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KNOWLEDGE, ATTITUDE AND PRACTICE OF BREAST FEEDING AMONG HEALTH CARE WORKING MOTHERS IN PRIMARY HEALTH CARE CENTERS OF PRINCE AHMAD SECTOR, MAKKAH ALMUKARRAMAH, SAUDI ARABIA

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Abstract

The World Health Organization recommends that all mothers should breastfeed their babies exclusively for 6 months. Nevertheless, some mothers do not know that and some mothers may be reluctant to follow this recommendation. To assess Breast feeding knowledge, attitude and practice of female health care working mothers in primary health care centers of Prince Ahmad Sector, in Makkah ALMukarramah, July, 2012 as well as to determine the barriers of exclusive breastfeeding during the first six months of their infants life. This research followed a cross-sectional design, included all healthcare working mothers (Physicians, Nurses and Technicians), who have a child aged six months to three years, working in primary health care centers of prince Ahmad sector within the city of Makkah, Makkah ALMukarramah region, Kingdom of Saudi Arabia during the study period July, 2012. And were asked to fill in a self administered validated questionnaire to assess their knowledge, attitude and practice of breast feeding. Data were collected by questionnaire consists of four parts: Personal characteristics (six items), Knowledge of mother (twenty items), Breast feeding practice (eight items) and finally, attitude of mothers toward breast feeding (ten items). This study included a total of 70 female health care working mothers of children aged between 6months to three years, the female health care working mothers were recruited from the primary health care centers within the Prince Ahmad sector during the month of July 2012. More than half of mothers were 30-40 years (51.4%), with a mean+SD of 31.6+4.6 years. The last child's age of more than half of mothers was 12-24 months (52.9%), with a mean+SD of 17.4+9.8 months. Only 38.6% of participant mothers breastfed their babies exclusively for at least six months. More than half of participant mothers did not continue breastfeeding their babies till the second year (55.7%). More than half of participant mothers started artificially feeding their babies without consulting a physician (52.9%), and 40% of mothers frequently changed the supplementary milk. The main reasons stated by participant mothers for starting artificial feeding were work-related obstacles (41.4%), insufficient breast milk (17.1%) and refusal of their child to be breastfed (15.7%). Mean knowledge scores were significantly higher among physicians than nurses or technicians ($p=0.004$) and were also significantly higher among mothers who underwent a Caesarian section than those who had vaginal delivery ($p=0.026$). Exclusive breast feeding was significantly less practiced by the youngest (i.e., <30 years) and the eldest mothers (i.e., >40 years) ($p=0.042$). Exclusive breast feeding was significantly less practiced by technicians ($p<0.001$) and mothers who underwent Caesarian sections ($p=0.018$). There are areas of lack of knowledge among female health care workers regarding exclusive breastfeeding. And only one third of health care workers in Makkah ALMukarramah, exclusively breastfeed their babies for 6 months. Most female health care workers do not continue breastfeeding their babies till the second year. The main reasons for early starting artificial feeding are work-related obstacles, insufficient breast milk and the refusal of the child to be breastfed.

Keywords: Breastfeeding Female Physicians, Exclusive, Knowledge, Attitude, Practice.

INTRODUCTION

In developing countries, the lives of one million infants can be saved just by promoting breastfeeding. In addition to the nutritional and psychological values of breast milk, it contains antibodies that help to protect the baby against many common childhood diseases. It is clean, always at the right temperature, inexpensive and nearly every mother has more than enough of this high quality food for her baby. Breastfeeding is the ideal method suited for the physiological and psychological needs of an infant [1].

In the Kingdom of Saudi Arabia (KSA), the law is based on the Quran and the Hadiths, or the sayings of the Prophet Muhammed (PUH). The Quran instructs its followers to breastfeed children for 2 complete years.

The WHO recommends that all mothers should breastfeed their babies exclusively for 6 months with supplemental breast feeding continuing up to the second year of life or later. Exclusive breastfeeding for the first 6 months of life improves the growth, health and survival status of newborns and is one of the most natural and best forms of preventive medicine [2].

Interventions that seek to increase exclusive breastfeeding should consider focusing on women who are most at risk of early discontinuation of breastfeeding. Nevertheless, some working mothers may find it difficult to follow this recommendation. Hence, it is important to explore the proportion of working mothers who decide to not exclusively breastfeed and the reasons behind their decision.

The current study aimed to explore magnitude and determinants of breast feeding practice by health care working mothers at the selected PHCCs, Makkah.

SUBJECTS AND METHODS

This research follows a cross-sectional design included all health care working mothers, who had a child, aged 6 months to 3 years, working in primary health care centers of prince Ahmad sector within the city of Makkah, Makkah ALMukarramah region, Kingdom of Saudi Arabia during the study period (July, 2012). The total number of the primary health care centers within the Prince Ahmad sector is eighteen. The total number of female health care workers in PHCCs of Prince Ahmad sector was estimated as 225 (physicians 45, nurses 137 and technicians 43). All female health care working mothers in PHCCs of Prince Ahmad sector who had a child aged 6 months to 3 years old were included; the total number was 70 participants.

Self administered validated questionnaire adopted from another study [3], both in English and Arabic languages [4] was utilized for data collection.

