

## Breast Feeding and Co-morbidities on Mothers and Infants in Two Main Hospitals of Diyala Province, Baquba, Iraq

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### Abstract

**Background:** Breast milk is the only food fully adapted to the physiology of human infants. Optimal breastfeeding is defined as initiating breastfeeding immediately after birth exclusively breastfeeding until 6 months of infant age, and continuing breastfeeding with age-appropriate introduction of complementary foods up to age two or longer.

**Objective:** To investigate the relationship between type of feeding in the first year of infant life, and infant morbidity in the same period of infant's age. It focuses on different diseases that affect many infants in spite it could be preventable by very simple and cheap methods.

**Method and Material:** It is a descriptive study done in Al-Batool teaching hospital and Al-Zahra hospital of Diyala province, during the period from October 2012 to March 2013, 100 cases of infant at one year of age have be included in the study regardless of medical reason of hospital admission, divided into three groups of infants exclusive breast feeding, bottle feeding and mixed type of both bottle and breast feeding. This study is considered as to investigate the relationship between type of feeding in the first year of infant life, and infant and maternal co-morbidities.

**Results:** One hundred cases were included in the study, 51 males infant and 49 females included in the sample, according to feeding type the study revealed that 31 breast feeding, 34 bottle feeding, and 35 mixed feeding. The current study demonstrate that 69 delivered by section among them 14 breast feeding, 32 bottle feeding and 22 mixed feeding while 31 delivered by normal vaginal delivery including 15 breast feeding, 9 bottle feeding and 7 mixed feeding only. Regarding post-partum maternal weight loss we found 81 had significant weight loss among them 30 breast feeding, 15 bottle feeding and 16 mixed feeding. According to the study of fetal diseases demonstrated that 68 infant developed diarrhea among them 14 breast feeding, 29 bottle feeding and 25 mixed feeding, 47 had urinary tract infection 9 of them breast feeding 20 had bottle feeding, 32 infant had constipation five of them breast feeding, 14 bottle feeding and 13 mixed feeding.

**Conclusion:** The duration of breastfeeding showed a decline with decreasing maternal age, less educated and multiparous mothers who lived in rural communities and belonged to the low socio-economic class were more likely to breastfeed, breastfeeding patterns and practices need to be re-assessed hopping this review will serve as baseline information for any upcoming longitudinal studies on breastfeeding.

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## Introduction

Breast milk is the only food fully adapted to the physiology of human infants [1]. Optimal breastfeeding is defined as initiating breastfeeding immediately after birth [2]. Exclusively breastfeeding until 6 months of infant age, and continuing breastfeeding with age-appropriate introduction of complementary foods up to age two or longer [3].

Exclusive breastfeeding differs from predominant breastfeeding (PBF), where in breast milk constitutes infants' primary nutritional source, but infants are also given other liquids such as water, tea, juices, oral rehydration salt solutions, or ritual fluids [4]. Exclusive breastfeeding is the most effective global public health intervention for child survival [3, 5, 6]. Therefore, while any breastfeeding is physiologically normal for optimal health outcomes, [7]. Early initiation and exclusive breastfeeding in the first 6 months are optimal due to the resultant infant and child survival, growth, and development and maternal health [8, 9]. Human milk generally provides all of the nutrient requirements for infants less than 6 months of age, about half of their energy requirement from 6 – 12 months, and approximately one third throughout the child's second year of life [10]. When mothers are adequately nourished, human milk includes nearly all of the water vitamins, minerals, carbohydrates, fats, proteins, digestive enzymes, and hormones that a developing child needs [11]. Breastfeeding provides both a food and a biologically based interaction between two individuals, both achieving a healthy normal physiological milieu. As a result, lactation/breastfeeding also is associated with less maternal risk of breast and ovarian cancers [12].

Although no data exist that specifically address the costs and savings associated with exclusive breastfeeding, it has been estimated

that breastfeeding costs approximately \$600 annually in additional foods for the mother, whereas the cost of commercial formula alone, without bottles is approximately \$1500 annually [13]. The economic benefits include cost savings from avoiding illness, workdays lost and the purchase of infant formula [14]. Moreover, it has been projected that 11.6% of child deaths in 2011 could be attributable to sub-optimal breastfeeding [15].

A variety of factors have been reported to affect the practice of exclusive breastfeeding, including maternal characteristics (education, occupation, health condition, age), infant characteristics (gender, birth order, illness), and cultural practices (initiation of breastfeeding, time of introduction of complementary feeds) [16, 17]. The effects of these factors vary according to cultural context and related socioeconomic conditions.

There is insufficient data available on breastfeeding in Diyala province of Iraq to monitor progress and develop promotion programs and because of the public health and clinical significance of breastfeeding, it is appropriate to further review the data that are available to provide a summary of breastfeeding patterns, practices, rates and duration in Diyala province, Iraq.

