

Assessment of Initiation of Breastfeeding, Prevalence of Exclusive Breast Feeding and Their Predictors in Taif, KSA

Laila Shehata Dorgham¹, Samar K. Hafez^{1,2}, Heba E.Kamhawy¹ and Wisal B.Hassan^{1,3}

¹Faculty of Applied Medical Sciences, Taif University, KSA. ² Faculty of Nursing, Alexandria University, ³Faculty of Science, Omdurman Islamic University, Sudan

Lailadorgham@gmail.com

Abstract: Introduction: Despite growing evidence that supports the importance of 6-month exclusive breastfeeding, few Saudi mothers adhere to this, and early termination of exclusive BF is a common practice. The study aimed to assess the initiation of breast feeding, the prevalence of exclusive BF up to 6 months of infants life, and explore their predictors in Taif, KSA, 2013 (1434 H). **Methods:** A multistage cluster random sample of 400 Saudi mothers who had infants up to 6 months of age was selected. Mothers attending for birth registration at four primary health care centers (PHCCs) in Taif city were interviewed. Based on the World Health Organization definitions, the main two outcomes, in this study, were initiation and exclusive breastfeeding. Socioeconomic, demographic, maternal, pregnancy and delivery related variables were considered for a multivariate logistic regression using stepwise modeling. **Results** Timely initiation BF rate was 22%, while prevalence of exclusive BF was 19%. Logistic regression revealed that the independent predictors of timely breastfeeding were: not giving prelacteal feed (OR 12.0), housewives mothers (OR 5.6), secondary school educated father (OR 6.7), and mothers who delivered through spontaneous vaginal delivery (OR 7.2). In addition, logistic regression revealed that the independent predictors of exclusive breastfeeding were: secondary school educated mothers (OR10.3), secondary school educated father (OR 2.7), normal vaginal delivery (OR2.3), having infant whose age < 1 month (OR2.7). **Conclusions and recommendations:** Timely initiation of BF and exclusive breastfeeding rates in Taif, are considerably below national and international breastfeeding recommendations. The study results constitute the basis for designing interventions that aim to bridge the gap between the current practices of breastfeeding and the World Health Organization recommendation.

[Laila Sh. Dorgham, Samar K. Hafez, Heba E.Kamhawy and Wisal B.Hassan. **Assessment of Initiation of Breastfeeding, Prevalence of Exclusive Breast Feeding and Their Predictors in Taif, KSA.** *Life Sci J* 2014;11(1):1-9]. (ISSN:1097-8135). <http://www.lifesciencesite.com>. 1

Keywords: Timely initiated BF, exclusive BF, Taif, predictors, maternal employment, maternal education.

1.Introduction:

It is estimated that every day, as many as 4,000 infants and young children die worldwide because they are not breastfed. World Health Organization (WHO) and United Nations Children's Fund (UNICEF) recommend initiation of breastfeeding within one hour after birth, exclusive breastfeeding for the first six months of life, and continued breastfeeding up to two years of age or beyond. Promotion of exclusive breastfeeding is the single most cost-effective intervention to reduce infant mortality in developing countries (WHO,2008; Du Plessis,2009). Non-exclusive breastfeeding can increase the risk of dying due to diarrhea and pneumonia among 0-5 month old infants by more than two folds (WHO,2009). In addition, recent studies indicated that increases in diseases such as diabetes, obesity, autoimmune disorders, and cardiovascular diseases (CVD) are likely to be caused by a decrease in the practice of breastfeeding (Arenz *et al.*, 2004; Horta *et al.*, 2007). The same studies also revealed that these chronic diseases extend beyond infancy and affect the overall health of a nation. This would

suggest that obesity prevention begins with breastfeeding.

In spite of great advances in health services in the KSA, four national and some local sporadic surveys were implemented during the last three decades, and reported a downward trend in breastfeeding (BF) practice in different parts of the Kingdom. Generally, the results of these surveys were quite consistent in that there is a high prevalence of initiation to breastfeeding despite delay in initiation after delivery, indicating a willingness of Saudi mothers to breastfeed (Al Jassir, *et al.*, 2006). Unfortunately, due to modernization as well as the aggressive promotion and marketing campaigns of infant formula and other baby food, there is a clear tendency to introduce artificial milk formulas and bottle feeding too early, leading to a parallel fast reduction and subsequent failure of breastfeeding. Accordingly, mothers ignored the Quranic recommendations of breastfeeding for two years (Al Jassir *et al.*, 2006).

Researchers in KSA have recently started using the WHO recommended key breastfeeding indicators.

Al-Hreashy *et al.*, 2008 conducted a cross-section study at King Abdul-Aziz Medical City (KAMC), Riyadh, in 2005, and highlighted that the percent of exclusive breastfeeding was 1.7% and the partial breastfeeding breast milk with formula was the most common type of feeding (78.8%). Lactation duration dropped to 50% at 6 months of age. Al Mouzan *et al.*, 2009 concluded that the current practice of feeding of Saudi infants was very far from compliance with even the most conservative WHO recommendations of exclusive breastfeeding for 4 to 6 months. The authors also recommended that research in infant nutrition should be a public health priority in KSA to improve the rate of breastfeeding and to minimize other inappropriate practices.

