0021-7557/11/87-04/364
Jornal de Pediatria

Brief Communication

Results of research into the frequency of exclusive breastfeeding vary depending on the approach taken in the interview

Marcela M. Belo,[1] Gabriel B. Serva,[2] Vilneide B. Serva,[3] Malaquias Batista Filho,[4] José N. Figueiroa,[5] Maria de Fátima C. Caminha[4]

Abstract

Objective: To compare the frequency of exclusive breastfeeding using two different interview approaches.

Methods: This was a cross-sectional study of 309 mothers of children aged 0 to 6 months, with a median age of 11 days. Mothers were interviewed at the Instituto de Medicina Integral Prof. Fernando Figueira during November and December of 2009. Two approaches to the interview were tested: firstly, the mother was asked if complementary foods had been given during the preceding 24 hours. Secondly, they were asked if at any point during the child's life any other foods had been given. The marginal homogeneity test was applied and the significance level was 5%.

Results: According to the 24-hour recall, the frequency of exclusive breastfeeding was 78.0%. According to the wider-ranging recall period, the frequency was 59.2% ($p < 0.001$).

Conclusions: The frequency of the exclusive breastfeeding is overestimated using the 24-hour recall compared with the whole-life recall.

J Pediatr (Rio J). 2011;87(4):364-368: Breastfeeding, methods, evaluation.

Introduction

When it is the only source of energy and nutrients, breastmilk guarantees healthy growth and development for the first 6 months of life[1] and also confers protection against many different diseases that cause death, such as respiratory infections, diarrheal disease and diseases caused by deficiencies, particularly in poorer countries.[2-4] The beneficial effects of breastfeeding last for the whole of the lifecycle, reducing the risk of occurrence and the severity of problems that have late onset, such as non-transmissible chronic diseases.[5]

1. Enfermeira residente, Saúde da Criança, Instituto de Medicina Integral Prof. Fernando Figueira (IMIP), Recife, PE, Brazil.
2. Acadêmico, Departamento de Medicina, Faculdade Pernambucana de Saúde (FPS), Recife, PE, Brazil.
3. Mestre. Coordenadora, Banco de Leite Humano, IMIP, Recife, PE, Brazil.
4. Doutor(a). Diretoria de Pesquisa, IMIP, Recife, PE, Brazil.
5. Mestre. Diretoria de Pesquisa, IMIP, Recife, PE, Brazil.

No conflicts of interest declared concerning the publication of this article.

Financial support: Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq) and Fundo de Apoio à Pesquisa do Instituto de Medicina Integral Prof. Fernando Figueira (FAPE/IMIP).

Suggested citation: Belo MM, Serva GB, Serva VB, Batista Filho M, Figueiroa JN, Caminha MF. Results of research into the frequency of exclusive breastfeeding vary depending on the approach taken in the interview. J Pediatr (Rio J). 2011;87(4):364-8.

Manuscript submitted Oct 25 2010, accepted for publication Mar 21 2011

doi:10.2223/JPED.2099

Bearing in mind the primordial importance of exclusive breastfeeding (EBF) and the large variations in results when it is evaluated, in 1991 the World Health Organization (WHO) proposed a set of criteria and indicators for analyzing infant feeding with the objective of standardizing data collection and analysis, making comparisons between different national and international studies possible.[6] One of the recommendations was to use a 24-hour recall to collect data on breastfeeding categories.[6] However, in 2007, the WHO itself warned that using the previous day's intake could be overestimating the proportion of children being exclusively breastfed,[7] thereby making estimates of exclusive breastfeeding frequency biased. From this perspective, the 24-hour method may act as a source of variation in results for duration and type of breastfeeding.

Considering these conflicting issues and their conceptual, normative and pragmatic implications, the objective of this study is to compare two approaches to collecting information on breastfeeding, drawing on the experience of a Brazilian Ministry of Health regional center of excellence for mother and baby care.

Methods

This was a cross-sectional study conducted in the childcare clinic at Instituto de Medicina Integral Prof. Fernando Figueira (IMIP). The institute is situated in Recife, PE, Brazil, and the majority of patients come from the maternity unit at the same hospital.

Sample size was calculated using the StatCalc module in EPI-Info 6.04, adopting a 95% confidence interval (95%CI) and an error of 4% and assuming a 15% prevalence of EBF with a minimum duration of 4 months, as indicated by data from the III National Census of Women's and Children's Demographics and Health (Pesquisa Nacional de Demografia e Saúde da Criança e da Mulher [PNDS]).[8] The estimated sample size was 306 children. The final sample was 309 mothers of children aged 0 to 6 months, recruited to the study consecutively between November and December of 2009 after agreeing to take part and providing a signed free and informed consent form. Mothers were not included if their children had never been exclusively breastfed and the mothers of twins and other multiple births were excluded.

