Determinants of exclusive breast-feeding discontinuation in southeastern Brazil, 2008–2013: a pooled data analysis

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Abstract

Objective: To analyse the determinants of exclusive breast-feeding (EBF) discontinuation in southeastern Brazil between 2008 and 2013.
Design: Secondary cross-sectional data were analysed from three waves of child feeding surveys conducted in the city of Marília, São Paulo, Brazil, in 2008, 2011 and 2013 (*n* 1645 children under 6 months). Multivariable Poisson regression models were used to test the association between EBF discontinuation and socio-economic, demographic and biomedical factors in a pooled sample and within each survey wave.
Setting: Regionally representative cross-sectional survey from Brazil.
Participants: The analytical sample included 1645 infants under 6 months old.
Results: In the pooled sample, 40·7 % of the infants were exclusively breastfed. Between 2008 and 2013, there was a significant increase in C-section (35·1–42·7 %) and pacifier use (41·4–48·8 %). The determinants of EBF discontinuation in the pooled analysis were mothers working outside the home (adjusted prevalence ratio (APR) = 1·10; 95 % CI 1·00, 1·21), first-time mothers (APR = 1·10; 95 % CI 1·01, 1·20), pacifier use (APR = 1·48; 95 % CI 1·36, 1·61) and low birth weight (APR = 1·17; 95 % CI 1·05, 1·32).
Conclusions: Mothers working outside the home, first-time moms, pacifier use and low birth weight were the factors associated with EBF discontinuation. Evidence-based counselling strategies during antenatal and early postpartum care in primary healthcare are needed to address the modifiable determinants of EBF discontinuation and ultimately to improve its rates in southeastern Brazil.

Keywords
Breast-feeding
Child
Health promotion
Public policy

Breast-feeding is one of the fifteen viable, effective and low-cost preventive interventions that can reduce infant mortality[1]. Evidence has shown that breast-feeding provides substantial benefits beyond infant survival and women's health in high-, medium- and low-income countries[2–4]. Considering all these benefits, the WHO recommends exclusive breast-feeding (EBF), without offering water, teas and other liquids, until 6 months of age[5]. Over the past two decades, the prevalence of EBF slowly increased worldwide, from 24·9 % in 1993 to 35·7 % in 2013 and to 41 % in 2018[2].

In Brazil, the EBF prevalence is similar to the global context. Despite an increase over time from 3·1 % in 1986 to 41·3 % in 2008[6], recent data indicated stabilisation of EBF prevalence between 2006 (37·1 %) and 2013

(36·6 %)[7]. Furthermore, there are heterogeneities in the EBF prevalence among regions of the country and within the 5570 Brazilian municipalities. An example is the difference found in the duration (in d) of EBF prevalence among regions of the country comparing data from the first and second Breastfeeding Prevalence Survey (conducted in 1999 and 2008, respectively). For instance, while a significant increase was observed in the Centre-west region (19·5–66·5 d), not so favourable performance was observed in the Northeast region (26·3–34·9 d).

Evidence has shown that multiple factors may interfere in EBF discontinuation, such as unplanned pregnancy[8], pacifier use and bottle-feeding[9,10], pre-lacteal feeding[8], early use of infant formulas and other types of milk[11], maternal primiparity[10], C-section[8,12], low birth

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weight[13], not being born in a Baby-Friendly Hospital[10], or lack of qualified support during childbirth[14], maternal obesity[14], and the absence of maternity leave[15]. In Brazil, a recent systematic review identified thirty-six factors associated with EBF discontinuation. These factors were organised within the hierarchical model, where distal factors included mother's place of residence, age and education, and proximal factors included mother's employment, child's age and pacifier use[15].

