

Breastfeeding practice and determinants among Arab mothers in Qatar

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ABSTRACT

الأهداف: تقييم ممارسات الأمهات العربيات للرضاعة الطبيعية من خلال قياس مؤشرات الرضاعة الطبيعية، وتحديد العوامل المؤثرة على هذه الممارسات في دولة قطر للعام 2009.

الطريقة: أُجريت هذه الدراسة المقطعية المستعرضة لتقييم عينة عنقودية تتكون من 770 أم عربية لديهن أطفال تقل أعمارهم عن 24 شهر في مراكز الرعاية الصحية الأولية في قطر في العام 2009 عن طريق إجراء مقابلات للاستبيانات.

النتائج: لقد أوضحت هذه الدراسة أن نسبة الأمهات اللاتي مارسن البدء المبكر للرضاعة الطبيعية 57%، والرضاعة الطبيعية المطلقة للأطفال الأقل من 6 شهور 18.9%، ومواصلة الرضاعة الطبيعية على عمر سنة واحدة 49.9%. ولقد كانت نسبة الأطفال الذين رضعوا رضاعة طبيعية في حياتهم 97.9%، وتمت مواصلة إرضاعهم لعمر سنتين 45.4%، والذين رضعوا رضاعة طبيعية كمصدر رئيسي للتغذية 11.9%. ولقد بلغت نسبة الأطفال الذين رضعوا بالطريقة المناسبة 29%، وبلغ معدل الإيواء المشترك 43.9%. وتبين من النتائج أن إعطاء الأمهات عينات أي منتج بديل للحليب الطبيعي أو زجاجة الرضاعة والأم العاملة كانا عاملان مؤثران للبدء المبكر للرضاعة الطبيعية والرضاعة الطبيعية المطلقة للأطفال الأقل من 6 شهور، بينما أثر الإيواء المشترك وطريقة الولادة على البدء المبكر للرضاعة الطبيعية، وأثرت الرضاعة الطبيعية حسب الحاجة على الرضاعة الطبيعية المطلقة للأطفال الأقل من 6 شهور.

خاتمة: لقد بينت هذه الدراسة أن ممارسة الأمهات العربيات في قطر للرضاعة الطبيعية ليست في المستوى المقبول. ولم تحقق المؤشرات الأساسية، والمؤشرات الثانوية للرضاعة الطبيعية، ومؤشرات مستشفيات الولادة المستويات المقترحة من قبل منظمة الصحة العالمية.

Objectives: To assess the breastfeeding practices of Arab mothers by measuring breastfeeding indicators, and to identify the related determinants that affect maternal practices in Qatar.

Methods: Using interview administered questionnaires, we carried out this cross-sectional study with cluster sampling of 770 Arab mothers of children below 24 months of age attending primary health care centers in Qatar from June to October 2009.

Results: Early initiation of breastfeeding was found in 57%, exclusive breastfeeding under 6 months in 18.9%, and continued breastfeeding at one year in 49.9% of mothers. Children ever breastfed comprised 97.9%, continued breastfeeding at 2 years old comprised 45.4%, and predominant breastfeeding 11.9%. The proportion of children who were appropriately breastfed was 29%. The 'rooming in' rate was 43.9%. Receiving breast milk substitutes, exposure to advertisements for artificial teats, and employment status showed a significant relation with both early initiation and exclusive breastfeeding. On demand feeding was related to exclusive breastfeeding, and 'rooming in' and mode of delivery was related to early initiation.

Conclusion: Breastfeeding practice among Arab mothers in Qatar is not at an acceptable level. Core indicators, optional indicators, and health facility indicators for breastfeeding practice are not at the desired World Health Organization recommended levels.

