

## Comparison of the rate of exclusive breast-feeding between pacifier sucker and non-sucker infants

Mousa Ahmadpour Kacho\*<sup>1</sup>, MD; Yadollah Zahedpasha<sup>1</sup>, MD; Pooyan Eshkevari<sup>2</sup>, MD

1. Pediatrician and Neonatologist, Babol University of Medical Sciences, Babol, IR Iran
2. General Physician, Babol University of Medical Sciences, Babol, IR Iran

Received: 2/11/06; Revised: 14/03/07; Accepted: 3/04/07

### Abstract

**Objective:** Pacifier as a non-nutritive and comforting object instead of mother's breast is used widespread in civilised societies. The most possible risks of this habit are increased incidence of oral thrush; dental deformities, recurrent acute otitis media and dental caries, but there are still some reports on its beneficial effects. We carried out this study to compare the rate of exclusive breast-feeding during the first six months of life between the pacifier sucker and non-sucker infants.

**Material & Methods:** The study was designed as a case-control study on infants who came to outpatient clinic in a primary health care center, affiliated to Babol University of medical sciences during 2003-4. Inclusion criteria were: infants aged 6-12 months, born at term via normal vaginal delivery with a normal birth weight. We divided them into pacifier suckers as case group (n=100) and non-suckers as control group (n=120) by frequency matching. Pacifier suckers were given by their mothers a pacifier to suck as a soothing object before 2 month of life. Outcome characteristics including exclusive breast-feeding, rate of early weaning and substitution of mother milk with a non-mother milk in infants who were pacifier suckers were compared with those of the infants who were not used to suck a pacifier. A p-value less than 0.05 was considered being significant.

**Findings:** Success rate of exclusive breast-feeding in pacifier suckers was 30% (n=30), in non-suckers 64% (n=77), (CI: 2.3-7.3; OR=1.24; P<0.001). The rate of early cessation of breast-feeding among pacifier suckers was 16% and non-suckers 0.01% (p<0.001).

**Conclusion:** To promote successful breast-feeding and to reduce early cessation of breast-feeding, the use of pacifiers should be avoided or restricted.

**Key Words:** Exclusive breast feeding, Pacifier, Neonate, Feeding, Human milk

\* Correspondence author.

**Address:** Neonatal Intensive Care Unit (NICU), No 19, Amirkola children hospital, Amirkola, Babol, Mazandaran, 47317- 4 115 1, Iran

**E-mail:** mousa\_ahmadpour@hotmail.com

## Introduction

The use of pacifiers is widespread among infants and young children in many parts of the world, including developing countries<sup>[1]</sup>. Data on the possible beneficial effects of these objects are scant. Their soothing effect is the most widely recognized beneficial effect, and the possible relationship with a lower incidence of sudden infant death syndrome is the newest. Possible positive effects of pacifier use in the prevention of sudden infant death have been discussed, and it could be added that such an effect also has been questioned<sup>[2,3,4]</sup>. But there is a long list of disorders which have been associated with their use. The most important risks of this nonnutritive sucking habit are failure of breast-feeding, dental deformities, recurrent acute otitis media, and the risk of accidents. The development of latex allergy, tooth decay, oral ulcers and sleep disorders are other possible problems<sup>[1,2]</sup>.

Although there have been warnings that this practice may decrease lactation<sup>[5]</sup>, there is little scientific evidence to support this claim. Many observational studies suggest a negative impact of pacifiers on breast-feeding<sup>[6,7,8]</sup>, but two randomized trials have failed to support a causal association between pacifiers and breast-feeding problems<sup>[9,10]</sup>.

As breast-feeding inversely correlates with infant mortality<sup>[11]</sup> and pacifier use is common in many poor societies, there is a need to elucidate the relationship between pacifier use and success rate in exclusive breast-feeding. This study was carried out to compare the rate of exclusive breast-feeding between pacifier sucker and non-sucker infants.

## Material & Methods

The research committee of the Babol University of Medical Sciences approved this study protocol. Informed consent for study participation was also obtained. Enrollment occurred between January 2003 and January 2004 from mother-infant couples that came to Mosarreza primary health care center affiliated

to Babol University of Medical Sciences, which provides routine health care and vaccination for children.