This evidence supports the importance of gathering local data in order to better inform policies that support, promote and protect breast-feeding tailored with needs of each municipality/locality[16]. However, the Brazilian monitoring system of breast-feeding and infant feeding practices (SISVAN 'Sistema de Vigilância Alimentar e Nutricional') has not been fully adopted by all municipalities and lacks quality information. Thus, municipalities should conduct surveillance to monitor progress and then analyse these data. Robust analysis such as pooled data analysis from multiple surveys can facilitate more precise estimation and lead to better decision-making processes[17]. Nevertheless, the use of pooled analysis using EBF data has not been well explored. By using a pooled data analysis from three methodologically similar data sets of cross-sectional surveys on breast-feeding practices, this paper describes an innovative way to identify determinants of EBF discontinuation in the municipality of Marília, São Paulo, Brazil, between 2008 and 2013.

Methods

Study settings

The data presented in this manuscript refer to the municipality of Marília, a medium-sized municipality (216 745 inhabitants) located in the state of São Paulo, in the southeastern region of Brazil, with a maternal–child health network composed of fifty primary healthcare units, three maternity hospitals and one Human Milk Bank. Marília is one of the few municipalities in Brazil that surveyed breast-feeding and child feeding practices in three waves 2008, 2011 and 2013, in an effort by its political administration to effectively monitor breast-feeding practices. The first author is the municipal health manager, who facilitated the logistics of the research and translation of the findings into evidence-informed decisions.

Semi-structured interviews on child feeding practices (Supplementary Material) were conducted with children's caregivers (among which 73 % were mothers) in the first stage of the National Immunization Campaign. The interviews were conducted by trained undergraduate and graduate students, and health providers. Interviewers were trained and supervised by the Director of the Human Milk Bank and by professors from partner universities. The child feeding questionnaires were stored in the administration of the Human Milk Bank. Data were collected in the years 2008, 2011 and 2013, totalling a sample of 1645 children under 6 months old.

Outcome variable

In this study, the WHO recommendation for EBF was followed to define the outcome, that is, children under 180 d old who received only breast milk in the last 24 h with no other food or liquids[5].

EBF was determined from the question, 'Did the child receive breast milk between yesterday morning until this morning?' This information was confirmed with questions about intake in the previous 24 h of tea, juice, water or other type of milk/infant formula and questions about intake of other foods like fruit or savoury food. For all questions, the options for answers were 'yes' or 'no' (Supplementary Material).

For data analysis purpose, the dependent variable of the study was the discontinuation of EBF (not being EBF at the time of the data collection). The use of *current status*, recommended by the WHO, aims to minimise possible biases resulting from the informant's memory, which is particularly suitable for the characterisation of EBF[18].

Covariates

A conceptual hierarchical model was used to guide the selection of covariates (Fig. 1). Conceptual hierarchical frameworks are particularly appropriate to study determinants of childhood health outcomes such as breast-feeding[19], as in the case of our analysis. Specifically, in Brazil, a recent literature review indicates the hierarchical model as the approach to organise a range of factors at varying levels of proximity to determine EBF determinants[15]. This method of organising and determining relevant risk factors is appropriate for grouping inter-related factors in a hierarchical way to elucidate relationships between variables and inform analytical decisions. Thus, considering the set of data collected in the years 2008, 2011 and 2013, a conceptual model of determinants for discontinuation of EBF adapted from the literature[8,9] was used to guide the selection of ten explanatory variables (Fig. 1).