It consists of four parts: personal characteristics (6 items), knowledge of mother (20 items), breast feeding practice, if breast fed her child till the age of 6 months (3 items), if not had breast fed her child till the age of 6 months (5 items) and attitude of mothers toward breast feeding (10 items)

The total knowledge score for each participant was calculated as follows: for each statement, a correct response gives a score of (1), while an incorrect response or a do not know response gives a score of (0).

There are a twenty knowledge statements, a participant who gives twenty correct responses was given a total score of twenty. The mean scores were calculated according to every personal characteristic (e.g. age group, job.etc.) these mean scores were compared and the p-values were calculated.

The researcher conducted a pilot study on 5 health care working mothers at ALAwali PHCC. The deficits were identified and modified accordingly. The collected data from the pilot study were not included into the main study.

Official approvals of joint program of family and community medicine, Makkah ALMukarramah and Prince Ahmad sector director as well as permissions of the managers of the selected PHCCs were obtained. Verbal consent to participate was obtained from all participants and full confidentiality of their responses was ensured.

Statistical analysis

Data was analyzed by using Statistical Package for Social Sciences (SPSS) software version 17.0. Descriptive statistics (e.g. number, percentage, mean and standard deviation) were used. Student`t t-test was applied to test for the comparison of the mean of two groups whereas ANOVA test was utilized to compare means of more than two groups. P values equal to or less than 0.05 was considered as statistically significant**.**

RESULTS

This study included a total of 70 female health care working mothers of children aged between 6 months to three years, the female health care working mothers were recruited from the primary health care centers within the Prince Ahmad sector in Makkah ALMukarramah during the month of July 2012. Their socio-demographic characteristics are presented in table (1). It shows that more than half of mothers were 30-40 years (51.4%), with a mean$\pm$SD of 31.6$\pm$4.6 years. The last child's age of more than half of mothers was 12-24 months (52.9%), with a mean$\pm$SD of 17.4$\pm$9.8 months. Most mothers were Saudis (78.6%). Almost one third of mothers were physicians (30%), nurses (35.7%) or technicians (34.3%). The mode of delivery of more than two thirds of mothers was vaginal (68.6%), while 31.4% were delivered through a CS. And More than three-fourths of mothers had a servant at home (77.1%)

Table (2) shows that all participant mothers knew that supplementary feeding should be given to the baby after the age of 6 months (100%), while the majority expressed their knowledge regarding the facts that

breastfeeding protects the mother against breast congestion and fullness (97.1%); colostrums is very useful to the baby (94.3%); breastfeeding minimizes the risk for respiratory infections among children (92.9%); and protects the child against allergy (92.9%); and exclusive breastfeeding should be continued till the age of 6 months (92.9%).

However, knowledge items that participant mothers were least aware of were: "sufficient breastfeeding is usually followed by frequent urination of the baby" (52.9%) and "breastfeeding protects against osteoporosis" (52.9%).

Table (3) shows that almost one third of participant mothers started breastfeeding immediately after labor (32.9%), while 17.1% of mothers started breastfeeding more than 24 hours after labor. Only 39% of participant mothers breastfed their babies exclusively as illustrated in Figure 1. More than half of participant mothers started artificially feeding their babies without consulting a physician (52.9%), and 40% of mothers frequently changed the supplementary milk. The main reasons stated by participant mothers for starting artificial feeding were work-related obstacles (41.4%), insufficient breast milk (17.1%) and refusal of their child to be breastfed (15.7%).

Table (4) shows that the majority of participant mothers agreed that the lack of places of nurseries for babies of working mothers negatively affects breastfeeding (91.4%) and breastfeeding reduces family expenditure (85.7%). On the other hand, least agreement was achieved for: breastfeeding affects marital relationship (31.4%) and two months' vacation is enough for the working mother to breastfeed exclusively (30%).

Factors affecting the knowledge level of breastfeeding among participants

Table (5) shows that knowledge scores did not differ significantly according to age or nationality of participant mothers, age of child or presence of a servant at home. On the other hand, mean knowledge scores were significantly higher among physicians than nurses or technicians ($p=0.004$, Figure 2) and were also significantly higher among mothers who underwent a Caesarian section than those who had vaginal delivery ($p=0.026$).

Factors affecting the practices of exclusive breastfeeding among participants

Table (6) shows that practice of exclusive breast feeding did not differ significantly according to nationality of participant mothers, presence of a servant at home or age of child.

On the other hand, exclusive breast feeding was significantly more practiced by mothers aged 30-40 years ($p=0.042$). Exclusive breast feeding was significantly less practiced by technicians ($p<0.001$, Figure 3) and mothers who underwent Caesarian sections ($p=0.018$).