As breast-feeding rate in Babol in 2002 was 64%, sample size calculations determined that 100 infants in each group would be needed to detect a 10% difference in exclusive breast-feeding rate at 6 months postpartum with an  $\alpha=0.05$  and a power of 90%. A total of 220 healthy mother-infant pairs (120 in sucker and 100 in non-sucker group) were identified and considered eligible for enrollment.

The mother-infant pairs were eligible for the study if the mother had uncomplicated, singleton pregnancies and delivered a full term well baby via normal vaginal delivery. Both groups of mothers had chosen to start and continue breast-feeding after birth. The age of the babies at enrollment was 6-12 months. All infants who had any congenital anomalies including cleft lip or cleft palate and also any disorder that required hospital admission were excluded from study. A questionnaire was devised and conducted with a series of information like the type of milk (mother and/or non-mother milk) fed during the first 6 months of life, age of discontinuance of breast-feeding, as well as employment, age, education, parity of the mothers and the frequency of prenatal visits to health professionals.

On interview infants were randomized into 1) pacifier sucker group: infants who were given a pacifier to suck as a soothing object before 2 months of life; and 2) the control (non-sucker) group: infants who were not used to suck pacifier.

The pacifier suckers did not differ in terms of age, education, or number of prenatal visits from the infant-mother pairs who were enrolled as the control group.

Data were entered and analyzed using SPSS version 10. Statistical  $\chi^2$ , exact Fisher and t-tests were used to compare baseline and outcome characteristics of the two study groups. Outcome characteristics including exclusive breast-feeding, rate of early weaning and substitution of mother milk with a non-mother milk in infants who were pacifier sucker were compared with those who were not

used to suck a pacifier. A P-value less than 0.05 was considered being significant.

### *Findings*

The 220 mother-infant pairs that participated in this research formed 2 groups (120 pacifier suckers and 100 non-pacifier suckers). We had no cases of refusal to participate.

Participating mothers were  $22.6 \pm 5.1$  years old and well educated ( $11 \pm 2.1$  years of school education). 37% were primiparous. Infants were born at term via normal vaginal delivery with an average birth weight of  $3350 \pm 362$  g. Participating infants were  $9 \pm 1.43$  months old. Study groups did not differ by maternal age, parity, employment status, breast-feeding experience, or level of education. Similarly, among mother-infant pairs who participated in the non-sucker group there were no significant differences with those in pacifier sucker group. Exclusive breast-feeding for the first 6 months of life was less likely among infants exposed to pacifiers (Fig. 1). The rate of early weaning and cessation of breast-feeding in pacifier

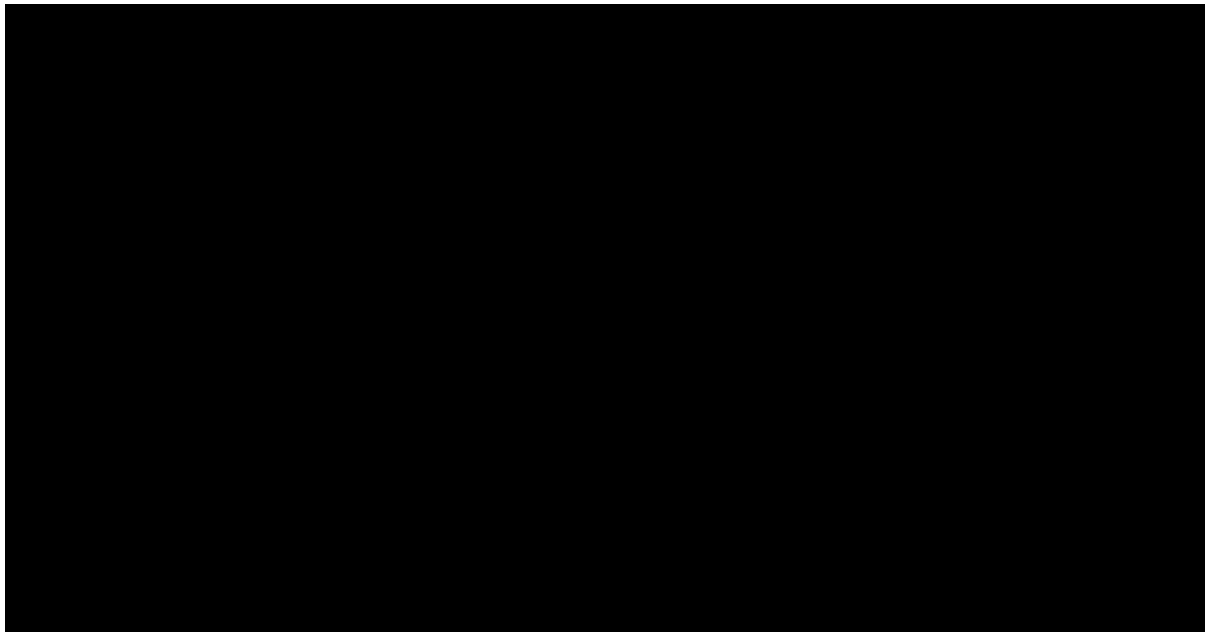
suckers were significantly higher than in the non-sucker infants (P-value<0.001) (Table 1).

