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Tania Maria Brasil Esteves[I]

Regina Paiva Daumas[I]

Maria Inês Couto de Oliveira[II]

Carlos Augusto de Ferreira de Andrade[III]

Iuri Costa Leite[IV]

Factors associated to breastfeeding in the first hour of life: systematic review

Fatores associados à amamentação na primeira hora de vida: revisão sistemática

ABSTRACT

OBJECTIVE: To identify independent risk factors for non-breastfeeding within the first hour of life.

METHODS: A systematic review of Medline, LILACS, Scopus, and Web of Science electronic databases, till August 30, 2013, was performed without restrictions on language or date of publishing. Studies that used regression models and provided adjusted measures of association were included. Studies in which the regression model was not specified or those based on specific populations regarding age or the presence of morbidities were excluded.

RESULTS: The search resulted in 155 articles, from which 18 met the inclusion criteria. These were conducted in Asia (9), Africa (5), and South America (4), between 1999 and 2013. The prevalence of breastfeeding within the first hour of life ranged from 11.4%, in a province of Saudi Arabia, to 83.3% in Sri Lanka. Cesarean delivery was the most consistent risk factor for non-breastfeeding within the first hour of life. "Low family income", "maternal age less than 25 years", "low maternal education", "no prenatal visit", "home delivery", "no prenatal guidance on breastfeeding" and "preterm birth" were reported as risk factors in at least two studies.

CONCLUSIONS: Besides the hospital routines, indicators for low socioeconomic status and poor access to health services were also identified as independent risk factors for non-breastfeeding within the first hour of life. Policies to promote breastfeeding, appropriate to each context, should aim to reduce inequalities in health.

DESCRIPTORS: Breast Feeding. Infant, Newborn. Postpartum Period. Review. Epidemiologic Studies.

[I] Centro de Saúde Escola Germano Sinval Faria. Escola Nacional de Saúde Pública Sergio Arouca. Fundação Oswaldo Cruz. Rio de Janeiro, RJ, Brasil

[II] Departamento de Epidemiologia e Bioestatística. Instituto de Saúde da Comunidade. Universidade Federal Fluminense. Niterói, RJ, Brasil

[III] Laboratório de Epidemiologia Clínica. Instituto de Pesquisa Clínica Evandro Chagas. Fundação Oswaldo Cruz. Rio de Janeiro, RJ, Brasil

[IV] Departamento de Epidemiologia e Métodos Quantitativos. Escola Nacional de Saúde Pública Sergio Arouca. Fundação Oswaldo Cruz. Rio de Janeiro, RJ, Brasil

Correspondence:
Tania Maria Brasil Esteves
Fundação Oswaldo Cruz
Rua Leopoldo Bulhões, 1480 térreo
Manguinhos
21041-210 Rio de Janeiro, RJ, Brasil
E-mail: tmbesteves@gmail.com

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RESUMO

OBJETIVO: Identificar fatores de risco independentes para a não amamentação na primeira hora de vida.

MÉTODOS: Revisão sistemática nas bases de dados Medline, Lilacs, Scopus e Web of Science, sem restrição de idioma ou período de publicação, até 30 de agosto de 2013. Foram incluídos estudos que utilizaram modelos de regressão e forneceram medidas de associação ajustadas. Foram excluídos artigos que não especificaram o modelo de regressão utilizado ou que abordaram populações específicas quanto à faixa etária ou presença de morbidade.

RESULTADOS: Foram identificados 155 artigos, dos quais 18 preencheram os critérios de inclusão. Foram realizados na Ásia (nove), África (cinco) e América do Sul (quatro) entre 1999 e 2010. A prevalência da amamentação na primeira hora de vida variou de 11,4%, em uma província da Arábia Saudita, a 83,3% no Sri Lanka. A cesariana foi o fator de risco mais consistente para a não amamentação na primeira hora de vida. "Baixa renda familiar", "idade materna menor que 25 anos", "baixa escolaridade materna", "ausência de consultas pré-natais", "parto domiciliar", "falta de orientação sobre amamentação no pré-natal" e "prematuridade" foram fatores de risco identificados em pelo menos dois estudos.

CONCLUSÕES: Além de rotinas hospitalares, indicadores associados a pior nível socioeconômico e menor acesso a serviços de saúde foram também identificados como fatores de risco independentes para a não amamentação na primeira hora de vida. Políticas de promoção da amamentação, adequadas a cada contexto, devem ter como meta a redução das desigualdades em saúde.

DESCRITORES: Aleitamento Materno. Recém-Nascido. Período Pós-Parto. Revisão. Estudos Epidemiológicos.

