

Exclusive Breastfeeding and Factors Affecting Knowledge, Attitude and Practice of Mothers in Rural and Urban Regions of East Azerbaijan, Iran

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Abstract: Background and Purpose: Although exclusive breastfeeding rates have been increasing in most developing countries over the past 10 to 15 years, UNICEF's statistics show the necessity to educate mothers and increase knowledge and attitude about the importance of exclusive breastfeeding during the first six months to help mothers practice breastfeeding. Therefore, the present study was done to determine the prevalence of BFD (Breastfeeding duration) and EBF (Exclusive Breastfeeding Duration) and identifying the main factors associated with discontinuation of exclusive breastfeeding, and knowledge and attitude of mothers towards exclusive breastfeeding in East Azerbaijan, Iran. **Methods and Materials:** This descriptive cross-sectional study was conducted from January 2011 through March 2011, with data from 750 mothers who were selected through multistage sampling method and cluster sampling with non-equal clusters pattern. Data was collected using a questionnaire containing demographic information, socioeconomic status of the household (SES), childbirth information, pregnancy and delivery complications likely to influence breastfeeding as well as the knowledge and attitude towards EBF. The obtained data were analyzed using SPSS 16 through the application of statistical tests using t-test, chi-square and regression analysis in Univariate and multivariate methods. **Results:** The mean duration of exclusive breastfeeding was 4.3±1.2 months; also, the mean duration of any breastfeeding was 20.3±3.68 months. There was higher levels of awareness of the concept of positive feedback of lactation amongst mothers in the urban region as compared to the rural area ($p < 0.001$). **Conclusion:** Breastfeeding situation in this province was good. However, exclusive breastfeeding prevalence had shown a downward trend at four and six months; and the results were far away from to the WHO recommendations.

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1. Introduction

Almost all mothers can breastfeed successfully, including initiating breastfeeding within the first hour of life, breastfeeding exclusively for the first 6 months and continuing breastfeeding (along with giving appropriate complementary foods) up to 2 years of age or beyond. Breastfeeding is an unequalled way of providing ideal food for the healthy growth and development of infants; it is also the proper nutrition during infancy which is considered as essential for lifelong health and wellbeing. To achieve optimal growth, development and health, infants should be exclusively breastfed for the first six months of life. On a population basis, exclusive breastfeeding for six months is the optimal way of feeding infants. To enable mothers in establishing and sustaining exclusive breastfeeding for six months, WHO and UNICEF recommend:

- Initiation of breastfeeding within the first hour of life
- Exclusive breastfeeding – that is the infant only receives breast milk without any additional food or drink, not even water
- Breastfeeding on demand – that is as often as the child wants, day and night
- No use of bottles, teats or pacifiers (1, 2).

Exclusive breastfeeding in the first six months of life is particularly beneficial for infants and mothers especially in developing countries. The use of inadequate breast-milk substitutes may lead to stunting, underweight or wasting, and increases infant mortality. Infant feeding practices account, to a large extent, for the high rates of malnutrition among children in developing countries (3). Positive effects of breastfeeding on the health of infants and mothers are observed in all settings. Breastfeeding reduces the

risk of acute infections such as diarrhea, pneumonia, ear infection, Homophiles influenza, meningitis and urinary tract infection (3). It also protects against chronic conditions in the future such as type I diabetes. Breastfeeding during infancy is also associated with lower mean blood pressure and total serum cholesterol and with lower prevalence of type 2 diabetes, overweight and obesity during adolescence and adult life (3, 4).

In the developing world, breastfeeding is nearly universal, with most children being breastfed for some time. Even after 6 months of age when food supplementation becomes necessary, many mothers continue to breastfeed, often until their child is two years old. So what is the definition of breastfeeding, and why is this an issue? Evidence indicates that in these countries exclusive breastfeeding during the first six months is rare and early supplementation with water, or other fluids, is the norm. The breastfeeding Promotion Committee in the Iranian Ministry of Health established in 1991, promotes and monitors breastfeeding expansion and requires active support of establishing and sustaining appropriate breastfeeding practices (4).

Based on Demographic Health Survey statistics in 2000, approximately 90 percent of the infants in Iran receive any breastfeeding, while exclusive breastfeeding rates within six months in Iran was 44 percent in 2000, which decreased to 40 percent in 2004 (5). Although exclusive breastfeeding rates have been increasing in most developing countries over the past 10 to 15 years, UNICEF's statistics show the necessity to educate mothers and increase knowledge and attitude about the importance of exclusive breastfeeding during the first six months to help mother knowledge, attitude and practice regard breastfeeding (KAP) (6). Despite the associated benefits of exclusive breastfeeding especially in developing countries, the practice is still low due to loss of knowledge and attitude. Improving the uptake and appropriating the benefits will require an understanding of breastfeeding as an embodied experience within a social context.