The variables selected were: maternal education (0–8 years, >8 years), maternal age (<20 years old, ≥20 years old), maternal employment situation (does not work outside the home/on maternity leave, works outside the home), primiparity (yes, no), birth in a Baby-friendly hospital in the municipality of Marília (yes, no), C-Section (yes, no), child's sex (male/female), low birth weight (yes, no), pacifier use (yes, no) and well-child visits (public, not-public). The child's age (0–2 months old, 2–4 months old and 4–6 months old) was included as a control variable in all stages of data analysis.
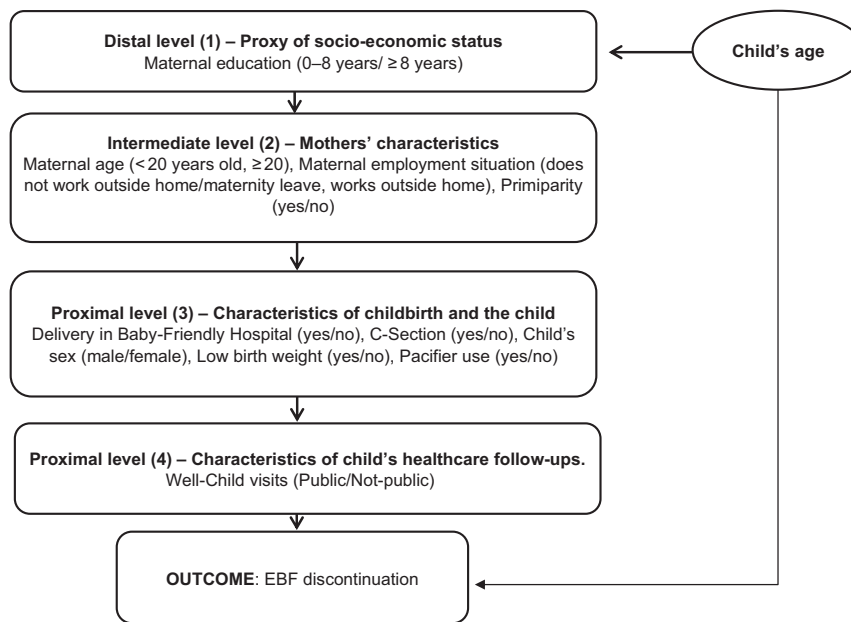
Fig. 1 Conceptual model: description of hierarchical interrelationship between explanatory and outcome variables

Statistical analyses

To analyse the determinants of EBF discontinuation between 2008 and 2013, the statistical analysis was conducted by survey wave and for the pooled sample. For the pooled analyses, data were weighted to adjust for the differences in the sample size across survey waves. As proposed by Buccini *et al.*[9], for all analyses of the pooled sample, data were weighted to adjust for the differences in sample size across survey waves. The sample size weight was created from equation $1/(2 \times [n_C/n_T])$, where n_C is the sample size for each survey and n_T is the sample size for the pooled data.

The analyses were conducted in three stages. First, each explanatory variable was described by comparing its distribution in each survey wave (i.e. 2008, 2011 and 2013) using the χ^2 analyses. The P value < 0.05 was the criterion of significant changes in the distribution of the variable across the three surveys. Second, bivariate analysis was conducted within each survey and the pooled sample to compare the prevalence of EBF discontinuation across explanatory variables using χ^2 analysis. Third, multivariable Poisson regressions with robust variance adjusted by the child's age were conducted on each survey wave and on the pooled sample to investigate the independent association between the EBF discontinuation and the explanatory variables. To estimate the adjusted prevalence ratio of each explanatory variable associated with the outcome, a multivariable model guided by the hierarchical model was used (Fig. 1). The *distal level* (1) included mother's education (proxy of socio-economic status), which was the first to be included in the analytical model and remained as a

control for the hierarchically inferior blocks. The *intermediate level* (2), which corresponds to the variables related to mother's characteristics, was included in the model after the adjustment by the distal block and remained as a control for the subsequent block. Analogous procedure was adopted to the *proximal level* (3), which corresponds to the variables related to the characteristics of the child and their birth. *Proximal level* (4) corresponds to the variables related to child's health care follow-up. All the analyses were conducted in Stata version 14.1.

Results

A total of 1645 mothers with children under 6 months old participated in the three survey waves. The average prevalence of EBF between 2008 and 2013 was of 40·7 % (Table 1). The prevalence of EBF across survey waves slightly decreased, from 42·3 in 2008 to 39·2 % in 2011, and to 40·6 % in 2013. The prevalence of C-section and pacifier use significantly increased between 2008 and 2013 (Table 1).