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Breastfeeding is an unequalled way of providing ideal food for the healthy growth and development of infants, and it is an integral part of the reproductive process with important implications for the health of the mother. Yet, barely one in 3 infants is exclusively breastfed during the first 6 months of life.¹ Unfortunately, compliance with breastfeeding recommendations in developing countries is low, and more attention should be given to increasing breastfeeding rates and to monitor trends. The World Health Organization (WHO) Indicators for assessing breastfeeding practices can be used to assess infant feeding within and across countries to evaluate the progress of breastfeeding promotion efforts. These indicators are generated using data from children less than 24 months of age. The 3 core indicators for breastfeeding are early initiation of breastfeeding (proportion of children born in the last 24 months who were put to the breast within one hour of birth), exclusive breastfeeding under 6 months (proportion of infants 0-5 months of age who are fed exclusively with breast milk), and continued breastfeeding at one year (proportion of children 12-15 months of age who are fed breast milk).²

Health facility indicators were established by WHO/UNICEF to monitor the health facility practices that affect breastfeeding and follow the trends of practice over time as well as allow for inter country comparisons. The health facility indicators included: breastfed rate (infants who were breastfed in the 24 hours prior to discharge), exclusive breast milk-fed rate (infants exclusively breast milk-fed from birth to discharge), bottle-fed rate (infants who received any food or drink from a bottle in the 24 hours prior to discharge), timely first suckling rate (infants who first suckled within one hour of birth), rooming-in rate (infants rooming in 24 hours a day, not separated from their mothers for more than one hour), pacifier use rate (infants who received pacifiers at any time prior to discharge).³

Many factors that affect how women feed their infants include socioeconomic status, maternal education regarding breastfeeding,⁴ employment situation, commercial pressures, and availability of

breast milk substitutes, as well as professional and peer support.⁵ In Qatar, the WHO indicators have been revised since 1998. This necessitates assessing these indicators and the various determinants of breastfeeding to support establishing successful interventions of the integrated health care system giving the optimal practical support for the mothers. Therefore, this study aimed at assessing the breastfeeding practices through calculation of core indicators and optional indicators of breastfeeding practice and health facility indicators among Arab mothers of children less than 24 months of age, attending primary health care centers in Qatar, and investigating the determinants of breastfeeding practices among those mothers.

Methods. After obtaining approval from the Institutional Review Board of Hamad Medical Corporation (funding organization for health and medical researches in Qatar) we conducted this cross-sectional study from June to October 2009 at Primary Health Care Centers (PHCCs) in the State of Qatar. A network of PHCCs is widely distributed all over the country (total of 21 centers). Each PHCC has a well-defined catchment area and population. Only 15 health care centers had a registered population from Arabic countries. Each PHCC was considered as a cluster. The sample distribution between clusters was determined proportionate to the size of clusters. Cluster size was determined based on the size of the population registered in each health center. Accordingly, the total sample size of 770 was divided among the 7 clusters proportionate to the size of each cluster, and mothers fulfilling the eligibility criteria were enrolled in the study from each health center during the data collection period until the required sample size was reached. The inclusion criteria were; having a child less than 24 months of age, being an Arab mother, giving birth to the youngest baby in Qatar (participant baby), lived in Qatar during at least two-thirds of her pregnancy.

The data collection was carried out using an interview-administered questionnaire. The questionnaire was prepared in English with guidance from the Infant Feeding Survey of the National Health Services, UK, the National Immunization Survey, and the National Health and Nutrition Examination Survey (NHANES), Center for Disease Control and Prevention (CDC).⁶ The questionnaire was translated into Arabic with back translation to check for reliability at an Hamad Medical

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Corporation (HMC) accredited translation center (this was carried out for validation of the questionnaire). The questionnaire items were based on the 24-hour recall of breastfeeding practice. The focus on 24-hour recall is aimed at decreasing recall bias although overestimated/underestimated prevalence of breastfeeding results may occur due to day-to-day variation in this practice. The questionnaire was checked for item flow, order, skip patterns, timing, and time needed for completion by mothers and colleagues in the community medicine residency program. The estimated time for completion was approximately 10 minutes. The questionnaire had 3 components: i) demographic data, including age, education and employment; ii) breastfeeding practice related data, including type of milk given, introduction of solid or semi solid food, 'rooming in,' and on demand feeding; and iii) health service related data, including feeding discussion during antenatal check up, teaching of proper positioning and receiving breast milk substitute advertisements and others, for example, gender of the baby, planned method of feeding, and mode of delivery.

