



## KNOWLEDGE, ATTITUDE, AND PRACTICE OF MOTHERS AND HEALTH CARE PROVIDERS TOWARDS OPTIMAL BREASTFEEDING IN YEREVAN, ARMENIA

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### Abstract

Extensive research has documented that breastfeeding is beneficial both for children's and mothers' health. In 1993, the Ministry of Health of the Republic of Armenia launched a national breastfeeding promotion program. By 2000, the program had increased the infant full breastfeeding rate from 23% in 1993 to 60% during the first 4 months of life. In 2003 as a part of the "Survey Research Methods" course students of Master of Public Health program at the American University of Armenia conducted two concurrent surveys of mothers and health providers. The present study was a secondary data analysis of data sets from those two surveys. Objectives of this study were: to assess knowledge/attitude of mothers and health care providers relevant to optimal breastfeeding and to examine difference in breastfeeding practices between "Baby Friendly" certified and non-certified hospitals. A multistage cluster sampling technique was used to identify 86 mothers living in Yerevan and having a child below two years of age and 81 paediatricians/nurses working in district paediatric polyclinics in Yerevan. Interviewer-administered questionnaires were used.

The study outcomes signified that mothers and health care providers had sufficiently high level of knowledge about optimal breastfeeding, but this knowledge was not always applied in practice. Early introduction of complementary food/liquids remains a widespread practice among mothers and care providers.

"Baby Friendly" certified hospitals demonstrated better, though not perfect, breastfeeding practice.

Prenatal care clinics do not take full advantage to provide breastfeeding counseling during prenatal care visits. Though the majority of providers ever participated in breastfeeding-targeted trainings, educational programs are still needed to increase knowledge and improve practice.

**Keywords:** breastfeeding, mothers, health care providers, knowledge, "Baby Friendly Hospital"

### Introduction

Extensive research has documented that breastfeeding (BF) is beneficial both for children's and mothers' health. Exclusive BF for six months provides the newborns with all essential nutrients for health and growth, as well as with the immune bodies not present in breast milk substitutes.

Mother's milk is easily absorbed, has a low solute load, and an increased availability of minerals, vitamins, and proteins. Breastfed infants have fewer ear and respiratory tract infections, diarrhea illnesses, and atopic skin disorders [Arora S. *et al.*, 2000]. BF is healthy and provides several advantages for mothers as well. It increases secretion of oxytocin leading to more rapid uterine involution. Lactating women are less likely to have postpartum bleeding. BF also has an anti-cancer effect and decreases the risk of breast, ovarian, and

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endometrial cancers [Guise J. et al., 2003]. BF has direct economic benefits for families and for the society. Several studies have shown that expenditures for infant formula exceed food-related expenses for lactating women. BF has also significant indirect impact to the national economy due to reduced health care expenditures for treatment of childhood diseases and due to decreased parental absenteeism attributable to care for a sick child [Work Group on Breastfeeding, 1997].

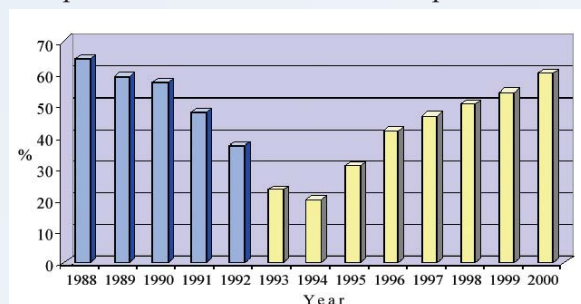
Based on the clinical evidence of BF benefits for infants, mothers, and the society as a whole the World Health Organization (WHO) recommends exclusive BF for the first 6 months of life. Thereafter infants should receive complementary foods with continued BF up to 2 years of age and beyond [Child and Adolescent Health, 2004]. A joint WHO and UNICEF strategy introduced in 1991 to implement the Baby-Friendly Hospital Initiative (BFHI) was aimed to increase BF rates worldwide [Philipp B. et al., 2004].

In Armenia BFHI commenced in 1993 as a response to progressively decreasing BF rates. After the devastating earthquake in 1988 great quantities of infant formula were imported to Armenia. Later the collapse of the Soviet Union and economic hardship also led to increased donations of infant formula for Armenian infants. Availability of baby formula, unfavourable postpartum hospital practices, namely late initiation of BF, keeping newborns in isolation from mothers, widespread use of bottles and pacifiers, and scheduled feeding worked against maintenance of BF. According to the Ministry of Health, full BF rates decreased in 1993 to 23% compared to 64% in 1988. In response to the

alarming decrease of BF rates in Armenia, the Ministry of Health of Armenia launched a national BF promotion program. Introduction of dramatic policy changes, which endorsed a program based on the UNICEF/WHO BFHI in 1993 and launching a national BF promotion campaign by the Ministry of Health resulted in increased rates of exclusive and predominant BF. By 2000, the program had increased the infant full BF rate to 60% during the first 4 months of life (Figure 1).

