

ORIGINAL ARTICLE

Why mothers are not exclusively breast feeding their babies till 6 months of age? Knowledge and practices data from two large cities of the Kingdom of Saudi Arabia

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ABSTRACT

The noble practice of breast feeding is on the decline across the globe. Our objective was to research why women stop feeding their infants before the recommended 6 months of exclusive breast feeding and to assess the mothers' knowledge regarding importance and benefits of breast feeding. A cross-sectional study was conducted in two cities of Riyadh and Dammam using a structured questionnaire to 614 Saudi females in reproductive age group (15–45 years) from February to April 2016. Majority of the respondents were <30 years old, housewives and multiparous. The breast feeding initiation rate was 76% while only 37% continued to exclusively breast feed the infants until 6 months. Mothers of Dammam city showed higher rates of overall breast feeding, higher initiation of breast feeding within 24 hours of delivery and longer duration of breast feeding practices. Mothers older than 30 years ($p < 0.014$), residents of Dammam

city ($P < 0.000$) and receiving information on breast feeding during antenatal care ($P < 0.001$) were associated with higher knowledge scores. Residents of Riyadh, working mothers, delayed initiation of breast feeding after 24 hours of giving birth, and those who did not get information on breast feeding during antenatal classes were at higher risk of stopping exclusive breast feeding before 6 months. Regional differences exist with Dammam city having greater awareness and better compliance to breast feeding practices. There is a need to strengthen the education facilities at ANC clinics in Riyadh regarding duration and benefits of breast feeding along with nationwide promotion of breast feeding practices as per guidelines.

KEYWORDS:

Breast feeding pattern; Knowledge; Barriers of breast feeding; Saudi Arabia.

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INTRODUCTION

The innumerable benefits of breast feeding both for the baby and mother have been well researched and published in scientific literature [1–3]. The World Health Organization and American Academy of Paediatrics have strongly recommended exclusive breast feeding until the age of 6 months [4–6]. Despite this, declining trends in breast feeding have been reported in the developed and developing countries [4–11]. Several causes, including urbanisation and modernism have been associated with the decrease in the prevalence of breast feeding [12–14].

The Kingdom of Saudi Arabia has seen immense economic changes, including transformation in life style, health and educational opportunities recently. In the absence of national figures indicating the actual breast feeding rates in the Kingdom, small-scale cross-sectional studies conducted mostly in primary care and hospital settings of small urban cities of the Kingdom, need to be relied on to understand the trends in breast feeding [15,16]. These studies have also mentioned factors responsible for decline in breast feeding rates; however, their findings cannot be generalised to the entire country, especially large urban cities [17,18].

Despite the fact that governmental initiatives such as implementation of the Baby Friendly Hospital Initiative (BFHI) and strengthening of the antenatal care (ANC) services across the Kingdom are well established since the past decade, their effectiveness seems to be questionable when these low rates of breast feeding are seen to be reported [18,19]. Local studies have reported that the initiation rate of breast feeding is high; however, the rates decline over 6 months [12,15–18], indicating a call to explore and research the factors in detail which are associated with the decline in maintaining exclusive breast feeding till the age of 6 months.

While reviewing the local literature on breast feeding practices, we identified that there is lack of knowledge assessment regarding benefits of breast feeding. Hence, we explored the knowledge, attitudes and practices of community women among two large urban cities of the Kingdom, one from the eastern region,

Dammam, and the other from the central and capital, Riyadh.