Before conducting the study, the investigator conducted a training session for social workers (interviewers) including orientation on the purpose of the study and full explanation of the questionnaire. Each social worker was provided with a special copy of the questionnaire that included a detailed explanation of the questions. The interview process and the quality of the questionnaire data were supervised by the investigator through role-play.

Data analysis. The data analysis was carried out using the Statistical Package for Social Sciences (SPSS Inc., Chicago, IL, USA) version 17. For maternal characteristics frequency tables were carried out. Breastfeeding indicators were calculated according to equations established by the WHO.^{2,3} Chi-Square test was used as a test of significance to relate different factors to different indicators. Chi-Square test and fisher exact test were used as a test of significance to relate different factors to different indicators. The level of significance was defined at 0.05. Frequency tables and bar charts were used for presentation of results.

Results. The age range for the children was 91 weeks with a median age of 22.5 weeks. Most participating mothers were less than 35 years old (87.4%). Their education was mainly university level or higher (50.6%),

and almost two-thirds of participants were unemployed (64.4%). Most of the mothers had more than one child (61.6%) with a monthly family income between 5,000 and 20,000 Qatari Riyal/month (69.1%). Nationality was distributed almost equally (48.1% and 49.4%) between Qatari and Non-Qatari. Early initiation of breastfeeding was found in 57% (437/770), exclusive breastfeeding under 6 months was found in 18.9% (73/386), and continued breastfeeding at one year was found in 49.9% (65/131) of the study participants (Figure 1). The study results showed that mothers younger than 25 years old, unemployed mothers, and mothers with more than one child had significantly higher rates of early initiation of breastfeeding. Mode of delivery, whether vaginal or caesarean section, had statistically significant relation with higher rate of early initiation (Table 1). Mothers who practiced 'rooming in' in the hospital and of those who did not receive breast milk substitute or teat advertisement before discharge either in antenatal care or in the hospital reported higher rates of early initiation of breastfeeding (Table 2). Exclusive breastfeeding below 6 months was significantly lower among Qatari, employed mothers and those with a family monthly income less than 5000 Riyal/month and higher than 20,000 Riyal/month. Among infants less than 6 months, mothers who planned to breast-feed their infants before delivery, and those who were feeding their baby on demand, achieved higher level of exclusive breastfeeding for less than 6 months of age (Table 3).

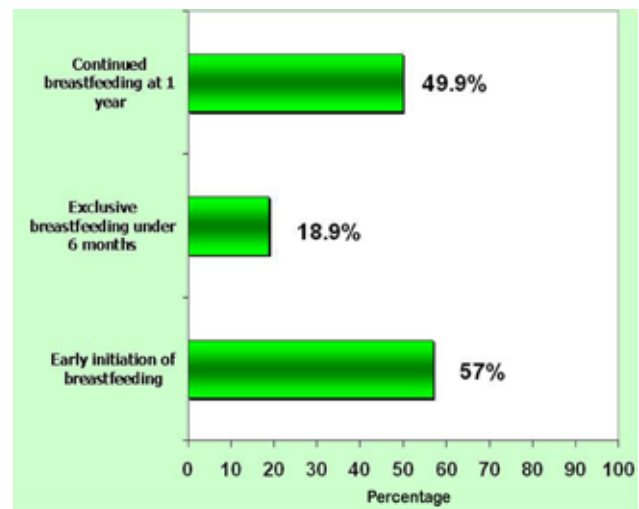


Figure 1 - Core indicators of breastfeeding among Arab mother attending Primary Health Care Centers (PHCCs) in the State of Qatar from June to October 2009.