In the pooled sample, the prevalence of EBF discontinuation was higher in mothers with more education, younger, primipara and those working outside the home (Table 2). The characteristics of childbirth, birth in a Baby-Friendly Hospital, not using pacifiers and not being born with low weight favoured continuation of EBF (Table 2). Except for maternal education, the same determinants increased the prevalence of EBF discontinuation in 2008, 2011 and

Table 1 Descriptive characteristics of children under six months old and their mothers by research wave, AMAMUNIC, 2008–2013

Variables	Grouped sample* (n 1645) %	2008† (n 888) n	2008† (n 888) %	2011† (n 748) n	2011† (n 748) %	2013† (n 160) n	2013† (n 160) %	P
Exclusive breast-feeding								
Yes	40·7	376	42·3	293	39·2	65	40·6	0·429
No	59·3	512	57·6	455	60·8	95	59·4	
Distal level (1)								
Maternal education								
0–8 years	78·8	608	75·1	580	84·4	109	73·6	0·001
≥8 years	21·2	202	24·9	107	15·6	39	26·4	
Intermediate level (2)								
Maternal age								
≥20 years old	86·9	709	87·5	581	85·4	132	89·2	0·331
<20 years old	13·1	101	12·5	99	14·6	16	10·8	
Maternal employment situation								
Does not work outside home/on maternity leave	80·8	660	81·6	551	81·3	114	77·5	0·511
Works outside the home	19·2	149	18·4	127	18·7	33	22·5	
Primiparity								
Yes	47·1	404	49·9	350	51·5	41	27·5	
No	52·9	406	50·1	329	48·5	108	72·5	0·001
Proximal level (3)								
Birth in Baby-Friendly Hospital								
Yes	21·7	193	21·7	155	20·7	39	24·4	0·584
No	78·3	695	78·3	593	79·3	121	75·6	
C-Section								
Yes	34·7	311	35·1	234	31·4	68	42·7	0·018
No	65·3	575	64·9	510	69·5	91	57·3	
Child's sex								
Female	50·6	457	51·5	376	50·3	79	49·4	0·831
Male	49·4	431	48·5	372	49·7	81	50·6	
Low birth weight								
Yes	9·5	71	8·00	79	10·6	17	10·6	
No	90·5	817	92·00	669	89·4	143	89·4	0·171
Pacifier use								
Yes	45·4	368	41·4	359	48·1	78	48·8	
No	54·6	520	58·6	387	51·9	82	51·2	0·015
Proximal level (4)								
Well-child visits								
Public	68·8	641	72·2	477	63·8	118	73·7	0·001
Not-public	31·2	247	28·0	271	36·2	42	26·3	

*Adjusted by grouped sample weight.
†Adjusted by individual survey sample.

2013. Whereas in 2011, high maternal education increased the EBF discontinuation compared with less educated women, in 2008 and 2013, no difference between mothers' educational levels was observed.

The determinants of EBF discontinuation between 2008 and 2013 were maternal employment status (mothers working outside of the home) (adjusted prevalence ratio (APR) = 1·10, 95 % CI 1·00, 1·21); first-time mothers (APR = 1·10, 95 % CI 1·01, 1·20); low birth weight (APR = 1·17, 95 % CI 1·05, 1·32) and pacifier use (APR = 1·48, 95 % CI 1·36, 1·61) (Table 3). For maternal employment status, first-time mothers and low birth weight, the individual prevalence ratios were not significant within all the survey waves but in the same direction (attesting higher power of pooled analysis). Thus, whereas in 2008 and 2013, working outside the home and low birth weight were not significantly associated with EBF discontinuation, in 2011 working outside the home and low birth weight were associated with 18 and 33 % higher prevalence for EBF discontinuation,

respectively. Similarly, in 2011 and 2013, first-time mothers were not associated with EBF discontinuation, whereas in 2008, first-time mother was associated with an 18 % higher prevalence for EBF discontinuation. For pacifier use, similar results were observed within each survey wave where multivariable analyses indicated that pacifier use was strongly associated with the risk of EBF discontinuation in 2008, 2011 and 2013 (APR = 1·55 v. 1·36 v. 1·71, respectively).

