

Socioeconomic factors affecting exclusive breastfeeding in the first 6 months of life

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Abstract

Introduction: Despite the well-known positive effects of exclusive breastfeeding (EBF) in the first 6 months of life, several studies have indicated its inadequacy in Iran. This study has investigated the socioeconomic factors affecting EBF in the first 6 months of life.

Methods: The study population included 6- to 12-month-old children referred to Arak healthcare centers with their mothers for vaccination and healthcare in 2019. Sampling was performed according to Cochran formula. The questionnaires were completed by asking mothers and also reference to the family documents. The relationship between EBF and household socioeconomic variables was examined using Kaplan-Meier survival analysis. The multivariate logistic regression was used to assess adjusted and unadjusted odds ratios for factors affecting EBF and the relationship between household variables and breastfeeding.

Results: Mothers completed a total number of 517 questionnaires (97%). Working mothers (OR = 2.3 [1.77, 2.91]), mothers with higher education (OR = 1.02 [0.68, 1.35]) and higher physical activity (OR = 1) breastfed their infants more than others up to 6 months ($p < 0.05$). There was no significant relationship between sex of the child, household income, maternal BMI, pregnancy complications, previous abortion, and type of delivery with EBF ($p > 0.05$).

Conclusion: The results indicated that mothers who belonged to low socioeconomic groups breastfed their infants less than other groups. This necessitates planning and taking interventional healthcare, educational, and financial support measures in this group.

Keywords

Socioeconomic factors, exclusive breastfeeding, workplace support.

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Introduction

Human breast milk ensures the ideal feeding and nutrition for infants with many short- and long-term benefits for both mother and baby [1]. Babies who are breastfed have lower rates of asthma, obesity, type 2 diabetes, necrotizing enterocolitis, and sudden infant death syndrome. Breastfeeding also protects against infections in low-income countries, particularly gastrointestinal and respiratory tract infections. For breastfeeding mothers, the risks of heart disease, type 2 diabetes, and ovarian and breast cancer are reduced [2, 3].

Based on these concerns, the World Health Organization (WHO) and the American Academy of Pediatrics (AAP) have recommended that all children should be exclusively breastfed for the first 6 months of their lives. Besides, it has been recommended to feed the children by breastfeeding and then complementary feeding from 6 months to 1 year followed by complementary feeding and breastfeeding from 1 to 2 years of age [4-6].

In 1981, all members of WHO, including Iran, accepted to support breastfeeding and decrease marketing of breast-milk substitutes. Another important relevant event worldwide was the foundation of International Baby Food Action

Network in 1979, whose main emphasis was on the protection of mothers and the right of infants to breastfeed and to be breastfed, respectively [7]. Another global event was developing a declaration on the protection, promotion and support of breastfeeding in 1990 [8]. In Iran, the National Center for Promotion of Breastfeeding and the National Committee on Breastfeeding were established in 1991. The law of breastfeeding promotion and mothers' support during the lactation period was enacted in the Iranian parliament in 1995 to support exclusive breastfeeding (EBF). According to one of the first surveys on the status of breastfeeding in Iran in 1988, 70% and 60% of children were breastfed in the first year of life in rural and urban areas, respectively. Also, 45% of Iranian hospitals performed the mother and baby rooming-in policy [9].

Worldwide EBF is at a low level. Accordingly, the recent data from the Center for Disease Control (CDC) demonstrated that 81.1% of babies born in 2013 were breastfed; 51.8% continued breastfeeding through 6 months and 30.7% continued throughout the 1st year. Although there has been an increase in breastfeeding from 73% in 2004, the CDC also reports that 60% of mothers stop breastfeeding because of several reasons [2].

Generally, among low- and middle-income countries, only 37% of children at the age of 6 months and under are exclusively breastfed [10]. Although the EBF has increased from 24.9% to 35.7% from 1993 to 2013, this increase is far below the target of the 56th WHO meeting, namely at least 50% by 2025 [11]. Despite the improvement of many health care indicators along with the implementation of breastfeeding promotion programs in Iran, only 53% of mothers exclusively have breastfed their infants up to 6 months [12].