Data analysis shows that mothers who received breast milk substitute or teat advertisement whether during pregnancy or before discharge from the hospital had significantly lower rates of exclusive breastfeeding for babies under 6 months compared with mothers who did not receive such advertisements (Table 4).

The potential determinants of continuing breastfeeding at one year for children aged 12-15 months of age were studied. None of the variables showed a

Table 1 - Relation between socio-demographic and other determinants and early initiation of breastfeeding among children <2 years (N=770).

Determinant	Early initiation		P-value
	Yes n (%)		
Nationality (n=737)*			0.456
Qatari	204 (56.4)		
Non-Qatari	222 (59.2)		
Age (n=746)*			0.021
<25	117 (60.9)		
25-35	277 (59.2)		
>35	38 (44.2)		
Educational level (n=754)*			0.503
High school or less	218 (58.9)		
University education or higher	217 (56.5)		
Employment (n=756)*			0.009
Employed	138 (51.3)		
Not-employed	298 (61.2)		
Number of children (n=757)*			0.02
One child	134 (51.9)		
More than one	303 (60.7)		
Monthly family income (n=722)*			0.087
≤5000 Riyal/month	31 (50.0)		
5001-10,000 Riyal/month	152 (64.1)		
10,001-20,000 Riyal/month	156 (54.7)		
>20,000 Riyal/month	81 (58.7)		
Gender of the baby (n=748)*			0.505
Male	218 (56.6)		
Female	215 (59.2)		
Planned method of feeding for participating child (n=753)*			0.074
Infant formula milk	9 (50)		
Breastfeed	324 (61)		
Breastfeed infant and formula milk	83 (50)		
Had not decided	21 (55.3)		
Mode of delivery (n=757)*			<0.001
Vaginal	404 (67.2)		
Caesarean section	33 (21.2)		
Colostrum is (n=757)*			0.926
Is perfect food for babies	427 (57.7)		
Not to be given to babies /do not know	10 (58.8)		

*Missing data and not applicable value (not applicable for mothers who did not practice breast-feeding at all)

statistical significant relation to this indicator. Among children who were born within the last 24 months, 97.9% (754/770) had ever received breast milk at any time during their life. The indicator for continued breastfeeding at 2 years (children of 20-23 months of age who were ever breastfed) was 45.4% (15/33). The age-appropriate breastfeeding indicator is composed of 2 fractions, first is exclusive breastfeeding under 6 months, which was found in 18.9% (73/386), and the second part the proportion of children aged 6-23 months who were given solid or semi solid in addition to breast milk, and was found in 39.3% (150/382). Combining the 2 proportions showed that just 29% (223/768) of the children were appropriately breastfed according to the recommended practice for their ages. Predominant breastfeeding under 6 months was 11.9% (46/386) (Figure 2).

The health facility indicators were developed by the WHO in 1992 in order to assess the birth facility performance with regard to the WHO recommendations. Approximately 84.7% (651/768) of the infants were

Table 2 - Relation between health service related determinants and early initiation of breastfeeding among children <2 years (N=770).

Determinant	Early initiation		P value
	Yes n (%)		
Feeding advice received during antenatal care (n=712)			0.394
Yes	114 (61.3)		
No	300 (56.9)		
Taught about proper position during breastfeeding (n=757)			0.229
Yes	261 (57.5)		
No	176 (58.1)		
Receiving breast milk substitute or teat advertisement (n=734)			<0.001
Yes	85 (38.8)		
No	342 (66.4)		
Birth facility (n=755)			0.808
Hamad Medical Corporation	391 (57.7)		
Private hospital	46 (59.7)		
"Rooming in" (n=753)			<0.001
Yes	255 (76.1)		
No	181 (43.3)		
Availability of support for feeding problem after delivery (n=753)			0.229
Yes	51 (64.6)		
No	384 (57.0)		

*Missing data and not applicable value (not applicable for mothers who did not practice breast-feeding at all)

Table 3 - Relation between socio-demographic and other determinants and exclusive breastfeeding among infants under 6 months (N=386).

