

Breastfeeding duration and its effective factors in mothers with children aged 30-36 months in Kerman province, Iran

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Abstract

Introduction

: Complete cessation of breastfeeding (CCB) at the right time is as important as starting breastfeeding, as well as identifying the factors that affect the duration of breastfeeding, so that breastfeeding promotion programs focus on these causes, to increase mothers' ability and desire to breastfeed. This study aimed to determine the time of CCB and its related factors.

Methods

This analytical cross-sectional study was conducted in Iran in 2020. This study was performed at all health centers and health homes affiliated to Kerman University of Medical Sciences, Kerman, Iran. A total of 802 urban and rural mothers with children aged from 30 to 36 months completed the questionnaire. The validity and reliability of the questionnaire were confirmed by Cronbach's alpha of 85%. Data were analyzed using SPSS software version 16.

Results

The mean time of breastfeeding was 19.23 ± 7.09 and the median was 22-month-year. About 41% of children were breastfed until 24-month-year. There was a significant relationship between the time of cessation of breastfeeding with contraception, number of households, place of residence, and weight at 6-month-year at the level of 0.05.

Conclusion

Duration of breastfeeding is influenced by some demographic and cultural factors. The timing of the CCB is near to the suggestions of the World Health Organization (WHO) and religious teachings.

Introduction

Shortening the duration of breastfeeding is a serious problem, especially in developing countries, as more than one million children under the 12-month-year die each year from not using breast milk. In Asia, an estimated 300,000–350,000 child deaths could be prevented with optimal breastfeeding and the majority would be under 12 months of age (1). Various studies have shown the effects of breastfeeding to reduce the incidence of various diseases in children. The prevalence of diarrhea and lower respiratory tract infections in breastfed infants is lower than in infants who are not breastfed (1).

Various studies have suggested different reasons as barriers to breastfeeding, including not having a sufficient amount of milk, maternal employment, stress, isolation, exhaustion, concern about the child's

developmental disorder and time commitment to breastfeeding (2–7).

The US breastfeeding continuity index is problematic in the United States. Although the program target (healthy population by 2010) was 25% for continued breastfeeding until 12 months of age, and the 2020 target was 34.1%. Only 25.5% of US mothers report continuing breastfeeding for up to one year, and this figure is less than 10% for less than 18-month-year (8).

A Canadian study found that infants who were exclusively breastfed during hospitalization were breastfed longer than infants who received supplements (mean 11 Month vs. 7 months) (9). A study in Turkey found a correlation between demographic information and breastfeeding attitudes and duration of breastfeeding. There was an inverse relationship between maternal employment and breastfeeding duration (10).

Studies on the duration of breastfeeding and its related factors are limited in Iran, and the few studies that have been conducted differ in the duration of breastfeeding with the recommendations of the WHO. The results of a study conducted in Iran reported mothers with younger and higher education stopped breastfeeding earlier than others (11). In the study of Assarian et al. 50% of infants less than 4 months old and only 35% of infants less than 6 months old were exclusively breastfed(12). In another study, 87% breastfed their infants for 12 months, while only 36% were breastfed for up to 24 months(13).

The problems of malnutrition and growth retardation of children are seen in the two stages of exclusive cessation of feeding and the start of complementary foods and during the CCB. Therefore, this study was conducted for the first time in Kerman with the aim to determine the time of CCB and its related factors. The results of this study can be used to determine the pattern of breastfeeding that can help increase the duration of breastfeeding and improve the breastfeeding continuity index up to 2 years of age.

Methods

Design and setting

This analytical cross-sectional study was conducted in Iran from October 15 to December 18, 2020. This study was performed at all health centers and health homes affiliated to kerman University of Medical Sciences, kerman, Iran.

Sample size

In this study, there was a sample of both urban and rural communities. Since the volume of urban to rural population is 5 times, the required sample was selected in the same proportion from each of the rural and urban classes. Therefore, at least 784 samples of $\sigma^2 = 32.5$ placement with 95% confidence interval and 80% power and $d = 0.1$, the minimum required sample volume was equal to:

$$n = \frac{32.5(1.96 + 0.84)^2}{0.1^2} = 784$$

A total of 130 and 654 samples were required from the rural community and urban community, respectively. There were 49 health centers in urban communities and 25 health homes in rural communities. By dividing the required sample size into rural and urban communities by the number of these centers and health homes, it was necessary to sample at least $\frac{654}{49} \cong 13$ number of people from each urban health center and $\sigma^2 = 32.5$ people from each comprehensive rural health center. In this study, 802 people were considered as the final sample size for more confidence. Sampling was done based on the information in the integrated health system (Apple system) and randomly so that mothers with children aged 30 to 36 months participated in this study.