In 1997, the Center for Health Services Research of the American University of Armenia conducted a study “Infant feeding practices in Armenia” to determine the magnitude of changes and to develop recommendations for future BF promotion. The results of the study showed increased rates of exclusive and predominant BF. Particularly, increase of combined rates of exclusive and predominant BF from 33% in 1993 to over 60% in 1997. The same study compared mothers’ and health care providers’ knowledge regarding BF in 1993 and 1997. It revealed remarkable improvement in their knowledge regarding BF. It also highlighted areas for further improvement, such as maintenance of exclusive BF, early initiation of BF and rooming-in in maternity hospitals, health education of mothers in prenatal care clinics, etc. [Hekimian K., 2003]. During recent years no studies were conducted to explore mothers’ and health care providers’ perceptions/knowledge of optimal BF.

In spring 2003, as a part of the “Survey Research Methods” course under the faculty supervision and monitoring, students of Master of Public Health program (MPH) at the American University of Armenia (AUA) conducted two concurrent surveys of mothers and health care providers. The present study was a secondary data analysis of data sets from those two surveys. The objectives of this study were to assess the knowledge and attitude of mothers and health care providers on optimal BF. Another objective was to explore current BF practices and examine difference in BF practices between “Baby Friendly” certified (BFH) and non-certified hospitals (NBFH).



**Figure 1.** Full BF Rates at the Age of 4 Months, Armenia, by Ministry of Health.

### Material and Methods

For the MPH students' study, a multistage cluster sampling procedure was used to identify a total of eighty-six mothers and eighty-three health care providers working at district pediatric polyclinics in Yerevan. The whole area of the Yerevan city was divided into 22 sub-areas according to the catchment areas of pediatric polyclinics. Each polyclinic provided services for 800-1000 children aged 0-18. A team of district pediatrician and district nurse served about 500 children. The job responsibilities of a district pediatrician included well-child visits, home-based treatment, and follow up of children.

District pediatricians visited and examined newborns at home and provided BF counseling for mothers. District nurses assisted pediatricians during visits and conducted household visits of babies during the first month of life. Thirteen of twenty-two district polyclinics were randomly selected for interviews with health care providers owing to the limited human and time resources. In total, 83 interviews with pediatricians and nurses currently working at the polyclinics regardless of their work experience, age and gender were completed. Face-to-face interviews were conducted in polyclinics with the health care providers on duty at the time of interview. Narrow specialists were excluded from the study.

The questionnaire, as a research tool, involved questions exploring background information, knowledge, attitudes, and practice regarding BF and counseling on BF. Health care providers were also asked about participation in BF trainings.

A seventy-four-item questionnaire containing the following domains was offered to respondents:

- ◆ Questions on knowledge regarding exclusive BF and supplementary feeding;
- ◆ Questions exploring attitude of care providers towards infant formula;
- ◆ Questions exploring care providers' reported behavior regarding exclusive BF, introduction of supplementary food, weaning, and management of impediments to BF initiation, habituation, and maintenance (as evidenced by respondents);

- ◆ Questions on environmental factors possibly affecting providers' performance.

The same sampling procedure was applied to identify 86 mothers residing in Yerevan. Respondents were selected from fifteen out of twenty-two randomly selected city sub-areas corresponding to the catchment areas of pediatric polyclinics. Each of fifteen interviewers completed six interviews with mothers having one or more children from 0 to 2 years, getting child care at one of pediatric polyclinics of Yerevan, and having delivery at one of the maternity hospitals of Yerevan. In each sub-area, the starting point for household selection was chosen by interviewer's convenience. The initial household round was followed by consecutive households with eligible participants. Mothers who were not actual care givers were excluded from the study.

The instrument for mothers' interviews, the Questionnaire, contained questions exploring background information, knowledge, attitudes, and practice regarding BF and counseling on BF provided throughout pregnancy and after delivery. Questions exploring hospital practice on BF initiation, habituation, round-the-clock rooming-in and supplemental feeding were also included in the Questionnaire. Both survey instruments applied for this study were developed using information from previous Armenian and international studies [*KPC 2000 Survey; Hekimian K., 2003*]. The questionnaires were pre-tested and appropriate changes were done.

The study was approved by the Institutional Review Board at the College of Health Sciences of the American University of Armenia. All participants gave their prior informed consent to participate in interviews.

The database was created using SPSS 11.0 statistical software package. Data entry operators performed double entry and cleaning of data. Statistical analysis was carried out using SPSS 11.0 software. Recoding and re-scoring of some variables was performed.