Determinant	Exclusive breastfeeding <6 months		P-value
	Yes n (%)		
Nationality (n=374)*			
Qatari	18 (10.2)		<0.001
Non-Qatari	53 (26.9)		
Age (n=382)*			0.346
<25	17 (14.7)		
25-35	47 (20.3)		
>35	8 (23.5)		
Educational level (n=384)*			0.462
High school or less	33 (17.3)		
University education or higher	39 (20.2)		
Employment (n=385)*			0.001
Employed	15 (10.7)		
Not-employed	58 (23.7)		
Number of children (n=385)*			0.351
One child	31 (21.4)		
More than one	42 (17.5)		
Monthly family income (n=365)*			0.012
≤5000 Riyal/month	3 (10.7)		
5001-10,000 Riyal/month	34 (29.6)		
10,001-20,000 Riyal/month	26 (16.8)		
>20,000 Riyal/month	9 (13.4)		
Gender of the baby (n=380)*			0.434
Male	34 (17.3)		
Female	38 (20.7)		
Planned method of feeding for participating child (n=383)*			0.003
Infant formula milk	1 (7.1)		
Breastfeed	65 (23.9)		
Breastfeed infant and formula milk	6 (7.4)		
Had not decided	1 (6.3)		
Mode of delivery (n=385)*			0.269
Vaginal	62 (20.2)		
Caesarean section	11 (14.1)		
What does exclusive breastfeeding mean? (N=382)*			0.066
Breast milk and food for 6 months	6 (10.7)		
Breast milk for 2 years with just water at the first 6 months	30 (18.3)		
Breast milk without any additional food or drink (except for ORS, drops, vitamins, minerals)	35 (25.0)		
Don't know	2 (9.1)		
Breast feeding pattern (n=362)[†]			0.025
On demand	60 (24.0)		
At set times	5 (11.1)		
Depends on circumstances	8 (11.9)		

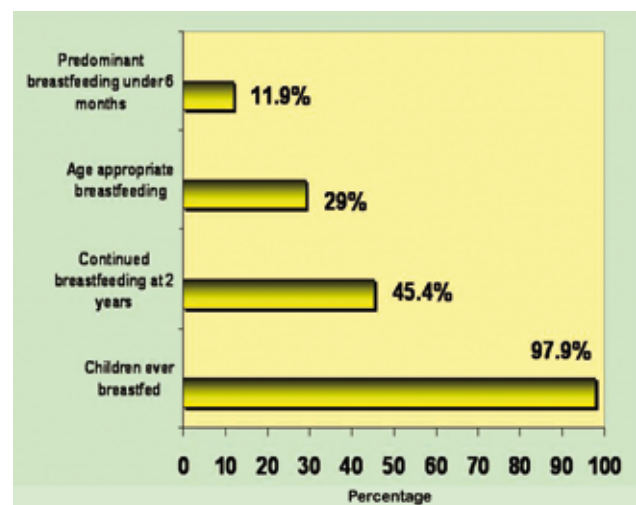
*Missing values, [†]Missing and not applicable values (not applicable for mothers who did not practice breast-feeding at all).

ORS - Oral Rehydration solutions

Table 4 - Relation between health service related determinants and exclusive breastfeeding among infants under 6 months (n=386).

Determinant	Exclusive breastfeeding <6 month		P-value
	Yes n (%)		
Feeding advice received during antenatal care (n=365)[‡]			0.351
Yes	20 (23.5)		
No	52 (18.5)		
Taught about proper position during breastfeeding (n=385)*			0.693
Yes	44 (19.8)		
No	29 (17.8)		
Receiving breast milk substitute or teat advertisement (n=374)*			0.005
Yes	13 (10.8)		
No	59 (23.2)		
Birth facility (n=384)[‡]			0.162
Hamad Medical Corporation	61 (18.0)		
Private hospital	12 (26.7)		
Rooming in (n=384)[‡]			>0.99
Yes	31 (18.8)		
No	42 (19.1)		
Availability of support for feeding problem after delivery (n=385)*			0.222
Yes	8 (27.6)		
No	65 (18.3)		

*Missing values, [‡]Missing and not applicable values (not applicable for mothers who delivered at home), [‡]Not applicable for those who did not have antenatal care (ANC).