Data collection

A questionnaire used to collect data, which was designed and used in 2019 at Shiraz University. At the Shiraz university, the opinions of four specialists in pediatrics, nutrition, epidemiology, and social medicine were used to examine the validity, content, and structure of the questionnaire. The reliability of the questionnaire was confirmed by conducting a pilot study on 50 samples by two independent questionnaires, with an interval of one month, to an acceptable level (kappa between 75 to 85% and internal correlation coefficient, between 75 to 98%) (7). This questionnaire consists of 32 questions. There are 14 questions about parental demographic information, 7 questions about children, and 11 questions about time and method of CCB. Inclusion criteria included mothers with children aged 30-36 who were mentally healthy, had breastfed their child at least once and were Iranian nationals, and exclusion criteria included parents who did not have access to a telephone, problems such as deafness, Mental retardation or any illness that prevented them from answering the questions correctly.

After determining the required sample size and considering the entry and exit criteria, the questionnaire was completed through a telephone interview or visiting the door. Five interviewers who were completely proficient in the subject and had the necessary ability to communicate and conduct interviews collected data. The duration of each interview was between 20-25 minutes.

Ethical considerations

Written, informed consent was provided by all person before participation, and the study was approved by Tehran University of Medical Sciences with the code of ethics IR.TUMS. VCR.1399.375

Statistical analysis

In this study, due to abnormal data distribution, non-parametric Mann-Whitney U tests were used to compare the means in the two groups and Kruskal-Wallis test was used to compare the means in more than two groups to examine different variables with complete cessation of breastfeeding. Chi-square test

was also used to examine the relationship between demographic variables and CCB time. SPSS 16 software was used for data analysis. Significance level in the tests was considered 0.05.

Results

Of the 802 children surveyed, most were born at 38 weeks of gestation. 42.5% of the children were the first child, the age range of mothers was between 18 to 47 years with an average of 31.41 ± 5.50 and the age range of fathers was between 21 to 65 years with an average of 34.97 ± 6.16 years. The demographic characteristics of the participants are given in Table 1.

Table 1
Demographic factors of the participants

Variable		Number	Frequency
Gender	girl	399	49.8
	boy	401	50
Location	urban	667	85
	rural	135	15
Type of delivery	cesarean section	427	54
	natural	364	46
Place of delivery	hospital	787	98.1
	home	0.6	0.7
	maternity facilities	0.7	0.9
Mother's education	No formal education	18	2.2
	reading and writing	36	4.5
	middle school	49	8.5
	high school	28	3.5
	diploma	288	35.9
	collegiate	362	45.1
Father's education	No formal education	14	1.7
	reading and writing	58	7.2
	middle school	107	13.3
	high school	37	4.6
	diploma	280	34.9
	collegiate	304	37.9
Job Mother	homemaker	648	80.8
	worker	1	0.1
	farmer	1	0.1
	employee	108	13.5
	self-employment other	28	3.5
		10	1.2

Variable		Number	Frequency
Father's job	unemployed	8	1
	worker	156	19.5
	farmer	28	3.5
	employee	257	32
	self-employment Other	337	42
		15	1.9

The breastfeeding time range was between one and 36 months with a mean of 19.2 ± 7.09 and a median of 22 months. 41% of children were breastfed until 24-month-year (Table 2).

Table 2
Frequency distribution of CCB

CCB	Number (percent)
Two births up to 6 months	94 (11.7)
7 to 12 months	52 (6.5)
13 to 18 months	96 (12)
19 to 20 months	93 (11.6)
21 to 23 months	136 (17)
24 months	264 (32.9)
More than 24 months	67 (8.4)

The reasons for stopping breastfeeding before 24 months along with its descriptive results are presented in Table 3. According to Table 3 the decrease in infant desire was the most common cause of cessation of breastfeeding before 24-months.