Despite the evidence that there are widely recognized benefits of breastfeeding, there are still little attention is paid by health care practitioners and policy makers to this simple preventive strategy. In addition, there are still gaps in understanding why many women have difficulties initiating and maintaining breastfeeding. Accordingly, exploring the factors that determine the initiation and duration of breastfeeding is an important issue for implementation of this simple preventive strategy. Unfortunately, there is a gap in knowledge of the current situation regarding initiation and different breast-feeding rates, during the first 6 months of an infant's life, in Taif City, as there is no studies that examined and documented the magnitude and associated factors of initiating and exclusive breastfeeding in the study area.

The present study aimed to estimate the initiation of breast feeding, the prevalence of exclusive BF, and explore their predictors in Taif, KSA during the first 6 months of infants' life.

2. Methods:

Study settings and sample

This study was a cross-sectional study which was carried out in Taif, Saudi Arabia, 2013G (1434 H). Taif city has a population of 1.1 million (MOH, 1431H). Maternity and child care in Taif is provided through a network of 105 primary health care centers (PHCCs) covering urban and rural areas. Primary health care centers (PHCCs) attract the majority of the population of low and medium social class. They provide preventive and curative services that offer essential care to the population of Taif City and affiliated regions. 4 out of those 105 PHCCs in Taif were chosen by multistage cluster sampling technique. In the first stage cluster sampling, a list of the PHCCs within each geographic region of Taif (North, South, East, and West) was obtained, and selection of one PHCC from each geographic list was obtained by using simple random sampling technique. In the second stage cluster sampling, all eligible mothers,

attended the well-baby clinics of the selected four PHCCs, during the study period were included. Eligible mother was a mother who is Saudi in nationality, had an infant 0 – 6 months age, resided in Taif and as well agreed to participate in the study. In Saudi Arabia, the well-baby clinics receive all children up to the age of 5 years. The birth certificate is only given to children who complete the obligatory vaccination requested up to the age of 12 months. Consequently, all mothers with their infants are expected to attend the well-baby clinic at regular intervals during the first 12 months of the infant's life. The sample size was calculated using Epi-Info statistical program, using a total of 26 070 live births were registered in Taif in 2009, with estimation of 10% of timely initiating breastfeeding (known from a pilot study), confidence limits of 4% and 99% confidence level. The calculated sample size was 368 infants which we approximated to 400 infants.

Data collection

A pre-designed and pre-tested **questionnaire** was used to collect information on feeding practice of the preceding 24 hours of the survey. Mothers were interviewed at the PHCCs by the researchers during the period April to July 2013. The questionnaire was consisted from three parts: First part contained basic data as family residence (urban or rural/hegar); income (self-assessed as satisfactory or unsatisfactory); mother's age, education, work and parity; mode of delivery (spontaneous vaginal delivery or caesarean section/ ventouse) and place of delivery (home or hospital); infant's sex, birth weight; giving pre lacteal feeds to infants (e.g. water, glucose water, teas and herbal preparations). Second part included data related to initiation of breastfeeding, and the third part addressed the exclusive breastfeeding and risk factors that may have effect on it. The WHO definition of early initiation of breastfeeding was characterized as putting the infant to the breast within one hour of birth and was measured using the indicator: timely initiation of breastfeeding. Also WHO definition of exclusive breastfeeding: The infant has received only breast milk from its mother or a wet nurse, or expressed breast milk, but no other liquids or solids with the exception of drops or syrups consisting of vitamins, mineral supplements or medicines.

In this study the two outcome variables were, timely initiation of breastfeeding (expressed as the proportion of infants who first suckled within 1 hour after birth); and exclusive breastfeeding (expresses as the proportion of infants below 6 months who fed only on breast milk in the 24-hours preceding the survey to the total number of children in the same age group (< 6 months of age). Participants were also requested to answer "For how many months did they feed their children with breast-milk only?" This was used to

calculate the mean and median durations of exclusive breastfeeding.

Approval for this study was obtained and granted by University of Taif. It also approved by Taif Directorate of Health, Ministry of Health, KSA. Informed verbal consent was secured from study participants in their own Arabic language after explaining the purpose of the study, potential risks and benefits of participating in the study, and the right to withdraw from the study at any time. The participants were also assured about the confidentiality of the data.

Statistical analysis

Quantitative data were entered, coded, and analyzed using SPSS for windows version 16.0 (SPSS Inc. version 16.1, Chicago, Illinois). Descriptive statistics was computed to determine the prevalence of timely initiated BF, and exclusive breastfeeding. Proportions were compared by both timely initiation, and exclusive breastfeeding using Pearson's chi-

square test of independence. To identify the associated independent factors, all variables that were significant by chi square test, were entered for multivariable logistic regression to determine independent predictors of each of initiation and exclusive breastfeeding. All tests were two-sided and $p < 0.05$ was considered statistically significant.