Discussion

EBF prevalence in Marília is slightly higher (40·7 %) than the national average (36·6 %)[7], and for the state of São Paulo in southeastern Brazil (39·1 %)[16]. EBF prevalence in Marília is slightly lower than Colombia (43 % in 2005)[20] and higher than Mexico (16 % in 2016)[21]. Results from EBF prevalence in Marília are low compared with findings from 127 countries that found an EBF prevalence of 53 % in low-income

Table 2 Prevalence of exclusive breast-feeding discontinuation by mother–child characteristics, AMAMUNIC, 2008–2013

Variables	Grouped sample* (*n* 1645) (%)	2008† (*n* 888) (%)	2011† (*n* 748) (%)	2013† (*n* 160) (%)
Child's age				
0–3 months old	48·5	48·7	47·6	50·5
4–6 months old	75·7	74·7	77·6	72·3
Distal level (1)				
Maternal education				
0–8 years	57·3	55·9	59·3	55·9
≥8 years	61·4	56·4	64·5	56·4
Intermediate level (2)				
Maternal age				
≥20 years old	57·4	55·5	59·4	56·8
<20 years old	62·1	59·4	62·6	68·7
Maternal employment situation				
Does not work outside home/on maternity leave	56·4	55·3	57·5	56·1
Works outside the home	65·1	59·1	71·6	63·6
Primiparity				
Yes	60·8	61·1	59·4	65·8
No	55·6	51·0	60·5	55·6
Proximal level (3)				
Birth in Baby-Friendly Hospital				
Yes	60·4	58·0	61·3	64·1
No	59·0	57·5	60·7	57·8
C-Section				
Yes	60·8	58·6	62·5	61·5
No	57·0	55·9	58·1	57·3
Child's sex				
Female	61·2	58·6	63·6	62·0
Male	57·3	56·6	58·1	56·8
Low birth weight				
Yes	73·0	63·4	81·0	70·6
No	57·8	57·1	58·4	58·0
Pacifier use				
Yes	73·5	74·2	72·1	75·6
No	47·3	46·0	50·1	43·9
Proximal level (4)				
Well-child visits				
Public	58·5	55·4	61·4	60·2
Not-public	60·7	63·6	59·8	57·1

*Adjusted by grouped sample weight.
†Adjusted by individual survey sample.

countries, 61 % in medium-income countries and 63 % in high-income countries[2]. The heterogeneity of EBF prevalence, within the Brazilian context and globally, highlights the relevance of monitoring breast-feeding practices at the local level and the key role of having a robust analysis such as pooled analysis focused on the understanding of EBF determinants over time, as we did in our study.

The EBF prevalence in Marília remained relatively stable between 2008 and 2013, unlike what was observed in other municipalities in southeastern Brazil[10,20]. For instance, in Bauru, a medium-sized municipality with similar characteristics as Marília also located in southeastern Brazil has increased EBF prevalence from 8·5 % (1999) to 24·2 % (2006), a growth of 184·7 %, which was due to investment in actions that promote breast-feeding, in training health professionals (community-based/Primary Health Care and hospital-based) as well as in reducing pacifier use[20]. Likewise, in Botucatu, the prevalence of EBF moved from 13·0 % (1995) to 29·6 % (2004), as a result of

the improvement of the care practices provided to mothers and newborn children in maternity hospitals, the creation of a Human Milk Bank, the creation of Family Health Units in the Primary Health System and the increase in the number of health professionals to provide breast-feeding support in the municipality[20]. These data reinforce the importance of a municipal strategic plan based on evidence and tailored to the municipality needs.