MATERIAL AND METHODS

A community-based cross-sectional study was done in two major cities, Riyadh and Dammam, which represent urban regions of the Central and Eastern part of the Kingdom, respectively. The study included Saudi females, in reproductive age group of 15–45 years, having at least one child. Non-Saudi females and those who did not have any children were excluded from the study. Sample size was calculated separately for knowledge and practices as these were our main outcomes. A sample size of 600 was estimated for knowledge assessment, assuming 50% prevalence of knowledge and a precision of 4%. For assessing the practices, we took 70% prevalence from a previous study by El Mouzan et al. [17], and with a 4% precision the sample size was estimated to be 498. Hence, the larger number was taken. The sample was then equally divided between the two cities. Data were collected from shopping malls in Riyadh and Dammam, keeping in mind that shopping malls are visited frequently by women for the purpose of both shopping and socialisation, thereby providing representative sample of subjects from all socio-economic strata. Riyadh and Dammam were divided into five regions, central, east, west, north and south, and one mall was randomly selected from each region, using the lottery method. Within each mall a total of 60 women were interviewed. A convenience sampling strategy was adopted to recruit the subjects.

The questionnaire was constructed in Arabic, translated in English, and then retranslated into Arabic to assure consistency of the tool. It was developed after thorough literature search and consultations with experts in the field, along with some focus group discussions to bring out items for the knowledge assessment. The questionnaire was pretested on 10% of a similar sample, which was not taken in the final survey. Written informed consent was taken from the study participants. No incentives were kept for participation. Ethical approval was obtained from the university's research ethical review board. The questionnaire

was distributed to the mothers who met the inclusion criteria and who were willing to participate from selected city malls, since it is considered the best way to approach women in Saudi Arabia. The data collection was done by well-trained female data collectors who administered the questionnaire to the study participants.

The questionnaire had three parts, knowledge, attitude and practices regarding breast feeding. Each item assessing the knowledge and attitude was recorded using a scale of 1–3 (yes, no, don't know). Knowledge scores were calculated by giving a score of one to every correct response for the 14 questions related to knowledge on breast feeding. So, the maximum attainable score was 14. The study subjects were then categorised into two groups based on the derived median. For the sake of the study, we defined exclusive breast feeding as the pattern of feeding that includes giving nothing but breast milk to the infant up to the age of 6 months, while mixed feeding was referred to as addition of bottle feed to breastfed infants before the age of 6 months. Data were entered and analysed using statistical package for social sciences (SPSS) version 21.0. IBM Corp. Released 2012; IBM SPSS Statistics for Windows, Version 21.0. Armonk, NY: IBM Corp. Descriptive and inferential statistics were computed across the groups for breast feeding practices. Chi-square test was done to determine the difference between Riyadh and Dammam residents. Bivariate and multivariate analysis was performed to determine the factors associated with mixed feeding. *P* value less than 0.05 was considered significant.

RESULTS

A total of 614 participants, 306 and 308 from Riyadh and Dammam, respectively, had participated in the study. There were 353 study participants (57.5%) below 30 years of age and 587 (96%) were married and living with their husbands. The socio-demographic features of the surveyed population showed that 478 respondents (78%) had family income below 10,000 Saudi Riyal (SAR) per month. Employment rate among the mothers was 50% in Riyadh and 20% in Dammam while 61%

of Riyadh mothers were university graduates versus 39% of Dammam counterparts.

We analysed the prevalence rates of breast feeding practices in the overall study population and found 76% exclusive breast feeding rate at birth and 37% at 6 months of infant age. Table 1 demonstrates the details of mothers' attitude and feeding pattern between Riyadh and Dammam. The results showed Dammam mothers had significantly higher rates of initiation of breast feeding infants on the same day of birth and also reported higher exclusive breast feeding rates for 6 months (51.3%) compared to Riyadh mothers who, on the other hand, exhibited higher mixed feeding pattern at 6 months (58.8%, $p < 0.05$). Around 28% of Riyadh respondents preferred continuation of breast feeding until 6 months while 46% Dammam mothers favoured breast feeding until 2 years.

We then assessed the knowledge of mothers regarding the benefits of breast feeding. The results are shown in Table 2. Further analysis of scores was done and a median score 10 was obtained. Among the Dammam residents, 197 (64%) obtained high knowledge scores ≥ 10 while 148 (48.3%) from Riyadh scored ≥ 10 with significant difference $p < 0.0001$ across the two cities. The factors significantly associated with high knowledge scores were maternal age greater than 30 years ($p < 0.014$), place of residence as Dammam city ($p < 0.000$) and receiving education at antenatal clinics ($p < 0.001$).