Despite the high emphasis on EBF for up to 6 months, some mothers may be unable to meet this requirement due to problems in living conditions. Although physicians, midwives, and health professionals play a critical role in promoting EBF, demographic and socio-economic factors determine the mother's decision to comply with EBF guidelines [13]. To promote EBF, it is necessary, at first, to identify the factors that prevent EBF for children up to 6 months of age. Numerous studies have shown that the determinants of breastfeeding are multi-dimensional, including socioeconomic, cultural, and social values and attitudes, political and legal orientations, women's working and employment conditions, health care services, and individual factors [14-16].

On the one hand, although many studies have been conducted on the status of EBF in Iran, few have assessed the relationship between EBF and socioeconomic status. On the other hand, there was no study on this issue in Arak city, the hub of industry and employment in Iran, where many women work in the industrial sector. The factors affecting EBF have been well documented worldwide, but there is little information on the status of Arak city in this regard. Besides, the predicting and influencing factors on EBF vary from region to region, emphasizing the collection of specific data for each region [17, 18]. The results of this study will add to the scientific body of knowledge and understanding on EBF, while they can facilitate planning and policy-making to promote EBF. Arak city is a highly migrant-populated city, it has many ethnicities and high living costs. The city has provided employment for many of parents because of its industrialized towns, companies, and factories. Given these issues, the present study aimed to examine the socioeconomic factors affecting EBF in the first 6 months of life.

Methods

Study population and sampling

According to the 2017 National Iranian Census, the population of Arak city consists of 658,322 people. Given the specific population, Cochran formula was used to estimate the number of samples required [19]. To obtain the maximum sample size, we set the p-value to 0.5. The sample size was 517 by adding 20% for design effect and 15% for those who provided incomplete information.

Sampling was performed through randomized clustering so that each health center made up one cluster, and 5 centers were randomly selected after calculating the number of clusters. Samples were taken from each center of the city in proportion to its covered population. This way, the number of samples required to enter the study was obtained. Sampling was based on the population covered by each center among the mothers with 6-month to 1-year children with the above-mentioned conditions. As these mothers had recently stopped EBF, they had complete information on the quality and quantity of the EBF.

Inclusion and exclusion criteria

Inclusion criteria were mothers higher than 16 years of age, single gestational deliveries, unassisted

conception, and who participated in education programs on the importance of the EBF during pregnancy. Exclusion criteria were congenital abnormalities such as lips and cleft palate or diseases such as mastectomies and mothers with mental illness. The reason for selecting women participating in pre-study education programs was to assess the effect of these programs on promoting EBF.

Ethical issues

The participating women completed the consent form, and the Ethical Committee of Arak University of Medical Sciences approved the study administration. The ethical code number of IR.ARAKMU.REC.1398.233 was obtained from Arak University of Medical Sciences, Arak, Iran.

Questionnaire

The data were collected through questionnaires and reference to the household healthcare records. The questionnaires were delivered to women with children from 6 months to 1 year of age, exploring the level of breastfeeding and economic, social, and cultural status of the household. Parent's education levels were categorized by primary, secondary, and university grades. Family income status was also categorized as less than 100, 100-299, 300-500, and higher than 500 US dollars. Of course, the approximate monthly costs and savings of households were also calculated to measure the household financial status. The employment status of parents was divided by employer or manager, business or self-employed, employee, technical worker, and simple worker. The completed questionnaires entered into the final step of the study, and if one mother did not incline to participate, the next person would be invited to participate in the interview.

Validity and reliability of the questionnaire

The methods of content validity (by a panel of faculty members of the Arak University of Medical Sciences), expert ideas, and literature review were used to assess the validity of the questionnaire. The test-retest method was used to confirm reliability. To do so, 10 participants were selected and received the questionnaires. This work was repeated after 15 days. Accordingly, Cronbach's alpha coefficient was 83%, indicating high reliability of the questionnaire.

