
Patterns of Infants Feeding in A Sample of Attendants of A Health Center in Baghdad

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PhD

Abstract:

Objective: To find the exclusive breast-feeding and other practices rates and to identify factors that affect breast-feeding and to find the effect of breast-feeding patterns on the rate of hospital admission for diarrhea and respiratory tract infection of the attendants of New Baghdad Health Center.

Methodology: The sample of the study was consist of 484 mother infant pairs selected randomly every other pairs from the attendants of the primary health care unit for vaccination. The babies ages were recorded precisely to be two years or under. Mothers were interviewed about the current feeding pattern of their babies, and about several factors that play a role to choose the pattern of feeding like mothers' age, education, parity and employment.

Results: Exclusive breast-feeding rate was 9.8% during the first month and decrease subsequently after that. Predominant breast-feeding pattern was significantly more in males than in females. By the age of fourth months, 23.6% of babies had received solid or semisolid food. Glucose water was given by 68% of mothers in the first 72 hours of infant life. High rate of babies (87.4%) were received water in the first six months. Bottle-feeding babies showed higher percentage rate (21.6%) of admission to hospital because of diarrhea and respiratory tract infection.

Conclusion: The exclusive breast-feeding rate was very low in spite of high initiation rate.

Key words. Exclusive breast-feeding, feeding practice, predominant feeding.

Abbreviations ORT: oral rehydration therapy

Introduction:

Human milk is presumed to have evolved, over about 2-2.5 million years, to meet the varying circumstances of hominid species and their environments ^[1]. Human milk is species specific, and all substitute-feeding preparations differ markedly from it, making human milk uniquely superior for infant feeding ^[2].

Breast feeding benefits have been demonstrated to be dose responsive, related to the amount of breast milk received. For example fully breast fed infants have been shown to have lower over all illness rates, whereas minimal breast-feeding has not been found to be protective ^[3].

During the first six months of age, even in hot climates, water and juice are unnecessary for breast-fed infants and may introduce contaminants or allergens ^[4]. Introduction of complementary feedings before six months of age generally does not increase total caloric intake or rate of growth and only substitute's foods that lack the protective components of human milk ^[5].

In 2001, the World Health Organization (WHO) changed its recommendation for exclusive breast-feeding until six months of age ^[6]. Exclusive breast feeding is the reference or normative model against which all alternative feeding methods must be measured with the regard to growth, health, development and all other short and long term outcomes ^[2].

Aims of the study:

- 1- In order to find the exclusive breast-feeding rates and other feeding practices of the attendants of New Baghdad Health Center.
- 2- To identify factors that influence breast-feeding.

3-To find the effect of breast feeding patterns on the rate of hospital admission for diarrhea and respiratory tract infection

Materials & Methods:

This study was conducted during the period between Jan 15th and April 14th 2006 in New Baghdad Health Center.

A total of 484 mother child pairs from 0-24 months of age were selected randomly (every other one) from the attendants of the primary health care unit for vaccination.

Age of children:

precise birth date for each child was directly recorded onto the questionnaire from the child health card to avoid mistake in calculating the age in days exactly.

Mothers were interviewed about:

- 1- The current feeding pattern of infants, and if her child is exclusively breast-fed since birth.
- 2-The recall data: are based on asking the mother at what specific age she fed her child, i.e. time of introducing glucose water, water or complementary feeding.

Description of the sample:

Several important determinants of breast feeding practices were considered to describe the sample:

- a- Mother characteristics: maternal schooling, age, employment, the number of children in the family.
- b- Child characteristic: gender.

Definitions:

Breast-feeding practices were defined according to WHO into [7]:

- 1-Exclusive breast-feeding: the infant receives breast milk (including expressed milk) and is allowed to receive drop or syrups of (vitamins, minerals, and medicine). The infant may not receive anything else.
- 2-Predominant breast-feeding: the infant receives breast milk (including expressed milk) and is allowed non-nutritive liquids (water and water based drinks, fruit, juice, ORT, and ritual fluids) the infant is not allowed to receive anything else (in particular non-human milk, food based fluids).
- 3-Complementary feeding: The infant receives breast milk and is allowed any food or liquid.

Statistical analysis:

Statistical analysis was performed using Epi Info release 6 (centers for disease control and prevention USA)

Rates were calculated < 6 months of age i.e. from (0-183days of life), and monthly by completed month [8] (i.e. 0 month = 0-30 days, 1 month = 31- 61 days, 2 months = 62- 91 days, 3 months = 92-122 days, 4 months = 123- 152 days, 5 months = 153- 182).