3.Results:

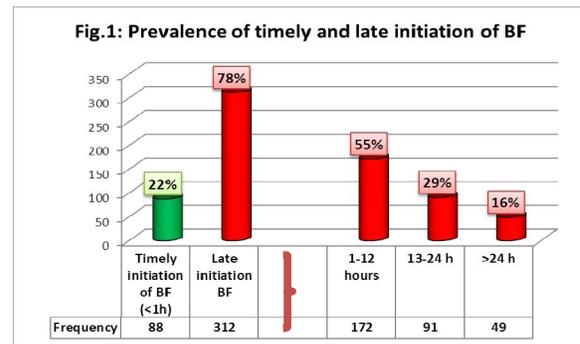
From the 400 participating infants, 8.2% fell within the age group \leq one month, and 53.8 % were between 4 – 6 months. Approximately two thirds of studied infants were females (59.5%). The majority of infants were in first – second birth order, live in urban area, and had a satisfactory family income (49.5%, 77.7%, and 83.8% respectively. Pertaining to the educational status of mothers, 36.5% had completed university, and 35% of them had attended secondary schools. The majority (80%) of mothers were housewives by occupation (Table 1).

Table 1: General characters of 400 studied infants and their families, 1434 H (2013G), Taif City, KSA.

General characters	Frequency (N=400)	Percent
Infants age (months): \leq 1 month	33	8.2 %
2 – 3 months	152	38 %
4 – 6 months	215	53.8 %
Infant sex: Male	162	40.5 %
Female	238	59.5 %
*Infant birth order: 1 st – 2 nd	194	49.5%
3 rd – 4 th	133	33.9%
5 th – 7 th	65	16.6 %
*Family residence: Urban	307	77.7%
Rural/Hager	88	22.3 %
*Family income: Satisfactory	330	83.8%
Unsatisfactory	64	16.2%
Mother education: < 2ry education	114	28.5%
2ry education	140	35 %
University	146	36.5%
Mother work: Housewife	320	80%
Teacher	54	13.5 %
Employee	26	6.5%
Total	400	100%

(*) = Different from total sample due to missing values

Twenty two per cent of sample mothers initiated breast-feeding immediately after birth (within first hour after delivery) and 78 % put their babies to breast after the first hour of delivery. Almost 85 per cent of newborns received colostrums within 24 hours after birth, and approximately 16 % initiated BF after the first day of delivery. Timely initiation of breast-feeding in Taif can be considered unsatisfactory because almost 80 % of mothers did not follow WHO's recommendation to timely initiate breastfeeding within the first hour after birth. Therefore, health education concerning advantage of timely initiation of breast-feeding should be emphasized (Fig.1).



Among socioeconomic factors, time of initiation breast-feeding shows highly significant associations with education of mothers, education of husbands, and family income ($p < 0.0000$). Also occupation of mothers, family residence, antenatal care visits, place of delivery, and type of last delivery were significantly associated with time of initiation of breast-feeding, but with varying degrees (**Table 2**).

The model explained 47.5 % variance in initiation of BF ($R^2 = 0.475$, $\chi^2 = 126.24$, $P < .000$). The significant statistically variables in our model were prelacteal fluids with mothers not giving prelacteal fluids to their babies were more likely than mothers who gave prelacteal fluids to timely initiate BF (the odds ratio of timely initiating BF mothers who were not giving prelacteal fluids 12.02 times the odds of mothers who gave pre lacteal fluids (OR: 12.02; 95%CI: 5.01,28.82); mother work, with housewives mothers more likely than worked outside homes mothers to timely initiate BF (the odds ratio of housewives mothers timely initiating BF was 5.6 times the odds of worked mothers (OR: 5.6; 95%CI: 1.353,22.835); father education, with secondary educated fathers more likely than lower educated fathers to encourage their wives for timely initiated BF (the odds ratio of secondary educated fathers was approximately seven times the odds of < secondary educated fathers (OR:6.99; 95%CI: 2.057,18.361); and type of last delivery, with mothers delivered normally through vagina were approximately seven times more likely to be timely initiated BF compared with mothers delivered by cesarean section (OR:7.195; 95%CI: 2.106, 24.59). The multiple logistic regression model correctly predicted 86.3% of mothers initiating timely breastfeeding. (Table3). On the other hand, residence, family income, place of birth, and mother education, and antenatal care visits, were all not significantly predictive of timely initiating BF in Taif (Table3).

The prevalence of exclusive BF was low (19%). On demand pattern, was the most common pattern of exclusive BF (94.7%) (Table4).

The prevalence of exclusive breastfeeding decreased considerably from <1 month to 6 months among Saudi Mothers in Taif. Nearly one third (30.3%) of infants were breastfed exclusively for <1 month, while almost a quarter (23%) of infants were breastfed exclusively to 2 to 3 months of age. The exclusive BF dropped to 14.4% to 4-6 months (Figure 2).

Exclusive BF was more likely to be practiced by mothers with rural/Hager residence, of university education, with secondary educated husbands, with unsatisfactory family income, delivered at hospital, having normal vaginal delivery, not using oral contraceptive pills, and having infant ≤ 1 month of

age. The mean \pm SD of duration of exclusive BF was 1.8 ± 1.1 months with median = 1.8 months (**Table5**).