Table 1. Socio- demographic Characteristics of female health care working mothers in primary health care centers of Prince Ahmad sector, Makkah ALMukarramah, July 2012

Socio- demographic Variables	no.	%
Age of mothers (in years)		
· <29 years	29	41.4
· 30-40 years	36	51.4
· >40 years	5	7.1
· Mean±SD	31.6±4.6 years	
Age of child (in months)		
· <12 months	23	32.9
· 12-24 months	37	52.9
· >24 months	10	14.3
· Mean±SD	17.4±9.8 months	
Nationality		
· Saudi	55	78.6
· Non-Saudi	15	21.4
Job title		
· Physician	21	30.0
· Nurse	25	35.7
· Technician	24	34.3
Mode of delivery		
· Vaginal	48	68.6
· Caesarian section (CS)	22	31.4
The presence of a servant at home		
· Yes	54	77.1
· No	16	22.9

Table 2. Knowledge level of female health care working mothers in the selected PHCCs regarding breastfeeding, Makkah ALMukarramah, July 2012

Knowledge items	Yes	No	Do not know
	N (%)	N (%)	N (%)
Supplementary feeding should be given after the age of 6 months	70 (100.0)	0 (0.0)	0 (0.0)
Breastfeeding protects against breast congestion and fullness	68 (97.1)	2 (2.9)	0 (0.0)
Colostrums is the first milk, which is sticky, thick, yellow, and very useful to the baby	66 (94.3)	4 (5.7)	0 (0.0)
Breastfeeding minimizes the risk for respiratory infections among breast-fed children	65 (92.9)	5 (7.1)	0 (0.0)
Breastfeeding protects the child against allergy	65 (92.9)	5 (7.1)	0 (0.0)
Exclusive breastfeeding should continue till the age of 6 months	65 (92.9)	4 (5.7)	1 (1.4)
Breastfeeding promotes uterine contraction	64 (91.4)	0 (0.0)	6 (8.6)
Breastfeeding helps proper teething	62 (88.6)	6 (8.6)	2 (2.9)
Breastfeeding minimizes the incidence of diarrheal attacks among breastfed children	62 (88.6)	8 (11.4)	0 (0.0)
Breastfeeding helps the mother regain her pre-pregnancy weight	58 (82.9)	6 (8.6)	6 (8.6)
Exclusive breastfeeding endorses pregnancy spacing	56 (80.0)	9 (12.9)	5 (7.1)
Breastfeeding should continue till the baby is two years old	56 (80.0)	11 (15.7)	3 (4.3)
Breastfeeding prevents cancer breast	54 (77.1)	3 (4.3)	13 (18.6)
It is advised to alternatively give to the baby one breastfeeding and one supplementary feeding after the age of 6 months	54 (77.1)	10 (14.3)	6 (8.6)
Breastfeeding should continue for at least 10-20 minutes each time	52 (74.3)	9 (12.9)	9 (12.9)
Breastfeeding should be provided to the baby on demand	48 (68.6)	17 (24.3)	5 (7.1)
Colostrums is difficult to digest and should be discarded	19 (27.1)	48 (68.6)	3 (4.3)
Belching after breastfeeding means that the baby's stomach is full	45 (64.3)	19 (27.1)	6 (8.6)
Sufficient breastfeeding is usually followed by frequent urination of the baby	37 (52.9)	25 (35.7)	8 (11.4)
Breastfeeding protects against osteoporosis	37 (52.9)	14 (20.0)	19 (27.1)

Table 3. Breast feeding practice of female health care working mothers toward their babies in the selected PHCCs, Makkah ALMukarramah, July 2012.

Variables	no.	%
Start of breastfeeding:		
Immediately after labor	23	32.9
Within 30 minutes after labor	7	10.0
Within 6 hours after labor	24	34.3
6-24 hours after labor	4	5.7
>24 hours after labor	12	17.1
Timing of start of supplementary feeding:		
Within the first 3 months	5	7.1
3-6 months	38	54.3
After 6 months	27	38.6
When breastfeeding was stopped:		
During the first year	39	55.7
During the second year	31	44.3
Consulting a physician to start artificial feeding:		
Yes	33	47.1
No	37	52.9
Frequent changing the supplementary milk		
Yes	28	40.0
No	42	60.0

Reasons for starting artificial feeding*:		
work-related obstacles	29	41.4
insufficient breast milk	12	17.1
refusal of child	11	15.7
diseased mother	2	2.9
breast problems	1	1.4

* *More than one reason could be stated*

Table 4. Female health care working mothers attitude toward breastfeeding issues in the selected PHCCs, Makkah ALMukarramah, July 2012

Statement	**Agree**	**Not sure**	**Disagree**
	no. (%)	**no. (%)**	**no. (%)**
The lack of places for nurseries for babies of working mothers affects negatively breastfeeding	64 (91.4)	3 (4.3)	3 (4.3)
Breastfeeding reduces family expenditure	60 (85.7)	10 (14.3)	0 (0.0)
Doctors and nurses encourage working mothers to breastfeed	57 (81.4)	8 (11.4)	5 (7.1)
It is impossible for the working mother who breastfeed to work properly and at the same time take care of her baby	55 (78.6)	15 (21.4)	0 (0.0)
The community prefers breastfeeding more than artificial feeding	55 (78.6)	12 (17.1)	(4.3) 3
Use of contraceptives affects breastfeeding	35 (50.0)	25 (35.7)	10 (14.3)
Artificial feeding keeps the shape of the mother's body and prevents obesity	37 (52.9)	32 (45.7)	1(1.4)
Breastfeeding affects marital relationship	22 (31.4)	38 (54.3)	10 (14.3)
Two months' vacation is enough for the working mother to breastfeed exclusively	21(30.0)	42 (60.0)	7 (10.0)