Because there has not been a study in East Azerbaijan, Iran to evaluation exclusive breastfeeding status in this province until now, this study was done with the aim of determining the prevalence of BFD (Breastfeeding duration) and EBFD (Exclusive Breastfeeding Duration) and identifying the main factors associated with discontinuation of exclusive breastfeeding, socioeconomic status and knowledge and attitude of mothers towards exclusive breastfeeding in East Azerbaijan, Iran located geographically in the North-western Iran.

2. Method and Materials

This descriptive cross-sectional study was conducted during a one-year period from January 2011 through March 2011, with data from 750 mothers with infants less than 24 months of age; they were selected through multistage sampling method with three kinds of random sampling in 15 urban and rural health services canter in East Azerbaijan province, Iran.

A cluster sampling with non-equal clusters pattern was used for data collection. In each district, we identified 15 clusters by random sampling from electrical power counters list. Then, 50 mothers were selected from each cluster to enter this study. Sampling in the urban areas was from mothers who had breastfed babies less than 2 years, who came to five Health services centers for vaccination or other health care services (i.e. convenience sampling). Random systematic sampling was also used to sample infants in 10 rural areas. We attempted sampling frames like the list of childcare users which covered more than 99% of the infants in the rural areas.

Data was collected using a questionnaire containing biographical information and socioeconomic status of household (SES), i.e. age, level of education, maternal occupation, place of childbirth, occupation, marital status, sex of the baby, pregnancy being wanted and unplanned, ethnicity, maternal BMI, number or order of child, and pregnancy and delivery complications likely to influence breastfeeding to the child and, at last, knowledge and attitude towards EBFD.

Face validity and content validity of the questionnaire were obtained using questions order and expert opinions. For testing reliability of the questionnaire, Cronbach's Alpha was calculated to be 0.84 for the attributes tested.

The duration of breastfeeding was computed only for children aged over 24 months old. Breastfeeding duration and Exclusive Breastfeeding Duration were classified based on WHO definition. Economic status was categorized based on the possession of 10 consumer items considered necessary for modern daily life including telephone, running water, gas pipeline, home ownership, color television, computer, video, private car and air conditioner; the status was defined as follows: low ≤ 3 , moderate 4-6 and good being 7-10.

Also, ethnicity was defined as follows:

- 1) Turk-native ethnic group: People residing in the North western Iran over very long periods of time who are considered to be the native residents of East Azerbaijan.
- 2) Other ethnic groups: People who immigrated from other provinces to this region of the East Azerbaijan Province during the past decades.

The parents' educational levels were classified in terms of years of schooling based on the Iranian educational system. Three educational levels of mothers were considered; illiterate (without schooling), 1-12 (with high school diploma) (low educated), beyond high school (>12 years schooling or college). However, the father's job was categorized into two occupational groups, either being employed or unemployed.

In the present study, the inclusion criteria were those including mothers who had a living child with an age less than 24 months, who was also seeking postnatal care at the urban and rural health centres. The exclusion criteria were unwilling mothers and those who could not remember their children's breastfeeding conditions. BFD was computed only for children aged over 24 months old, but CBFD was computed only for infants less than 6 months; both groups were classified based on WHO definitions. The data were collected from the participants using a questionnaire by trained interviewers acting also as healthcare workers; the obtained data were analyzed using SPSS 16 through

the application of statistical tests. The prevalence of exclusive Breastfeeding was calculated and the relationship between dependent and independent variables was analyzed by t-test, chi-square and regression analysis in Univariate and multivariate methods. P-value less than 0.05 was considered as statistically significant.

3. Results

In the present study, within the participants (750 mothers) with breastfeeding, the mean (\pm SD) age of mothers was 23.5 (\pm 5.5) and 27.8 (\pm 3.2) years in rural and urban health area, respectively. Also, 214 out of 250 mothers (85.6%) in the urban area as well as 96.8 % (484 out of 500 mothers) in the rural area were Azari Turks (native to the area). In evaluation of the economic status of family; 48.4% of the mothers were poor, 35.2% were moderate, and only 16.4% exhibited good economic status. The results also revealed that 94.3% and 88% of mothers in the rural and urban areas were housewives, respectively. Thus, other jobs and activities were not considered. EBD duration and other related factors in East Azerbaijan are presented in Table 1 below.