Association between categorical variables were tested by the use of contingency tables and the calculation of χ^2 (chi- square test). When the expected value is less than five, then χ^2 yates correction were used instead.

Results:

A total of 484 mother child pairs were included in the study. The mean age of all mothers was (27.3 ± 5.74 years).

The initiation rate of breast-feeding was (91.3%), and the percentage of infants never breast-feed since birth was (8.7).

The prior breast-feeding experience:

It was found that (34%) of mothers had a history of breast-feeding of previous child, (13.8%) had a history of combined feeding (i.e. breast-feeding + bottle-feeding), while (9.7%) had a history of bottle-feeding only.

Using glucose water:

The study found that 329 mothers (68%) were giving glucose water in the first 72 hours of infant life, 149 mothers (30.8%) were not doing, two mothers (0.4%) gave honey, and four (0.8%) gave herbs.

Using water:

The study found that 423 mothers (87.4%) were giving their infant water in the first six months, 302 of them (62.4%) were giving water from the first day of life.

Table 1 shows that exclusive breast-feeding was the most rare of the practices; it constitutes (2.3%), and it was (9.8%) during the first month of infant life (0-month) then decreased during the subsequent months. High percentage of mothers used the complementary feeding during the first six months of life it was (41.6, 49.3, 37.9, 52.4, and 47.8) during the second, third, fourth, fifth, and the sixth month of life respectively. The rate of continued breast feeding second year was (34.1%).

Table 2 shows a significant difference (p-value 0.03) between males and females in their feeding patterns; males constitute 72.7% of exclusive type and 61% of predominant type while the females constitute 55.7% and 56.8% of complementary and bottle feeding respectively.

Table 1. Types of feeding for the entire study sample

Age in months	Exclusive breast feeding		Predominant breast feeding		Complementary feeding		Bottle feeding (only)		Solid/Semisolid feeding		Total
	No.	%	No.	%	No	%	No	%	No	%	
(0)month	6	9.8	29	47.5	23	37.7	3	4.9	0	0	61
(1)month	2	5.5	14	38.9	15	41.6	4	11.1	1	2.7	36
(2)months	1	1.3	19	26	36	49.3	17	23.3	0	0	73
(3)months	1	3.4	8	27.6	11	37.9	5	17.2	4	13.8	29
(4)months	0	0	5	12	22	52.4	6	14.3	9	21.4	42
(5)months	1	4.3	1	4.3	11	47.8	1	4.3	9	39.2	23
6-12 months	0	0	1	0.7	83	61.5	1	0.7	50	37.1	135
13-24 months	0	0	0	0	29	34.1	0	0	56	65.9	85
Total	11	2.3	77	15.9	230	47.5	37	7.6	129	26.7	484

Table 2. Frequencies of different feeding according to gender.

Type of feeding	Male		Female		Total
	No.	%	No.	%	
Exclusive breast	8	72.7	3	27.3	11
Predominant	47	61	30	39	77
Complementary	102	44.3	128	55.7	230
Bottle (only)	16	43.2	21	56.8	37
Solid/Semisolid	69	53.5	60	46.5	129
Total	242	50	242	50	484

Yates corrected $\chi^2(x^2y) = 10.27$ p-value= 0.03

Table3 demonstrated that by the age of third month 4.3% of babies had received variable amount of food other than milk, and 23.6% of babies by the age of fourth month. There were no significant differences between males and females in the time of introducing food.

Table 4 shows the categories of complementary feeding. The combined feeding i.e. breast and formula constitute (37.7, 41.6, and 47.9%) in the first three months of life then breast milk and food was the commonest practice after the fourth months which constitute (26.2, 30.4%) in the fourth and fifth months.

Table 3. Time of application of solid/semisolid food according to gender.

	Third months		Fourth months		Fifth months		Sixth months		Seventh months		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Male n=242	10	4.1	56	23.1	25	10.3	32	13.2	10	4.1	133	55
Female n=242	11	4.5	58	24	28	11.6	33	13.6	13	5.4	143	59
Total n=484	21	4.3	114	23.6	53	11	65	13.4	23	4.8	276	57

X² = no significant difference

Table 4. Types of Complementary feeding.