**Table 1.**

## Mothers' Knowledge and Beliefs Regarding BF

Statement	Agree (%)	Disagree (%)
Breast milk is nutritious enough for the baby for the first six months	94.0	6.0
Breast milk contains all necessary components for baby	93.0	7.0
Breastfeeding can make a woman fat	43.3	56.7
Breastfeeding protects a baby against diarrhea and pneumonia	94.0	6.0
If a woman is breastfeeding she is less likely to become pregnant	68.8	31.2
Infant formula is as nutritious as breast milk	13.9	86.1
A newborn baby should be fed on-demand	88.0	11.0
A baby should be breastfed within the first half an hour after birth	77.0	23.0
A baby should stay with mother while in the hospital	91.0	9.0
If a baby is given a bottle, he/she may stop wanting the breast	73.1	26.9
A newborn baby should be given water in addition to breast milk	61.0	39.0

**Results**

*Mothers:* The mean age of interviewed mothers was 27. The educational level of 76% of respondents was college/university degree. Almost 41% of respondents mentioned the family income from 25,001 to 50,000 Armenian drams (AMD) and 39% - more than 50,000 AMD. Thirty-four percent of respondents delivered at Baby Friendly Hospitals (BFHs) and 66% at non-BFHs (NBFHs), 86% of women had vaginal delivery and 14 % delivered through Caesarian section.

In general, mothers had good knowledge about optimal BF and desirable BF practices. The majority (94%) of respondents considered breast milk as nutritious for the first six months and containing all necessary components. About 85% of mothers agreed that baby should be fed on-demand (Table 1).

The majority of respondents agreed that baby should be fed within the first half an hour after birth (77%) and should stay with mother while at hospital (91%).

Sixty percent of respondents considered 7-12 months period an ideal duration for BF. It is interesting that 61% of mothers agreed that a newborn baby should be given water besides breast milk. According to the reported data, while not perfect, Baby Friendly Hospitals demon-

strated significantly better BF practices of early initiation and bottle-feeding/pacifier practice than NBFHs ( $p \leq 0.05$ ) (Table 2).

**Table 2.**

## BF Practices in BFHs and NBFHs

BF practice	BFHs (%)	NBFHs (%)
Initiation of BF immediately/ within the first hour*	75.9	29.1
Baby was fed by bottle or given pacifier*	18.5	47.8
Any BF counseling while in hospital *	92.9	66.1

\*  $p \leq 0.05$

Almost all respondents (97.7%) had ever breastfed their children. The majority of women (76%) in BFHs initiated BF within one hour after delivery compared to 30% in NBFHs. All women who gave birth in BFHs initiated BF within the first day after delivery, whereas in NBFHs only about 75% of women initiated BF within the first day. All babies born in BFHs stayed with mothers 24 hours a day vs. 70% in NBFHs. The proportion of women receiving any BF counseling was significantly higher in BFHs vs. NBFHs ( $p \leq 0.05$ ) (Table 3).

Virtually all respondents (94.2%) received prenatal care, however only one-third received any BF counseling during those visits.

**Health Care Providers:** Results of the survey demonstrated that the majority of health care providers had proper knowledge on optimal BF. Nearly all physicians agreed that a newborn baby should not be given water or other liquids and should be fed on-demand, rather than on-schedule (Table 4).

However, about 60% of respondents agreed that infants should be given water and juices before six months of age (Table 5).

Health care providers had good knowledge on medical interventions if a baby has diarrhea. Almost all providers mentioned that mother should not stop BF, should not give supplementary food, should not give liquids other than breast milk, and should breastfeed more often (Table 6).

The distribution of responses to the question about the optimal age of giving infant formula to babies was interesting. The majority of respondents considered optimal age for weaning from 12 to 24 months (Figures 2 and 3).

The results of the survey demonstrated that most of medical facilities (73%) had a special policy regarding BF and in majority of facilities it was displayed in places, where mothers and

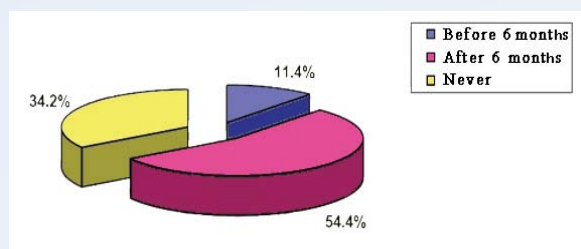


Figure 2. Optimal Age of Giving Infant Formula to Babies.