Table 1- **Breastfeeding** duration and factors affecting EBD and BFD in East Azerbaijan

Duration of Breastfeeding (Months)								
Characteristics		Mean(SD)	p **value	0-6 **M	6- 12M%	12- 18M%	18-24 M%	p value
Family size (No)	<5	20.7(6.3)	0.021*	15.6	13.8	14.7	55.8	0.032*
	5≤	19.0(8.1)		13.5	15.4	16.2	54.7	
Birth order (No)	1-2	20.3(6.3)	0.004*	15.8	14.4	16.3	53.5	0.025*
	3≤	21.3(6.6)		12.4	12.9	14.2	58.4	
Father's Job	Unemployment	20.3(6.1)	0.668	15.9	11.5	19.1	53.5	
	Employment	20.7(6.4)		16	14.0	14.6	55.3	0.73
Economic status	Poor	20.3(6.1)		15.1	15.6	16	53.2	
	Moderate	20.9(6.4)	0.014*	16	12.7	14.6	56.4	
	Good	21.2(6.4)		16.6	12.8	11.3	59.2	0.225
Maternal BMI (kg/m ²)	Low	21.2(6.1)		13.5	15.9	11.8	58.4	
	Normal	20.3(6.6)	0.021*	16.2	14.6	15.2	54.2	0.01 *
	Overweight	20.8(6.1)		13.9	15.6	15.2	53.9	
Maternal Education Level	Obese	21.2(6.5)		16.5	12.5	10.5	60.3	
	Illiterate	21.0(6.8)		16.1	15.2	11.2	57.2	
	0-12 years schooling	20.5(6.3)	0.073*	13.2	16.2	15.7	74.6	0.031*
Maternal Age (year)	College	20.7(5.0)		11.3	15.2	22.3	71.2	
	≤25	19.9(5.9)		14.6	16.3	20.2	49	
	26-35	21.0(6.4)	0.013*	13.6	12.6	15.6	57.4	0.001*
Nutritional Status	36≤	20.9(7.3)		18.8	13.5	8.4	59.5	
	Malnutrition	21.0(6.5)		16.9	12.2	13.5	57.4	
	Normal	20.7(6.3)	0.042*	11.5	14.1	14.7	59.3	0.023*
	Overweight	19.2(6.9)		18.1	16.3	20.8	44.3	

*Hoc test is significant groups.(p<0.05).

**Colored columns refer to EBD

The findings also revealed that mean EBFD was 5.59 months; exclusive breastfeeding was however 23.8 percent (CI 22-26%) in only 179 of infants less than 6 months old; also, 63.3 percent (CI 61-65%) of infants less than 4 months old were breastfed with complementary food; 86% (CI 83-89%) of children 12 -15 months and 53.4 percent (CI 54-61%) of 20-23 months old are currently

breastfeeding. Exclusive breastfeeding was different between two sexes of children; 110 (61.45%) of infants with EBFD was male. This difference in the pattern of breastfeeding between the urban and rural areas was significant ($p=0.01$). The mean duration of exclusive breastfeeding was 4.3 ± 1.2 months; also, the mean duration of any breastfeeding was 20.3 ± 3.68 months (see *Figure 1* for details).

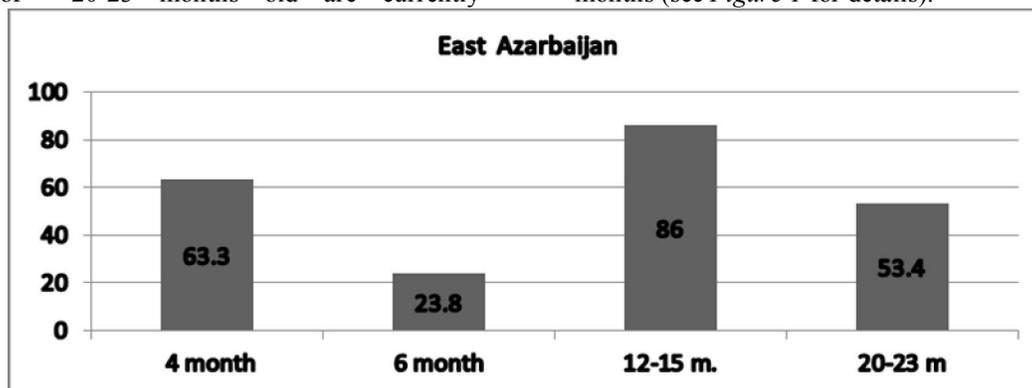


Figure 1 - Mean percentage of infants with exclusive breastfeeding (EXBF) and 95% confidence interval (CI) at four and six months (m) of age, and partial breastfeeding (BF) at one and two years of age in the East Azerbaijan province, Iran