Among the determinants of EBF discontinuation identified in our study, mothers currently working outside the home were a major risk factor. Mothers who were working outside of the home at the time of the survey included those who did not have maternity leave due to informal employment or those who returned to work before the baby reached 6 months. Evidence shows that mothers who work outside home, without maternity leave, had three times the chance of interrupting EBF[22]. The analysis of the Brazilian national data confirmed that not having maternity leave increased the chances of EBF discontinuation in 23 %

Table 3 Multivariable Poisson regressions used to estimate the adjusted prevalence ratios of exclusive breast-feeding discontinuation according to mother–child characteristics controlled for child's age, AMAMUNIC, 2008–2013

Variables	Grouped sample*		2008 †		2011 †		2013 †	
	APR	95 % CI	APR	95 % CI	APR	95 % CI	APR	95 % CI
Distal level (1)								
Maternal education								
0–8 years	1		1		1		1	
≥8 years	1·07	0·97, 1·18	1·00	0·87, 1·15	1·08	0·93, 1·25	1·28	0·97, 1·67
Intermediate level (2)								
Maternal age								
≥20 years old	1		1		1		1	
<20 years old	1·05	0·93, 1·18	1·01	0·85, 1·21	1·05	0·89, 1·23	1·13	0·79, 1·62
Maternal employment status								
Does not work outside home/on maternity leave	1		1		1		1	
Works outside the home	1·10	1·00, 1·21‡	0·99	0·85, 1·15	1·18	1·03, 1·33‡	1·14	0·86, 1·51
Primiparity								
Yes	1·10	1·01, 1·20‡	1·19	1·05, 1·15‡	0·99	0·88, 1·13	1·14	0·84, 1·53
No	1		1		1		1	
Proximal level (3)								
Birth in Baby-Friendly Hospital								
Yes	0·99	0·90, 1·09	0·98	0·85, 1·13	1·02	0·88, 1·18	0·94	0·70, 1·27
No	1		1		1		1	
C-Section								
Yes	1·07	0·98, 1·17	1·04	0·85, 1·18	1·10	0·96, 1·25	1·09	0·83, 1·44
No	1		1		1		1	
Child's sex								
Female	1		1		1		1	
Male	0·92	0·85, 1·00	0·92	0·83, 1·04	0·89	0·79, 1·01	0·92	0·71, 1·20
Low birth weight								
Yes	1·17	1·05, 1·32‡	1·04	0·87, 1·26	1·33	1·16, 1·53‡	1·13	0·79, 1·62
No	1		1		1		1	
Pacifier use								
Yes	1·48	1·36, 1·61‡	1·55	1·38, 1·75‡	1·36	1·21, 1·54‡	1·71	1·29, 2·26‡
No	1		1		1		1	
Proximal level (4)								
Well-child visits								
Public	1		1		1		1	
Not-public	1·03	0·93, 1·14	1·15	0·98, 1·33	0·97	0·84, 1·12	0·94	0·66, 1·33

APR, adjusted prevalence ratio.
*Adjusted by grouped sample weight.
†Adjusted by individual survey sample.
‡Variables $P < 0.05$.

of women[14]. Likewise, analysis of data from thirty-eight countries found that the extension of paid maternity leave promotes breast-feeding[23]. Maternity leave for formal and informal workers can be a potential mechanism for reducing barriers in EBF. Among mother's characteristics, maternal primiparity has also been associated with EBF discontinuation in prior studies[14,24,25] including ours. First-time mothers have 41 % more risk of interrupting EBF than multiparous mothers[24]. This result confirms the importance of training health providers to develop actions to manage and support breast-feeding tailored to the needs of first-time mothers[25].

In our study, infants with low birth weight were more susceptible to EBF discontinuation. Studies showed that the weight at birth greatly influences breast-feeding outcomes, especially EBF[26]. Low birth weight children may have difficulty sucking mother's breast[27]. In addition, they may stay hospitalised for longer time, and the separation from their mothers may negatively impact breast-feeding

outcomes. Recent study showed that infants with low weight are likely to be breastfed when being born in a Baby-Friendly Hospital[28]. Although the birth in a Baby-Friendly Hospital was not associated with EBF discontinuation in this study, prior evidence found that local investments in the adherence of the Baby-Friendly Initiative can improve breast-feeding rates among the most vulnerable children[28,29]. For instance, in Marília, only one of the three maternity hospitals of the municipality is certified as Baby-Friendly; thus, there is a window of opportunity with strong evidence of high impact on the increase of EBF rates[28,29].