**Figure 2** - Optional indicators of breastfeeding among Arab mothers attending Primary Health Care Centers (PHCCs) in the State of Qatar from June to October 2009.

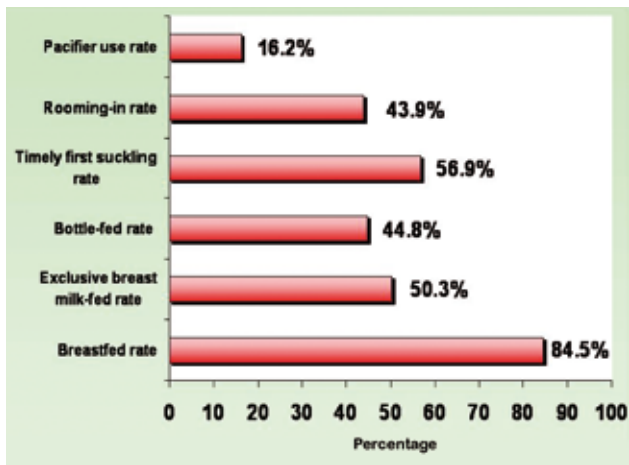


Figure 3 - Health facility indicators among Arab mothers attending Primary Health Care Centers in the State of Qatar from June to October 2009.

breastfed in the 24 hours prior to discharge from the hospital. Over 50% (387/768) of the participating mothers reported exclusively breastfeeding their infants from birth to discharge. Mothers who practiced bottle feeding 24 hours before discharge from the hospital represented 44.8% (345/768) of the participating mothers. The timely first suckling rate indicator was 56.9% (437/768) indicating that more than half of the mothers started breastfeeding within one hour of birth. Mothers who practiced rooming in with their infants comprised 43.9% (338/768) of the participating mothers who gave birth in a hospital. The proportion of the mothers who used a pacifier for infants during their hospital admission was 16.2% (125/768) (Figure 3).

Discussion. We carried out a comprehensive study on breast-feeding indicators and health facility indicators in Qatar. The study was well received by mothers who were eager to participate, even women who did not meet the eligibility criteria. The results showed 57% early initiation rate among children below 2 years, which is comparable to the WHO rating,⁷ and also to the Egypt national rate in 2008 (55.9%).⁸ Mothers who had more than one child reported a higher level of early initiation; this may be attributed to having more experience of proper breastfeeding and an appreciation of the importance of early initiation. Similarly, mothers who delivered vaginally had a higher rate of early initiation of breastfeeding than those who delivered by cesarean section, and this is attributed to the pain after

surgery, infant separation from the mother, and inability of the mothers to sit in the appropriate position for breastfeeding. In agreement with other studies, mothers who were housewives achieved higher levels of early initiation.⁹ Our study revealed that mothers who did not receive milk or teat advertisements before discharge and practiced 'rooming in' were more likely to initiate breastfeeding within an hour after delivery.

Although the current study reported an improvement in the rate of exclusive breastfeeding under 6 months (18.9%), compared with the rate reported in 1998 (12%), it is considered fair if compared with the WHO rating,⁸ and the Egyptian level for the same indicator in 2008 (53.2%),⁸ this discrepancy is attributed to better breastfeeding practices by mothers in Egypt due to the availability of the Egyptian Lactation Consultants Association, which is involved in conducting health promotions.⁹

Contrary to our findings, the exclusive breastfeeding rate at 6 months in the USA in 2007 was 13.6%, and is due to the increased level of supplementation of breastfeeding in the first few days after birth among US mothers.¹⁰ Exclusive breastfeeding was higher among housewives in comparison with employed mothers, as the unemployed mothers have enough time to practice on demand breastfeeding as recommended by the WHO. The current study also revealed an association between on demand breastfeeding and higher rates of exclusive breastfeeding practices.