Age in months	Breast milk and food		Combined(breast and formula)		Combined and food		Total	
	No.	%	No	%	No.	%	No.	%
(0) month n=61	0	0	23	37.7	0	0	23	37.7
(1)month n=36	0	0	15	41.6	0	0	15	41.6
(2)months n= 73	0	0	35	47.9	1	1.4	36	49.3
(3) months n=29	0	0	4	13.8	7	24.1	11	37.9
(4) months n=42	11	26.2	5	11.9	6	14.3	22	52.4
(5)months n=23	7	30.4	1	4.3	3	13	11	47.8
6-12 months n=135	54	40	1	0.7	28	20.7	83	61.5
13-24months n= 85	21	24.7	1	1.2	7	8.2	29	34.1
Total n=484	93	19.2	85	17.6	52	10.7	230	47.5

Table 5 shows breast feeding practices by categories of demographic characteristics of mother.

1-Age of mothers: most of the mothers (377 i.e. 77.9%) were 21 to 35 years old, but there were no significant differences between types of feeding in the different age groups.

2-Education level: the level of illiteracy in this sample is very low, nine out of 484 i.e.1.9% of the sample. The frequency of predominant breast-feeding was decreased with increasing years of education, it was 44.4% in illiterate mothers group and 8.3% of highly educated mother (> 12 years) were using this type of feeding. There was

a significant difference (p-value 0.02) between the type of feeding and different categories of education.

3- Parity: there was no significant difference between child number in the family and the type of feeding.

4- Mothers employment: there was no significant difference between employment of mothers and the type of feeding they were practiced.

Table 5. Mothers characteristics and feeding pattern of children.

Mother characteristics	Exclusive breast		Predominant		Complementary		Bottle		Solid/ semisolid		total
	No.	%	No.	%	No.	%	No.	%	No.	%	
I- Age of * Mother (year)											
≤20	1	1.6	13	20.3	28	43.7	5	7.8	17	26.6	64
21-35	9	2.4	60	15.9	174	46.2	28	7.4	106	28.1	377
> 35	1	2.3	4	9.3	28	65.1	4	9.3	6	14	43
Total	11		77		230		37		129		484
2- Mother education (year)											
Illiterate	0	0	4	44.4	1	11.1	1	11.1	3	33.4	9
1-6	2	1.5	25	19.2	72	55.4	5	3.8	26	20	130
7-9	4	2.5	25	15.8	71	44.9	15	9.5	43	27.2	158
10-12	2	1.9	16	15.5	40	38.8	13	12.6	32	31.1	103
>12	3	3.6	7	8.3	46	54.8	3	3.6	25	29.7	84
Total	11		77		230		37		129		484
3- parity											
One	3	1.4	30	14.9	95	47	20	9.9	54	26.7	202
Two	1	0.8	25	19.8	60	47.6	7	5.5	33	26.2	126
≥Three	7	4.5	22	14.1	75	48.1	10	6.4	42	26.9	156
Total	11		77		230		37		129		484
4- mothers employment											
Yes	2	3.6	6	10.9	29	52.7	3	5.5	15	27.3	55
No	9	2.1	71	16.5	201	46.8	34	7.9	114	26.6	429
Total	11		77		230		37		129		484

*1- age of mother Yates corrected $\chi^2(x^2y) = 8.55$ p-value= 0.39

2-mothers education Yates corrected $\chi^2(x^2y) = 27.53$ p-value= 0.02

3-parity Yates corrected $\chi^2(x^2y) = 9.23$ p-value = 0.32

4-mothers employment Yates corrected $\chi^2(x^2y) = 2.24$ p-value = 0.69

Table 6 shows that 8.9% of the entire children were admitted to hospital because of diarrhea and

respiratory tract infection. Bottle feeding babies had higher percentage of admission to hospital (21.6%)

because of respiratory tract infection and diarrhea (16.2% and 5.4%) respectively, while there was no admission to hospital for those with exclusive

breast-feeding. There was a significant difference (p-value 0.028) in admission to hospital between different categories of feeding.

Table 6. Causes of admission to hospital according to the type of feeding.