Table 5. Knowledge scores related to breastfeeding according to characteristics of participant mothers (Mean±SD) in the selected PHCCs, Makkah ALMukarramah, July 2012

Variables	**No.**	**Mean±SD**	**p-value**
Age groups			
<29 years	29	16.5±1.9	
30-40 years	36	15.9±2.9	
>40 years	5	16.0±2.5	0.680
Age group of child			
<12 months	23	16.6±2.1	
12-24 months	37	15.7±2.6	
>24 months	10	16.9±2.5	0.270
Nationality			
Saudi	55	16.1±2.5	
Non-Saudi	15	16.6±2.4	0.452
Job			
Physician	21	17.6±1.4	
Nurse	25	15.6±3.1	
Technician	24	15.5±2.0	0.004
Mode of delivery			
Vaginal	48	15.7±2.6	
CS	22	17.1±1.9	0.026
The presence of a servant			
Yes	54	16.4±2.2	
No	16	15.5±3.2	0.218

Table 6. Practice of exclusive breast feeding according to characteristics of participant mothers in the selected PHCCs, Makkah ALMukarramah, July 2012

Variables	Exclusive Breastfeeding			
	<6 months (n=43)	≥ 6 months (n=27)	Total	P-value
	no. (%)	no. (%)	no. (%)	
Age groups				
<29 years	22 (75.9)	7 (24.1)	29 (41.4)	
30-40 years	17 (47.2)	19 (52.8)	36 (51.4)	
>40 years	4 (80)	1 (20.0)	5 (7.1)	0.042
Age of child				
<12 months	10 (43.5)	13 (56.5)	23 (32.9)	
12-24 months	27 (73.0)	10 (27.0)	37 (52.9)	
>24 months	6 (60.0)	4 (40.0)	10 (14.3)	0.074
Nationality				
Saudi	36 (65.5)	19 (34.5)	55 (78.6)	
Non-Saudi	7 (46.7)	8 (53.3)	15 (21.4)	0.185
Job				
Physician	9 (42.9)	12 (57.1)	21 (30.0)	
Nurse	11 (44.0)	14 (56.0)	25 (35.7)	
Technician	23 (95.8)	1 (4.2)	24 (34.3)	<0.001
Mode of delivery				
Vaginal	25 (52.1)	23 (47.9)	48 (68.6)	
Caesarian section	18 (81.8)	4 (18.2)	22 (31.4)	0.018
The presence of a servant				
Yes	34 (63.0)	20 (37.0)	54 (77.1)	
No	9 (56.3)	7 (43.8)	16 (22.9)	0.628

Figure 1. Prevalence of exclusive breastfeeding practice among participant mothers in the selected PHCCs, Makkah ALMukarramah, July 2012

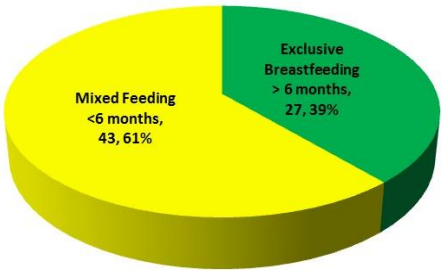


Figure 2. Mean scores of knowledge related to breastfeeding according to job of participant mothers in the selected PHCCs, Makkah ALMukarramah, July 2012

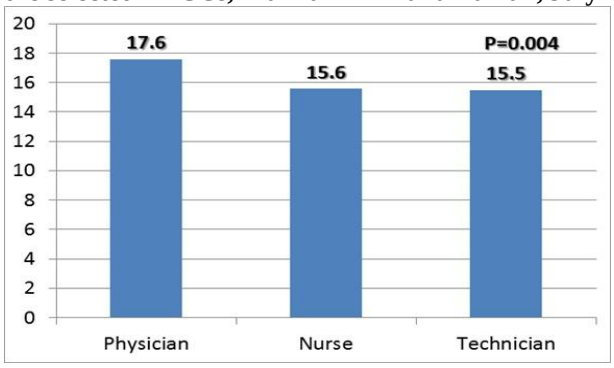
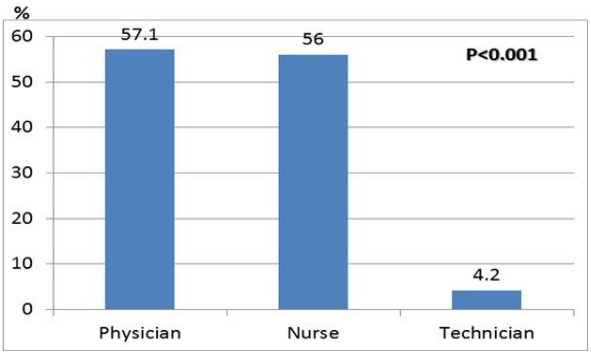


Figure 3. Proportion of exclusive breastfeeding practice according to job of participant mothers in the selected PHCCs, Makkah ALMukarramah, July 2012



DISCUSSION

Exclusive breastfeeding is the single most effective intervention for child survival. According to the Millennium Development Goals, exclusive breastfeeding for six months is considered as one of the most effective interventions [5].

This study involved different groups of female health care workers, where non-physicians (i.e., nurses and technicians) constituted the main participants (70%). They were mostly Saudis (78.6%). Their mode of delivery was mainly vaginal (68.6%).Their last child's mean age was 17.4+9.8 months.

