



CODEN [USA]: IAJPBB

ISSN : 2349-7750

**INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES**

SJIF Impact Factor: 7.187

<http://doi.org/10.5281/zenodo.4658072>Available online at: <http://www.iajps.com>

Research Article

**PRACTICE OF BREASTFEEDING AND WEANING AMONG
SAMPLE OF SAUDI MOTHERS****Jawaher Ali Alzahrani¹, Shatha Hesham Bakor¹, Sara Faisal Alhassan¹, Sahar Sameer AL-Jubali¹, Alaa Aidroos Sagaf¹.**¹Resident Pediatric Department, Hera General Hospital, Mecca, Saudi Arabia.

Article Received: February 2021

Accepted: February 2021

Published: March 2021

Abstract:

Background: one of the most important infant essentials is proper feeding, including adequate and sufficient breastfeeding for at least the first year of life and gradual introduction of supplementation until weaning at the age of 2 years. It does not only affect infant health and growth but also has important social impacts; therefore, implicating best methods of introduction of infant nutrition is a crucial issue and worth further social investigations. This study aims to assess the breastfeeding and child weaning perception and practice of mothers from Mecca, Saudi Arabia. **Methodology:** This is a cross-sectional study on 1105 mothers in Mecca City, Saudi Arabia, about breastfeeding practices, using a pretested online questionnaire that has been checked for validity before data being imported and analyzed by SPSS version 23. **Results:** the result demonstrates socio-demographic statuses of the participant mothers, finding out the highest percentage of mothers having at least university education (68.3%), with high occupational levels (55.9%), and their association to feeding decisions, habits, and estimating sources of information about infant feeding principles. **Conclusion:** It has been found thoroughly that maternal age and educational levels affect the practice of breastfeeding. Therefore, mothers should receive more educational support regarding proper practice, which is recommended to be conducted by well-trained health care providers via a wide variety of means.

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Please cite this article in press Jawaher Ali Alzahrani et al., *Practice Of Breastfeeding And Weaning Among Sample Of Saudi Mothers.*, Indo Am. J. P. Sci, 2021; 08(03).

BACKGROUND:

Breast Feeding is the most necessary means of Child survival[1]. It is the first built-up relationship of protection and affection between the mother and her infant, thus impacting both of them as well as the entire community positively, in short, and long-term manners [8]. As well as helping to decline the infant mortality rates of all causes [4,5], it helps with birth spacing, offers the child a good coverage of immunity through exposure to high levels of immunoglobulins and lymphocytes found in the colostrum, that is provided exclusively during the process of early breastfeeding initiation [4]. In addition, it allows the mother a closer tactile approach to her child, showing tenderness during feeding and strengthen their bond, in addition to protecting the infant from hypothermia [1].

According to the World Health Organization (WHO) recommendations, All nutrients needed by the infant should be initiated from the first hour after birth, the process referred to previously as ‘early BF initiation’ [2]. In the same vein, the WHO and multiple international entities have stated that breastfeeding is best provided exclusively for the 1st six months of life [3] and continued for 24 months of age or beyond together with nutritionally adequate complementary food, which is suboptimal in most of the countries worldwide [6].

Weaning practices are equally important since malnutrition can result in whether food is introduced too early or too late[14]. Thus, by the age of 6 months, the infant is ready for the introduction of solid and other types of complementary foods, while bottle-feeding is unnecessary and maybe hazardous at some point [12].

It was found that infant feeding practices are variable among countries as attributed to knowledge, attitudes, and individual practices that are mainly influenced by social, cultural & economic factors of each society. It is also determined that the commercial establishment of non-human milk substitutes [12] and processed weaning foods with the high and aggressive manner of marketing among new mothers [13] has a great impact on the problem magnification over time.