Table 3
Frequency distribution of causes of CCB before 24-month-year

Cause of cessation of breastfeeding	Number (percent)
Mother's opinion	51 (10.9)
Pregnancy	50 (10.7)
Decreased baby desire	109 (23.4)
Baby refused breastfeed	72 (15.5)
Insufficient milk supply	86 (18.5)
Medical ban	22 (7.4)
Other	76 (16.3)

The results of the study on the timing of CCB in the subgroups of demographic variables are presented in Table 4. According to Table 4, the time of CCB was significantly related to the type of contraception that this time in the other group with the group that used condoms ($P = 0.006$) or natural method ($P = 0.032$) for contraception, it was statistically different. The number of household members was also effective at the time of CCB. Thus, the time of CCB was different in families of 3 and 4 people ($P < 0.001$). In addition to these variables, the time of CCB in urban and rural families was also different.

Table 4
Comparison of CCB time by demographic variables

Variable		Number (percent)	Mean \pm SD	p- value
Gender of the child	Boy	401(50.1)	19.14(7.17)	0.981
	Girl	399(49.9)	19.27(6.27)	
Mother's education	No formal education or reading and writing	54(6.7)	20.65(6.28)	0.325
	middle school	69(8.6)	19.23(8.27)	
	diploma	316(39.6)	19.59(6.60)	
	collegiate	362(45.1)	18.73(7.37)	
Father's education	No formal education or reading and writing	72(9)	20.44(6.35)	0.051
	middle school	107(13.4)	20.33(6.67)	
	diploma	317(39.4)	18.81(7.27)	
	collegiate	304(38)	18.97(7.12)	
Job Mother	homemaker	648(8.4)	19.43(6.85)	0.466
	employee	108(11.6)	18.81(7.83)	
	self-employment	28(3.5)	16.64(8.48)	
	other	12(1.5)	18.67(8.51)	
Type of delivery	cesarean section	364(46)	19.98(6.30)	0.079
	natural	427(54)	18.53(7.66)	
Father's job	unemployed or other	23(2.9)	17.48(9.20)	0.425
	worker	156(19.5)	19.91(6.52)	
	farmer	28(3.5)	21.28(5.5)	
	employee	257(32.1)	19.38(6.83)	
	self-employment	337(42.1)	18.82(7.41)	
Type of contraception	natural	318(41.1)	19.31(7.35)	0.024
	pill	28(3.6)	17.04(8.13)	
	condom	327(42.2)	19.73(6.78)	
	IUD	26(3.4)	18.08(7.32)	
	other	75(9.7)	18.17(6.56)	

Variable		Number (percent)	Mean ± SD	p-value
Location	urban	690(86)	18.90(7.28)	0.002
	rural	112(14)	21.31(5.37)	
Income	less than 1 million	119(15)	19.55(7.01)	0.312
	1 to 2 million	317(39.8)	19.60(6.77)	
	2 to 4 million	291(36.6)	19.18(7.10)	
	more than 4 million	68(8.6)	16.81(8.44)	
Number of household members (household dimension)	3	282(35.7)	20..6(6.64)	< 0.001
	4	321(40.6)	18.15(7.48)	
	5	139(17.6)	19.56(6.96)	
	6 or more	49(6.1)	20.04(7.28)	
Number of children	1	340(4.5)	18.96(7.37)	0.362
	2	301(37.6)	19.15(6.93)	
	3	119(14.9)	19.74(6.57)	
	4 or more	40(5)	20.38(7.45)	
Age of childbirth	Less than 25	231(29.2)	19.54(658)	0.549
	25 to 30	263(33.2)	19.16(7.24)	
	30 to 35	201(25.4)	18.77(7.16)	
	Above 35	96(12.2)	19.35(8.03)	

There was no significant relationship between birth weight and the time of CCB. Among the weights of 6, 12, and 24 months, only the weight of the child at the age of 6 months was directly related to the time of CCB. The duration of breastfeeding also increases with weight increasing. For each unit that gained 0.382 month, the duration of breastfeeding was increased (Table 5).

Table 5
The effect of infant weight on the time of CCB

Variable	Regression coefficient (standard error)	p-value
Birth weight	0.002(0.015)	0.881
Weight 6 months	0.382(0.168)	0.024
Weight 12 months	0.013(0.119)	0.108
Weight 24 months	0.055(0.058)	0.347

Discussion

According to the findings of the present study, the time range of CCB was between 1 to 36 months with an average of 19.23 ± 7.09 and a median of 22 months. The highest time of CCB was 24 months (32.9%) and CCB in 59% of cases occurred before 24 months.

