Breast feeding in a saudi arabian community

Profile of parents and influencing factors

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ABSTRACT

Objective: Although bottle feeding is the main infant feeding mode in most societies, human milk is considered the most appropriate food for human infants. The aim of this study is to gather statistics regarding breast feeding prevalence, influencing factors for engaging in, and demographic characteristics of breast feeding in general population.

Methods: This is a random cross-sectional questionnaire study conducted in Al Kharj Health Centre, Kingdom of Saudi Arabia between the period of November 2000 through to February 2001. Mothers of childbearing age with at least one child were interviewed by trained interviewers. The sample was divided into 3 groups according to the mode of feeding: Exclusive breast feeding, partial breast feeding, which included some breast feeding and some bottle feeding and exclusive bottle feeding. A statistical analysis was performed using statistical package for social sciences software package, (version 10.0). The response data were subjected to chi-square test, and Spearman's correlation analyses.

Results: Seven hundred and four mothers were interviewed. The mean age of mothers, fathers, and most recently born child were 30-years, 37-years, and 15.7-months. Partial breast feeding was the most common mode of infant feeding in this sample, with 66.1% of mothers engaging in this mode ($p<0.00001$). Exclusive breast feeding was the next most common, with 27.3% of mothers engaging in this mode. Finally, exclusive bottle feeding was the least common (6.7%). Four main demographic factors significantly related to the exclusive mode of breast feeding were husbands' educational level, advice received regarding breast feeding, whether or not a milk sample given at discharge from hospital, and whether or not contraception used. A positive significant correlation was found between breast feeding and mother's age, father's age, age of most recently born child, parity, number of children previously breast fed, and duration of previous breast feeding.

Conclusion: Partial breast feeding is the dominant mode of feeding in our community, although the influencing factors and behavioral factors are similar in breast feeding and partial breast feeding groups. The most significant factors affecting the outcome of breast feeding are modifiable by health education.

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Breast feeding is the most ancient and reliable form of infant feeding. Breast milk is not only beneficial for the physical, psychological and emotional well being of the infant but also for the breast feeding mother.[1-6] Despite the recognized benefits of breast feeding for the infant and, the mother the rates of breast feeding in early postpartum period are not very encouraging and range from 29-57% at 6-months postpartum.[7-9] There are different factors associated with

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successful initiation and continuation of breast feeding such as the social and demographic background of the mother, individual characteristics, attitudes towards breast feeding, previous lactation experience.[10-13] To the best of our knowledge, there are no statistics available regarding breast feeding at the national level and there is only one study regarding breast feeding prevalence and influencing factors in the Kingdom of Saudi Arabia (KSA).[9] This information is crucial for the development of a successful breast feeding promotion plan in our community. The objective of our study was to find out the prevalence of breast feeding, the social and demographic influencing factors related to the initiation and continuation of breast feeding and the attitude of females towards breast feeding in our community.

Methods. This questionnaire study was carried out in Alkharj Health Center. Questionnaires were obtained from randomly selected mothers of childbearing age, visiting our clinics from 1 November 2000 through to 28 February 2001. Trained medical and non-medical interviewers administered a total of 704 questionnaires. None of the women refused to participate. Questions were regarding the social and family background of the mothers such as age, education and employment status, marital status, number of children, how many children were breast fed and the average duration of breast feeding, their knowledge regarding breast feeding, most important reason for breast feeding, social support available, husband education and employment status and opinions regarding breast feeding and details regarding the last delivery and mode of feeding for the last child. Subjects were divided into 3 groups: such as breast feeding (breast milk as the only source of feeding), partial breast feeding (breast feeding along with bottle milk) and bottle feeding (only given bottle milk). The association between breast feeding and various factors was determined by the chi-square (χ^2) test and the calculation of the odds ratios for variable in each category (**Table 3**). Univariate and multivariate logistic regression (LR) analysis were performed to find the best fit models for the outcome of breast feeding. The univariate LR analysis was carried out in 2 steps, breast feeding versus bottle feeding and breast feeding versus partial breast feeding. The response variable was categorized into 1=breast feeding and 0=bottle feeding/partial breast feeding. For multivariate LR analysis, the response variable was categorized as 1=breast feeding, 2=partial breast feeding and 3=bottle feeding. Various independent variables were categorized as education (1=uneducated, 2=primary, 3=secondary, 4=high school, 5=college, 6=university); husband's opinion regarding breast feeding (1=support, 2=no support, 3=impartial); contraception (1=yes, 2=no); family system (1=extended, 2=nuclear); occupation (1=unemployed, 2=employed; child's sex (1= male, 2=female); social support (1=yes, 2=no); husband's education (1=uneducated, 2=primary, 3= secondary, 4=high school, 5=college, 6=university); husband's occupation (1=unemployed, 2=employed); pregnancy duration (1=full-term, 2=pre-term); mode of delivery (1=normal, 2=cesarean); season of delivery (1=summer, 2=winter, 3=fall, 4=spring);