The main reasons for halting the breastfeeding before two years included physician's recommendations and pregnancy in urban area (40%) and rural area (17.4%), respectively; only 33 mothers (4.4%) with infants less than six months had acceptable excuses to add formula. Discontinuation of exclusive breastfeeding was resorted to around 4.87 months in participants with a higher educational level. However, 261 mothers indicated their willingness to gain more knowledge about EBFD with media, if available, in future pregnancies.

The results did not vary significantly with father's job, use of colostrums, economic situation and breastfeeding. Meanwhile, maternal age, mother's job and educational level, living area, child's birth weight, child's parity, and birth intervals had a significant relationship with BFD in mothers; the results also showed that exclusive breastfeeding duration significantly increased with maternal educational level ($p<0.005$). Maternal age, maternal knowledge and advice to stop breastfeeding were meaningful factors in the multiple regression models. Although in the univariate analysis, mothers with high educational levels appeared to have shorter duration of breastfeeding in comparison with illiterate mothers. After controlling the confounding variables, in the Cox regression model, high levels of education had a positive correlation with longer duration of breastfeeding. Also, the risk of discontinuing of breastfeeding was increased significantly among mothers who had high levels of

stress. Most mothers with EBFD were in the poor socio-economic group in the rural region. The results showed that the incidence of breastfeeding was 87 (and 89%) at 12 months in the urban and rural areas and 18 (and 53%) at 24 months, respectively.

In the present research, the main reasons mothers with EBFD achieved from questions about knowledge and attitude of mothers about EBFD are summarized into four major themes and main reasons for not breastfeeding infants in three themes (Figure 2 & Figure 3).

- 1- Baby health 31%
- 2- Mother and infant health 29%
- 3- Cost effective 23%
- 4- Convenient 17%

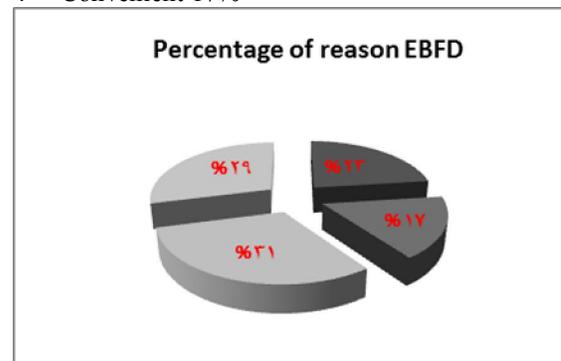


Figure 2 - Reasons why women in East Azerbaijan exclusively breastfeed their infants

Based on the study findings, 74% of the participant mothers were aware that breastfeeding did not produce weaknesses; while 26% thought that it did; however, 63% of the mothers thought bottle feeding was acceptable during the first six months of life. Also, 54% of the mothers were aware of the advantages of breastfeeding and disadvantages of bottle feeding. There was higher levels of awareness of the concept of positive feedback of lactation amongst mothers in the urban region as compared to the rural area ($p < 0.001$). Comparatively, two folds of mothers were aware of the disadvantages of bottle feeding in the urban area than in the rural areas of Azerbaijan, Iran ($p = 0.036$).

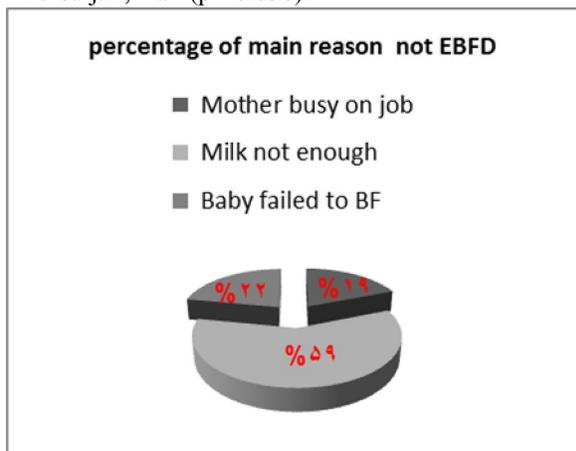


Figure 3 - Reasons why women in East Azerbaijan did not exclusively breastfeed their infants