Data was collected by two researchers using a structured interview covering sociodemographic variables, to build up a profile of the mothers, and supplemented with questions about the conditions during pregnancy and birth and about the children and their feeding habits. In order to be in a position to describe the situation in relation to EBF, the dependent variable of central interest, mothers were asked whether they had fed their children anything other than breastmilk – water, water with sugar, teas, fruit juices, infant formulae, porridge (milk-based semi-liquid preparations containing flours, starches and/or cereals), purees (preparations with a pasty consistency made from fruit or vegetables or milk-based preparations with a pasty consistency containing flours, starches and/or cereals), soups, pan-cooked food, fruit or other foods on the previous day. The second approach asked the mothers whether at any point in their children's lives they had eaten other foods than breastmilk, noting the age (months and days) of the child being investigated on the whole-life recall.

Breastfeeding types were classified according to the following categories proposed by the WHO[6]:

- Exclusive breastfeeding: child fed only on human milk directly from the breast or pumped, with the exception of medications, vitamins and minerals prescribed by physicians. Water and tea are excluded whether drunk occasionally or routinely.
- Predominant breastfeeding: child fed on breastmilk supplemented only with water (sweetened or not), teas, other infusions and fruit juices.
- Mixed and/or complemented breastfeeding: child breastfed, but neither exclusively or predominantly, i.e. child fed breastmilk in addition to any type of solid or semisolid complementary foods or non-breastmilk.

Statistical analysis was conducted using SPSS for Windows, version 13.1. Categorical data were summarized and grouped according to their distribution in simple frequencies and tabulated. Numerical data are represented in terms of measures of central tendency (means and medians) and of variability (standard deviation and interquartile range). The frequencies of the three categories of breastfeeding according to the 24-hour recall and according to the whole-life recall were compared using the marginal homogeneity test (Stuart-Maxwell). The McNemar test was used to compare the frequency of introduction of other foods into the children's diets according to the two maternal recalls. The significance level was set at 5%.

This project was approved by the IMIP Human Research Ethics Committee (protocol number 1492, 12 August, 2009).

Results

The children's ages varied from 2 to 180 days, with a median of 11 days (1st quartile = 7 days and 3rd quartile = 39.5 days); 51.5% were male. Maternal characteristics were as follows: 75.4% were in the 20 to 34 year range, with a mean age of 26.4 years (SD = 6.3 years); 49.8% of the mothers lived in a consensual relationship; the majority (73.2%) had successfully completed nine or more school years; 57.7% had a family per capita income of less than half the minimum wage. The sample characteristics are shown in Table 1.

With relation to EBF frequency, 78.0% were on exclusive breastfeeding, according to the 24-hour recall recommended

by the WHO.[6] In the results from the second approach (covering the period since birth), EBF frequency (59.2%) was significantly lower ($p < 0.001$).

Table 2 shows the distribution of breastfeeding types according to the two approaches and the foods given when not EBF. Water, teas, juices and infant formulae

Table 1 - Characteristics of the sample of mothers and children evaluated with relation to breastfeeding practices, Recife, PE, 2009

Variables	Sample (n = 309) n (%)
Socioeconomic and demographic factors	
Mother's age	
< 20 years	44 (14.2)
20 to 34 years	233 (75.4)
≥ 35 years	32 (10.2)
Marital status	
Single	50 (16.2)
Married	105 (34.0)
Consensual relationship	154 (49.8)
Educational level	
1st to 4th grade	19 (6.2)
5th to 8th grade	64 (20.7)
9th grade or more	226 (73.1)
Per capita income (MW)*	
< 0.5	169 (57.7)
0.5-0.99	91 (31.1)
≥ 1	33 (11.3)
Obstetric and healthcare factors	
Given prenatal guidance on breastfeeding†	
Yes	219 (71.1)
No	89 (28.9)
Number of prenatal consultations	
≥ 3	20 (6.5)
4 to 5	57 (18.5)
≥ 6	231 (75.0)
Parity	
Primiparous	171 (55.3)
Multiparous	138 (44.7)
Type of delivery	
Vaginal	166 (53.7)
Caesarean	143 (46.3)
Biological factors relating to child	
Age	
< 11 days (50th percentile)	154 (50.0)
11 to 39.5 days (75th percentile)	77 (24.9)
≥ 39.5 days (≥ 75th percentile)	78 (25.1)
Sex	
Male	159 (51.5)
Female	150 (48.5)
Gestational age	
< 37 weeks	56 (18.1)
37 to 42 weeks	253 (81.9)
Birth weight	
< 2,500 g	52 (16.8)
≥ 2,500 g	257 (83.2)
Uses pacifier	
Yes	70 (22.6)
No	239 (77.3)

MW = minimum monthly wage.
* Figure at time of study: R$ 465.00.
† One mother had no prenatal care.

were most often mentioned, with occurrences that were statistically different for the two approaches.

