



## PREVALENCE OF DIARRHEA AMONG BREAST-FEEDING CHILDREN IN AI-HASA CITY KINGDOM OF SAUDI ARABIA, 2017-2018

### Medicine

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### ABSTRACT

Among children under age five, diarrhea is the second leading cause of death. However, exclusive breastfeeding stands out as the single most effective intervention for child survival. So, we conducted this study to estimate the prevalence of both breastfeeding and diarrhea and to investigate the association between them among children 24 months old and less in Al-Hasa city.

Trained physicians filled a validated questionnaire for a 296 of child/ caregiver pairs, among PHC centers in Al-Hasa, and the result shows that 65% of children 24 months old and less were exclusively breastfed, prevalence of breast-feeding among Saudi women in Al-Hasa city reached 50%. Regarding diarrhea, 30% of children had a diarrheal episode in the last two weeks and 70% didn't have. The use of formula has a significant association with episodes of diarrhea.

Children 0-24 months old who were formula fed significantly had a higher risk for diarrhea episodes.

### KEYWORDS

Breast-feeding, Diarrhea, Al-Hasa city, PHC Centers, Saudi Arabia

#### Chapter 1: Introduction background

Among children under age 5, Diarrhea is the second leading cause of death<sup>(1)</sup>. Worldwide, children younger than five years have an estimated 1.7 billion episodes of diarrhea each year<sup>(1)</sup>.

In the Middle Eastern and North African Rotavirus gastroenteritis related hospitalization rates ranged from 14% to 45%, it caused up to 112 fatalities per 100,000 annually in specific countries in the region<sup>(3)</sup>. Some studies done in Jeddah, Taif and Riyadh showed that the prevalence of diarrhea in 25% of cases, reach about six episodes/child/year<sup>(4)</sup>.

However, considerable evidence shows that exclusive breastfeeding during the first six months of life is associated with decreased morbidity and mortality related to diarrhea<sup>(2)</sup>.

Based on such evidence, the WHO recommends early initiation of breastfeeding within the first 24 hours of birth<sup>(1)</sup>. Exclusively breastfed for the first six months, continue to be breastfed until they are two years or older along with complementary feeding<sup>(4)</sup>. However, adherence to these recommendations remains low in developing countries where only 39% of infants are exclusively breastfed<sup>(4)</sup>. In whole Saudi Arabia, only 33.08% of infants were breastfed exclusively for 1<sup>st</sup> four months<sup>(5)</sup>.

In Al-Hasa, Saudi Arabia, only 12.2% of infants were exclusively breastfed at the age of 6 months<sup>(6)</sup>.

**The aim of this study is** to estimate the prevalence of breastfeeding and diarrhea and to investigate the association between them in children 24 months old and less in Al-Hasa city.

#### CHAPTER 2: METHODOLOGY

##### Material studied:

##### 2.1 Setting

study was conducted at pediatric and well-baby clinics in PHC centers in Al-Hasa city, Saudi Arabia.

##### 2.2 Design

This study was descriptive cross-sectional study

##### 2.2.1 Sample

Participants were selected by a systematic random sampling of patients attending well-child or pediatric clinic, PHC centers were selected using cluster sampling from three sectors of PHC centers in Al-Hasa city (Al-Omran, Al-Mubarak and Hofuf) proportionately.

##### 2.2.2 Sample Size

The sample size for the study was calculated as 296, based on the prevalence of breastfeeding among children<sup>(8)</sup>.

##### Inclusion and Exclusion Criteria

##### Inclusion criteria

All male and female children with following characteristics: Saudi nationality, mothers of single infants, infants full term at birth

**Exclusion criteria:** children who were product of triplet pregnancy, or have congenital anomalies were excluded

##### 2.3 Data Collection

Trained physician filled validated questioner, which includes two sections:

**Section one:** Includes socio-demographic characteristics of child and mother

**Section two:** Elicit information on other items such as diarrheal episodes in the children over the previous two weeks before the survey and at the time of the study and a type of feeding practice. It also includes detailed inquiries about current breastfeeding practices, time of initiation of breastfeeding in hours after childbirth, its duration in months, duration of exclusive breastfeeding, types of fluids, solids, and semisolid foods that given.

##### 2.4 Data Analysis

- After collecting data, they were entered into a personal computer and analyzed using the Statistical Package of the Social Sciences (SPSS) program version 21. All variables were coded before entry and checked before analysis.
- To test for the association between categorical variables, Chi-square test was used.
- P-value of less than 0.05 was considered as a level for significance.