4. Discussion

The highest exclusive breastfeeding rate at six months of age was shown in Oskoo and Shabestar, Iran, which is an area with higher levels of rural culture. This could be explained by old traditions that support breastfeeding in that area. The highest exclusive breastfeeding rate at four months of age was also evident in this region with high education; but the exclusive breastfeeding rate at six months of age had declined. It was explained by the return to work by mothers especially in the urban area. The lowest exclusive breastfeeding rate at four months of age was shown in one of the urban (Tabriz) health centers, where mothers had high SES, higher education and most mothers were employed. Higher rates of EBFD in the rural areas of EA compared with mothers in urban areas indicated that traditional values in this situation could have greater influence than the socioeconomic status or higher education.

A cross-sectional study in Babol (1998) showed that the prevalence of breastfeeding was 87% and 89% at 1 year in the urban and rural areas, and 18% and 53% at 24 months, respectively (7). In the

present research, the prevalence of BFD was different at 12 and 24 months in the urban and rural areas; on the other hand, in the present study, there is no clear relationship between high and low socioeconomic statuses; also, high and low proportions of EBFD and BFD demonstrated that the BFD rate was determined by many confounding and interactive factors.

Based on the results, EBFD was lower in employed mothers and it demonstrated the need to educate mothers to continue EBFD despite being employed with external duties at workplace (8). The data obtained about EBFD and EFD was nearly equal to the results about Iran as reported by WHO. In Iran, there was not any International Board Certified Lactation Consultants (IBCLCs) until 2007 (9). But in 2007, the first coordinator was appointed to be certified as an IBCLC, the growth rate of the population is under control, and mothers are encouraged to work outside the home and have fewer children. In comparing the continents, West and Central Africa, Eastern and Southern Africa, Middle East and North Africa (MENA), East Asia and Pacific, South Asia, Americas and the Caribbean, Central and Eastern Europe and the Commonwealth of Independent States (CEE/CIS) and Industrialized Countries can be identified. Iran is located in the MENA region with 376 BFHs in 2002; Iran as 1 out of 20 countries has 46% of the BFHs in this region. The first ranked country in terms of proportion of BFHs in the MENA region belong to Iran, and second and third ranked countries are Tunisia and Egypt, with 17% and 15% of proportions of BFHs in MENA region, respectively. From an international perspective, Iran has a relatively good position, as regards the MOH by comparison with some EU countries (9). In regards to the number of BFHs, Iran had an intermediate situation. In Sweden, despite 100% BFH, this country had only a 34% exclusive breastfeeding rate in 2000 which was indicating the complexity of the subject (9). In a review study, regarding breastfeeding in Australia and Iran, it was stated that most Australian women discontinue breastfeeding before the recommended time (10). This research was attempted to identify variables influencing breastfeeding practices in Australia by comparing Australia with Iran, indicating comparatively high breastfeeding rates in Iran.

The Canon Medicine Textbook, stated that breastfeeding tradition was well established in ancient Iran (11).

5. Conclusion

In the present study, we evaluated the patterns of breastfeeding and exclusively breastfeeding in the East Azerbaijan Province (North western Iran), and we showed that breastfeeding situation in this province was good. However,

exclusive breastfeeding prevalence had shown a downward trend at four and six months; and the results were far away from to the WHO recommendations. As far as the awareness, knowledge and practice of mothers in the rural and urban regions are concerned, the advantages and disadvantages of breast and bottle feeding disparity were observed. The main findings in this study were the identification of the rates of exclusive breastfeeding at four and six months of age in the urban and rural regions of East Azerbaijan, Iran. There were variations in breastfeeding rates, in time and place which were not easily explained. The differences in the number of EBF were due to differences in the number of Health care centers in each region. BFD covered more than 80% of infants across the East Azerbaijan at the time of the investigation. But more maternal support needs considerable improvement in the protection, promotion and support of breastfeeding as well as enhancing the knowledge of mothers and the household members in order to develop and substantially enhance the national figures.

Conflict of interests

The authors declare that they have no competing interests.

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Definitions

**** Breastfed with complementary food:** Percentage of infants who breastfed from 6 to 9 months in addition to receiving complementary food.

***** Still breastfed:** Percentage of children 12 - 15 months and 20-23 months old who are currently breastfeeding

*** Exclusive breastfeeding:** Percentage of infants who are exclusively breastfed (the infant only receives breast milk without any additional food or drink, not even water) for the first six months (age 0-5 months).

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