Statistical analysis

Descriptive statistics, mean, and standard deviation (SD) are presented for the variables. The relationship between categorical variables is indicated using χ^2 . P-value was calculated based on the two-tailed test, and its value lower than 0.05 was considered significant. The relationship between household variables and lactation was assessed using the two-way and multivariate logistic regression tests. EBF rate in the first to the sixth month of birth was measured using Kaplan-Meier method. The statistical analyses were performed using STATA® 13.1 (StataCorp; College Station, TX, USA).

Results

Participants totally received 533 questionnaires, but only 517 were entirely completed, yielding a response rate of 97%. **Tab. 1** illustrates the demographic characteristics of the mothers' population. According to **Tab. 1**, 37.7% of mothers were in the age range of 30 to 34 years old, 48.9% of mothers had secondary education (middle and high school), 19.6% were employed, 26.8% had complications during pregnancy, 28.9% had a previous miscarriage, and 38.1% cesarean delivery. In addition, 14.3% of mothers spent less time than recommended 150 minutes/week in physical activity, 3.5% were cigarette smokers, and 26.3% had worked during the last 3 months of pregnancy. Moreover, 18.5% of children had birth weight of less than 2,500 g.

As **Tab. 2** indicates, the prevalence of EBF at hospital discharge was 85.1%, which decreased to 46.2% at 6 months of age ($p < 0.05$). In this study, mothers belonged to different age groups, but the results showed that maternal age did not affect EBF ($p > 0.05$).

EBF in the mothers with higher education levels was higher than other mothers in all age groups (the first to the sixth month) of infants (**Tab. 3**). Mothers with higher education levels spent more time on EBF of their children ($p < 0.05$). Smoking mothers spent less time breastfeeding their children ($p < 0.05$).

One of the study variables was the determination of the relationship between child gender type and EBF. Given that those mothers who have babies with an unwanted gender type may breastfeed them less than those with the wanted gender type, this variable was included in the study. However, the results indicated that EBF rates in mothers with a male newborn were not different from mothers with a female newborn ($p > 0.05$).

Table 1. Socio-demographic and health characteristics of respondents.

Variable	Number	Percent	
Mother age	< 25 years	46	18.3
	25-29 years	74	29.6
	30-34 years	94	37.7
	≥ 35 years	36	14.4
Mother education	Primary	28	11.1
	Secondary	122	48.9
	University	100	40
Father education	Primary	53	21.2
	Secondary	95	38.2
	University	102	40.6
Mother job	Employed	49	19.6
	Income without working	33	13.2
	Unemployed	168	67.2
Father job	Employed	212	84.8
	Income without working	16	6.3
	Unemployed	22	8.9
Child birth weight	< 2,500 g	46	18.5
	≥ 2,500 g	204	81.5
Number of other children	0	61	24.3
	1	124	49.8
	> 1	65	25.9
Complications during pregnancy	No	183	73.2
	Yes	67	26.8
Miscarriage history	No	178	71.1
	Yes	72	28.9
Type of delivery	Natural	155	61.9
	Cesarean	95	38.1
Monthly household income	< 100 USD	52	20.7
	100-299 USD	141	56.4
	300-500 USD	39	15.5
	> 500 USD	18	7.4
Physical activity	< 150 min/week	36	14.3
	≥ 150 min/week	214	85.7
Smoking in pregnancy	No	241	96.5
	Yes	9	3.5
Employment at last 3 months of pregnancy (among employed women)	No	184	73.7
	Yes	66	26.3

Another variable was the effect of monthly household income on EBF. The results indicated that higher-income families did not breastfeed more than low-income ones ($p > 0.05$). Physical activity was one of the most influencing variables on EBF.

Table 2. Exclusive breastfeeding (EBF) in terms of maternal variables (continues on the next page).