Type of feeding	Diarrhea		Respiratory infection		Total	
	No.	%	No	%	No.	%
Exclusive breast N=11	0	0	0	0	0	0
Predominant breast N= 77	0	0	3	3.9	3	3.9
Complementary N=230	9	3.9	7	3.1	16	7
Bottle feeding N=37	2	5.4	6	16.2	8	21.6
Solid/Semisolid food N=129	12	9.3	4	3.1	16	12.4
Total N =484	23	4.8	20	4.1	43	8.9

Yates corrected $\chi^2(\chi^2y) = 0.028$

Discussion:

The American Academy of Pediatrics recommends exclusive breast-feeding for 6 months and continuation of partial breast-feeding for ≥ 12 months.^[9] Healthy people 2010 set a goal that 75% of infants be breast fed in the early postpartum period, with continued breast feeding to 6 months for 50%.^[9,10] These goals were exceeded by this study; the initiation rate was 91.3% and 56.4% of babies were continued breast-feeding to 6 months as shown in table 1. Other goal of Healthy people 2010 were 25% of babies continuing to breast feed at one year of life which was exceeded in this study as shown in table 1 that 34.1% of mothers continued breast feeding to the second years of life. Although these goals were achieved but the striking finding was the rate of exclusive breast-feeding since birth 2.3% of the entire sample i.e. 4.2% of mothers who had babies up to 6 months of age continued this practice of feeding while the intended goal of Healthy People 2010 was 25%. This low rate of exclusive breast feeding is due to the influencing behaviors of mothers particularly in giving glucose water in the first day after birth as it was found in 68% of mothers, and giving water early in life 87.4% of all mothers gave water during the first 6 months of life and finally due to the use

of artificial milk. It was found that 37.7% of 0-month infants were artificially fed.

The probability of exclusive and predominant breast-feeding is influenced by infant sex; boys are more commonly exclusive and predominant than girls as shown in table 2. This finding is inconsistent with Mexico study that shows the opposite findings.^[8]

Introduction of solid/ semisolid food before four months of age as shown in table 3 was found in 4.3% of infants which is lower than Li, et al study in china^[11] that found about 19.3% of mothers introduce solid and semisolid food before age of four months this may indicate a better knowledge of this study mothers than Chinese to the time at which they introduce complementary foods according to the previous goal of exclusive breast feeding to the age of three months.

The complementary type of feeding is consisting of three categories as shown in table 4. About one sixth 17.7% received no solids foods, but were given infant formula and breast milk i.e. combined feeding.

The demographic characteristics of mother were studied in different practices of feeding as shown in table 5; the age of mother had no effect on feeding practices this is inconsistent with Ryan et al

study^[12] that demonstrates younger women had lower rate of exclusive breast feeding, this is may be due to the very low exclusive practice and knowledge in this study. Mother education: it was found that with increase years of education the predominant practice was reduced, this is consistent with Chhabra et al study that done in Delhi^[13], and inconsistent with Ryan et al study that demonstrates women lacking a college degree had a lower rate of exclusive breast-feeding^[12]. There was no association between numbers of children in the family and feeding practices, this is consistent with Mexico study^[8]. This study found that the practice of feeding was not affected by mothers' employment. This is may be because the maternity leave that applies to all mothers by law. Visness and Kennedy reported a positive association between the duration of maternity leave and the duration of the breast-feeding^[14].

The health care system has an important role in the promotion and support of breast-feeding. Lu et al indicated that encouragement by nurses and physicians in a population less likely to breast- feed would increase breast- feeding initiation. Women who were encouraged by their physicians and nurses to breast feed were four times more likely to initiate breast-feeding than women who did not receive such encouragement.^[15]

The data in table 6 demonstrate that exclusive and predominant breast fed infants has a lower percentage of admission to hospital because of respiratory infection and diarrhea. These results are consistent with Belarusian study^[16] that demonstrated that exclusive breast feeding for six months is associated with a lower risk of gastrointestinal infection, and with recent studies that demonstrated that predominant breast feeding for less than six months was significantly associated with two or more hospital, doctor, or clinic visits or hospital admission^[17], and increased risk of respiratory tract infection including pneumonia and recurrent otitis media in children who were fully breast-fed for 4 vs. 6 months.^[18]

Conclusion:

The rate of exclusive breast- feeding was very low in spite of high initiation rate. This study has identified problems in practices of infant feeding as mothers introduced glucose water as pre-lacteal feed, and giving water to the baby early in the first days of life this lead to decrease in the rate of exclusive breast-feeding. The frequency of predominant breast-feeding was decreased with increasing education. Age of mother, parity, and employment had no effect on the practice of feeding. There was a reduction in the percentage of admission to the hospital due to respiratory tract infection and diarrhea in predominant breast-feeding.

Thus considerable efforts will be required to reach the proposed healthy people 2010 goal of 25% of mothers must be exclusively breast-feed their babies.

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