These findings are comparable to those reported by Al-Binali (2011) in Abha, whose participants in his study were mainly Saudi national (55%). The mean age of their youngest child was 2.25+1.56 years. Their type of delivery was vaginal in 67.5% [6].

Regarding knowledge of interviewed health care working mothers in this study, all participants knew that supplementary feeding should be given to the baby after the age of 6 months, while 97.1% knew that breastfeeding protects against breast congestion and fullness; 94.3% knew that the colostrums is very useful to the baby; breastfeeding minimizes the risk for respiratory infections among children (92.9%); protects the child against allergy (92.9%); and exclusive breastfeeding should be continued till the age of 6 months (92.9%). Nevertheless, there were areas of knowledge deficiencies among participant health care working mothers. Results of this study showed that mean knowledge scores did not differ significantly according to age, nationality of participant mothers, age of child or presence of a servant at home. However, mean knowledge scores were significantly higher among physicians than nurses or technicians.

Several studies identified different points of knowledge defects among health care working mothers. Results of a survey of midwives and health visitors revealed that they were not very sure about the benefits of breastfeeding. Furthermore, 28% of the health professionals disagreed that breastfed babies are healthier, and 37% disagreed that type of feeding influences the health of the baby [7].

Cantrill *et al.,* (2003) found that the level of basic breast-feeding knowledge of Australian midwives was adequate but there are deficits in key areas. They noted that knowledge variations by midwives may contribute to conflicting advice experienced by breast-feeding women [8]. Hila (2004) noted that due to their deficient knowledge, some nurses and physicians are less than supportive of breastfeeding and tend to encourage mothers to supplement with formula or to give up altogether if they experience difficulties with breastfeeding [9].

Gartner *et al.,* (2005) stressed that many pediatricians have significant educational needs in the area of breastfeeding management. The American Academy of Pediatrics calls for enthusiastic support and involvement of pediatricians in the promotion and practice of breastfeeding [10]. Similarly, Philipp *et al.,* (2001) reported a "knowledge gap" among pediatricians, in general, and a less positive attitude toward breastfeeding [11].

Power *et al.,* (2003) found that 23.3% would give a woman a "gift pack with coupons for infant formula". They concluded that obstetricians need further training and education in breastfeeding management in order to positively influence a woman's choice to breastfeed her infant [12]. A study conducted with 50 nurses revealed that they did not have adequate knowledge of breastfeeding in certain areas including lactation physiology and efficacy of glucose feedings [13].

Ekambaram *et al.,* (2010) reported that 56% of Indian mothers knew that colostrums needs to be given, while 38% of mothers knew that exclusive breastfeeding should be given for 6 months and 38% of the mothers said that they would not breastfeed their child if the child has diarrhea [14].

In Dharan, Chaudhary *et al.,* (2011) reported that all mothers knew that they had to breast feed their babies, but they did not have adequate knowledge about the appropriate way of breastfeeding, while 10% knew that they have to initiate breast feeding within 30 minutes of birth, 10% had idea on prelacteal feed, 25% had idea on importance of colostrums, 15% knew the meaning of exclusive breast feeding, and 15% had idea on importance of night feeding [15].

In Abha City, Al-Binali (2011) stated that, it was surprising to find that 2.6% of nurses considered the colostrums as harmful to the baby and 7.3% could not respond to the question regarding their exact opinion about colostrums [6].

These findings indicate that training of health care workers in primary care setting on breastfeeding must be stressed. Breastfeeding is of extreme importance for safeguarding health and welfare of the growing infant and this practice must be preserved, protected and promoted by all means. The quality of health care workers' knowledge and support has a crucial role in the success of breastfeeding promotion [16].

This study revealed that 32.9% of health care working mothers started breastfeeding immediately after labor and 38.6% breastfed their infants exclusively for at least 6 months, while only 44.3% of mothers continued breastfeeding till the second year. More than half of participants (52.9%) started artificially feeding their babies without consulting a physician and 40% frequently changed the supplementary milk.

Different worldwide studies reported different rates for exclusive breastfeeding and weaning practices. In Conakry, Guinea, Diallo *et al.,* (2009) reported a low prevalence rate of 15.5% [17]. Oche *et al.,* (2011) reported

that 53% of the mothers in Kware, Nigeria, initiated breastfeeding immediately after birth. Findings from recent studies have stressed the risk of delayed onset of breastfeeding on neonatal mortality in sub-Saharan Africa and showed that neonatal mortality could be significantly reduced by 16% if the mothers started breastfeeding at day one and 22% when breastfeeding was commenced within the first hour [18].

Ertem *et al.,* (2001) reported an initiation rate of 98.2% of breastfeeding in Turkey, [19] while Ergenekon-Ozelci *et al.,* 2006) added that only 10% of Turkish mothers breastfed their infants within the first hour of birth, with most women (90%) initiating breastfeeding two days after birth [20].

In Singapore, Foo *et al.,* (2005) reported 21% rate for exclusive breast feeding [21]. In Western Nepal, obtained a higher rate (72.2%) of breastfeeding initiation was reported by Chandrashekhar *et al.,* (2007) [22]. A study conducted in Klang district in Peninsular Malaysia revealed a prevalence rate of 32.8% amongst the respondents [23].