Discussion

The results of this research are a good illustration of the relevance of the question raised by the WHO[7] about the possibility that there is an overestimation bias caused by its proposal[6] for assessing breastfeeding, particularly in relation to EBF, when a 24-hour recall is used. Indeed, when this instrument was used in practice, the prevalence of EBF (78.0%) differed significantly from the results for the same sample using the wider-ranging recall method (59.2%), covering the children's entire lives up to the interview date. Taken as a relative proportion (18.9 x 100÷59.2), the difference of 18.9% increases to 31.9%, which is a very large margin of overestimation. Of course this large difference cannot be taken *a priori*, since the whole-life recall is subject to memory bias, with a potential risk of underestimation. These unresolved questions may explain the great variation in results between studies, because of the variation in methods employed by different authors.[8-10]

It should be stressed that it is very probable that the elevated frequencies of EBF reported here are the result of the majority of the sample being very young children (39.5 days at the 75th percentile), since recent data from the city of Recife indicate an EBF frequency of 18.6% at 4 months and 6.1% at 6 months.[11]

Although the basic question that most affected the study centered on the possibility of distortions due to two different approaches to EBF, it appears relevant to test, with both models, possible interference from events that have an implication for the results of both methods of assessment, i.e., the different foods that modify orthodox exclusive breast-feeding status, producing other classifications and types. This study showed that four items were statistically relevant to non-EBF outcomes: water, teas, juices and infant formulae. Many of these reports are of circumstantial, random occurrences of short duration, which is the cause of the concerns of many authors about its effective validity for classifying different types of breastfeeding and, particularly, for ruling pout EBF.[12,13] This is not the appropriate place to go deeper into this discussion, since the intention is to illustrate the frequent occurrence of this difference between the results of the two approaches. Nevertheless, even more important that the differences between the two methodologies and the conceptual differences with relation to a child's health, is the context of each case, which should be taken into consideration. There would be, for example, a large difference between the consequences of feeding babies water in poor sanitary conditions and doing the same in a situation in which hygiene is guaranteed.

In conclusion, it was observed that the two approaches result in very significant differences in EBF frequency and that water, teas, juice and infant formulae are the items that most frequently interfere with the exclusivity of breastfeeding in these children's diets.

Table 2 - Distribution of breastfeeding types among children ≤ 6 months, assessed using two different approaches, at a regional center of excellence in mother and baby care, Recife, PE, 2009

Situations studied	24-hour recall n (%) n (%)	Whole-life recall* n (%)	p
Exclusive breastfeeding	241 (78.0)	182 (59.2)	< 0.001†
Predominant breastfeeding	19 (6.1)	49 (15.5)	< 0.001†
Mixed and/or supplemented breastfeeding	49 (15.9)	78 (25.2)	< 0.001†
Foods given in addition to breastmilk			
Water	46 (14.9)	87 (28.2)	< 0.001‡
Teas	11 (3.6)	54 (17.5)	< 0.001‡
Juice	8 (2.6)	24 (7.8)	< 0.001‡
Infant formulae	47 (15.2)	73 (23.6)	< 0.001‡
Porridge	7 (2.3)	10 (3.2)	NA§
Purees	1 (0.3)	4 (1.3)	NA§
Soup	4 (1.3)	7 (2.3)	NA§
Fruit	–	6 (1.9)	NA§
Coconut water	–	2 (0.6)	NA§

NA = not applicable.
* Covering the child's entire dietary history.
† Test of marginal homogeneity.
‡ McNemar test.
§ Not applicable because of the low number of cases.

Acknowledgements

Thanks are due to the IMIP Fundação de Apoio à Pesquisa (FAPE) and the Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq) for financing this research.

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Correspondence:
Maria de Fátima Costa Caminha
Diretoria de Pesquisa, IMIP
Rua dos Coelhos, 300 – Boa Vista
CEP 50070-550 – Recife, PE – Brazil
Tel.: +55 (81) 2122.4702
Fax: +55 (81) 2122.4722
E-mail: fatimacaminha@imip.org.br