age (y)	1640	34.95±5.94	34.00	21	70
Birth rank	1573	1.88±0.97	2.00	1	8
Child weight (g)	378	3152.84±528.46	3200.00	1000	4600
Child height (cm)	1387	49.62±3.03	50.00	30	68
Breastfeeding duration (month)	1603	18.64±7.40	21.00	1	38
Age of auxiliary food initiation (month)	1575	5.86±1.04	6.00	1	15

income were not significantly associated with breastfeeding duration, as shown in Table 4.

Discussion

In this study, 1653 children aged between 6 and 24 months were explored. The study findings showed that 47.2% of the mothers had normal vaginal delivery. The breastfeeding mean age of the studied children was up to 18.64 months, and the mean age of onset of complementary feeding was 5.86 months. Weaning was performed for 35.6% of the children at 24 months of age and upper. The main reason for weaning before 24 months of age was detected to be the inadequacy of breast milk. The type of delivery had a significant effect on the duration of breastfeeding.

Our study findings also demonstrated that 52.8% of the mothers had cesarean deliveries, which were inconsistent with the results from a similar study conducted in 2010 in Fars province.[15] In previous study, most of the deliveries (61.1%) were normal vaginal delivery. Considering the negative impact of the cesarean delivery on breastfeeding, it was suggested that further comprehensive studies be conducted to investigate the given issue, as well as to explore the underlying reasons behind the increased tendency among mothers to have cesarean delivery.

Table 3. Frequency of variables related to the breastfeeding status of 6-24 month-old children in the south of Iran

Variable		Number (%)
Weaning time	From birth time to 6 months	246 (15.3)
	7 to 23 months	787 (49.1)
	24 months or higher	570 (35.6)
The main cause of weaning before 24 months	Inadequate breast milk to feed the child	267 (26.5)
	Lack of proper child weighting	106 (10.5)
	No sucking breast	73 (7.3)
	Adequate breastfeeding time (mother's idea)	259 (25.7)
	Mother's disease	41 (4.1)
	Mother's medication and medical prohibition	11 (1.1)
	Child disease	14 (1.4)
	Mother's employment	14 (1.4)
	Beauty preservation	3 (0.3)
	Mother's Pregnancy	95 (9.4)
	Others	123 (12.2)
The child's first food	Rice-mucilage	108 (6.6)
	Porridge	1025 (62.2)
	Rice-milk	18 (1.1)
	Almond porridge	370 (22.5)
	Child food	37 (2.3)
	Fruit juice	2 (0.1)
	Bread or biscuits and tea	4 (0.2)
	Table food (Family members' food)	22 (1.3)
	Soup	18 (1.1)
	Others	30 (1.8)
	I don't know	13 (0.8)
Taking multivitamin or vitamin A+D drops until 2 years old	Yes regularly	1099 (69.2)
	Yes sometimes	403 (25.4)
	No	87 (5.4)
Taking iron drops until 2 years old	Yes regularly	997 (62.9)
	Yes sometimes	458 (28.9)
	No	129 (8.2)

Table 4. The relationship between demographic variables and breastfeeding duration for 6-24 month-old children in the south of Iran

Variables		Breastfeeding duration	*P* Value
		Mean ±SD	
Child sex	Boy	18.79±7.29	0.553
	Girl	18.63±7.32	
Residence	Urban	18.00±8.00	0.108
	Rural	19.51±6.39	
Mother's job	Housewife (Only)	18.73±7.37	0.082
	Employee	17.53±7.69	
Mother's education	Illiterate	19.49±7.11	0.006
	Elementary	19.88±6.49	
	Middle school	18.84±7.44	
	High school	18.75±7.16	
	Academic/University	17.22±8.25	
Type of delivery	Normal vaginal delivery	19.27±6.77	0.021
	Cesarean delivery	18.05±7.89	
Family income per month (1646 individuals)	Less than 15 million IRR (<410 USD)	18.71±7.37	0.885
	15- 30 million IRR (410–820 USD)	18.63±7.59	
	More than 30 million IRR (>820 USD)	18.31±6.86	