Among the group with higher knowledge scores, 19% of Riyadh mothers and 53% of Dammam mothers exclusively breastfed their babies while 24% and 48% of Riyadh and Dammam mothers from the group with lower scores exclusively breastfed. High proportion of mixed feeding was seen in Riyadh (76%) in comparison to Dammam mothers (48%). Longer duration of breast feeding was seen in Dammam where 50% of mothers from the high knowledge group continued to breast feed their babies beyond 2 years compared to 23% from Riyadh ($p < 0.000$). Also, significant differences were obtained in breast feeding duration among mothers within Riyadh city ($p < 0.018$) where greater proportion of those with high scores fed longer.

Table 1 - Breast feeding pattern of mothers in Riyadh and Dammam.

	Riyadh (306)	Dammam (308)
	Number (%)	Number (%)
Mothers ever breastfed	261 (85.3)	284 (92.2)
Mothers' attitude about duration of breast feeding		
Don't know	35 (11.4)	21 (6.8)
0–6 months	84 (27.5)	52 (17.0)
6–12 months	87 (28.4)	92 (30.0)
12–24 months	100 (32.7)	143 (46.4)
Type of milk given before 6 months		
Breast milk only	66 (21.6)	158 (51.3)
Bottle feed only	60 (19.6)	26 (8.4)
Mixed feeding	180 (58.8)	126 (40.3)
Initiation of breast feeding after birth		
Within 1 hour of delivery	66 (21.6)	158 (51.3)
Within 24 hours	127 (41.5)	91 (21.5)
After 24 hours	96 (31.4)	153 (49.7)
After colostrum had stopped	7 (2.3)	6 (2.0)
Never initiated	23 (7.5)	11 (3.6)

Table 3 shows the determinants of mixed feeding by bivariate analysis. Mothers whose family income was less than 10,000 SAR [Odds ratio (OR) 2.1, confidence interval (CI) 1.4–3.4], housewives (OR 2.9, CI 2.0–4.2), having higher level of education (OR 2.2, CI 1.6–3.1), residents of Riyadh (OR 3.8, CI 2.6–5.4) and those who did not receive knowledge regarding breast feeding in the antenatal clinics (OR 1.9, CI 1.3–2.7) were more at risk of initiating mixed feeding before 6 months of age.

The multivariate model for predictors of mixed feeding is presented in Table 4. The final model showed residents of Riyadh, employed mothers, those who initiated breast feeding after 48 hours of birth, and those who were not given information during antenatal classes were at risk to start mixed feeding for their children before the age of 6 months. Delaying in breast feeding initiation had 2.5 times the risk of initiating early bottle feeds, while living in Dammam showed protective effect against mixed feeding which means they

had more inclination towards exclusive breast feeding.

DISCUSSION

Knowledge on breast feeding practices

The practice of early introduction of bottle feeding before the recommended 6 months of age is increasing in Saudi Arabia [12,13,16,17]. With a focus to assess the reasons for this change in patterns of breast feeding, we aimed to evaluate the existing knowledge of mothers on breast feeding benefits and practices. We found that older mothers (>30 years of age), residents of Dammam and those who had been informed regarding benefits of breast milk during their ANC visits had higher knowledge scores.

The findings of the present study have highlighted deficiencies in knowledge levels between mothers of Dammam and Riyadh. One may assume that Riyadh, being the capital city of the country would have higher level of

Table 2 - Comparison of knowledge regarding benefits and importance of breast feeding among study participants between Dammam and Riyadh cities.