##### 2.5 Ethical Consideration

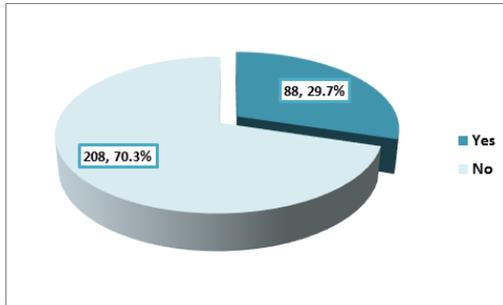
Written permission from the Joint Program of Family & Community Medicine and from concerned authority in MOH PHC centers was obtained, from all mothers/caregiver who participated in the study, a Written informed consent was obtained.

All information was kept confidential and was not be accessed except for scientific research.

**Chapter3 :Results**

**3.1-The prevalence of the diarrhea and its associated factors.**

The results in figure 1 suggest that 30% of children had a diarrheal episode in the last two weeks and 70% didn't have any diarrhea during the same period. Table 1 further reveals that more than half of the participants (57%) use bottled water followed by 31% use pump water and 12% use tap water for drinking. However, 51% of participants are aware of any method for purifying water, and 45% have no idea about any purification method. Thirty-four percent of people usually boil the water to make it safe, whereas, 44% don't use any purification method. Regarding the child drinking anything from nipple bottle, 61% of parents agreed upon the use and 36% denied of such use; however, 3% had no idea about it.



**Figure 1: Prevalence of diarrhea in the last two weeks among 0-24 months children, Al-Hassa**

**TABLE 1: Factors associated with diarrhea**

Statement	Number	Percentage
<b>What is the major source of drinking water for members of your household?</b>	168	57%
Bottled	36	12%
Tap	92	31%
Pump		
<b>Do you do anything to the water to make it safer to drink?</b>	152	51%
Yes	134	45%
No	10	4%
Don't know		
<b>What do you usually do to make the water safer to drink?</b>	101	34%
Boil	4	1%
Add Chlorine	60	20%
Use filter	131	44%
Don't know		
<b>Did the child drink anything from a bottle with a nipple yesterday or last night?</b>	182	61%
Yes	106	36%
No	8	3%
Don't know		

**3.2-Initiation of breastfeeding and exclusive breastfeeding:**

Participants were asked a number of questions, and the results of those responses are summarized in table 2. Majority of the babies (44%) were breastfed immediately after the birth followed by 19% who were breastfed in less than an hour, and 16% took more than 8 hours to be breastfed. During the first three days, 46% of babies were not given anything except breastfeeding, followed by 42% infants who were given formula feed. At present 50% of women are still breastfeeding their current child. Exclusive breastfeeding was observed among 65% of babies.

**TABLE 2: Factors associated with initiating breastfeeding and exclusive breastfeeding.**

Statement	Number	Percentage
<b>How long after birth did you breastfeed?</b>		
Immediately	130	44%
< 1 hour	55	19%
1 - 4 hours	16	5%
4 - 8 hours	11	4%
> 8 hours	48	16%
>24 hour	25	8%
Never	11	4%

<b>Was anything given to drink other than breast milk, In the first three days after delivery?</b>		
Nothing	136	46%
Milk other than breastfeeding	2	1%
Plain water	24	8%
Sugar	2	1%
Sugar-salt water	1	1%
Fruit juice	5	2%
Infant formula	125	42%
<b>Are you still breastfeeding?</b>		
Yes	148	50%
No	148	50%
<b>For how many months did you breastfeed?</b>		
<6 months	181	65%
6 - 12 months	64	23%
>12 months	32	12%
<b>How many times did infant drink infant formula?</b>		
4 times	172	58%
4 - 6 times	11	4%
6 - 8 times	4	1%
No infant formula	109	37%
<b>How many times did infant drink milk?</b>		
4 times	56	19%
4 - 6 times	2	1%
No milk	238	80%

**3.3-Association between diarrhea and type of feeding:**

The use of formula feed was shown to have a significant association (p-value<0.05) with episodes of diarrhea. However, there was no association found between eating or drinking homemade food, cereals, fruits or vegetables (p-value 0.30) with diarrhea.