The significant statistically variables in our model were secondary school educated mothers with more likely than < secondary school educated mothers to practice exclusive BF (the odds ratio of secondary educated mothers practicing exclusive BF was 10.3 times the odds of < secondary educated mothers (OR:10.3; 95%CI: 1.79,58.9); father education, with secondary school educated fathers were more likely than < secondary school educated fathers to encourage their wives for practicing exclusive BF (the odds ratio of secondary educated fathers was approximately three times the odds of < secondary educated fathers (OR:2.7; 95%CI: 0.60,12.13); type of delivery, with mothers delivered normally through vagina were approximately 2.5 times more likely to be breast feeding exclusively compared with mothers delivered by cesarean section (OR:2.3; 95%CI: 1.14,4.47); and infant age with those <1 month were approximately three times more likely to be breast feeding exclusively compared with infants in the age range of 4 – 6 months (OR:2.7; 95%CI: 1.55,4.72) (Table 6). On the other hand, residence, family income, place of delivery, giving pre lacteal fluids, and timely initiation of BF did not enter the equation as all were not significantly predictive.

4. Discussion:

WHO infant-feeding guidelines recommend that all infants should be breastfed within 1 hour after birth and exclusively breastfed from birth until 6 months of life (WHO,2008). This study found that the **timely initiated breast feeding** was low in Taif, KSA,2013,1434 H. Twenty two percent of mothers had initiated breastfeeding within the first hour after birth, while 78% were initiated BF late ($>$ one hour after birth), almost 20% of those who initiated BF late, put their babies to their breasts after more than the first day of birth, which means that colostrum was not given to these babies. The first milk (colostrum) present at birth is critical in boosting an infant's immune system and encouraging the passage of the first stool. Approximately two thirds of mothers gave prelacteal fluids to their infants, (almost 80% of those who gave pre lacteal fluids used bottle as a method of giving prelacteal fluids). Multiple logistic regression revealed that the independent predictors of timely breastfeeding were: not giving prelacteal feeds (OR 12.02), housewives mothers (OR 5.6), 2ry educated supportive father (OR 6.99), and vaginal spontaneous delivery (OR 7.2). This result was consistent with a recent study in Saudi Arabia which reported that 23.2% of babies were breastfed within 1 hour after birth (Al- Mouzan *et al.*,2009). However, the result of present study was higher than other recent Saudi study

in Al Hassa where the authors reported that only 11.4% of mothers initiated breastfeeding within 1 hour after birth (El-Gilany *et al.*, 2012). In many parts of the world, the rates of early initiation of breastfeeding are extremely low: for example, 17% in Eastern Europe and Central Asian countries, and 33% in the Asia-Pacific region [Setty, 2006]. In Lebanon, 18.3% of the

mothers initiated breastfeeding within half an hour after birth [Batal *et al.*, 2005]. The highest rates (about 50%) are in Latin America, the Caribbean, East and North Africa. In South Asia, 24%–26% of babies born in Bangladesh, India and Pakistan are breastfed within the first hour of birth (World Breastfeeding Trends Initiative, 2013).

Table 2: The effect of socioeconomic, selected demographic, and health services factors on initiation of breastfeeding, Taif, 2013, KSA.

Selected factors		Time of BF initiation		Total (N0.=400) N0. %	P value of difference
		Timely initiated (N0. = 88) N0. %	Late initiated BF (N0.=312) N0. %		
Mother education	< secondary education	54 47.4	60 52.6	114 100	P=0.0000
	secondary education	22 15.7	118 84.3	140 100	
	University	12 7.9	134 92.1	146 100	
Mother work	Housewife	74 23.1	246 76.9	320 100	P=0.02
	Teacher	4 7.4	50 92.6	54 100	
	Employee	10 38.5	16 61.5	26 100	
*Father education	< secondary education	58 52.3	53 47.7	111 100	P=0.0000
	secondary education	15 9.4	144 90.6	159 100	
	University	12 9.7	112 90.3	124 100	
*Family income	Satisfactory	59 17.9	271 82.1	330 100	P=0.0000
	Unsatisfactory	23 35.9	41 64.1	64 100	
*Residence	Urban	45 14.7	262 85.3	307 100	P=0.000
	Rural/Hager	39 44.3	49 55.7	88 100	
Antenatal care visit	Yes	60 31.1	133 68.9	193 100	P=0.000
	No	28 10.6	179 89.4	207 100	
Place of delivery	Home	11 40.7	16 59.3	27 100	P=0.006
	Hospital	77 20.6	296 79.4	373 100	
Type of last delivery	Normal/Ventous	85 27.3	226 72.7	311 100	P=0.000
	Cesarean Section	3 3.4	86 96.6	89 100	
Giving prelacteal fluids	Yes	9 3.8	227 96.2	236 100	P=0.000
	No	79 48.2	85 51.8	164 100	
Total		88 22	312 78	400 100	