Variables	Discharge, yes (total)	Percent	p-value	1 month, yes (total)		2 months, yes (total)		3 months, yes (total)		p-value
				Percent	p-value	Percent	p-value	Percent	p-value	
EBF	440 (517)	85.1	-	389 (517)	75.2	366 (517)	70.8	312 (517)	60.3	-
	52 (58)	89.7		43 (58)	74.1	40 (58)	69	35 (58)	60.3	
Education	213 (252)	84.5	0.01	190 (252)	75.4	166 (252)	65.9	142 (252)	56.3	0.01
	190 (207)	91.8		162 (207)	78.3	158 (207)	76.3	157 (207)	75.8	
	94 (107)	87.9		81 (107)	75.7	79 (107)	73.8	71 (107)	66.4	
Monthly household income	234 (291)	80.4	> 0.05	230 (291)	79	193 (291)	66.3	189 (291)	64.9	> 0.05
	71 (81)	87.7		63 (81)	77.8	58 (81)	71.6	54 (81)	66.7	
	32 (38)	84.2		30 (38)	78.9	26 (38)	68.4	21 (38)	55.3	
	444 (498)	89.2	0.00	406 (498)	81.5	394 (498)	79.1	320 (498)	64.3	0.00
Smoking in pregnancy	8 (19)	42.1	0.00	7 (19)	36.8	6 (19)	31.6	6 (19)	31.6	0.00
	409 (459)	89.1	0.00	377 (459)	82.1	333 (459)	72.5	313 (459)	68.2	0.00
Employment status at last month of pregnancy	45 (58)	77.6		43 (58)	74.1	38 (58)	65.5	33 (58)	56.9	0.00
	449 (488)	92	0.00	395 (488)	80.9	384 (488)	78.7	329 (488)	67.4	0.00
Employment status at first month of childbirth	18 (29)	62.1	0.00	19 (29)	65.5	16 (29)	55.2	14 (29)	48.3	0.00
	432 (482)	89.6	0.00	396 (482)	82.2	362 (482)	75.1	319 (482)	66.2	0.00
Employment status at third month of childbirth	29 (35)	82.9		24 (35)	68.6	21 (35)	60	17 (35)	48.6	
	400 (459)	87.1	0.00	351 (482)	72.8	358 (482)	74.3	310 (482)	64.3	0.00
Employment status at sixth month of childbirth	48 (58)	82.8		25 (35)	71.4	25 (35)	71.4	22 (35)	62.9	0.00

EBF: exclusive breastfeeding.

Table 2. Exclusive breastfeeding (EBF) in terms of maternal variables (continues from the previous page).

Variables	4 months, yes (total)		Percent	p-value	5 months, yes (total)		Percent	p-value	6 months, yes (total)		Percent	p-value
	Yes	(total)			Yes	(total)			Yes	(total)		
EBF		302 (517)	58.4	-		256 (517)	49.5	-		238 (517)	46	-
	Education	Primary	35 (58)	60.3	0.01	26 (58)	44.8	0.00	29 (58)	50	> 0.05	
		Secondary	139 (252)	55.2		134 (252)	53.2		129 (252)	51.2		
Monthly household income	University	143 (207)	69.1	> 0.05	122 (207)	59	> 0.05	106 (207)	51.2	> 0.05		
	< 100 USD	60 (107)	56.1		54 (107)	50.5		47 (107)	43.9			
	100-299 USD	172 (291)	59.1		149 (291)	51.2		137 (291)	47.1			
	300-500 USD	43 (81)	53.1		46 (81)	56.8		37 (81)	45.7			
	> 500 USD	21 (38)	55.3		18 (38)	47.4		16 (38)	42.1			
	Smoking in pregnancy	No	309 (498)		62	0.00		275 (498)	55.2		0.00	269 (498)
Yes		5 (19)	26.3	6 (19)	31.6		5 (19)	26.3				
Employment status at last month of pregnancy		Non-working	290 (459)	63.2	0.00		230 (459)	50.1	0.00	244 (459)		53.2
	Working	31 (58)	53.4	29 (58)		50	25 (58)	43.1				
Employment status at first month of childbirth	Non-working	313 (488)	64.1	0.00	254 (488)	52	0.00	240 (488)	49.2	0.00		
	Working	15 (29)	51.7		14 (29)	48.3		12 (29)	41.4			
Employment status at third month of childbirth	Non-working	295 (482)	61.2	0.00	262 (482)	54.4	0.00	247 (482)	51.2	0.00		
	Working	16 (35)	45.7		15 (35)	42.9		15 (35)	42.9			
Employment status at sixth month of childbirth	Non-working	285 (459)	62.1	0.00	257 (459)	56	0.00	215 (459)	46.8	0.00		
	Working	33 (58)	56.9		26 (58)	44.8		24 (58)	41.4			

EBF: exclusive breastfeeding.