## Patients and Methods

It is a descriptive study done in Al-Batool teaching hospital and Al-Zahra hospital in Diyala province, Iraq in the period from October 2012 to March 2013, 100 infant at one year of age have be included in the study regardless of medical reason of hospital visit ,they were divided into three groups of infant at one year have be included in study exclusive breast feeding, bottle feeding and mixed bottle and breast feeding. This study is considered as to investigate the relationship between type of feeding in the first year of

infant life, and maternal and infant morbidities.

Different diseases that affect many infants could be preventable by simple and cheap methods such as are upper respiratory tract infection, lower respiratory tract infection, meningitis, diarrhea, urinary tract infections, and allergies by this simple and cheap method. Relationship between selected mother's and infant's sociodemographic variables and the mother's choice of infant's feeding in the first year of infant like mother's age at baby's birth, mother's level of education, mode of delivery, parity, and infant's gender.

In this study, exclusive breastfeeding was defined as the infant having received only breast milk from the mother (either directly from the breast or expressed) and no other liquids or solids with the exception of drops or syrups consisting of vitamins, mineral supplements, or medicines.

## Result

One hundred cases, 51 males infant and 49 females were included in the study, according to feeding type the study revealed that 31 breast feeding, 34 bottle feeding, 35 mixed feeding. The mean age of mothers breast feeding is 35 years while bottle feeding mothers mean age 23 years and mixed type feeding 28 years. Regarding

parity it is noticed that 82 mothers were multipara including 35 of them breast feeding, bottle feeding and 27 mixed feeding, 18 mothers were primi mothers 3 breast feeding 9 bottle feeding and 6 mixed feeding showing a significant correlation between parity and type of feeding. The current study demonstrate that 69 delivered by section among them 14 breast feeding, 32 bottle feeding and 22 mixed feeding while 31 delivered by normal vaginal delivery including 15 breast feeding, 9 bottle feeding and 7 mixed feeding only, However women lives in rural area tended to provide EBF more than urban area 53 Rural, 47 urban in infant with EBF. Regarding post partum maternal weight loss we found 81 had significant weight loss among them 30 breast feeding, 15 bottle feeding and 16 mixed feeding.

According to the study of fetal diseases results demonstrated that 68 infant developed diarrhea among them 14 breast feeding, 29 bottle feeding and 25 mixed feeding, 47 had urinary tract infection 9 of them breast feeding 20 had bottle feeding, 32 infant had constipation five of them breast feeding, 14 bottle feeding and 13 mixed feeding, 37 hospitalized infants 7 of them breast feeding, 17 bottle feeding and 13 mixed type of feeding.

**Table (1):** Maternal Co-morbidities in the study.

Criteria	Breast feeding No. &%	Bottle feeding No. &%	Mixed feeding No. & %	Total Out of 100
Mean maternal age (ys.)	35	23	28	28.3 ys.
Maternal weight loss	30(37%)	15(18%)	16(19%)	81%
Multiparous mothers	35(42%)	20(24%)	27((33%)	82%
Primiparous mothers	3(17%)	9(50%)	6(33%)	18%
Normal vaginal delivery	15(47%)	9(28%)	8(25%)	32%
Caesarian section delivery	14(20%)	32(47%)	22(32%)	68%

**Table (2):** Fetal co-morbidities in the study.

Criteria	Breast feeding (31) No. &%	Bottle feeding (34) No. &%	Mixed feeding (35) No. & %	Total out of 100
Diarrhea	14(22%)	29(42%)	25(36%)	68%
Urinary tract infection	9(19%)	20(43%)	18(38%)	47%
Constipation	5(16%)	14(44%)	13(40%)	32%
Respiratory disease	16(20%)	34(41%)	32(39%)	82%
Male feeding at 6 months of age	20(41%)	17(33%)	15(30)	51%
Female feeding at 6 months of age	19(40%)	16(33%)	13(27%)	49%
Type of feeding at 3 months of age	52%	22%	26%	100%
Type of feeding at 6 months of age	39%	33%	28%	100%
Type of feeding at 9 months of age	27%	43%	30%	100%
Type of feeding at 12 months of age	18%	55%	27%	100%
Hospitalization	7(19%)	17(46%)	13(35%)	37%

**Table (3):** General common infant variable data of the study.

Criteria	No.	(%)
Breast feeding	31	31%
Bottle feeding	34	34%
Mixed feeding	35	35%
Diarrhea	68	68%
Hospitalization	37	37%
Respiratory disease	82	82%
Introducing solid food at 6 months of age	78	78%
Urinary tract infection	47	47%
Constipation	32	32%

