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## Breastfeeding During Early Infancy is Associated with a Lower Incidence of Febrile Illnesses

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### Abstract

Human breast milk is known to contain immunoprotective, antimicrobial, and anti-inflammatory agents. In a prospective clinical study of dengue virus infections during infancy, we examined the correlation between breastfeeding and the development of febrile illnesses in an infant population. We found that breastfeeding status and the frequency of breastfeeding during early infancy was associated with a lower incidence of febrile illnesses.

### Keywords

Breastfeeding; bottle-feeding; infant; fever

## INTRODUCTION

Human breast milk is known to contain immuno-protective, antimicrobial, and anti-inflammatory agents [1, 2]. We therefore examined the correlation between breastfeeding and the development of febrile illnesses during early infancy in San Pablo, Laguna, Philippines. We found that breastfeeding status and the frequency of breastfeeding during early infancy was associated with a lower incidence of febrile illnesses.

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### CONFLICT OF INTEREST

The authors confirm that this article content has no conflict of interest.

## METHODS

### Infant Clinical Study

The infant clinical study was approved by the institutional review boards of the Research Institute for Tropical Medicine, Philippines, and the University of Massachusetts Medical School. Mothers and their healthy infants were recruited and enrolled after providing written informed consent. Study enrollment began in October 2006 in San Pablo, Philippines. Healthy infants and their mothers were enrolled when the infant was between 6–18 weeks old. The occurrence of infant febrile illnesses between birth and the first study visit was reported by the mother at the first study visit. Additional details about the study protocol have been previously reported [3].

### Statistical Analysis

The SPSS software package (version 20.0) was used for statistical analyses. Ages are shown as median [95% confidence interval].  $P < 0.05$  was considered significant.

## RESULTS AND DISCUSSION

### Clinical study

As part of a prospective clinical study of dengue virus infections in infants, we collected information from infants' mothers on breastfeeding and the occurrence of infant febrile illnesses between birth and the first study visit (infant ages 2.1 [2.1–2.2] mos). There were  $n=107$  infants with 1.0 [1.0–1.0] febrile illnesses/infant (median [95% CI]) during this time period.

### Breastfeeding during early infancy is associated with a lower incidence of febrile illnesses

Breastfeeding during early infancy (exclusive or supplemental) was associated with a lower incidence of febrile illnesses between birth and the first study visit compared to bottle-feeding (Table 1). Among breastfed infants at the first study visit ( $n=7,362$ ), the odds ratio for developing a febrile illness between birth and the first study visit was 0.57 [0.34–0.94] (odds ratio [95% CI]) for every increase in breastfeeding frequency of 3x/24 h (binary logistic model,  $p=0.03$ ). The association between breastfeeding during early infancy and a lower incidence of febrile illnesses cannot establish causation. However, the dose-response effect suggests that breastfeeding contributes to protection from febrile illnesses during early infancy; an effect that has been seen in some previous studies [4,5]. Some limitations of our study include the small number of febrile illnesses, potential recall bias, and the potential for confounding variables.

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**Table 1**

Breastfeeding During Early Infancy is Associated with a Lower Incidence of Febrile Illnesses Between Birth and the First Study Visit (Infant Ages 2.1 [2.1–2.2] Mos, Median [95% CI])<sup>a</sup>

	No Febrile Illnesses	Febrile Illnesses	Total
Bottle-fed (exclusive)	N=1,689 (98.2%)	N=31 (1.8%)	N=1,720 (100%)
Breastfed (exclusive or supplemental)	N=7,286 (99.0%)	N=76 (1.0%)	N=7,362 (100%)

<sup>a</sup>p=0.01, Fisher's exact test.