A considerable number of studies have been conducted in Saudi Arabia, aiming to observe the infant feeding practices in different areas around the country, have shown BF to have higher percentages in AlTaif and AlHassa regions, compared to those in Riyadh[8]. The mean duration of BF in Saudi Arabia has declined progressively since 1985[8], and most of

the studies have shown that infant feeding among mothers in the country is less than optimal [12].

Regarding the demographic variables, the Eastern Mediterranean Regional Office of WHO (WHO-EMRO) has reported high rates of early BF initiation with 60% of mothers continuing to 12 months of age, compared to previous lower rates reported from the same region [11].

Focusing on a particular Middle East and North Africa (MENA) country would help to declare the possible effects on practice. The studies conducted in Bahrain showed the practice has declined dramatically during the period 1970:1990, influenced by multiple factors including the economic status of the country, educational statuses of mothers, and the processed weaning foods, till the health authority has launched a comprehensive program that helped to encourage the BF [13]. However, the results may differ a little moving west, particularly in England, where studies have shown that 83% of mothers conducted a proper BF initiation process, while the proportion has dropped by six weeks to 57%, and only 36% were still committed to BF until the age of 6 months [7].

WHO country profile of Saudi Arabia had no local data availability about BF practice types, duration[9], or determinants, while in 1992, a single investigation was conducted to assess the risk factors related to the BF duration in one area in Mecca City[10]. Therefore, this study aims to investigate possible factors that affect infant feeding and weaning practices and to provide further data helping determination of the regional status of child nutrition in Mecca City, Saudi Arabia.

METHODS & SUBJECTS:**Study design**

This is an observational cross-sectional study.

Study setting and duration

The study was conducted on a well-set sample of Saudi mothers in Mecca city during the period of February 5, 2021, to March 4, 2021.

Sample size and data collection procedure

The sample was collected via recruitment of mothers around the childbearing age, who attend health care institutes in Mecca City, whether governmental or private, and then picking mothers with at least one child to attain better investigation of local practices.

Picked groups were sent a pretested online questionnaire that demonstrates their related socio-demographic data, personal ideas, and believes

concerning breastfeeding practices and helping to reach out their scope of knowledge regarding BF benefits.

This sampling method has resulted in 1105 valid and conclusive participants out of 1142 responses, under the consequences of neglecting any incomplete, invalid, or irrelevant responses, as well as participants who did not meet the inclusion criteria previously set.

Selection criteria

Inclusion criteria

Adult Saudi mothers from Mecca city, who are around the childbearing age 18:45 years old, attending primary healthcare facilities, having at least one child, and have filled up the questionnaire adequately (i.e., correct and complete filling of all questions).

Exclusion Criteria

Non-Saudi mothers, or those who do not reside in Mecca city, above or below the childbearing age, who do not have any offsprings, or those who messed up the questionnaire filling (i.e., false, incomplete, or irrelevant answers).

Data management and statistical analysis

The filled questionnaires were first checked manually for inclusion criteria regarding completeness; then data were entered into Microsoft Excel software before being exported to the Statistical Package for the Social Science (SPSS Inc. Chicago, IL, USA) version 26 for further analysis. Percentages were given for qualitative variables. The determinant factors were determined using Pearson's correlation, Kruskal-Wallis, and the Mann-Whitney tests. P-value was considered significant if $P\text{-value} < 0.05$, and highly significant if $P\text{-value} < 0.01$.

Ethical considerations

Information about the study purpose, benefits, and confidentiality was given to participants, assuring them privacy and end to end concerns of the collected information and affording them the voluntary nature of participation.

RESULTS:

Data presented in **Table 1** shows a mean age of participants of 30.81 ± 6.39 , where the majority (46.5% were aged between 30 and 40 years). It was also found that 68.3% of mothers had a university education or more, with a high percentage of working mothers of 55.9% from the total sample.

The least parameter is confined to reasons of feeding decisions among working mothers, as 340 of them

(43.4%) have switched to artificial feeding due to difficulty of commitment to breastfeeding during work hours.