Table 1 - Details of social and demographic background of mothers.

Variable	Breast feeding n	(%)	$\chi 2$	*P* values
Maternal age				
>20	6	(4)		
21-30	92	(46.9)		
31-40	83	(42.3)		
>40	10	(6.6)		
Education				
Uneducated	80	(41.9)	29.17	0.00001
Elementary	46	(18.3)		
Middle	38	(19.9)		
Secondary	6	(3.1)		
College	13	(6.8)	26.4	0.00001
University	19	(9.9)		
Profession				
Housewife	182	(94.8)	15.24	0.0001
Working	9	(5.2)		
Parity				
1	22	(11.5)		
2-4	56	(21.5)		
5-8	86	(45)	9.61	0.001
>8	42	(22)		

Table 2 - Pregnancy and postnatal variables in breast feeding groups.

Variables	Breast feeding n	(%)	$\chi 2$	*P* values
Pregnancy duration				
Full term delivery	187	(97.4)	6.08	0.01
Mode of delivery				
Non vaginal delivery	174	(91.3)	11.18	0.001
Hospital stay				
24-hours	143	(74.4)	5.33	0.02
Advice in hospital stay				
Nurses	52	(27)		
Doctors	18	(9.4)		
Both	64	(33.3)	11.43	0.001
When started breastfeed				
1-3 hours	156	(81.3)	7.81	0.001
Milk given at discharge				
Yes	43	(22.4)	4.99	0.0001

hospital stay (1=24 hours, 2=48 h, 3=1 week); advice during hospital stay regarding breast feeding (1=nurse, 2=doctor, 3=both); when started breast feeding after birth (1=1-3 hours, 2=4-8 hours, 3=9-12 hour, 4=more than 12 hour) and whether milk sample was given at discharge (1=yes, 2=no). Initially, all the variables were included in the model, but the best model was obtained by stepwise LR using a backward elimination procedure. The effect of continuous variables including mother's age, father's age, age of last child, parity, number of previously breast fed children and the duration of previous breast feeding on the outcome of breast feeding was analyzed by Spearman's correlation test. All the statistics were performed by statistical package for social sciences (Version 10) statistical software.