	Dammam	Riyadh	P value
	N (%)	N (%)	
Breast feeding must be initiated within 1 hour			
Yes	238 (77.3)	237 (77.5)	0.95
No	70 (22.7)	69 (22.5)	
Colostrum is highly nutritive and beneficial			
Yes	303 (98.4)	280 (91.5)	0.000*
No	5 (1.6)	26 (8.5)	
Breast feeding stimulates hormones that help in uterine contraction			
Yes	274 (89)	252 (82.4)	0.02*
No	34 (11)	54 (17.6)	
Breast feeding decreases bleeding post-delivery			
Yes	274 (89)	252 (82.4)	0.02*
No	34 (11)	54 (17.6)	
The breast feeding stimulates milk ejection			
Yes	275 (89.3)	281 (91.8)	0.33
No	33 (10.7)	25 (8.2)	
Breast feeding helps to attain pre-pregnancy weight			
Yes	225 (73.1)	236 (77)	0.14
No	83 (26.9)	70 (23)	
Breast feeding reduces the risk of osteoporosis			
Yes	125 (40.6)	92 (30.1)	0.004*
No	183 (59.4)	214 (70)	
Breast feeding decreases anemia			
Yes	119 (38.6)	79 (25.8)	0.000*
No	189 (61.4)	227 (74.2)	
Breast feeding reduces the risk of breast cancer			
Yes	289 (93.8)	265 (86.6)	0.003*
No	19 (6.2)	41 (13.4)	
Breast feeding acts like birth spacer			
Yes	100 (32.5)	98 (3.2)	0.46
No	208 (67.5)	208 (68)	
Overall knowledge score			
Group 1 (score < 10)	111 (36)	158 (51.6)	0.000*
Group 2 (score ≥ 10)	197 (64)	148 (48.3)	

*Considered statistically significant $p < 0.05$. Testing of significance was done by chi-square analysis.

Table 3 - Determinants of mixed feeding.

Variables	Exclusive breast feeding	Mixed feeding	χ^2	<i>p</i> value	OR	CI
City of residence						
Dammam	159	149	58.322	0.000	3.8	2.67–5.40
Riyadh	67	239				
Family income						
≤10,000 SAR	194	284	13.242	0.000	2.2	1.43–3.43
>10,000 SAR	32	104				
Living type						
Apartment/floor	141	254	0.588	0.485	0.87	0.62–1.23
Villa/house	85	134				
Mothers occupation						
Housewives	179	218	0.588	0.000	3.8	2.52–6.01
Working	31	147				
Mothers education						
High school	139	159	24.086	0.000	2.3	1.64–3.21
Post graduate	87	229				
Number of children						
Less than three children	92	191	4.171	0.044	0.7	0.50–0.98
Three or more children	134	197				
Age of youngest child						
≤12 months	75	142	0.728	0.431	0.86	0.60–1.21
>12 months	151	246				
Gender of the youngest baby						
Boy	75	142	0.084	0.802	1	0.75–1.45
Girl	151	246				
Knowledge given during ANC check up						
Yes	161	218	13.698	0.000	1.9	1.36–2.74
No	65	170				

ANC, antenatal care.

knowledge and stronger compliance with global and local policies, yet our study pointed the opposite. Mothers from Dammam city were more knowledgeable regarding the benefits of breast feeding, such as decrease risk of cancer and about benefits of giving colostrum to the newborns. Low knowledge of mothers was also reported by a study from Abha where only 55% of the ladies

knew about importance of early initiation of breast feeding after delivery [20].

It has been reported in studies from Saudi Arabia, that experienced mothers tend to initiate breast feeding earlier and are more likely to continue to breastfeed for a longer duration [17,18,21]. This seems to support the fact that older mothers are more adherent to cultural and religious norms of

Table 4 - Multivariate logistic regression analysis showing associated factors for mixed feeding.

