

Assessment of Proper Technique of Artificial Feeding among Infants in Al-Hilla City

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Abstract

Background: Infant formula is considered an effective alternative to breast milk. Safe preparation of infant formula is a crucial goal by the World Health Organization for infants receiving some or all of their feeding using infant formula. **Objectives:** The objective is to find out the errors in the method of bottle-feeding which leads to feeding problems in infants in Al-Hilla city. **Methods:** This cross-sectional study was conducted on a convenient sample of 384 infants (who attended the general wards in Babylon Maternity and Pediatric Hospital, AL-Noor Hospital and some primary health-care centers). **Results:** The percentage of mothers who had followed all the recommended steps for feeding and sterilization of infant bottle was (16.90%). **Conclusions:** Very low percentage of mothers were found to follow all the proper steps of bottle-feeding.

Keywords: Bottle-feeding, breast milk, infant formula

INTRODUCTION

Breast milk is the ideal form of infant feeding for almost all infants. It has multiple advantages to the mother and infant. It permits proper growth and development of little infants.^[1-3]

The choice for breastfeeding is very personal and is influenced by several conditions. Infant formula is found to be an effective alternate to breastfeeding, and it is prepared to simulate the nutritional contents of human milk. Various causes to select formula feeding include mother's sickness, some of the breast diseases, and conception of deficiency of breast milk.^[4-6]

The forms of the infant formulas can be liquids or reconstituted powders fed to infants. These infant formulas can be used as an alternate to breast milk. In some children, infant formulas have a significant role in diet because they can be the only source of food for them.^[7]

Bottle-fed infants do not have the same level of immunological protection as breast-fed infants; hence, rigid hygiene procedures are essential in the preparation of feed. Good infant feeding practices are the foundation of a healthy life, so safe utilization of formula is a crucial

goal recognized by the World Health Organization (WHO) for infants who get some or all of their feeding using infant formula.^[8-10]

A lack of solid data and studies regarding bottle-feeding practices in Iraq was the main reason for conducting the current study. No studies examined how mothers made decisions about the frequency or quantity of bottle-feeds. In addition to a deficit of studies in the world that's related to the current study.

One study done in Pakistan had addressed the cleaning practices and contamination status of feeding bottles among caregivers.^[11]

In 2009, a systemic review done in the United Kingdom which assessed the mothers' experiences of bottle-feeding showed apparent mistakes in the preparation of bottle-feeds among mothers.^[2]

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In 2005, a Survey of Infant Feeding showed that almost half of the mothers who prepared powdered infant formula did not follow key recommendations, which are intended to reduce the risk of infection and overconcentration.^[12]

A qualitative study conducted in India related to bottle-feeding practices among mothers had shown that a majority of them practiced hygienic bottle-feeding measures.^[13]

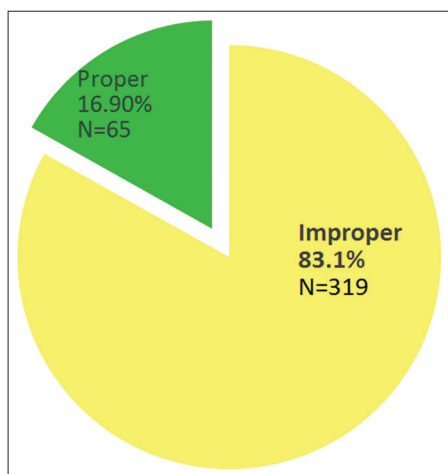


Figure 1: Assessment of technique of bottle-feeding

MATERIALS AND METHODS

Study design, setting, and time

This cross-sectional study was carried out in Babylon Maternity and Pediatric Hospital, AL-Noor Hospital, and some primary health-care centers. Data collection was done from February 1 to May 1, 2019.

Sampling method

A convenient sample of 384 infants was approached (who attended the general wards at the above-mentioned hospitals and primary health-care centers).

Inclusion criteria

The inclusion criteria included bottle-fed infants aged from 1 month to 1 year whose mothers agree to participate.

Questionnaire form

A specially designed questionnaire was prepared which was partially adapted from the Food and Agriculture Organization/WHO and UNICEF guidelines for the preparation of bottle-feeding.^[14-16] The questionnaire consisted of the following two parts:

- The first part contains two sections: First, the sociodemographic data related to the mother
- The second section of this part was related to the