Results. A total of 704 Muslim mothers of childbearing age were interviewed. Mean age for mothers was 30 ± 6.2 (range 16-46 years) and for fathers was 37.2 ± 9.1 (range 22-70 years). Mean age of the last child was 15.7 ± 14.5 (0.5-48 months). All mothers were married. Most of them 606 (86%) were full time housewives. One hundred and ninety (26.7%) mothers were uneducated. Results showed that 27.3% (191) were only breast feeding, 66.1% (465) were partially breast feeding and 6.7% (47) were only bottle feeding. The details of the characteristics of the mothers are shown in **Table 1**. As compared to bottle feeding, the factors significantly related to breast feeding are shown in **Table 2**. The results of both univariate and multivariate LR analyses showed that contraception, husband's education, advice regarding breast feeding and milk samples given at discharge were most significantly associated with the outcome of breast feeding **(Tables 3, 4 & 5)**. The occupation of mother and child's sex also significantly contributed to the final models obtained by multivariate LR and univariate LR when the dependent variable was dichotomously set between breast feeding and partial breast feeding. On the other hand, involvement of the family system was common among multivariate LR and univariate LR designed for breast feeding versus bottle feeding. Other factors, including social support, pregnancy duration, and the season of delivery were present only in the final univariate LR model for breast feeding versus bottle feeding, whereas, the mode of delivery was present in both the univariate LR models (bottle or partial breast feeding). There was a positive and significant correlation between the outcome of breast feeding and the mother's age (correlation coefficient, r=0.128, $P<0.01$), the father's age (r=0.102, $P<0.01$), age of last child (r=0.075, $P<0.05$), parity (r=0.142, $P<0.01$), number of children breast fed earlier (r=0.167, $P<0.01$) and the duration of earlier breast feeding (r=0.304, $P<0.01$). Average duration of breast feeding for previous children was 16.8 ± 6 months in the breast feeding group as compared to 9.2 ± 9 months in the bottle feeding group. More breast feeding mothers (69.3%, $\chi^2=63.86$, $p<0.00001$) were feeding their babies on demand and planned to continue breast feeding (82.3%, $\chi^2=78.54$, $p<0.00001$) for up to 24-months. The most common

Table 3 - Stepwise univariate logistic regression analysis for breast feeding versus bottle feeding.

Variable	Change in-2 log likelihood	Degree of freedom	Significance of the change
Model summary: -2 log likelihood=117.34, χ^2=114.48, df=17, *P*=0.000)			
Contraception	29.428	1	0.000
Family system	4.841	1	0.028
Social support	3.255	1	0.071
Husband's education	47.672	5	0.000
Pregnancy duration	3.651	1	0.056
Mode of delivery	19.773	1	0.000
Season	8.069	3	0.045
Advice	20.261	3	0.000
Milk sample	13.896	1	0.000

Table 4 - Stepwise univariate logistic regression analysis for breast feeding versus partial breast feeding.

Variable	Change in-2 log likelihood	Degree of freedom	Significance of the change
Model summary: -2 log likelihood=681.70, χ^2=97.84, df=13, *P*=0.000)			
Contraception	8.461	1	0.004
Occupation	2.787	1	0.095
Child's sex	4.098	1	0.043
Husband's education	40.625	5	0.000
Mode of delivery	6.447	1	0.011
Advice	13.512	3	0.004
Milk sample	18.449	1	0.000

Table 5 - Multivariate logistic regression model showing the most significant variables for the outcome of breast feeding.

Variable	Chi-square*	Degree of freedom	Significance
Model summary: -2 log likelihood=598.10, χ^2=159.19, df=26, *P*=0.000)			
Contraception	19.175	2	0.000
Family system	5.683	2	0.058
Occupation	5.481	2	0.065
Child's sex	5.513	2	0.064
Husband's education	58.729	10	0.000
Advice	31.181	6	0.000
Milk sample	30.867	2	0.000

reason for continuing breast feeding up to 24-months, in this group was religious in nature (77%, χ^2=52.30, p<0.00001). Mothers in the breast feeding group exclusively breast fed babies to a mean age of 5 ± months. Partial breast feeding was the dominant mode of feeding (66.1%, p=0.00001) in our population. This was significantly more common among mothers having 2-4 children. Factors related to partial breast feeding were similar to those found in breast feeding group. The most common reason given for supplementing breast feeding with bottle feeding was "not enough milk" (70.8%, x=176.84, p<0.00001). Significantly more mothers (34.8%, x=82.87, p<0.00001) in the partial breast feeding group plan to discontinue breast feeding at the age of 6-months. The most common reason for discontinuing breast feeding before 24 months was inconvenience (29.6%, x=42.33, p<0.00001).