Significant variables	β coefficient	OR	95% CI	p value
Mothers employment	0.527	1.7	1.1–2.7	0.028
Not given information at ANC	0.386	1.5	1.0–2.1	0.05
Delay in breast feeding after 24 hours	0.914	2.5	1.5–4.0	0.000
Place of living (Dammam)	-1.05	0.35*	0.23–0.52	0.000

ANC, antenatal clinics.

*Living in Dammam demonstrated a significant protective effect for mixed feeding which means they had more inclination towards exclusive breast feeding.

the society. Our study reported that the younger respondents did not breastfeed their babies. They were not viewing breast feeding as beneficial rather, perceived it as a threat to their physical appearance and convenience. Hence, our study points to the need to educate the younger mothers on benefits of breast feeding.

Another important finding of the study is that those mothers who did not receive education on breast feeding during their antenatal visits were 1.0–2.1 times at higher risk to stop exclusive breast feeding and initiate bottle feed within 6 months of birth. Findings from our study show that mothers who had obtained breast feeding information during antenatal visits achieved higher knowledge scores. Regional differences were prominent as Dammam mothers scored significantly higher than the Riyadh mothers, which can be taken as an indicator for better antenatal and primary care service provision in city of Dammam. Our results show that even within Riyadh city, well-informed mothers had significantly longer breast feeding duration, thus reflecting the positive effect of knowledge. Other studies have reported that strengthening ANC proves crucial in improving the rates of breast feeding. Mattar et al. [22] investigated the effect of counselling during antenatal services on breast feeding habits and found that counselling and education significantly improved breast feeding practices post-delivery with Odds of 2.6 at 3 months and 2.4 at 6 months. Mosher et al. [20] assessed the effectiveness of the BFHI implementation in Saudi Arabia and found that the cohort from the

BFHI hospitals had higher rates of exclusive breast feeding post-partum than those from non-BFHI hospitals, although the rates declined in both the cohorts at 3 and 6 months. However, the declining rates of breast feeding at 3 and 6 months point to the long-term effects of such programs and suggest the need for continuous education through breast feeding support programs. Identification of factors leading to disruption of exclusive breast feeding and switching to formula feeds is another area of concern and requires in-depth research.

Barriers related to breast feeding

The present study has identified an important finding that although the prevalence of ever breast feeding was as high as 92% and 85% in Dammam and Riyadh, respectively, the rate of exclusive breast feeding was just 51% and 21%, indicating the high practice of complementary feeds leading to a mixed feeding pattern. The important independent risk factors associated with mixed feeding pattern have thus been identified by the current study. Our multivariate model found four factors associated with early bottle feeding; delay in initiation of breast feeding at birth (after 24 hours), working mothers, not receiving education during antenatal visits and residents of the city of Riyadh. We have seen in our study that those mothers who had delayed the initiation of breast feeding by more than 24 hours were at 2.5 times risk of introducing bottle feed before 6 months of age. Similar findings have been reported in a study from Al Hassa region [15]. We further conducted analysis to look at why these females were

delaying initiation of breast feeding. Analysis showed that those who had caesarean section and those who were having less than two children (inexperienced) were more likely to delay early initiation of breast feeding.

Looking at the global causes of delayed breast feeding initiation, caesarean section as a mode of delivery was found to be one of the major factors reported [23–25]. However, in the presence of a well-established BFHI, delayed initiation of breast feeding can still be overcome by arrangements of feeding the baby through timely expression of milk [26].

Our study has also shown maternal employment as a predictor for early initiation of bottle feeding. Employment rate was higher in the capital city Riyadh which has had deleterious effect on continuation of breast feeding until 6 months. Several studies have demonstrated the effect of mothers' employment to be a major determinant of mixed feeding pattern since decades [27,28]. The modern era has witnessed a tremendous upsurge in women's employment, and Saudi Arabia is no exception [29]. Inadequate maternity leave, lack of child care centres at workplace, inflexible and long work timings and unavailability of appropriate places for expressing milk are some of the factors that affect breast feeding [23,24,27,30]. The Millennium Cohort Study Child Health Group had published enormous literature on maternal employment and breast feeding initiation [31]. They found that women who had to join duty within 6 weeks after delivery were less likely to continue exclusive breast feeding. Mothers of lower income status usually returned to work earlier and were at higher risk to stopping breast feeding. All these factors adversely impact practice of breast feeding and may probably indicate weaknesses of the breast feeding promotion programs. We recommend that employers can effectively address the issue by providing child friendly environment and flexibility in timings for breast feeding mothers. Extended grant of maternity leave also produces a favourable outcome on improving breast feeding practices. Sara Beck Fein, a pioneer