Mothers with higher levels of physical activity had higher levels of EBF ($p < 0.05$). However, another variable with no effect on EBF was maternal body mass index (BMI) so that there was no significant difference in EBF between mothers with weights lower than normal, normal, overweight, and obese ($p > 0.05$). Maternal working status was among

significant influencing factors on EBF. Accordingly, maternal employment in the last month of pregnancy and the first, third, and sixth months of childbirth all had negative effects on EBF ($p < 0.05$). Other variables that were not effective on EBF included complications in pregnancy, history of previous abortion, and type of childbirth ($p > 0.05$).

Fig. 1 indicates the Kaplan-Meier survival rates for EBF during the first 6 months of life. Accordingly, the number of mothers breastfeeding their children decreased by increasing the age to 6 months ($Pr > \chi^2 = 0.00$).

Fig. 2 shows the Kaplan-Meier survival rates for the effect of maternal employment on EBF up to 6 months after birth. Totally, EBF decreased in both groups of working and non-working women, but this decrease was more severe in working mothers than others. This indicates that fewer mothers breastfed their babies from the beginning and more mothers left EBF along the way, and also fewer mothers fed their infants at the age of 6 months ($Pr > \chi^2 = 0.00$).

Fig. 3 shows the Kaplan-Meier survival rates for the effect of maternal education levels on EBF up to 6 months of birth. Accordingly, mothers with higher education level breastfed their infants

more than others up to 6 months ($Pr > \chi^2 = 0.00$).

Fig. 4 shows the Kaplan-Meier survival rates for the relationship between different races and the rate of EBF. Accordingly, the results indicate that the difference in the duration of EBF was not significant in different races (Fars, Turk, Lor, and Kurd) ($Pr > \chi^2 = 0.78$).

Tab. 3 presents the results of multivariate logistic regression. In the adjusted model (adjusting for all variables listed in the table), women who spent at least 150 minutes/week on physical activity breastfed longer than sedentary mothers (odds ratio [OR] = 2.03; 95% confidence interval [CI]: 1.44, 2.67). Employed mothers were more likely to cease breastfeeding than unemployed ones (OR = 2.01; 95% CI: 1.32, 2.51). Smokers were more likely to cease breastfeeding than nonsmokers (OR = 2.2; 95% CI: 1.65, 2.59).

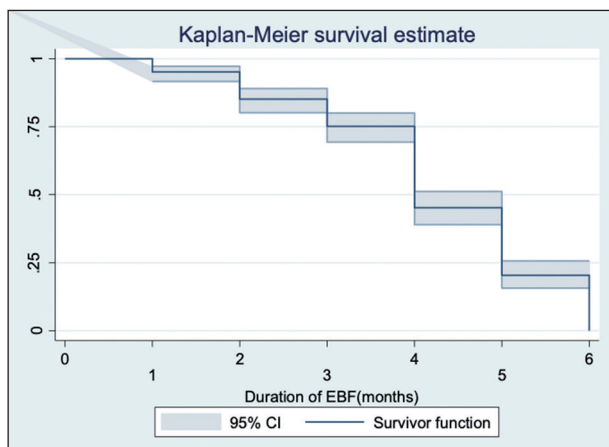


Figure 1. Kaplan-Meier survival rates for exclusive breastfeeding (EBF) in the first 6 months of life.