Banyamen and Hassan (1998) [24] reported an initiation rate of breastfeeding of 95% in Iraq and 95.4% in Lebanon (Batal and Boulghaurjian, 2005) [25]. In Jordan, Khassawneh *et al.,* (2006) reported an initiation rate of breastfeeding of 88.6%. [4] In Kuwait, Dashti *et al.,* (2010) reported an initiation breastfeeding rate of 92.5% [26].

In Abha City, Kingdom of Saudi Arabia, Al-Binali (2011) reported that 31.1% of working mothers started breastfeeding their children within 30 minutes of delivery, while exclusive breastfeeding at 6 months was 15.9% [6].

All these different rates of exclusive breastfeeding lag behind the Healthy People 2010 goal of 50% at 6 months [27] and depict a serious lag behind the WHO (2012) recommendations that every infant should be exclusively breastfed for the first 6 months of life, with breastfeeding continuing for up to 2 years of age or longer [28].

Moreover, it has been emphasized that delayed breastfeeding initiation deprives infants of the benefits of colostrum [29] and delaying initiation beyond two hours postpartum has been associated with shorter breastfeeding duration [30].

This study revealed that the main reasons for starting artificial feeding were work-related obstacles (41.4%), insufficient breast milk (17.1%) and refusal of their child to be breastfed (15.7%).

Studies throughout the world have identified that concern about milk supply is the most common reason women give for stopping breastfeeding [31-32].

Education for women regarding time needed for colostrums to change to transitional milk and education regarding ways of successful breastfeeding can be valuable in decreasing concern about milk supply [4].

Colin and Scott (2002) stated that the main reason is an unsettled child, a behavior often interpreted by mothers indicating an insufficient milk supply [33]. Hector *et al.,* (2005) noted that the feeling of insufficient breast milk may result in unnecessary cessation of breastfeeding [34]. Only about 5% of women may have insufficient milk supply among those who complain that they perceive insufficient milk for their babies [35]. This perception often coincides with softness of breasts, unsettled baby, slow weight gain in baby's growth pattern and frequent feedings [36].

Chandrashekhar *et al.,* (2007) added that the other common reasons for starting early artificial feeding were inverted nipples, cracked or sore nipples (27.5%), baby too tired to feed (11.6%) or difficulty in expressing milk (9.6%) [22].

In Mbarara, Uganda, Petit (2008) reported that 55% of mothers perceived that exclusive breastfeeding is nutritional to their babies and 66% perceived that exclusive breastfeeding had no disadvantage. The study has also shown that these women are knowledgeable about exclusive breastfeeding. 73.3% knew that exclusive breastfeeding is for the first six months of life of the baby. The study further showed that about half of the women (49.8%) practice exclusive breastfeeding for six months. Knowledge is an important factor that influences perception and practice in breastfeeding [37].

This study showed that most participant mothers agreed that the lack of places for nursing of babies of working mothers negatively affects breastfeeding; breastfeeding reduces family expenditure; and it is impossible for the working mother who breastfeeds to work properly and at the same time take care of their babies. On the other hand, least agreement was expressed by participants concerning that two months' vacation is enough for the working mother to breastfeed exclusively. Many studies have shown that one of the barriers to breastfeeding is work status. More and more women have joined the work force. An estimated 50% of women employed in the workplace are of reproductive age and return to work within one year of their infants' births [38]. In USA, only 22% of women employed full-time breastfed their infants compared to 35.4% of mothers who were not employed [39].

Li *et al.,* (2005) stressed that special attention needs to be paid to the sharp decline in exclusive breastfeeding between 3 and 5 months; for many mothers, this is the time at which they return to work and need additional support to continue exclusive breastfeeding. Lack of support for lactation in the workplace has been cited as a major barrier to maintaining breastfeeding. In addition, other than the social and environmental constraints, the barriers for exclusive breastfeeding might include the belief that breast milk cannot provide sufficient nutrition to infants beyond the first couple of months [40].

Mothers who planned to return to work before six week postpartum were significantly less likely to initiate breastfeeding compared to mothers who were not planning to return to work (Noble, 2001) [41]. There is always a competition between breastfeeding and work. In general, if a mother decides to return to work within six weeks postpartum, she is less likely to initiate breastfeeding [42].

This study showed that practice of exclusive breast feeding did not differ significantly according to nationality of participant mothers, presence of a servant at home or age of child. On the other hand, it was significantly more practiced by mothers aged 30-40 years and significantly less practiced by technicians and mothers who underwent Caesarian sections.

Forster *et al.,* (2006) stated that factors that are positively associated with exclusive breastfeeding for six months include a very strong desire to breastfeed, having been breastfed oneself as a baby, the mother being born in an Asian country and being older. On the other hand, factors that are negatively associated with feeding at six months include a woman having no intention to breastfeed for six months or more, baby receiving formula while in hospital, smoking 20 or more cigarettes per day pre-pregnancy, not attending childbirth education, maternal obesity and having self-reported anxiety or depression which was a problem in the six months after birth. Of these, the factors that have been less reported in the literature were obesity and self-reported maternal depression or anxiety in the six months after the baby is born [43].