in breast feeding and employment research, reported with colleagues [28] that full-time jobs 12 weeks post-partum decreased breast feeding duration significantly by 8 weeks while part time work did not affect breast feeding suggesting that part time work is seen as a potent strategy to prolong breast feeding duration among working mothers. Many studies have demonstrated the positive association between completing the recommended 6 months breast feeding with extension of maternity leave [31–33]. Examining the outcome on breast feeding among employed mothers of United States, Mirkovic et al. [32] concluded that women who had paid maternity leave beyond 12 weeks and more were more likely to continue breast feeding at 6 months. These studies have suggested mandating longer maternity leave in order to attain a higher proportion of women adhering to breast feeding practices. In Saudi Arabia, the Ministry of Health BFHI has been extended to more hospitals. However, with the recent policy changes targeted to increase the number of women in the country's work force, there would be a greater need to provide feeding facilities for mothers in their work places.

In addition to the reported reasons of early introduction of complementary feeding like insufficient breast milk, sickness, job and travel [34], our respondents reported that complementary feed was prescribed by the healthcare centres as a routine process during the post-partum stay in the hospital. This act becomes detrimental to the breast feeding practices. Similar finding was also summarised in a Centres for Disease Control and prevention (CDC) report related to breast feeding practices from close to 2700 hospitals and concluded that more than half of the facilities routinely prescribed supplemental feeds even to normal healthy mothers and babies and 70% gave gift packs of supplemental feeds as hospital gifts resulting in adverse outcome on breast feeding practices contrary to breast feeding promotion campaigns [35]. Hence, we suggest to explore further the factors related to prescription of complementary feed by healthcare providers in the country and to explore the market availability of artificial milk substitutes.

CONCLUSION AND RECOMMENDATION

To summarise, it can be said that lower levels of breast feeding knowledge, working mothers and lack and insufficient information regarding benefits of breast feeding during antenatal classes have been seen as major barriers to continue breast feeding until 6 months of age. Our study has also identified the regional differences with mothers in Dammam city showing greater compliance with breast feeding than mothers of Riyadh. Our findings advocate a rigorous integrated approach by interventions from policy makers and healthcare providers. Counselling for initiating and maintenance of breast feeding during prenatal and post-partum periods is needed. This can be achieved through the existing ANC services at the primary care centres functioning all over the Kingdom. Day care centres, feeding and milk expressing rooms may be established for mothers at their work places. We strongly advocate evaluating the effectiveness of governmental initiatives like the Mother and Child Health Passport Project and the BFHI which mainly focus on breast feeding promotion. Another possible area for further research is the local market analysis with regard to availability, accessibility and affordability of infant formulas which may play a pivotal role in early initiation of bottle feeds.

We would like to mention a few limitations of our study. First, the study design, being a cross-sectional, could not establish an absolute relationship. Second, there is a possibility of introduction of recall bias since the mothers had to report the feeding habits of the past year. The results cannot be generalised to the rest of the regions but, nevertheless, they provide a good idea of the current trends and practices. Our study findings point to the need to strengthen the health education facilities at the ANC clinics regarding benefits of breast feeding and promote breast feeding practices nationwide, with an intention to increase the proportion of mothers who breastfeed.