Pacifier use was significantly associated with the discontinuation of EBF, corroborating previous studies[9,30,31]. Data from the first and the second Breast-feeding Prevalence Survey in the Brazilian capitals and the Federal District, conducted in 1999 and 2008, also found that the use of pacifier was the strongest risk factor to the EBF discontinuation[9]. Buccini *et al.*[32] outlined three hypothesis (which do not exclude each other) to explain

the influence of pacifier use on the EBF discontinuation: (1) The introduction of pacifiers may cause EBF discontinuation; pacifier use may discourage breast-feeding, by interfering in the oral dynamics of the baby and the demand for mother's breast, which reduces the frequency of breast-feeding. (2) The introduction of pacifiers occurs due to problems in breast-feeding; thus, pacifier use would be a consequence and not a cause of a lower duration of EBF; it is based on this premise that pacifier can be considered an indicator of breast-feeding difficulty. (3) The introduction of pacifiers occurs due to baby's behaviour, mother–baby interaction and mother's profile (and their families'); thus, breast-feeding and pacifier use are influenced by the behaviour of the baby during breast-feeding and by the way the interaction mother–baby–family is established (e.g. a combination of a fussy baby and an anxious mom may increase the chances of introducing a pacifier). Pacifier are often used by mothers to relieve the infant's crying; thus, health providers must be educated about the topic to be able to counsel parents on the pros and cons of pacifier use. Actions with parents should address strategies to handle the infant's crying behaviour instead of introducing pacifiers[32], as well as information about the potential negative interference of pacifier use on breast-feeding. For the groups with more risk to use pacifier (e.g. first-time mothers and mothers working outside the home), it is recommended to offer practical help in dealing with the difficulties in breast-feeding, listening to the mothers concerning the need for a pacifier, and offering support for the cases where the habit of using pacifier has already begun[33].

This research has some strengths and limitations. First, due to its cross-sectional nature, we cannot establish the temporal sequence of events between the determinants and EBF outcomes; thus, reverse causality cannot be ruled out. On the other hand, this is the first study analysing the prevalence of EBF discontinuation and its determinants in the municipality of Marília using pooled analysis. Our findings may be generalised to urbanised areas in Brazil, which correspond to more than 85 % of the Brazilian population[34]. Second, despite the high coverage of immunisation campaign for children under 5 years old in the municipality of Marília in the three survey waves (in 2008 was 88·67 %; in 2011 was 98·25 % and in 2013 was 93·87 %), in 2013, there were changes in the national guidelines of immunisation making the convocation of children under 6 months old non-mandatory. Yet, during the campaign, some caregivers of children under 6 months old went to the Primary Health Care Units to update their immunisation booklets and participated in the research. Due to this change in the national immunisation strategy, the number of children under 6 months old who participated in the campaign was smaller than 2008 and 2011, and as a consequence, the sample size for that year was also smaller. To avoid bias related to sample size for the pooled analysis, data were weighted to adjust the differences in the sample size across survey waves. In spite of these limitations, these findings are innovative as they raise hypotheses that can be tested by future studies, for example, the evaluation of the degree of adherence to breast-feeding promotion strategies such as Baby-Friendly Hospital Initiative, Human Milk Banks and the Brazilian Strategy to promote breast-feeding and complementary feeding in the primary care settings. The fact that our findings are based on three survey waves that are representative of urban samples in a large country like Brazil and that both the individual and pooled regression analyses point to the same conclusions makes our study a unique contribution to the literature.

Finally, the determinants of EBF discontinuation in Marília can inform the formulation of tailored public policies. These findings can indicate the outlining of local actions and in others that have a similar epidemiological profile focused on groups who are most vulnerable to early weaning and strengthen the implementation of public policies in the mother–child healthcare network.

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Supplementary material

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