(*) = Different from total sample due to missing values

Table 3: Coefficients of Stepwise Regression for Relative Effect of giving prelacteal fluids, mother work, father education, and type of last delivery variables in Predicting timely initiating BF at Taif, 1434 H (2013 G).(N = 389*)

Predictors	β	S.E.	χ ²	Sig.	Adjusted OR	95.0% C.I. for OR	
						Lower	Upper
Pre lacteal fluids	2.486	0.446	31.04	.0000	12.02	5.01	28.82
No	-----	-----	-----	-----	1 ^a		
Yes							
Mother work:							
Working mothers	-----	-----	-----	-----	1 ^a		
Housewives	1.715	.721	8.396	.004	5.559	1.353	22.835
Father Education			31.488	.000			
2y Education	1.945	.473	16.926	.000	6.99	2.057	18.361
University	.018	.459	.002	.968	1.019	.414	2.506
< 2ry education	-----	-----	-----	-----	1 ^a		
Type of last delivery:	1.973	.627	9.908	.002	7.195	2.106	24.586
Normal Vaginal CS	-----	-----	-----	-----	1 ^a		

*= Eleven cases were excluded from the regression model due to missing values for any of the potential predictors of initiation BF and those included in the final regression model. a = Reference group

Constant = -0.764; χ²=126.24; P=0.000, R² = 0.475; R= 0.689

OR= Odds Ratio; CI = Confidence Interval. % correctly predicted = 86.3 %.

Table 4: Prevalence of exclusive breastfeeding and its pattern.

Exclusive BF	Frequency	
	N0.	%
Yes	76	19
No	324	81
Total	400	100
If yes which pattern:		
On demand	72	94.7
On schedule	4	5.3
Total	76	100 %

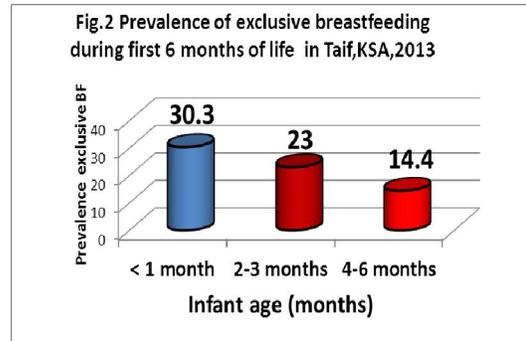


Table 5: The effect of socioeconomic, selected demographic, and health services factors on exclusive breastfeeding, Taif, 2013, KSA.

Selected factors	Exclusive BF		Total (N0.= 400) N0. %	P value of difference
	Exclusive BF (N0. = 76) N0. %	Non exclusiveBF (N0.=324) N0. %		
Mother education	< 2ry education	2 1.8	112 98.2	P=0.0000
	secondary education	31 22.1	109 77.9	
	University	43 29.5	103 70.5	
Infant age	≤ 1 month	10 30.3	23 69.7	P=0.001
	2 – 3 months	30 19.7	122 80.3	
	4 – 6 months	36 16.7	179 83.3	
*Father education	< 2ry education	3 2.7	108 97.3	P=0.000
	2ry education	44 27.7	115 72.3	
	University	29 23.4	95 76.6	
*Family income	Satisfactory	49 14.9	281 85.1	P=0.0000
	Unsatisfactory	21 42.2	43 57.8	
*Residence	Urban	47 15.3	260 84.7	P=0.002
	Rural/ Hagar	29 33	59 67	
Place of delivery	Home	1 3.7	26 96.3	P=0.03
	Hospital	75 20.1	298 79.9	
Type of last delivery	Normal/Ventous	68 21.9	243 78.1	P=0.006
	Cesarean Section	8 9	81 91	
Use oral contraceptive pills	No	72 23.8	230 76.2	P=0.0000
	Yes	4 4.1	94 95.9	

(*)= Different from total sample due to missing values. The mean ± SD of duration of exclusive BF was 1.8 ± 1.1 months with median = 1.8 months.

Table 6: Coefficients of Stepwise Regression for Relative Effect of mother education, infant age, Type of delivery, father education variables in Predicting exclusive BF at Taif, 1434 H (2013 G).(N = 392*)

Predictors	β	SE	χ ²	Sig.	Adjusted OR	95.0% C.I.for OR	
						Lower	Upper
Mother education			16.754	.000			
< 2ry education(ref.)			7.134	.028	1 ^a .0		
2ry education	2.329	.891	6.838	.009	10.270	1.792	58.852
University	.365	.306	1.422	.233	1.440	.791	2.624
Father education			6.453	.040	1 ^a .0		
< 2ry education(ref.)							
2ry education	.996	.765	1.695	.193	2.707	.604	12.128
University	-.518	.309	2.814	.093	.596	.325	1.091
Type of delivery					1 ^a .0		
Cesarean Section	.815	.348	5.493	.019	2.260	1.143	4.468
Normal vaginal							
Infant age (months)							
<1 month	.995	.285	12.221	.000	2.704	1.548	4.723
2 – 3 months	19.981	7298.365	.000	.998	4.759E ⁸	.000	.
4 – 6 months(ref)			12.221	0.002	1 ^a .0		

*= Eight cases were excluded from the regression model due to missing values for any of the potential predictors of exclusive BF and those included in the final regression model.

a = Reference group; Constant = 0.266; χ²=67.9; P=0.000; OR= Odds Ratio; CI = Confidence Interval.