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REFERENCES

1. Gareth J, Richard WS, Robert EB, Zulfiqar AB, Saul SM. How many child deaths can we prevent this year? *Lancet*. 2003;362(9377):65–71.
2. Effect of breast feeding on infant and child mortality due to infectious diseases in less developed countries: a pooled analysis. WHO Collaborative Study Team on the role of breast feeding on the prevention of infant mortality. *Erratum. Lancet*. 2000;355:1104.
3. Khalifa DS, Glavin K, Bjertness E, Lien L. Determinants of postnatal depression in Sudanese women at 3 months postpartum: a cross-sectional study. *BMJ Open*. 2016;6:e009443.
4. American Association of Pediatrics. AAP reaffirms breast feeding guidelines 2012. American Academy of Pediatrics. Accessed on 30 January 2017. Available from: <https://www.aap.org/en-us/about-the-aap/aap-press-room/pages/aap-reaffirms-breast-feeding-guidelines.aspx>
5. The World Health Organization, Report of the Expert Consultation. The optimal duration of exclusive breast feeding. Report reference number: WHO/NHD/01.09. Geneva, Switzerland; March 2001. Accessed on 30 January, 2017. Available from: http://www.who.int/nutrition/publications/infantfeeding/WHO_NHD_01.09/en/
6. World Health Organization. Global strategy for infant and young child feeding. Report reference number: ISBN 92 4 156221 8. Geneva, Switzerland; 2003. Accessed on 3 February, 2017. Available from: http://www.who.int/nutrition/publications/gs_infant_feeding_text_eng.pdf
7. Cesar G, Victora RB. Breast feeding in the 21st century: epidemiology, mechanisms and lifelong effect. *Lancet*. 2016;387:475–90.
8. Breast feeding report card. Progress towards national breast feeding goals, United States 2016. National Centre for Chronic Disease Prevention and Health Promotion. Accessed on 30 January, 2017. Available from: <https://www.cdc.gov/breastfeeding/pdf/2016breastfeedingreportcard.pdf>