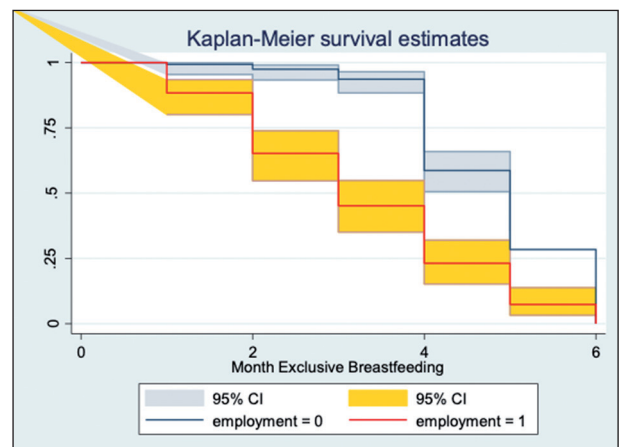


Figure 2. Kaplan-Meier survival rate for the impact of maternal employment on exclusive breastfeeding (EBF) up to 6 months of life.

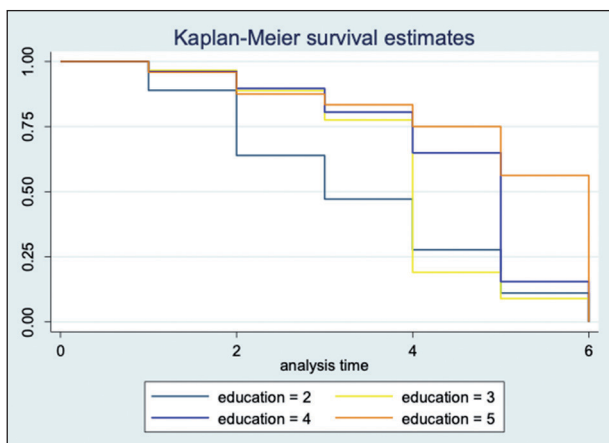


Figure 3. Kaplan-Meier survival rates for the effect of maternal education levels on exclusive breastfeeding (EBF) up to 6 months of life.

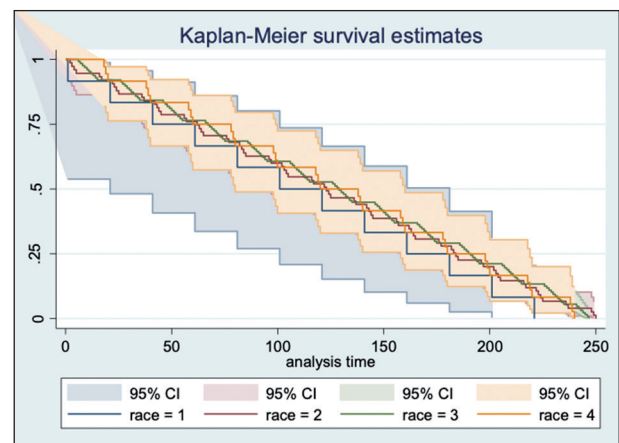


Figure 4. Kaplan-Meier survival rates for the effect of different races on exclusive breastfeeding (EBF) up to 6 months of life.

Table 3. Adjusted and unadjusted odds ratio for probability of stopping EBF at different levels of socioeconomic status.

Variables		Unadjusted OR (95% CI)	Adjusted OR (95% CI)
Age	< 25 years	1	1
	25-29 years	0.96 (0.53, 1.49)	1.4 (1.11, 1.78)
	30-34 years	0.92 (0.40, 1.41)	0.99 (0.41, 1.35)
	≥ 35 years	1.3 (1.01, 1.61)	0.98 (0.61, 1.07)
Education	Primary	1	1
	Secondary	0.9 (0.62, 1.44)	1.1 (0.85, 1.61)
	University	1.02 (0.68, 1.35)	0.95 (0.61, 1.22)
Physical activity	< 150 min/week	2.01 (1.39, 2.65)	2.03 (1.44, 2.67)
	≥ 150 min/week	1	1
Employment	No	1	1
	Yes	2.3 (1.77, 2.91)	2.01 (1.32, 2.51)
Smoking in pregnancy	No	1	1
	Yes	2.4 (1.85, 3.12)	2.2 (1.65, 2.59)
Monthly household income	< 100 USD	0.9 (0.66, 1.12)	0.99 (0.66, 1.12)
	100-299 USD	0.86 (0.55, 1.00)	0.98 (0.61, 1.07)
	300-500 USD	1.21 (0.85, 1.61)	1.14 (0.74, 1.55)
	> 500 USD	1	1
Complications during pregnancy	No	1	1
	Yes	1.04 (0.85, 1.35)	1.06 (1.92, 1.56)
Previous miscarriage	No	1	1
	Yes	1.1 (0.71, 1.55)	0.9 (0.62, 1.21)
Pre-pregnancy BMI	Underweight	1.3 (0.90, 1.44)	1.2 (0.69, 1.35)
	Normal weight	1	1
	Overweight	0.9 (0.47, 1.12)	1.2 (0.81, 1.48)
	Obese	0.9 (0.42, 1.10)	1.0 (0.66, 1.25)