Only nineteen percent of the mothers were **exclusively breastfed (EBF)** their infants aged less than 6 months in Taif, 2013. This could be due to inadequate knowledge among mothers and family members regarding benefits of exclusive breastfeeding in the first 6 months of infant's life and also existence of belief that breast milk alone is not sufficient to fulfill either infant's hunger or hot climate of the country, hence supplement or complement with other liquids/soft foods (Taveras *et al.*, 2003). It should be mentioned that breast milk alone can maintain adequate water balance in young infants, and supplementary fluids are not needed even in warm climates (Sachdev *et al.*, 1991). Provision of adequate support and educating mothers and their families from Taif, KSA, on the importance of giving initial breast milk to infants and EBF until 6 months may have a positive effect on improving rates of early initiation of breastfeeding and EBF and potentially reduce the risks of infections and death among newborns at Taif, KSA (Fjeld *et al.*, 2008).

The prevalence of EBF in Taif was low in comparison with both the national KSA figure, mentioned by World Breastfeeding Trends Initiatives, 2013, as 31% and other local Saudi studies such as: Ogbeide *et al.*, 2004 who reported 27.3% of mothers were engaged in exclusive BF, in AL Kharj, KSA. In addition, Khoja and Farid, 2000, reported that 31% of infants younger than 4 months of age were exclusively or predominantly BF. Also, Shawky and Abalkhail, 2003 reported exclusive BF of 30%. However, the authors in the previous Saudi studies did not mention the rate of initiation BF at birth and no definitions of breastfeeding were provided, making the comparison is difficult. Furthermore, the differences between this study and previous Saudi studies might either be attributed to variations in study designs, sample selection and variable definitions or to an actual decline in the rate of exclusive breastfeeding in KSA. Moreover, higher rates of exclusive breastfeeding have been reported in New Zealand (Heath *et al.*, 2002), Norway (Lande *et al.*, 2003), and UAE (Radwan, 2013). Similar to our result, low levels of exclusive breastfeeding were recorded in Ethiopia (Setegn *et al.*, 2011). However, our results were higher than that reported by Al-Hreashy *et al.*, 2008 who reported exclusive BF of 1.7%.

Researches that help in understanding the predictors of both timely initiation and exclusive breastfeeding, may assist in the creation of programs that promote breastfeeding exclusivity in accordance with the WHO guidelines (Al-Sahab, *et al.*, 2010). A number of socio-demographic variables were associated with the initiation and exclusive breastfeeding in this study. Parents' education effects

initiation, and exclusive BF. The higher the parents' education, the timely is the initiation of BF, the longer is the duration of exclusive breast-feeding. It may be likely that as parents become more educated, they may have more knowledge on infant feeding including benefits of breast-feeding than less educated parents. Also, since they are more educated, they can easily understand the health messages including breast-feeding from the health personnel or from mass media than less educated parents. This result was similar to some researches in developed countries (Simard *et al.*, 2005), and in Bahrain (Musaiger and Abdul Khalek, 2000), while it was inconsistent to UAE study (Radwan, 2013). In addition, generally, the present study reported inconsistent relationship between parity and BF. Similar results were reported in different countries (Amin *et al.*, 2011 KSA; Radwan, 2013 in UAE; and Ogunlesi, 2010 in Nigeria).

A number of hospital practices during the intrapartum and very early postnatal period are potentially detrimental to initiation of breastfeeding (Forster, & Lachlan, 2007). For example, a prelacteal feed was given to about two-thirds of babies in our study population. Recent studies reported an association between prelacteal feeding and delayed breastfeeding. Researchers suggested that prelacteal feeding result in the baby receiving insufficient breast milk possibly leading to lactation failure, and that giving prelacteal glucose to the infant weakens the suckling stimulus [Chudasama *et al.*, 2013].

Caesarean delivery (22.2%) and using oral contraception pills (OCP) (24.5%) were reported in this study as influencing variables associated with non exclusive breastfeeding practice. These factors have previously been shown to hinder breastfeeding and disrupt lactation (Ogbeide *et al.*, 2004). The OCP can cause decreased breast milk production and this effect varies among mothers. The negative association between Caesarean section and initiating BF may be linked to the effects of anesthesia delaying the onset of lactation and some baby-unfriendly postoperative-care practices. This study was in agreement with both Fida, and Al-Aama, 2003, and Al Hareashy *et al.*, 2008, in that the use of OCP was the most common contraceptive method used among lactating mothers in Taif. The percentage of Caesarean section delivery (22.2%) in our population at Taif, was higher than that reported elsewhere in the Kingdom (Al Hareashy *et al.*, 2008). Appropriate guidelines for caesarean deliveries are needed to minimize delays in initiation of breastfeeding. Prospective mothers and health workers should be informed about the negative association between prelabour caesarean delivery and breastfeeding and the implications for infant well-being.