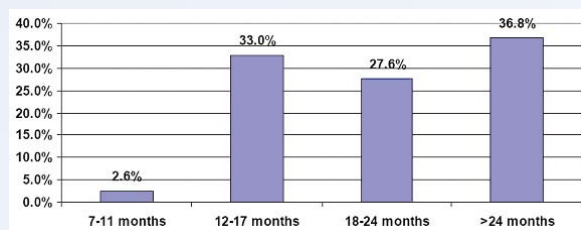


Figure 3. Optimal Age of Weaning .

Table 3.

Initiation of BF in BFHs and NBFHs

Initiation of BF	BFHs (%)	NBFHs (%)
Immediately/within 1 hour*	76.0	29.0
Within the first day*	24.0	46.0
After the first day*	0.0	25.0

\*p≤0.05

Table 4.

Health Care Providers' Knowledge Regarding BF

Statement	Agree (%)	Disagree (%)
A newborn should be given water	2.52	97.5
A newborn should be given juices	3.7	96.3
A newborn baby should be fed on-schedule	8.6	91.4
Breastfed baby is less likely to get diarrhea than a bottle-fed baby	91.4	8.6

Table 5.

Optimal Age for Giving a Baby Food/Liquids Other than Breast Milk

Type of food/liquid	Before 6 months (%)	After 6 months (%)
Water or flavored water	35.0	65.0
Juices	36.3	63.7
Milk other than breast milk	13.9	86.1
Solid food	19.0	81.0

Table 6.

Health Care Providers' Knowledge on BF in Babies with Diarrhea

Statement	Agree (%)	Disagree (%)
Infant formula is as nutritious as breast milk	20.0	80.0
Mother should not stop breastfeeding	100.0	0.0
Mother should not give supplementary food	100.0	0.0
Mother should not give liquids other than breast milk	98.7	1.3
Mother should breastfeed more often	91.3	8.7

babies were served. In most facilities, written materials on optimal BF were distributed to mothers. Almost all health care providers considered themselves prepared and trained to respond to BF concerns, provide BF counseling. The majority of providers (73%) had ever participated in BF trainings. However, more than half of providers (55%) believed that they needed additional BF training.

#### **Discussion**

Comparison of outcomes obtained in the present survey with results from the study on “Infant feeding practices in Armenia” shows improvement in mothers’ and providers’ knowledge regarding BF. Particularly, the percent of mothers answering correctly questions on protective effects of BF for infants and on effect of bottle-feeding on BF, increased by 7% and 10%, respectively. The significant increase in correct answers was observed on contraceptive effect of BF: from 37% in 1997 to 68% in 2004. This could be explained by the number of massive reproductive health programs conducted in Armenia in recent years.

The percent of women who believed that a newborn needed to be given water besides being breastfed to quench thirst increased from 31% in 1997 to 39% in 2004, whereas among health care providers this index has increased from 85% in 1997 to 98% in 2004. However, about 35% of health care providers considered that a baby should be given water and/or juices before age of six months. Providers demonstrated good knowledge on management of babies with diarrhea and maintenance of BF. Another encouraging finding was that more than one third of providers believed that babies should not be given infant formula at all.

Findings of the study demonstrate that there is a considerable improvement in early initiation of BF in BFHs. However, still about one fourth of infants in BFHs was put to mother’s breast within 24 hours after delivery. There was a great demand for improvement in NBFHs since only one third of mothers initiated BF within one hour after delivery and about one fourth of babies were put to breast within 24 hours after delivery. Since

early initiation of BF is significantly associated with BF longer duration [Hekimyan K., 2003], it is crucial to find out barriers hindering its early initiation in maternity hospitals.

Another disappointing finding is lack of BF counseling provided in prenatal care clinics. Studies have shown that health care providers are the optimal delivery channels for dissemination of health-related information in Armenia [Report No. 81]. Taking into account the high rate of women receiving prenatal care (about 95%), it is important to use opportunity and provide BF counseling during prenatal care visits. It is important to mention that about 55% of providers pointed that they needed additional BF trainings.

The results of this study should be treated with precaution because of several limitations. Since students conducted the study as a part of the Survey Research Quantitative methods course at the MPH program, due to time and human resource constrains the final sample size was decreased to 83 and 86 providers and mothers, correspondingly, instead of initially calculated 130 and 135. Choosing the start point by interviewer’s convenience could possibly introduce selection bias.

#### **Conclusions**

Mothers and providers were aware of modern approaches toward optimal BF, advantages of early initiation and maintenance of BF. Study showed that there was a widespread misconception on early introduction of complementary food and drinks to infants among both mothers and health care providers.

BFHs demonstrated better, though not perfect, BF practice compared to NBFHs. Prenatal care clinics do not take full advantage of opportunities to provide BF counseling during prenatal care visits. Though the majority of providers ever had participated in BF trainings, additional training programs are still required to increase optimal BF knowledge and improve practice.

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