Table 2 shows that the mean number of offspring was 3.47 ± 2.11 , and regarding the pattern of feeding, also as allocated in Table 2, it has been stated that most of the children in this area are breastfed till the age of 6 months by 58.7% of mothers, while only 13.3% mothers do not even introduce breast milk to their offspring. The mean \pm SD of the duration of BF was 7.29 ± 5.98 months. The introduction of supplementary food along with breastfeeding was reported by 65% of the participants.

Mixed feeding was the most common feeding manner among 675 of the participants (61.1%), while the least reported is artificial feeding with a percentage of 13.6% of participants.

Results of tackling the basic knowledge and believes in Table 2. have shown that most of the participants had a high awareness level, rejecting an upper preference of artificial feeding to the natural one (86.5%). Of all, 267 of the mothers (24.2%) have reported getting their nutritional education by hospitals, while only 128 participants (11.6%) had other sources than healthcare providers.

Table 3 shows that there is a highly significant correlation ($P\text{-value} < 0.001$) between the mean duration of BF (months) and mothers' age, number of offspring, number of breastfed offspring, and number of offspring to number of breastfed offspring ratio. Maternal age was directly proportionate with a mean duration of BF as mothers aged 29 years or less had a mean \pm SD of 6.51 ± 5.48 months, whereas mothers aged 40 years or older had a mean \pm SD of 10.87 ± 7.57 months. Similarly, there was a proportionate relationship between mean BF duration and number of offspring, number of breastfed offspring, as well as the number of offspring to number of breastfed offspring ratio.

Table 4 shows the association between mean BF duration and categorical variables. There is a significant relationship between mean BF duration and use of supplementary food, as well as receiving health education on breastfeeding ($P\text{-value} < 0.05$). Mothers receiving health education from social media and TV scored the highest mean BF duration (9.8 ± 5.06 months), and not using supplementary food was associated with a longer mean BF duration (7.56 ± 5.64 months).

Parameter		Frequency	Percentage
Mother age (y)	• ≤ 29	490	44.3%
	• 30 -	514	46.5%
	• ≥ 40	101	9.1%
Mother age, y, mean±SD		30.81±6.39	
Mother educational level	• Primary or illiterate	30	2.7%
	• Intermediate or secondary	320	29.0%
	• University or more	755	68.3%
Mother occupational status	• Occupied	618	55.9%
	• Unoccupied	487	44.1%

Parameter		Frequency	Percentage
Number of offspring	• ≤ 2	445	40.3%
	• 3 -	464	42.0%
	• 6 +	196	17.7%
Number of offspring (mean±SD)		3.47±2.11	
Number of breastfed offspring	• ≤ 2	681	61.6%
	• 3 -	320	29.0%
	• 6 +	104	9.4%
Number of breastfed offspring (mean±SD)		2.50±1.98	
No. of offspring to no. of breastfed offspring ratio	• ≤ 33.3%	204	18.5%
	• 33.4 -	202	18.3%
	• ≥ 66.7%	699	63.3%
No. of offspring to no. of breastfed offspring ratio (%mean±SD)		74.60±35.58	
Type of child feeding	• Breastfeeding	280	25.3%
	• Artificial feeding	150	13.6%
	• Mixed	675	61.1%
Duration of breastfeeding (months)	• No breastfeeding	147	13.3%
	• ≤ 6	649	58.7%
	• 7 -	222	20.1%
	• 13 - 24	87	7.9%
Duration of breastfeeding (months, mean±SD)		7.29±5.98	
Use of supplementary food	• Yes	718	65.0%
	• No	387	35.0%
Mother's reasons for artificial feeding	• Missing of support	182	23.2%
	• Preference for formula milk	85	10.9%
	• Difficulty of breastfeeding during working hours	340	43.4%
	• Difficulty of weaning	41	5.2%
	• Breastfeeding leads to obesity of the mothers	42	5.4%
	• Breastfeeding leads to breast enlargement and redundancy	29	3.7%
	• More than one cause	64	8.2%