The main strengths of this study include the use of a comprehensive data on standard infant-feeding indicators to identify factors associated with suboptimal breastfeeding practices in Taif, and appropriate sampling design and size in the analysis. In addition, the findings from this study will help guide health programmes to improve early initiation of breastfeeding, and exclusive breastfeeding in order to ensure young children in Taif receive the full benefits of appropriate breastfeeding practices including reduced morbidity and mortality. The main limitation was the cross-sectional nature of the study which limited inferences about causality from the analyses. In addition, the population of the study not representative of the KSA infant population, and is limited to 6 months duration, where the ideal duration of lactation is two years.

Conclusions and Recommendations:

This study indicated that the prevalence rates of timely initiated and exclusive breastfeeding were low in Taif, 2013. In addition, the practice of giving prelacteal fluids, and using of oral contraceptives pills, were of great concern in Taif population and should be discouraged. Also the study highlighted that interventions are needed to bridge the gap between the current practices of breastfeeding and the recent World Health Organization recommendations. Moreover, interventions are needed for infants, to gain the full benefits of breastfeeding and help the country achieve the Ninth Development Plan (2010-2014) relevant to Millennium Development Goal four (MDG Goal 4), for reduction of infant mortality from 16.9 deaths per 1000 births in 2010 to 12 deaths per 1000 live births by the year 2015. (Ministry of Economy and Planning, KSA, 2011). The improvement of breastfeeding practices will require national level programmes with a focus on target groups with suboptimal breastfeeding practices including less educated mothers who married less educated father, those who deliver by caesarean section, and those who have infants 4 - 6 months of age. Further nationwide research is recommended to provide a better picture about timing of initiation of BF in KSA. In addition, a research is needed to investigate Saudi mothers knowledge, attitude, and intention to practice exclusive breastfeeding in Taif, KSA. Also, policy makers should be informed of the need to make provision of more nursing rooms, at places where mothers work, a priority to encourage breastfeeding.

Acknowledgements

This study was supported by Taif University research grant number: 1 / 434 / 243

We acknowledge the support of Dr. Farid H.Felebnan, Vice President for Graduate Studies and

Scientific Research, Taif University. We are grateful to Mrs. Rabia Ali ElTeayeb, and Mrs. Rania Ahmed Kamal, for their efforts in data collection with the researchers, also to the participants and their infants.

Corresponding autor

Prof. Dr.: Laila Sh. Dorgham

Faculty of Applied Medical Sciences, Taif University, KSA

Lailadorgham@gmail.com

References:

1. Al-Mouzan MI, Ahmad A. Al Omar, Abdulla A. Al Salloum, Abdulla S. Al Herbish, and Mansour M. Qurachi (2009): Trends in infants nutrition in Saudi Arabia: compliance with WHO recommendations. *Annals of Saudi Medicine*, 2009, 29:20–23.
2. Amin T, Hablas H, and Al Qader AA (2011): Determinants of initiation and exclusivity of breastfeeding in Al Hassa, Saudi Arabia. *Breastfeed Med* 2011, 6(2):59–68.
3. Arenz S, Ruckerl R, Koletzko B, von Kries R (2004): Breast-feeding and childhood obesity: a systematic review. *Int J Obes Relat Metab Disord* 2004, 28:1247–1256.
4. Al Jassir MS, El-Bashir BM, Moizuddin SK, Abu-Nayan AAR (2006): Infant feeding in Saudi Arabia: mothers' attitudes and practices. *East Meditr Health J* 2006, 12(1&2):6–13.
5. Al-Sahab B., Andrea Lanes, Mark Feldman, and Hala Tamim (2010): Prevalence and predictors of 6-month exclusive breastfeeding among Canadian women: a national survey. *BMC Pediatrics* 2010, 10:20. <http://www.biomedcentral.com/1471-2431/10/20>
6. Al-Hreashy FA, Tamim HM, Al-Baz N, Al-Kharji Nora, Al-Amer A, Al-Ajmi H, et al. (2008): Patterns of breastfeeding practice during the first 6 months of life in Saudi Arabia. *Saudi Med J*. 2008;29(3):427–431.
7. Batal M, Boulghourjian C, Abdallah A, Afifi R (2005): Breast-feeding and feeding practices of infants in a developing country: a national survey in Lebanon. *Public Health Nutr* 2005, 9:313–319.
8. Chudasama RK, Patel PC, Kavishwar AB. (2013): Breastfeeding initiation practice and factors affecting breastfeeding in South Gujarat region of India. *Internet Journal of Family Practice*, 2009, 7(2) [online] <http://www.ispub.com/journal/theinternet-journal-of-family-practice/volume-7-number-2/>, accessed on 6 September, 2013).
9. Du Plessis D (2009): Breastfeeding: mothers and health practitioners, in the context of private medical care in Gauteng. *J Interdiscipl Health Sci* 2009, 14:1.
10. El-Gilany A.-H., B. Sarraf, and A. Al-Wehady (2012): Factors associated with timely initiation of