9. WHO European Region has lowest global breast feeding rates. World Health Organization, Regional Office for Europe. Available from: <http://www.euro.who.int/en/health-topics/Life-stages/maternal-and-newborn-health/news/news/2015/08/who-european-region-has-lowest-global-breastfeeding-rates>
10. Demirtas B, Ergocmen B, Taskin L. Breast feeding experiences of Turkish women. *J Clin Nurs*. 2012; 21:1109–18.
11. Cai X, Wardlaw T, Brown DW. Global trends in exclusive breastfeeding. *Int Breastfeed J*. 2012; 7:12.
12. Al Juaid AMD, Binns CW, Giglia RC. Breast feeding in Saudi Arabia: a review. *Int Breastfeed J*. 2014;9:1.
13. Nasreddine L, Zeidan MN, Naja F, Hwalla N. Complementary feeding in the MENA region: practices and challenges. *Nutr Metab Cardiovasc Dis*. 2012;22:793–8.
14. Office of the Surgeon General (US), Centers for Disease Control and Prevention (US), Office on Women's Health (US). Barriers to breast feeding in the United States. Rockville, MD: Office of the Surgeon General (US); 2011. Accessed on 5 February, 2017. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK52688/>
15. Amin T, Hablas H, Al Qader HA. Determinants of initiation and exclusivity of breast feeding in Al Hassa, Saudi Arabia. *Breastfeed Med*. 2011;6:59–67.
16. Al-Ayed IH. Breast feeding practices in urban Riyadh. *J Trop Pediatr*. 1998;44:114–18.
17. El Mouzan MI, Al Omar AA, Al Salloum AA, Al Herbish AS, Qurachi MM. Trends in infant nutrition in Saudi Arabia: compliance with WHO recommendations. *Ann Saudi Med*. 2009;29:20–3.
18. Nassir Ayed AA. Knowledge, attitude and practice regarding exclusive breast feeding among mothers attending primary health care centers in Abha city. *Int J Med Sci Public Health*. 2014;3:1335–63.
19. Al-Jassir MS, El-Bashir BM, Mouziddin SK. Surveillance of infant feeding practices in Riyadh city. *Ann Saudi Med*. 2004;24:136–40.
20. Mosher C, Sarkar A, Hashem AA, Hamadah RE, Alhoulan A, AlMakadma YA, et al. Self-reported breast feeding practices and the Baby Friendly Hospital Initiative in Riyadh, Saudi Arabia: prospective cohort study. *BMJ Open*. 2016;6(12):1–9.
21. Al-Hreashy FA, Tamim HM, Al-Baz N, Al-Kharji NH, Al-Amer A, Al-Ajmi H, et al. Patterns of breast feeding practice during the first 6 months of life in Saudi Arabia. *Saudi Med J*. 2008;29:427–31.
22. Mattar CN, Chong YS, Chan YS, Chew A, Tan P, Chan YH, et al. Simple antenatal preparation to improve breast feeding practice; randomized controlled trial. *Obstet Gynecol*. 2007;109:73–80.
23. Dubois L, Girard M. Social determinants of initiation, duration, and exclusivity of breast feeding at the population level: the results of the Longitudinal Study of Child Development in Quebec (ELDEQ 1998–2002). *Can J Public Health*. 2003;94:300–5.
24. Emily P, Santhakumaran S, Gale C, Phillips LH, Modi N, Hyde MJ. Breast feeding after cesarean delivery: a systematic review and meta-analysis of world literature. *Am J Clin Nutr*. 2012;95:1113–35.
25. Setegn T, Belachew T, Gerbaba M, Deribe K, Deribew A, Biadgilign S. Factors associated with exclusive breast feeding practices among mothers in Goba district, south east Ethiopia: a cross-sectional study. *Int Breastfeed J*. 2012;7:17.
26. Carvalho ML, Boccolini CS, Oliveira MI, Leal MC. The baby-friendly hospital initiative and breast feeding at birth in Brazil: a cross sectional study. *Reprod Health*. 2016;13:119.
27. Kimbro RT. On-the-job moms: work and breast feeding initiation and duration for a sample of low-income women. *Matern Child Health J*. 2006; 10(1):19–26.
28. Mandal B, Roe BE, Fein SB. The differential effects of full-time and part-time work status on breast feeding. *Health Policy*. 2010;97:79–86. Accessed on 16 February, 2017.
29. Beiter H. A changing Middle East: new Jobs for Women in Saudi Arabia. *The Jerusalem Post*; November 2016. Available from: <http://www.jpost.com/Middle-East/A-changing-middle-east-New-jobs-for-women-in-Saudi-Arabia-472395>
30. Ong G, Yap M, Li Tai L, Choo B. Impact of working status on breast feeding in Singapore: evidence from the National Breast feeding Survey 2001. *Eur J Public Health*. 2005;15:424–30.
31. Hawkins SS, Griffiths LJ, Dezateux C, Law C, Millennium Cohort Study Child Health Group. Maternal employment and breast-feeding initiation: findings from the Millennium Cohort Study. *Paediatr Perinat Epidemiol*. 2007;21:242–47.
32. Mirkovic KR, Perrine CG, Kelley S, Scanlon paid maternity leave and breast feeding outcomes. *Birth Iss Perinatal Care*. 2016;43:233–39.
33. Ogbuanu C, Glover S, Probst J, Liu J, Hussey J. The effect of maternity leave length and time of return to work on breast feeding. *Pediatrics*. 2011;127(6):e1414–27.

34. Alzaheb RA. Factors associated with the early introduction of complementary feeding in Saudi Arabia. *Int J Environ Res Public Health*. 2016;13:e702.
35. Centers for Disease Control and Prevention. Breast feeding-related maternity practices at hospitals and birth centers—United States, 2007. *MMWR Morb Mortal Wkly Rep*. 2008;57:621–25.