BMI: body mass index; CI: confidence interval; OR: odds ratio.

Discussion

Based on the results, EBF decreased from the birth to the age of 6 months. Mothers should exclusively breastfeed their infants up to 6 months of age. However, this study indicated a significant decreasing trend in this regard. It seems that despite

the great emphasis of international organizations, the importance of this issue has not been understood by mothers so far [4, 5].

This study showed that maternal age did not affect EBF. This suggests that mothers of different age groups may not have a different understanding of the importance of EBF. However, the results of various studies are inconsistent. For example, according to a study by Colombo et al. and Kitano et al., older mothers are less likely to breastfeed than younger ones [20, 21]. However, other studies have also shown that young mothers are at greater risk of stopping EBF [22, 23].

Generally, mothers who had higher education levels were more likely to participate in pre-pregnancy, pregnancy, and lactation period classes and had higher health literacy too. According to Tang et al., although mothers with higher levels of literacy had higher EBF rates, the positive impact of high literacy on breastfeeding was higher in families with higher incomes [24]. Accordingly, plans for the promotion of EBF should pay more attention to the promotion of maternal culture.

The results indicated that smoking mothers breastfed their infants less than non-smoking ones. The negative impact of maternal smoking on infant growth and sleep and other infant conditions has been proven before [25, 26]; however, this study indicated that smoking mothers generally cared less about their children's health and development. Breastfeeding training provided by health centers should give them the motivation to stop smoking, too. One of the issues that need emphasis in this regard is reporting the detrimental effects that smoking can have on child development.

EBF rates in mothers who had a boy child was not different from mothers who had a girl. In this regard, Goyal et al. in India stated that boys were more likely to be exclusively breastfed than girls. They also showed that the girls born at subsequent births were less breastfed at birth. This even affected their health and life negatively [27].

Despite national programs on financial and insurance supports and also service providing to low socioeconomic families, unfortunately, there is still a direct relationship between low socioeconomic status and low health status [28]. A study by Iranian researchers shows that child growth is more impaired in lower-income families [29], but the results of the current study indicated that higher-income families did not breastfeed their infants more than low-income families. According to a study in Quebec, Canada, low-

income mothers breastfed their infants less and for shorter periods [30].

Mothers who have more physical activity during and after pregnancy have the best breastfeeding outcomes [31]. This is in line with the results of the current study. The results indicated that the mother's weight did not affect the exclusive type of breastfeeding. According to the results, maternal employment in the last month of pregnancy and the first, third, and sixth months of childbirth affected EBF and decreased it. The impact of maternal employment on breastfeeding rates is a proven fact. Working mothers have less time and motivation to breastfeed their infants. The impact of formal jobs on breastfeeding is much worse than the case of informal occupations. In this regard, Nkrumah's study on 225 Ghanaian mothers indicated a significant difference in the amount and frequency of EBF between mothers with formal compared to those with informal employment. Also, mothers who took their children to the workplace breastfed their children more times in comparison with mothers who left them at the home [32]. Another study in the UK found that mothers who had part-time or self-employed jobs were more likely to breastfeed their infants compared to the full-time mothers [33]. The reason behind this can be in the nature of their work, according to which more job flexibility allows mothers to feed their infants more.