In a previous study in Iran, the mean CCB was 21 ± 5.7 . The highest time of CCB was 24 months (36.8%) and complete cessation of breastfeeding occurred in 50% of children before 24 months (7). Another study conducted in Golestan of Iran was a median of 22 months and a mean of 20.44 months of CCB (14). The status of the present study is more unfavorable than the studies found. In a study conducted in Tehran, the average duration of breastfeeding was 11.75 months (15). In Haji Kazemi's study, the average duration of breastfeeding was 17.4 months (16). In another study conducted in Iran reported an average duration of breastfeeding of 17.31 months (11). The status of the present study is more favorable than the mentioned studies. Perhaps one of the reasons for the different duration of breastfeeding in different cities of Iran is cultural and social differences, because in this country there are different ethnic and racial groups with different cultures and customs regarding child nutrition.

The point of interest in literature reviewing in Iran is that the duration of breastfeeding seems to have improved in recent years, although there is still a gap of 2 years with the recommendations of the WHO. In Iran, breastfeeding is culturally and religiously important and valuable, and breastfeeding women are more supported in the family. According to studies, the duration of breastfeeding in other Middle Eastern countries is shorter than in Iran. In a study in Turkey, only 12.3% of mothers breastfeed their baby for at least a year, and the average duration of breastfeeding was 7.7 ± 3.3 months (17). In a study conducted in the UAE, the duration of breastfeeding was reported to be 8.6 months (18). Also the rate of breastfeeding up to 12 months in Qatari women has been reported to be 2.4% (19). Perhaps one of the reasons for this was Iran's efforts to establish a National Committee to Promote Breastfeeding, with about 80% of births taking place in Baby Friendly Initiative hospitals in 2008 (20, 21). In 1992, "Ten Steps to Successful Breastfeeding" were approved by the World Health Assembly, since that time, foundation of infant nutrition policies at UNICEF and WHO in the form of Baby Friendly Hospital Initiative (BFHI). BFHI takes steps to successfully start breastfeeding infants after birth, as well as to continue breastfeeding in inpatient wards. One of the benefits of BFHI is the exclusive feeding of infants with breast milk, which will lead to optimal development and health of the child (22).

In this study the most common reasons for mothers to wean their baby before 24 months of age are decreased baby desire, Insufficient milk supply and baby refusal to breastfeeding. In a study conducted in Shiraz province, one of the neighboring provinces of Kerman, Insufficient milk supply and infant refusal to breastfeed were reported as the main reasons for stopping breastfeeding, which is consistent with the present study (23). Another study conducted in Iran, 28% of mothers stated that the reason for stopping breastfeeding was insufficient milk (21). In a study conducted in Qatar, 44% of women mentioned lack of milk as a reason for stopping breastfeeding (19). Other studies have shown that mothers' perceptions of not having enough milk was a reason for stopping early breastfeeding (18, 24, 25). Milk production is

controlled by the number of breastfeeding times and the baby's demand (26). On the other hand, according to research, nutrition according to the plan may lead to insufficient milk production (27). Therefore, mothers should be taught appropriate techniques to increase milk, because, even in societies where the diet is poor, most mothers are able to produce enough milk for the proper growth of their babies.

In the present study, people who used non-hormonal contraceptive methods (natural and condoms) had longer breastfeeding periods than those who used hormonal methods (such as pills and IUD). In a study conducted in Gilan, (one of the northern cities of Iran) there was a significant relationship between discontinuation of breastfeeding and taking birth control pills (15). The results of Radwan et al.'s study also showed that mothers who used non-hormonal contraceptive methods or had no contraceptive method breastfed their baby for 9–10 months, while mothers who used hormonal contraceptive methods 5.8 ± 7.1 months breastfed their baby (18). In this case, the evidence on the relationship between the type of contraception and cessation of breastfeeding is limited, and there is still insufficient evidence that hormonal methods of contraception have a negative effect on breast milk. In a systematic review of combined contraceptives and breastfeeding, 15 articles were reviewed, some of which considered the use of combined contraceptives to be effective in reducing breastfeeding duration while a number of articles did not show such an effect (28). It seems that more detailed studies are needed to determine the exact effect of hormonal methods of contraception on breastfeeding.