- breastfeeding in Al-Hassa province, Saudi Arabia. EMHJ •Eastern Mediterranean Health Journal Vol. 18 No. 3, pp: 250-254.
11. Fida N. M., and Al-Aama J.Y.(2003): Pattern of infant feeding at a University Hospital in Western Saudi Arabia. Saudi Med J 2003; Vol. 24 (7): 725-729
 12. Fjeld E, Siziya S, Katepa-Bwalya M, Kankasa C, Moland KM, T; T, promise-EBF Study Group (2008): No sister, the breast alone is not enough for my baby' a qualitative assessment of potentials and barriers in the promotion of exclusive breastfeeding in southern Zambia. Int Breastfeed J 2008, 3:26.
 13. Forster DA, McLachlan HL. (2007): Breastfeeding initiation and birth setting practices: A review of literature. Journal of Midwifery and Women's Health, 2007, 52:273–280.
 14. Heath AM, Tuttle CR, Simons MSL, Cleghom CL, Parnell WR (2002): A longitudinal Study of breastfeeding and weaning practices during the first year of life in Dunedin, New Zealand. J Am Diet Assoc 2002, 102(7):937–944.
 15. Horta BL, Bahl R, Martines JC, Victora CG (2007): Evidence on the long- term effects of breastfeeding: systematic reviews and meta-analyses. Geneva: WHO; 2007:52–57.
 16. Khoja TA, & Farid SM.(2000): Ministry of Health. Riyadh, Kingdom of Saudi Arabia: 2000. Saudi Arabia Family Health Survey
 17. Lande B, Anderson LF, Baerug A, Trygg KU, Lund-Larsen K, Veierod MB, Bjerneboe GE (2003): Infant feeding practices and associated factors in the first six months of Life. The Norwegian Infant Nutrition Survey. Acta Paediatr 2003, 92:152–161.
 18. Musaiger A O, and AbdulKhalek N,(2000): breastfeeding and weaning practices in Bahrain: the role of mother's education. Nutr Health 2000;14:237 – 263.
 19. Ministry of Economy and Planning,kingdom of saudi arabia(2011): millennium development goals, Overview of the Progress Achieved. 1432H 2011G. United Nations Development Program, 1426- 7222 ISSN 1658- 2705
 20. Ministry of Health Statistic Book, 1431 H.
 21. Ogbeide DO, Siddiqui S, Al-Khalifa IM, Karim A (2004): Breastfeeding in a Saudi Arabian community: profile of parents and influencing factors. Saudi Med J25(5):580–584.
 22. Ogunlesi TA(2010): Maternal socio-demographic factors influencing the initiation and exclusivity of breastfeeding in a Nigerian semi-urban setting. Matern Child Health J. 2010 May;14(3):459-65. doi: 10.1007/s10995-008-0440-3. Epub 2009 Jan 21.
 23. Radwan H. (2013): Patterns and determinants of breastfeeding and complementary feeding practices of Emirati Mothers in the United Arab Emirates BMC Public Health 2013, 13:171. <http://www.biomedcentral.com/1471-2458/13/171>.
 24. Sachdev HPS, Krishna J, Puri RK, Satyanarayana SL, Kumar S(1991): Water supplementation in exclusively breastfed infants during summer in the tropics. Lancet 1991, 337:929–933.
 25. Setegn T, Gerbaba M, Belachew T (2011): Determinants of timely initiation of breastfeeding among mothers in Goba Woreda. South east Ethiopia: a cross sectional study. BMC Public Health 2011, 11:217.
 26. Setty V.(2006): Better breastfeeding, healthier lives. Population reports series L No. 14. Baltimore, John Hopkins Bloomberg school of Public Health, 2006.
 27. Shawky Sh., and Abalkhail B.A(2003): Maternal factors associated with the duration of breast feeding in Jeddah, Saudi Arabia. Blackwell Publishing Ltd. Paediatric and Perinatal Epidemiology, 17, 91–96, 2003.
 28. Simard I, O'Brien HT, Beaudoin A, Turcotte D, Damant D, Ferland S, et al(2005): Factors influencing the initiation and duration of breastfeeding amonglow-income women followed by the Canada prenatal nutrition program in 4 regions of Quebec.J Hum Lact, 21:327–337.
 29. Taveras EM, Capra AM, Braveman PA, Jensvold NC, Escobar GJ, Lieu TA(2003): Clinician support and psychosocial risk factors associated withbreastfeeding discontinuation. Pediatrics 2003, 112:108–115.
 30. WHO (2008): Indicators for assessing infants and young child feeding practices. Part I. Definitions. Conclusions of a consensus meeting held 6–8 November 2007, in Washington D. Geneva, World Health Organization, 2008.
 31. World Breastfeeding Trends Initiative(2013): State of breastfeeding in 40 countries: IYCF practices, policies and programs measured on a scale of 150 (2008–2011). [website] (<http://www.worldbreastfeedingtrends>. Accessed on 15 September,2013.
 32. World Health Organization (2009): Infant and young child feeding (IYCF) ModelChapter for textbooks for medical students and allied health professionals. Switzerland: World Health Organization; 2009.