Table 1: Methods of feeding and sterilization of infant bottle

Method of cleaning and sterilization of infant bottle after feeding		
Item	Answer	Frequency (%)
Cleaning the infant bottle after each fed	Yes	378 (98.4)
	No	6 (1.6)
Washing mother's hand before cleaning the bottle	Yes	134 (34.9)
	No	149 (65.1)
Type of water for cleaning the bottle	Tap water with salt	127 (33.1)
	Tap water with chemical material	245 (63.9)
	Tap water only	12 (3)
Sterilization of infant bottle by	Boiling	338 (88)
	Others (just hot tap water)	46 (12)
	Yes	152 (39.50)
Washing hands and the surface of preparation	No	232 (60.5)
	Boiled water	214 (55.7)
Type of water used for preparing powdered milk	Tap water	1 (0.3)
	Filtered water	169 (44)
	Others	0 (0)
	Powder to water	359 (93.5)
Method of reconstitution	Water to powder	25 (6.50)
	Reach requirement	265 (69)
Number of feedings per day according to body weight	Not reach requirement	119 (31)
	Follow instruction	226 (58.9)
Number of scoops per ounce	One scoop to one ounce	158 (41.1)
	Yes	127 (33.1)
Testing the temperature by dropping milk on mother's wrist before feeding	No	257 (66.9)
	Like breast milk position	205 (53.4)
Position of infant during feeding	Others (on bed or alone)	179 (46.6)
	Yes	181 (47.1)
Eructating the infant during/after feeding	No	203 (52.9)

demographic data of the infant

- The second part of the questionnaire included methods of feeding and sterilization of infant bottle, which were modified from the WHO and UNICEF steps for safe preparation of powdered infant formula as follows.

Calculation of proper technique of bottle-feeding

The study participants were divided into two groups according to the proper technique: proper group and improper one.

- Proper group: Those who follow all the recommended steps of safe preparation of infant formula that were modified from the WHO, Centers for Disease Control and Prevention, and UNICEF guidelines
- Improper group: Those who did not follow all the recommended steps (had a defect in some or more points).

Statistical analysis

Statistical Package for Social Sciences version 24 (SPSS, IBM Company, Chicago, USA) was used for data input and analysis.

Categorical variables were presented as frequencies and percentages. Chi-square test and *P* value were used to determine the differences between the two sample groups (proper and improper techniques).

Findings with $P < 0.05$ were considered statistically significant.

Ethical consideration

1. The study protocol was approved by the Ethical Committee of Babylon University/College of Medicine
2. Written agreement was obtained from the Babylon Health Directorate
3. Verbal consents were obtained from the mothers prior to interviewing, after explaining the objectives of the study.

RESULTS

A total of 384 mothers were enrolled in this study. The most prevalent age group (38.3%) was between 21 and 30 years old, 51.3% of them had institute/college or higher level of education, a high percentage (57.6%) of them were homemakers, 69.5% of them were from urban area, and 68% of them have ≤ 3 children. Regarding socioeconomic status, 83.9% of them had enough income. Results also found that 29.9% of infants were aged 7.8–9.5 months, 51.3% of them were males, the average weight was between 7.8 and 9.5 kg. The more percentage (37%) of infants for sequences of child in family, was between ages 4 and 5.

Assessment of technique of bottle-feeding

In our study, a low percent (16.90%) of mothers had followed all the recommended steps for feeding and sterilization of infant bottle, who were considered proper group, whereas 83.1% had not followed all the recommended steps for feeding and sterilization of infant bottle, who were considered improper group [Figure 1].

There was a positive significant association between proper technique with enough economic state of family

and high educational level of mother. The employed mothers followed the proper technique more commonly than homemakers. In addition, urban background of mother was associated with proper technique than those from rural background [Table 1].

DISCUSSION

The safe use of infant formula is challenging in developing world.^[17] Supporting proper infant formula preparation may lead to positive short-term and long-term health outcomes for formula-fed infants.^[18]

Despite a large proportion receiving formula, relatively little research has focused on understanding behaviors regarding the proper preparation and feeding of infant formula in the populations of healthy infants.^[2,19-21]

To our knowledge, this is the first study in Iraq that assesses the proper technique of artificial feeding among infants.

It was found that a low percent (16.9%) of mothers follow all the proper steps of bottle-feeding. This point should not be neglected and efforts are needed to elevate this level of technique. This result may be due to a defect in knowledge about appropriate steps of infant bottle preparation and feeding and most efforts concentrate on the steps of successful breast-feeding with a neglecting of that part of "infants that had difficulties in breast-feeding must be on bottle-feeding".

Each step in the formula preparation process is an opportunity for bacterial contamination.^[22]

There was a positive significant association between proper technique and enough economic status of family and high educational level of mother. This is not unexpected as high-income families may have appropriate conditions to get proper steps of bottle-feeding than low-income families. In addition, a high educational level of mothers plays an important role in many aspects of health promotion of children.

Although employed mothers do not have enough time to take care of their infant, in the current study, it was found that employed mothers followed proper technique more commonly than homemakers. This may be related to their good educational level or long maternity leave for taking care of their infants.

In addition, urban background of mother was associated with proper technique than rural background. This could be related to a high educational level of urban people than rural ones. There was no association between the level of technique and age of mothers, marital status, number of children, pregnancy status, or infants' gender.

CONCLUSIONS

Very low percentage (16.9%) of mothers were found to follow all the proper steps of bottle-feeding, whereas a high percentage followed improper technique of bottle-feeding.

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Conflicts of interest

There are no conflicts of interest.

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