The results of the study showed that women with higher education levels who were employed at the same time had less breastfeeding. This suggests that although work place support has promoted in recent years, it is insufficient to prevent non-compliance with EBF. Currently, numerous training sessions on the benefits of EBF in the first 6 months of life and its extension to 2 years of age have been held by trained midwives throughout Iran. Also, baby friendly hospitals offer breastfeeding promoting programs across Iran. Based on the accreditation and ranking standards, hospitals are obliged to hold these courses with the highest quality. Currently, it is forbidden to advertise and display milk powders, pacifiers, and baby milk bottles in public and private Iranian pharmacies. Milk production factories are not allowed to advertise it either. The departments of health and food and medicine supervise the proper implementation of these rules. After childbirth, healthcare providers provide mothers with EBF training courses. After receiving each service, mothers are requested to state their consent regarding the services delivered through the message system designed by the Ministry of Health. Using

the capability of healthcare volunteers to educate mothers on breastfeeding is another proceeding performed by health centers around the country. These health volunteers have already received the necessary training in this area.

Other proceedings include strengthening breastfeeding counseling centers in all cities across the country, training specific breastfeeding counselors for each city, and equipping them by the Ministry of Health. Implementation of the compulsory rule of skin-to-skin contact for 1 hour after the birth by operating room and labor personnel is another ongoing measure in the country. In addition to promoting EBF, this measure improves mother-child emotional relationships and reduces infants' morbidity and mortality.

It is necessary to create equity in EBF in the workplace to encourage families to childbearing and increase employment and family income. In this regard, an increase in maternity leave from 6 to 9 months has been approved and is being implemented. Also, insurances are committed to pay for maternal salaries in these 9 months. Also, 15 days paid leave is enacted for fathers to assist the mothers. In Taiwan, pregnant women have to work until the time determined for child delivery, and after it they can have 8 weeks maternity leave [34]. Another important innovation in the healthcare system of Iran is the design and administration of a milk powder committee, through which milk powder is delivered under strict terms to mothers who cannot breastfeed their children based on the assessment of their real needs.

The last and most important issue is providing services based on universal developments in different aspects that affect health. Demographic and epidemiological transition, social and cultural changes, emergence of modern and advanced communication technologies, budgeting limitations and resource management, changing paradigm from volume to value in providing health services, and environmental pollutions all affect mothers and families' knowledge, attitudes, and behaviors significantly. Thus, health policymakers should consider these trends and changes when designing healthcare packages [35, 36].

Study limitations

This study had several potential limitations. First, the information about EBF depended on the mother's memory. Second, the questionnaires were completed with the presence of healthcare providers

responsible for breastfeeding promotion. Therefore, the healthcare providers may have attempted to indicate the situation better than what it was. Third, this study was cross-sectional. These types of studies are accused of weaknesses in reporting causal relationships. Fourth, different interviewers may have paid special attention to some questions while ignoring other ones. To deal with this problem, the interviewers attended common classes to decrease this type of bias.

Conclusion

This study showed a positive relationship between lifestyle, socioeconomic and cultural status, and breastfeeding in the first 6 months of life. Working in the final months of pregnancy and the first months of breastfeeding had a positive effect on stopping or reducing EBF. Therefore, this study examined the issues around EBF, and policymakers can use it to modify breastfeeding support programs.

The Ministries of Health in different countries perform extensive programs to promote EBF every year. However, one of the missing links in these programs is the promotion of maternal literacy, which is among the most influencing factors on EBF. Other measures include implementing full-term maternal leave programs for mothers up to at least 6 months after childbirth, creating a mother-friendly workplace for working mothers, and developing the culture of breastfeeding-promoting behaviors in outdoor environments. Since working mothers may face different challenges to comply with EBF, flexible working conditions should be considered.

Health policy makers and planners should determine the prerequisites to an infant-friendly work environment. These include flexible working hours, teleworking, and work-site crèches for lactating mothers.

Smoking mothers should be strongly encouraged to quit smoking, if possible, or at least give up smoking during lactation. Although the present study did not show a relationship between the status of the household income and EBF rates, it is necessary to provide nutritional support for mothers in low-income families to ensure receiving all nutritional groups.

Ethics statement

The study was approved and funded by Arak University of Medical Sciences Ethics Committee. The ethical code number is "IR.ARAKMU.REC.1398.233".

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Declaration of interest

The Authors declare that there is no conflict of interest.

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