Receiving health education on breastfeeding from	• No health education	489	44.3%
	• Primary healthcare center	161	14.6%
	• Hospital	267	24.2%
	• Social media and TV	60	5.4%
	• Other sources	128	11.6%
Mother's believe that artificial feeding is better than breastfeeding	• Yes	149	13.5%
	• No	956	86.5%

Table 3: Quantitative variables statistics according to Pearson's correlation (n=1105).				
Parameter		Mean±SD	Pearson's correlation	P-value
Mother's age (years)	• ≤ 29	6.51±5.48	0.213*	0.000
	• 30 -	7.33±5.84		
	• ≥ 40	10.87±7.57		
Number of offspring	• ≤ 2	6.76±5.58	0.141*	0.000
	• 3 -	7.29±5.59		
	• ≥ 6	8.5±7.41		
Number of breastfed offspring	• ≤ 2	6.62±5.64	0.260*	0.000
	• 3 -	7.82±5.68		
	• ≥ 6	10.04±7.88		
No. of offspring to no. of breastfed offspring ratio	• ≤33.3%	4.44±5.6	0.240	0.000
	• 33.4% -	7.35±4.85		
	• ≥66.7%	8.1±6.13		

*Correlation is significant at the 0.01 level (2-tailed).

Table 4: Qualitative variables in association with mean duration of BF (n=1105).				
Parameter		Mean±SD	Mean rank	P-value
Mother educational level	• Primary or illiterate	10.93±8.99	635.22	0.223*
	• Intermediate or secondary	6.85±5.41	538.36	
	• University or more	7.33±6.02	555.94	
Mother occupational status	• Occupied	7.35±5.91	558.31	0.514**
	• Unoccupied	7.21±6.07	546.27	
Use of supplementary food	• Yes	7.14±6.15	537.81	0.024**
	• No	7.56±5.64	581.18	
Receiving health education on breastfeeding from	• No health education	6.95±6.34	516.80	0.000*
	• Primary healthcare center	7.55±5.26	595.32	
	• Hospital	7.29±5.65	567.06	
	• Social media and TV	9.8±5.06	740.98	
	• Other sources	7.08±6.27	520.62	
Mother's believe that artificial feeding is better than breastfeeding	• Yes	6.99±5.14	557.87	0.843**
	• No	7.33±6.1	552.24	

*Kruskal-Wallis Test was used.

**Mann-Whitney Test was used.

DISCUSSION:

Breast Feeding is known as the most important source of infant adequate nutrition and growth, going along with multiple different benefits as enhancement of the infant immunity, protection against infections and helps to decrease mortality rates among neonates, as well as helping the establishment of family planning campaigns and proper child care held by the governmental health care institutes[1].

Type of feeding

The study results have implicated that the most commonly used pattern of feeding among participants is mixed feeding with both breastfeeding and artificial or supplementary food, by a percentage of 61.1% of all sample population. While breastfeeding is conducted by 25.5%, and the least feeding choice was formula feeding by 13.6% of the sample. Similar findings have been shown in studies that covered the same geographical region. In other Saudi areas, like the Central part, a study showed that the most common type was mixed feeding, with only 1.1% of participants had used formula feeding[16]. Another Saudi study conducted in Arar city showed a similar usage of mixed and artificial feeding methods by 41% and 41.8% percentages, respectively [19]. Another study was conducted in Riyadh reported similar results by half of the mothers (50.6%) who have practiced mixed feeding [15].