Discussion. In KSA, indigenous population is all Muslims with a very traditional style of living and all the facilities of modern living in big cities. The age of marriage especially for women is quite young and most Saudi's have big families. Alkharj Health Center delivers comprehensive health care to an eligible population of 100,000 patients. Although culturally, medically and religiously, breast feeding is the preferable method of infant feeding, only 29% of women exclusively breast fed their babies. The total prevalence of women breast feeding and partially breast feeding was 93.5% as compared to 64% reported in the United States of America in 1998 in the early postpartum period.[7] Sixty-three percent of mothers continue breast feeding up to 24-months (82.3% and 44.5% in the breast feeding and partial breast feeding groups) which is more than is found in other studies.[7-9] This reflects the fact that breast feeding is still the preferable mode of feeding in our society. The 4 factors most significantly associated with the outcome of breast feeding were contraception, husband's education, and advice regarding breast feeding and milk samples given at discharge. Fifty-five (28%) of mothers who were breast feeding were using contraceptives, 141 (72%) of those who were breast feeding were not using contraceptives. It is observed that in our society oral contraceptive pills were the preferred method of contraception. Most females believe that progesterone-only contraceptive pills are not very effective, and they prefer standard strength combined oral contraceptive pills like Microgynon. It is documented in the literature that these pills, due to their estrogen content, have an adverse effect on lactation.[14] Some ladies believe that oral contraceptive pills will cause harm to the baby so they stop breast feeding even though it is documented that the amount of hormones transferred in breast milk to baby is extremely small.[15] Another factor is that females with perinatal complications such as cesarean sections, premature deliveries, have more of a chance of receiving contraceptive and this may also explain the association with bottle feeding. Two hundred and sixty-eight (39.7%) mothers were using contraceptives and 407 (60.3%) were not using contraceptives. Milk samples given at discharge increase the chances of using formula later, which is shown to be associated with shorted duration of breast feeding.[12-13] There is also a greater chance of receiving formula milk for mothers with a complicated delivery such as a cesarean section and or when the infant had complications such as prematurity, such as resulting in difficulty in establishment and continuation of lactation.[16-19] Hospital staff advice and encouragement regarding breast feeding will indirectly result in a lower frequency of milk samples given at discharge. This explains that these two factors are important and may be related to the outcome of breast feeding. These results are similar to the findings in other studies suggesting that doctor', nurses' and other hospital staff advice regarding breast feeding are very strong predictors regarding mode of infant feeding.[16-19] Previous breast feeding experience and breast feeding advice by family members, especially mothers, were other factors significantly related to breast feeding. This is similar to findings in another study carried out in Canada.[20] There are many studies documenting the relationship of the mothers'education level with the outcome of breast feeding[10,21-22] but we could not find any study regarding the father's education level and breast feeding outcome. A possible explanation for this variable can be that education increases the awareness regarding the benefits of breast feeding resulting in more encouragement and support from the father for breast feeding the baby. The importance of fathers'attitude towards breast feeding is documented in various studies.[13,23-24] All the mothers know that breast feeding is the most healthy form of infant nutrition but the most common reason given for addition of formula milk was "not enough milk" (70.8%) followed by "inconvenience"(25.7%) as compared to a study in Canada where "not enough milk"and inconvenience was mentioned by 8% and 38% mother for using formula.[20] More than 78% of breast feeding mothers plan to continue breast feeding for up to 24 months and the most common reason (79%) for this decision was that it is mentioned in the Quran. This shows the influence of religion in Saudi society. It is instructed in the Quran to breast feed the babies until the age of 2 years. This religious influence is also shown in other studies.[22] The population served by this health center is mixed urban/rural coming from different parts of the Kingdom of Saudi

Arabia, but a larger study would be necessary for it to be considered representative of total Saudi population.

Our results showed that the factors most significantly related to the outcome of breast feeding are advice regarding breast feeding, milk sample given at discharge and contraception. These are all modifiable factors. There is a need for planning targeted health education for both men and women, the creation of facilities at the work place and in public places for breast feeding and for increasing awareness among mothers regarding correct techniques of breast feeding and the training of health care staff to teach mothers regarding breast feeding at every opportunity. More studies on a wider scale are needed for exploring different factors in details affecting the outcome of breast feeding.

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