There was a significant relationship between place of residence (city or village) and the time of complete cessation of breastfeeding; rural households had a cessation of CCB later than urban. In a study conducted in India, the duration of breastfeeding in rural mothers was longer than in urban areas (29). This relationship was also observed in the researches of Lubala and Thulier (30, 31), which are consistent with the present study. This can be due to cultural differences and lifestyles in urban and rural areas as well as rural women having more free time to breastfeed and are mostly housewives.

There was a significant relationship between the number of households and the time of CCB. Families of 4 people stopped breastfeeding later than 3 people. The results of a study conducted in the Congo showed that the duration of breastfeeding increases with the birth rate of the child in the family, and in fact the last child has the longest breastfeeding period in the family (32). This may be due to the mother's increased experience and skills compared to breastfeeding in previous children.

In the present study, there was no significant relationship between birth weight and CCB. Among the weights of 6, 12, and 24 months, only the weight of the child at the age of 6 months was directly related to the time of complete cessation of breastfeeding. Other studies have shown that babies who had a higher birth weight at the time of CCB were earlier (33, 34). Unfortunately, there is not enough evidence to compare but perhaps the reason that six months' weight was associated with an increase in breastfeeding duration is that six months is the time to start complementary feeding for children, and it is believed that if the baby is not gaining weight well, it is a sign of breast milk deficiency and complementary feeding should start earlier. On the other hand, mothers whose six-month-old baby

weighs well will realize the adequacy and effectiveness of their milk and are therefore more encouraged to continue breastfeeding for longer.

One of the strengths is that this issue is done for the first time in Kerman and is one of the few studies that has been done with this volume of samples in Iran. Kerman is wide in terms of geographical distance and there are cultural, economic and social differences in different parts of the city. In order for our sample size to cover all economic and social groups, we selected the desired sample from all centers.

One of the limitations of this research is the limitation in interpreting the results. Also transferring the results of this study with other communities should be done with caution. Another limitation of this study was the timing of the Covid 19 crisis, which was a major challenge for face-to-face data collection, and this prolonged the study process.

One of the good practices that Kerman province has taken to improve the breastfeeding index in recent years is the establishment of a specialized breastfeeding counseling center as a single center, which in comparison with other provinces of the country seems to have had a good effect on increasing the duration of breastfeeding. Therefore, it is suggested that governments establish such centers in communities.

Conclusion

The time of CCB in the present study is relatively favorable. The duration of breastfeeding is influenced by some demographic and cultural factors. The time to stop breastfeeding is near to recommendations of the WHO and religious teachings, but to 2 full years (24 months), it is about 5 months different. Considering the high importance of breastfeeding, the importance of monitoring and continuous monitoring of this matter, and efforts to expand and maintain breastfeeding, as well as expressing the important role of breastfeeding on the health of mother and child is necessary. It seems that the emphasis of policymakers and planners on the issue of breastfeeding and conducting quantitative and qualitative research in communities that have a good duration of breastfeeding can be useful and effective as a model for other communities.

The authors state that this article is just a scientific research and it has not any relationship to government issues and sanctions and we confirm that none of the authors listed on the manuscript are not employed by a government agency that has a primary function other than research and/or education. And None of the authors are not as an official representative or on behalf of the government.

Declarations

Ethics approval and consent to participate

The Ethics Committee of the Faculty of Medical Sciences of Tehran provided the approval with the ethics code of IR.TUMS.VCR.1399.375 and Informed consent was obtained from all the participants. All

methods were performed in accordance with the relevant guidelines and regulations.

Consent for publication

Not applicable.

Availability of data and materials

The datasets used and/or analysed during the current study, due to Persian language and ethical concerns, are available from the corresponding author on reasonable request.

Competing interests

The authors declare no conflict of interest

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Authors' contributions

Sedigheh Mirafzali, literature search, acquisition of data and interpretation of findings. Ali Akbari Sari, participated in the study's conception and design, literature search and edit the manuscript for the final submission. Abedin Iranpour, participated in the study's conception and design, literature search and interpretation of results. Somayeh Alizadeh, literature search, analysis, and drafting the manuscript and interpretation of results. All the authors read and approved the final manuscript.

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