Khassawneh *et al.,* (2006) showed that factors associated with not practicing full breastfeeding were mothers' working status and delivery by Caesarian section, where mothers rarely care for their babies in the first 2 days postoperatively [4]. Chandrashekhar *et al.,* (2007) stated that the influence of Caesarian delivery on the delayed initiation of breast-feeding has shown a negative influence on exclusive breastfeeding. Mothers who underwent Caesarian section were less likely to breast-feed exclusively as compared with those who delivered normally. [22]

Rowe-Murray and Fisher (2002) added that the baby who has been delivered by a Caesarian section is usually handed over to the attendants until the mother is fully recovered and discharged from the operating room. The anxious relatives often feed the newborn with sugar water, cow's milk or formula feeds before the initiation of breastfeeding [44].

Similarly, Dashti *et al.,,* (2010) found that women who had delivered by Caesarian section were less likely to be exclusively breastfeeding at discharge. They explained that finding by that newborns are often taken to a nursery following a Caesarian section delivery in order to allow the mother to rest after her operation, making it difficult for her to establish breastfeeding and increasing the likelihood of the infant receiving supplementary formula feeds [26]. Moreover, having delivered by Caesarian section has been associated with the delayed onset of lactation [45-46].

In conclusion, there are areas of lack of knowledge among female health care workers in Makkah regarding exclusive breastfeeding. Knowledge defects are more among nurses and technicians as well as most female health care workers in Makkah do not start breastfeeding immediately after labor.

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REFERENCES

1. Subbiah N. (2003). A Study to assess the knowledge, attitude, practice and problems of postnatal mothers regarding breastfeeding. *Nursing J Ind*, 94(8), 177-179.
2. Hoddinott P, Tappin D, Wright C. (2008). Breast feeding. *BMJ*, 336(7649), 881-7.
3. Alina T, Ismail T, Sulaiman Z. (2010). Reliability and validity of a Malay-version questionnaire assessing knowledge of breastfeeding. *Malaysian J Med Sci*, 17(3), 32-39.
4. Khassawneh M, Khader Y, Amarin Z, Alkafajei A. (2010). Knowledge, attitude and practice of breastfeeding in the north of Jordan: a cross-sectional study. *International Breastfeeding Journal*, 1, 17.
5. Bryce J, Terreri N, Victoria CG, Mason E, Daelmans B, Bhutta ZA *et al.,,* (2006). Count down to 2015: tracking intervention coverage for child survival. *Lancet*, 368, 1067-1076.
6. Al-Binali AM. (2011). Knowledge, Attitude and Practice of Breastfeeding among Female Health Care Workers in Tertiary Care Hospitals. *The Medical Journal of Cairo University*, 79(4), 361-367.
7. Beeken S, Waterston T. (1992). Health service support of breastfeeding—are we practicing what we preach? *BMJ*, 305(6848), 285-287.
8. Cantrill RM, Creedy DK, Cooke M. (2003). An Australian study of midwives' breast-feeding knowledge. *Midwifery*, 19, 310-17.
9. Hila JS. (2004). Nurses' attitudes, knowledge, and beliefs related to the promotion of breastfeeding among women who bear children during adolescence. *J of Pediatric Nursing*, 19(3), 176-83.
10. Gartner LM, Morton J, Lawrence RA *et al.,,* (2005). Breastfeeding and the use of human milk. *Pediatrics*., 115, 496–506.