**Table (4):** Common maternal variable data.

Criteria	No.	(%)
<b>Maternal age &gt;30y</b>	37	37%
<b>Maternal age &lt;30y</b>	63	63%
<b>Not educated mothers</b>	5	5%
<b>Primary education</b>	34	34%
<b>Secondary education</b>	46	46%
<b>High education</b>	15	15%
<b>Normal Vaginal delivery</b>	69	69%
<b>Caesarian Section</b>	31	31%
<b>Post partum weight loss</b>	61	61%
<b>Multiparous mothers</b>	82	82%
<b>Primiparous mothers</b>	18	18%
<b>Living place</b>		
<b>Urban</b>	47	47%
<b>Rural</b>	53	53%

## Discussion

The Eastern Mediterranean Regional Office of WHO (EMRO) has reported high rates (>60%) of early breastfeeding initiation with 60% of mothers continuing to breastfeed to 12 months in the Middle East and North Africa (MENA) countries [18]. Dop and Benbouzid, Reported that the mean rate of 'exclusive breastfeeding' at four months in the Middle East region is 24%, including Lebanon (7%), Yemen (15%), Pakistan (16%), Jordan (32%) and Iran (48%) [19]. The Global Data Bank on infant and young child feeding (updated in 2009) contained low 'exclusive breastfeeding' rates from the MENA region. These low rates have been observed in countries such as Algeria (10.4% at four months and 6.9% at six months), Sudan (21.4% at four months and 15.6% at six months) and Egypt (30.3% at six months) [20].

The risk of developing diarrhea increases as the amount of breast milk an infant receives decreases when compared with exclusively breastfed infants, infants who were exclusively formula-fed had an 80%

increase in their risk of developing diarrhea [21]. In the study 14 (22%) of breast feeding infant developed diarrhea compared to 29(42%) of bottle feeding and 25(36%) of those with mixed breast and bottle feeding (table 2) Breastfed infants have less risk of developing a UTI of compared to formula-fed infants [22]. This is clearly supporting the study finding of developing UTI in 9(19%) of breast feeding infants compared to 20(43%) of bottle feeding infants and 18(38%) of mixed feeding infants(table2) .In Vietnam, the 'exclusive breastfeeding' rate at four months was 43.5% [25] ,and in China ranged from 36% to77% [23,24]. The study shows in the studied area breast feeding rate at 3 months of age was 52% at 6 months 39% at 9 months 27% and at 1 year of age 18% only. A survey in rural parts of Shihezi found that in 1997 'exclusive breastfeeding' rates in the first week were 41% in Han, 53% in Uygur, 62% in Kazakh and 33% in Hui ethnic group [26]. The average age for the introduction of solid foods were (4.7months) in the Han and 5.7 months in minority groups



in Karamay, Xinjiang [27]. In our area of study 78% of infants received solid food at 6months of age.

Regarding parity and age of the moth the study shows that the higher the parity (>4 children) and age the higher the tendency to breastfeed exclusively; and the lower the parity (1-2), the higher the tendency to feed by using formula-milk exclusively which reflect the higher awareness and experience of the mother about her infant health and growth which higher with maternal age and parity.

The study findings are consistent with Khassawneh *et al* study (2003) in Jordan which found that mothers with lower number of children 3 were less likely to exclusively breastfed [28]. And Berger-Achituv study *et al* in Tel Aviv district which found that grand multiparous (5 children) had a significantly higher rate of breast-feeding than women with one to four children [29]. Delhi study, the less educated mothers were positively related to EBF [30]. This is consistent with the study findings, those delivered by caesarian were less likely to fully breastfeed for 6 months [28,30]. The results from other studies which have found significant postpartum weight loss in exclusively breastfeeding mothers compared to formula feeding mother [31,32] supported by the study result showing weight loss of 30(37%) breast feeding mothers and 15(18%) of bottle feeding mothers compared to 16 (19%) of mixed breast and bottle feeding mothers, PCBS study in the year 2006 that EBF in the first 6months of life is higher for females[33]. In the study we recorded that at 6 months of age breast feeding 20 males (41%)/ 19 females (40%) and bottle feeding 17 males (33%) /16 females(33%) and mixed feeding 15 males (30%) /13 females (27%). The study recorded a decreasing rate of respiratory tract infection and hospitalization with increasing rate of breast feeding which is supported in many worldwide studies and

references [34]. Breastfeeding has numerous benefits both for infants and mothers. It provides all the nutrients infants need for a healthy development; it protects them from common childhood illnesses. Breast milk also provides protective factors for infants, reducing significant morbidities for infant health and his mother as well.

## Conclusion

The duration of any breastfeeding showed a decline over time especially with decreasing maternal age and those delivered by section. Older, less educated and multiparous mothers who lived in rural communities and belonged to the low socio-economic class were more likely to breastfeed and have prolonged duration compared to other groups.

It is recommended in our study area that breastfeeding patterns and practices need to be re-assessed to analyze and follow up data and present more accurate and valid results hopping this review will serve as baseline information for any upcoming longitudinal studies on breastfeeding.

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