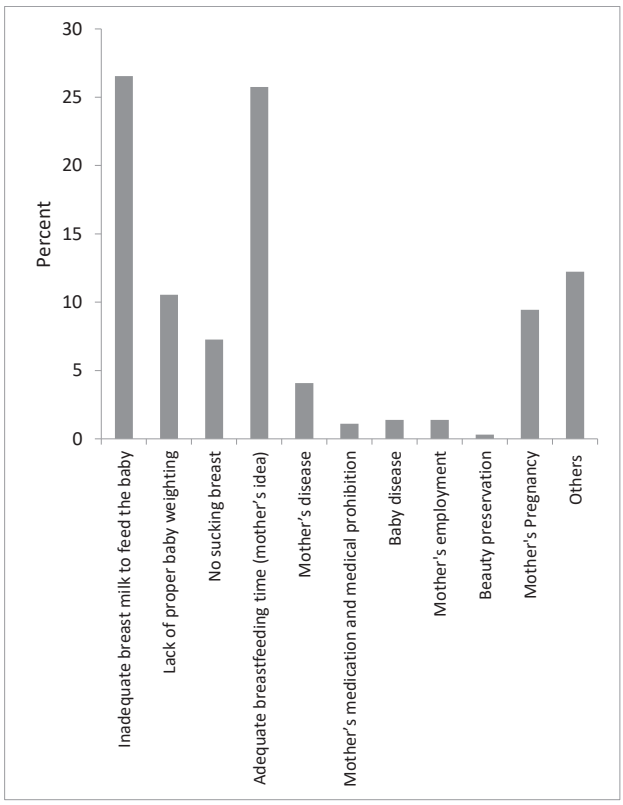

Figure 1. The Main Reason for Discontinuation of Breastfeeding Before 24 Months in 6-24 Months Old Children in South of Iran.

Islam stresses the importance of breastfeeding and the Holly Quran, the sacred book of Muslims, recommends mothers to breastfeed their children until two years of age.[16] A study on Arab women living in Michigan found that about 75% of the participants selected breastfeeding because its highlighted importance in Islam.[17] In a review study by Lauer et al, the data on breastfeeding from 94 developing countries were investigated. The results indicated that the rates of continued breastfeeding for infants aged 6-11 months and children aged 12-22 months were 86% and 68%, respectively.[12] However, the rates were 71% for infants and 37% for children from countries in Western Asia, including Iran. These results were somewhat consistent with the results from the present study.

In our study, complete weaning was performed for 35.6% of children aged 24 months and older, and the children in this study were breastfed for an average of 18 months, which compared to previous studies in Fars province (Complete weaning for 50.1% of children aged 24 months and older with an average feeding time of 21 months)[15] and in Tehran province (complete weaning for 65.8% of children aged 24 months and older with an average feeding duration of 21 months) [18] has declined alarmingly. The results of a study carried out in India showed that breastfeeding was stopped for 22% of all children participated in the study before the age of 24 months.[19] The results of another study from a Southeast Asian country to investigate breastfeeding and the factors affecting it showed that breastfeeding duration had decreased from 72.4% in the first year (12-15 months) to 32.3% in the second year (20-23 months).[20]

The main reason for weaning before 24 months of age was the inadequacy of breast milk for infant feeding, which was almost in line with the finding from a study by Zare et al conducted in 2010 on children from Fars province.[15] The reason for weaning discovered in the given study was the parents' concerns about the developmental disorder of the children due to a decreased desire for food. In two cohort studies conducted in China between 2015 and 2016[21] and in Brazil,[22] the majority of mothers (67.1% and 57.3%, respectively) stated that the main reason for their weaning was insufficient breast milk, which was consistent with our study findings. In a study by Rao et al[6] on Indian children, the most important reason for the delay in supplemental feeding was discovered to be the fact that mothers felt they had sufficient milk for breastfeeding their children. This difference in the main reason for weaning may have been explained by the fact that in the present study, the reason for stopping exclusive breastfeeding before 24 months of age was explored; whereas in the given study, the reason for the delay in starting complementary feeding had been investigated. Therefore, according to the start of complementary feeding at younger ages (6 months of age), the mothers are more likely to feel that their milk is enough. In the given study, however, only 12% of mothers were reported to start a delayed complementary feeding.

Taking into account the fact that weaning was carried out earlier than the time recommended by international organizations[7,8] and previous studies,[15] as well as considering the increased rate of cesarean delivery and its negative impact on breastfeeding,[2] it was recommended that further comprehensive reviews be performed by authorities and agencies responsible for public health in order for taking appropriate measures after identifying the relevant factors.

The present study had several strengths including using a larger sample size and a house-to-house data collection method that facilitated the investigation of non-hospital deliveries (e.g., home deliveries). One of the limitations of this study, however, was its cross-sectional design in which the causal relationship cannot be assessed with high confidence. Due to the face-to-face data collection by the interviewers, moreover, the amount and accuracy of the collected information was relatively dependent on the ability of these interviewers to communicate with mothers. Therefore, the presence of different interviewers with different abilities could have affected the results. To address this problem, all interviewers were trained.

Conclusion

It was concluded that the studied children on average were breastfed until 18 months of age and 35.6% of them were fully breastfed at 24 months of age or higher. The average duration of the breastfeeding was found to dramatically decrease compared to that detected in the previous studies, which could have been attributed to the increased tendency among mothers to have a cesarean delivery.

However, it was recommended that further comprehensive investigations be carried out in this regard.

Ethical Approval

The present study was approved by the ethics committee of Shiraz University of Medical (ethical code: IR.SUMS.REC.1396.S586). Information was collected after obtaining the informed consent from all parents.

Conflict of Interest Disclosures

The authors declare that there is no conflict of interests.

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