Agreeing with other studies,⁶ the planning of expectant mothers to breast-feed their babies was significantly related to the level of exclusive breastfeeding rate as planning helps the mother prepare herself physically and psychologically for baby nursing, and also enhances her knowledge of breast feeding benefits for both the baby and the mother. Results from the current study and many other studies have demonstrated that mothers who did not receive breast milk substitutes or teat advertisement either during the antenatal period or before discharge from birthing facilities, practiced exclusive breastfeeding more than others because they were not exposed to alternatives for the breastfeeding. Continued breastfeeding at one year was reported by 49.9% of participating mothers, which is much lower than reports from Oman in 2000, where 95% of mothers continued breastfeeding their infants at the age of one year reflecting better breastfeeding practices. This

may be related to the fact that the WHO and UNICEF embarked on a national certification of all hospitals in Oman and by 1999, all marked hospitals were thus certified as baby friendly hospitals.⁸

The children ever breastfed rate, as an optional indicator, was 97.9% indicating that most mothers in Qatar practice breastfeeding at some time before 2 years of age, even if not for sufficient periods. This is consistent with results reported at national levels in Jordan 2007 (93.1%)⁸ and Egypt 2008 (95.8%).⁸ In contrast, the level in USA for the year 2005 was 74.2% among children aged 19-35 months; this rate may be due to recall bias.⁸ Continued breastfeeding at 2 years among participants was 45.4%, which is lower than Iran 2006 (57%),¹¹ and Oman 2000 (72.7%).¹² This discrepancy is most likely related to well-established promotive programs for breastfeeding and available baby friendly practice in those countries. Age-appropriate breastfeeding was 29%, which was lower than Egypt 2008 (59%).² This indicator is the sum of exclusive breastfeeding under 6 months (18%), and the complementary food rate for children who are aged from 6-23 months (39.3%). It indicates that only 39.3% of the children are taking complementary foods with breast milk, and other children are either just taking breast milk, which is an inappropriate practice because after 6 months the breast milk is not enough for the infant, or are given formula milk with or without breast milk. Predominant feeding for less than 6 months was practiced among 11.9% of participants, reflecting the effect of the culture and traditions that the mothers receive from their mothers and grandmothers especially since they were reported as the most influential source of advice for breastfeeding among most of the participants.

The WHO indicators that assess the health facility practice showed that 84.5% of infants were breastfed in the 24 hours prior to discharge, this rate was higher than those found in USA hospitals in 1994 (57%),¹² but less than the Egypt rate in 2000 (88%).¹² The first suckling rate was 56.9%, which is similar to Egypt 2000 (57%),¹² and less than Oman in 1995 at the national level (80%).¹² In general, all health facility indicators are lower than optimal and reflect inadequate attention to breastfeeding promotion and support.

In conclusion, core indicators of breastfeeding in Qatar were lower than the WHO optimal levels. Maternal employment status and receiving infant formula or artificial teat advertisements were related to exclusive breastfeeding and early initiation. 'Rooming in' and mode of delivery were related to early initiation, while on demand feeding was related to exclusive breastfeeding. Although the majority of children below

24 months of age were ever breastfed, only a small proportion was appropriately breastfed. The WHO standards for breastfeeding promotion are not adopted by birth facilities in Qatar. The findings of the current study are subject to certain limitations. The data were dependent on 24 hours recall, which can give a false picture of breastfeeding practices as these may change daily. However, this is the approach adopted by the WHO as the standard for assessment of breastfeeding indicators. The results of this study assist in adopting the Baby Friendly Initiative in all health facilities, and support establishing successful interventions of integrated health care system providing the optimal practical support for the mothers.

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