A strong association was observed between drinking regular milk and frequency of drinking formula milk from one side and the episodes of diarrhea from the other side, (p-value<0.05)

**TABLE 3. The association between diarrhea and type of feeding**

Formula fed	Diarrhoea		P –value
	Yes N=88 N (%)	No N=208 N (%)	
Yes (n=182)	67 (36.8)	115 (63.2)	
No (n=106)	19 (17.9)	87 (82.1)	
Don't know (n=7)	1 (14.3)	6 (85.7)	
<b>Partially breastfed:</b>			
<b>Did the child eat or drink something else?</b>			
Nothing (n=75)	17 (22.7)	58 (77.3)	
Homemade food (n=133)	39 (29.3)	94 (70.7)	
Vegetables (n=36)	14 (38.9)	22 (61.1)	
Fruits (n=19)	5 (26.3)	14 (73.7)	
Cereals (n=33)	13 (39.4)	20 (60.6)	
<b>How many times did infant drink infant formula?</b>			
4 times (n=172)	63 (36.6)	109 (63.4)	
4 - 6 times (n=11)	3 (27.3)	8 (72.7)	
6 - 8 times (n=4)	2 (50.0)	2 (50.0)	
No (n=109)	20 (18.3)	89 (81.7)	
<b>How many times did infant drink milk?</b>			
4 times (n=56)	26 (46.4)	30 (53.6)	
4 - 6 times (n=2)	1 (50.0)	1 (50.0)	
No (n=238)	61 (25.6)	177 (74.4)	

**CHAPTER4:DISCUSSION**

**-Initiation of breastfeeding and prelacteal feeding:**

In line with previously reported evidence <sup>(7)</sup>, early initiation of breastfeeding within one hour was reported by almost two-thirds (63%)

among studied infants .However, an overwhelming half of the infant (55%)was given prelacteal foods in the first three days after birth. This should take attention as evidence shows that risk of nutritional deficits and infectious diseases that affect infant physical growth is increased with the premature initiation of solid and semi-solid food <sup>(10,11)</sup>.

**-Prevalence of breastfeeding:**

In the current study, exclusive breastfeeding was reported among 65% of babies aged less than six months. This was declined to 23% among infant aged between 6 and 12 months and reach only 12% among children aged over 12 months. This is consistent with that has been reported in another study carried out in Al-Hassa on 2011<sup>(12)</sup>. This emphasizes the great need for focused programs and health education to increase awareness of exclusive breastfeeding and its importance in our community.

**-Prevalence of diarrhea:** The prevalence of diarrhea was calculated as the proportion of children who had diarrhea at the time of interview or during the previous 2 weeks, and it was estimated to be 30%, which is similar to that has been reported in another similar study carried out in Qatar<sup>(7)</sup>, but it is much higher than the figure that has been reported in another study done in the Eastern province of Saudi Arabia in 1992<sup>(4)</sup>. This could be attributed to variation in the time and region of study conduction.

**-Relationship between breastfeeding and diarrhea:**

an important finding of this study is that children who are formula fed were at higher risk for diarrhea with a significant association with the frequency of drinking formula milk and drinking regular milk.

**-Study Strength and limitation:**

The setting for this study seems a suitable as the whole city is covered by the Primary Health Care Program. Approximately all Saudi residents are registered there, and they attended for any health problems.

authors apply WHO definitions of exclusive, partial and predominant breastfeeding,<sup>(13)</sup> which considered as an advantage of this study.

One of the limitations is that the infants who received prelacteal feeds were included in the definition of exclusive breastfeeding as if they were excluded; some differences in the result might be noticed. Another limitation is the study may be prone to recall bias.

**CONCLUSION:**

- The prevalence of diarrhea among children in this study is relatively high.
- Prevalence of exclusive breastfeeding at six months of age or more in our society is considerably low.
- The formula fed stands as a risk factor for diarrhea among children.
- Most of the factors hindering exclusive breastfeeding can be modified by health education.

**Recommendation:**

- The main thing this study highlight is the need to develop future interventions aiming to reduce diarrhea occurrence in our society.
- Studies on the incidence of diarrhea should be done in all PHC centers to monitor the magnitude of the diarrhea problem among children and implement the suitable preventive measures.
- Encouraging exclusive breastfeeding with high priority in all sectors of the society.
- health education to all mothers and revive the Baby-Friendly Hospital initiative to promote breastfeeding in Saudi Arabia

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