11. Philipp BL, Merewood A, O'Brien S. (2001). Physicians and breastfeeding promotion in the United States: a call for action. *Pediatrics*, 107(3), 584-587.
12. Power ML, Locke E, Chapin J, Klein L, Schulkin J. (2003). The effort to increase breastfeeding. Do obstetricians, in the forefront, need help? *J Reprod Med*, 48(2), 72-78.
13. Bernaix LW. (2000). Nurses' attitudes, subjective norms, and behavioral intentions toward support of breastfeeding mothers. *J Hum Lact*, 16(3), 201-209.
14. Ekambaram M, Bhat V, Asif M, Ahamed MAP. (2010). Knowledge, attitude and practice of breastfeeding among postnatal mothers. *Curr Pediatr Res*, 14(2), 119-124.
15. Chaudhary RN, Shah T, Raja S. (2011). Knowledge and practice of mothers regarding breast feeding: a hospital based study. *HR*, 9(3), 194-200.
16. Issler H, Rodrigues de Sá MBS, Senna DM. (2001). Knowledge of newborn healthcare among pregnant women: basis for promotional and educational programs on breastfeeding. *Sao Paulo Med J*, 119(1), 7-9.
17. Diallo FB, Bell L, Moutquin JM, Garant MP. (2009). The effects of exclusive versus non-exclusive breastfeeding on specific infant morbidities in Conakry (Guinea). *The Pan African Medical Journal*, 2, 2.
18. Oche MO, Umar AS, Ahmad H. (2011). Knowledge and practice of exclusive breastfeeding in Kware. *Nigeria African Health Sciences*, 11(3), 518-523.
19. Ertem IO, Akinci Z, Ulukol B, Baskan-Gulnar S. (2001). Socioeconomically advantaged infants attending a university well-child clinic in Ankara: are they breast-feeding optimally? *Turk J Pediatr*, 43, 223-230.
20. Ergenekon-Ozelci P, Elmaci N, Ertem M, Saka G. (2006). Breastfeeding beliefs and practices among migrant mothers in slums of Diyarbakir, Turkey, 2001. *Eur J Public Health*, 16, 143-148.
21. Foo LL, Quek SJS, Ng SA *et al.*,, Breastfeeding prevalence and practice among Singaporean, Chinese, Malay and Indian Mothers. *Health Promotion International*, 20, 2005, 229-237.
22. Chandrashekhar TS, Joshi HS, Shankar PR, Binu VS, Rana MS. (2007). Breastfeeding Initiation and determinants of Exclusive breastfeeding-a questionnaire survey in an urban population of Western Nepal. *Public Health Nutrition*, 10(2), 192-197.
23. Tan KL. (2009). Knowledge, attitude and practice on breastfeeding in Klang. *Malaysia The International Medical Journal*, 8, 17-21.
24. Banyamen YS, Hassan MK. (1998). Feeding patterns in the first two years of life in Basra, Iraq. *East Mediterr Health J*, 4, 448-451.
25. Batal M, Boulghaurjian C. (2005). Breastfeeding initiation and duration in Lebanon: are the hospitals "mother friendly"? *J Pediatr Nurs*, 20, 53-59.
26. Dashti M, Scott JA, Edwards CA, Al-Sughayer M. (2010). Determinants of breastfeeding initiation among mothers in Kuwait. *International Breastfeeding Journal*, 5, 7.
27. Taveras EM, Capra AM, Braveman PA, Jensvold NG, Escobar GJ, Lieu TA. (2003). Clinician Support and Psychosocial Risk Factors Associated With Breastfeeding Discontinuation. *Pediatrics*, 112, 108-15.
28. World Health Organization. (2002). The optimal duration of exclusive breastfeeding: A systematic review. World Health Organization Website. http://www. who.int/nutrition/ publications/optimal duration exc_bfeeding_review_eng.pdf.
29. Uruakpa FO, Ismond MAH, Akobundu ENT. (2002). Colostrum and its benefits: a review. *Nut Res*, 22, 755-767.
30. Nakao Y, Moji K, Honda S, Oishi K. (2008). Initiation of breastfeeding within 120 minutes after birth is associated with breastfeeding at four months among Japanese women: a self-administered questionnaire survey. *Int Breastfeed J*, 3, 1.
31. Binns CW, Scott JA. (2002). Breastfeeding: reasons for starting, reasons for stopping and problems along the way. *Breastfeed Rev*, 10, 13-19.
32. Heath AL, Tuttle CR, Simons MS, Cleghorn 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*, 102, 937-943.
33. Colin WB, Scott JA. (2002). Breastfeeding: reasons for starting, reasons for stopping and problems along the way. *Breastfeed Rev*, 10(2), 13-19.
34. Hector D, King L, Webb K. (2005). Interventions to encourage and support breastfeeding. *NSW Public Health Bulletin*, 16(3-4), 56-61.
35. Singh B. (2010). Knowledge, attitude and practice of breast feeding – A case study. *European Journal of Scientific Research*, 40(3), 404-422.
36. Walker M. (2002). Core curriculum for lactation consultant practice. London: Jones and Bartlett, 219.
37. Petit AI. (2008). Perception and Knowledge on Exclusive Breastfeeding Among Women Attending Antenatal and Postnatal Clinics. A Study From Mbarara Hospital – Uganda. Official Publication of the Tanzania Medical Students' Association, 27-30

38. Wyatt SN. (2002). Challenges of the working breastfeeding mother. Workplace solutions. *Am Assoc Occupational Health Nurses J*, 50(2), 61-66.
39. Libbus MK and Bullock LF. (2002). Breastfeeding and employment: an assessment of employer attitudes. *J Hum Lact*, 18(3), 247-251.
40. Li R, Darling D, Maurice E, Barker L, Grummer-Strawn LM. (2005). Breastfeeding Rates in the United States by Characteristics of the Child, Mother, or Family: The 2002 National Immunization Survey. *Pediatrics*, 115(1), e31 -e37.
41. Noble S. (2001). ALSPAC Study Team. Avon Longitudinal Study of Pregnancy and Childhood. Maternal employment and the initiation of breastfeeding. *Acta Paediatr*, 90(4), 423-428.
42. Meek JY. (2001). Breastfeeding in the workplace. *Pediatr Clin North Am*, 48(2), 461-474.
43. Forster DA, McLachlan HL, Lumley J. (2006). Factors associated with breastfeeding at six months postpartum in a group of Australian women. *International Breastfeeding Journal*, 1, 18.
44. Rowe-Murray HJ, Fisher JR. (2002). Baby friendly hospital practices: cesarean section is a persistent barrier to early initiation of breast-feeding. *Birth*, 29, 124–31.
45. Scott JA, Binns CW, Oddy WH. (2007). Predictors of delayed onset of lactation. *Matern Child Nutr*, 3, 186-193.
46. Qiu L, Zhao Y, Binns CW, Lee AH, Xie X. (2009). Initiation of breastfeeding and prevalence of exclusive breastfeeding at hospital discharge in urban, suburban and rural areas of Zhejiang China. *Int Breastfeed J*, 4, 1.