On the contrary to the previous results, a 344-participant study carried out in North of Jordan has reported the highest rank of breastfeeding usage, by 58.3%, mixed feeding was reported by 30.3%, and infant formula feeding was reported by 11.4% [17]. In association with the latter study, another study has reported that breastfeeding was the most common type by 51.6%, followed by mixed breast/artificial feeding in 47.0% [18]

Regarding the duration of BF, our study has demonstrated that 58.7% of mothers breastfed their children for six months or less, while mothers that continue till the end of the first year have constituted a percentage of 20.1%. A study was conducted in Mecca city have reported similar findings by a percentage of 44.1% of mothers that have breastfed their infants between 4 and 6 months of life.

In addition, another Saudi study was conducted in a different area, Hafr Al-Batin city found that more than two-thirds (71.3%) of the study respondents reported having breastfed their offspring for less than six months, followed by 16.8% for more than one year and 11.8% breastfeed for 6-12 months [22]. Contrary results have been estimated in India in a study that has demonstrated higher levels of

exclusive breastfeeding among mothers for more than six months of age by almost half of the participants (53% of 203 respondents) [20].

In concerns of the type of food introduced, our study results indicated that supplement food is used by 65% of respondents. Previously conducted studies in Riyadh [23] and Tabuk [24] have shown similar results about exclusive breastfeeding until the age of 6 months. A contrast study has found that sustained exclusive breastfeeding up to six months without any supplement was reported by only 8.3% of participants [25]. However, in Tanzania, another study reported that the prevalence of exclusive breastfeeding was 58% [26].

Causes of BF abstinence

Our results confined to reasons of feeding decisions depend highly on difficulties facing working mothers, as 43.4% have switched to artificial feeding due to difficulty of commitment to breastfeeding during work hours, while 5.4% of mothers do not breastfeed their children for fear of obesity, and only 3.7% for fear of consequences as enlargement and redundancy of breast. Another study on Saudi mothers in the Southwestern region has reported insufficiency of breast milk as the most common reason for BF cessation in 44% of the cases, while workplace-related problems have come in the second place with a percentage of 38.5%, and lastly, child refusal caused by 13.5%.[24].

Breastfeeding insufficiency was reported in another study by 49.5% of participants, while other possible causes included pain on illness (22.5%), job recruitment (12.6%), breast-related problems (6.3%), and cosmetic shape of breast/body represents (5.4%) [22]. Another study found that a mother's perception of breast milk being inadequate was the most common reason for stopping breastfeeding (41%), followed by the introduction of bottle milk (30%), mother felt that the duration of breastfeeding was adequate (19%), infant taking top feeds (15%), working mother (4%) and embarrassment in breastfeeding reported by 2% [21].

Our study found a statistically significant correlation between the mean duration of BF (months) and mothers' age, number of offspring, number of breastfed offspring, and number of offspring to number of breastfed offspring ratio (P-value < 0.01). Similar to our results, a study found that increased maternal age was significantly associated with early initiation of breastfeeding (within 24 hours of

delivery) (P-value = 0.016), with longer duration (P-value = 0.001), and with the exclusivity of breastfeeding (P-value = 0.034) [27].

Another relationship that has been investigated for the association is between mothers' educational & work statuses and type of food introduced; taking into consideration causes of abstinence, we found no correlations between mother criteria and feeding practices or abstinence reasons stated (P-value > 0.5). On the contrary, another study has stated that working mothers breastfed less frequently and had a shorter duration than non-workers and that these differences were statistically significant [27]. Further five studies found that working status had no significant effect on breastfeeding practices and duration [28, 18, 29-31], and one study reported a higher 'exclusive breastfeeding' rate among working mothers compared to non-working mothers (p = 0.005) [32].

CONCLUSION AND RECOMMENDATIONS:

It has been found throughout the study that mothers' age and the number of their offspring are correlated to the duration of breastfeeding. The majority of participants have reported that their main source of information about breastfeeding is hospitals; thus, it is recommended to start campaigns targeting current, new, and future mothers to raise their knowledge about proper feeding importance and feedbacks, as well as to establish easier access to get information and instructions concerning all feeding topics via hotline or regular workshops.

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