### *Discussion*

We found that introduction of pacifier in the first 2 months of life lessened the likelihood of exclusive breast-feeding at 6 months. Furthermore, pacifier introduction promotes the early cessation of breast milk.

The findings of this study confirm other previous reports that pacifier use is strongly associated with early weaning, even after controlling for a number of confounding variables<sup>[2,10,13]</sup>.

These results suggest that the pacifier use should not be recommended for breast-fed infants. Because breast-feeding protects against infection, and as there may be a causal association between pacifier use and early weaning, mothers and families, particularly in developing countries, should be made aware of these facts and advised against the early introduction of pacifiers.



**Fig 1:** Comparison of exclusive and non-exclusive breast-feeding between pacifier sucker and non-sucker infants. (Non-exclusive: own mother milk plus non-mother milk)

**Table 1:** Comparison of parameters related to the success rate in exclusive breast-feeding between pacifier sucker and non-sucker infants

<i>Variables</i>	<i>Pacifier sucker infants number (percent) (n=100)</i>	<i>Non-sucker infants number (percent) (n=120)</i>	<i>P-value</i>
<b>Type of feeding during the first 6 months:</b>			
Exclusively breast-feeding	30 (30)	77 (64)	<0.001
Non-exclusively breast feeding*	70 (70)	43 (36)	
<b>Cessation of breast-feeding before 6th month of life</b>	16 (16)	2 (0.01)	<0.001

\* Non-exclusively breast-feeding: Non-mother milk or own mother's milk plus non-mother milk

Infants must learn to attach and suckle properly at the breast during the first few days of life to breast-feed successfully<sup>[14,15]</sup>. Exposures to artificial nipples are believed to contribute to breast-feeding problems and early weaning<sup>[16,17]</sup>.

Howard, et al<sup>[18]</sup> also evaluated the effects of pacifier use and the timing of pacifier introduction on breast-feeding duration, problems, and frequency. They concluded that pacifier use was independently associated with significant declines in the duration of full and overall breast-feeding.

Aarts and colleagues<sup>[19]</sup> analyzed the influence of thumb sucking and pacifier use on breast-feeding patterns in exclusively breastfed infants, on the duration of exclusive breast-feeding, and on the total breast-feeding duration. They found that pacifier use was associated with fewer feeds and shorter sucking duration per 24 hours, shorter duration of exclusive breast-feeding, and shorter total breast-feeding duration compared with no pacifier use.

Scientific investigation of the effect of early artificial sucking experiences on the ability of newborns to breastfeed successfully is of profound importance to maternal and child health worldwide. Although there are

numerous recommendations to avoid exposing breastfed infants to artificial nipples through the use of pacifiers or bottle-feedings, the effects of these exposures have only recently been subjected to evaluation using rigorous scientific methods. Exposures to artificial nipples remain commonplace in nurseries throughout the world<sup>[20]</sup>. This study provides important information about the detrimental effects of early pacifier use on the duration of exclusive breast-feeding.

We believe that this information will help to enhance the breast-feeding success of mothers who choose to breastfeed their infants. We believe that this study confirms the importance of recommendations made in the Baby Friendly Hospital Initiative, the content of which should be promoted as the standard of care in all maternity settings.

## Conclusion

Introduction of pacifier is associated with reduction in exclusive breast-feeding rate and early weaning. To promote successful breast-feeding and to reduce early cessation of breast-feeding, the use of pacifiers should be avoided or restricted.

## Acknowledgment

We thank all health care professionals of Mosarreza health care center and also Mr. Mohammad Miri for his assistance in statistical analysis.

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