INTRODUCTION

Breast milk provides all of the nutrients an infant needs for the first six months. Additionally, it has immunological properties that protect infants against common diseases, such as diarrhea and pneumonia, which are important causes of infant morbidity and mortality.[4,18,22] Breastfeeding also presents advantages to the mother's health, increasing the postpartum infertility period, helping them return to their pregestational weight, and reducing their risk of developing breast[6] and ovarian cancer.[13,25,49]

Despite its recognized benefits, the practice of breastfeeding, in the majority of countries, is still below the recommended by the World Health Organization (WHO).[20] Regarding promotion of breastfeeding, the WHO recommends placing newborns in direct contact with their mothers immediately after birth for at least one hour, and encourage the mother to initiate breastfeeding as soon as the newborn is ready, offering help if necessary.[58] This recommendation is based on the newborn's stronger aptitude in spontaneously searching for the nipple area and initiating breastfeeding during this period, contributing to the establishment of exclusive maternal breastfeeding.[54,57]

Breastfeeding in the first hour of life is associated with prolonged duration of breastfeeding[33,34] and reduction of infant mortality, especially in low-income countries.[2,9,23] The positive effects of breastfeeding on the newborn's health can be attributed to the components of breast milk, as well as the contact between mother and baby. The colostrum, milk on its first days, contains the epidermal growth factor, which accelerates the development of the intestinal mucus, as well as the immunological bioactive factors that provide immunological protection to the newborns, preventing intestinal colonization by pathogenic microorganisms.[5,37]

The "skin to skin" contact between mother and newborn immediately after birth favors the newborn's skin colonization by the mother's microbiota, facilitates the regulation of body temperature, maintains the blood glucose levels stable, and contributes to cardiorespiratory stability.[33,55] The suction of the nipple right after birth stimulates the secretion of prolactin and oxytocin, hormones that induce the production and ejection of milk.[28,54] The oxytocin also reduces

puerperal bleeding and accelerates uterine involution, presenting additional benefits to the mother.[15]

In the past two decades, following WHO recommendation, the timely initiation of breastfeeding has been getting more attention from managers and researchers that work on questions relative to breastfeeding and infant nutritional practices. The inclusion of the question about the time between birth and the initiation of breastfeeding in the Demographic and Health Survey (DHS) has generated similar studies in several countries, as well as comparisons between them.[8] However, no systematic review uniting the body of evidence about the factors that promote or inhibit the opportune initiation of breastfeeding exists.

The objective of the present study was identifying independent risk factors for non-breastfeeding in the first hour of life.

METHODS

A systematic literature review utilizing pre-established protocol for the search, selection, and extraction of data was performed. The articles were found through bibliographic searches of the following databases: Medline, consulted via PubMed,[a] Lilacs,[b] Scopus,[c] and Web of Science.[d] The description of this systematic review is based on the guidelines of the Preferred Reporting Items for Systematic Reviews (PRISMA).[24]

The strategy for searching the PubMed database used the following terms: ("first hour" [Title/Abstract]) OR ("delayed initiation" [Title/Abstract]) OR ("timely initiation" [Title/Abstract]) AND ("breast feeding" [Title/Abstract]) OR ("breastfeeding" [Title/Abstract]). Similar strategies were adopted for the other databases. No limits were set with regard to time of publication or language restriction and the searches were finalized on August 30, 2013. Then, the reference lists of the selected articles were analyzed to identify other eligible publications.

The considered inclusion criteria comprised observational studies analyzing the determinants of breastfeeding or non-breastfeeding in the first hour of life, utilizing regression models with the intention of obtaining adjusted association measurements. Articles in which the type of regression model was not specified and studies that approached specific populations on the basis of the mother's age or the presence of mother or newborn morbidities were not included for preserving the comparison among the selected studies.

The references obtained through the electronic search were stored with the assistance of the program EndNote X7.0.1, through which duplicates were then excluded. Two independent reviewers evaluated the abstracts of the references obtained. All the publications that were potentially eligible were selected for full text reading. The extraction of data and final classification regarding inclusion into the review were done independently, the results were compared and the disagreements were resolved through a consensus between the two reviewers, or by a third reviewer, when necessary.

The following were recorded in the data extraction file: the complete reference of the article, location (country/city) where the study was conducted, period and data collection scenario, sample size, project design, prevalence of breastfeeding in the first hour, inclusion and exclusion criteria of individuals, analyzed variables, results found, and the points value for the quality evaluation criteria.

The quality of the studies was evaluated according to an instrument adapted from the Newcastle-Ottawa Scale for the evaluation of cohort studies[e] and considering the STROBE guidelines for sectional studies.[26] Four items were evaluated, receiving one point each, when they reached the standard of reference: means of selecting participants (S): representative and descriptive sample of the target population as complete, random or selective; loss proportion (P): described and inferior to 20.0%; means of standardizing the outcomes (D): standardization instruments available or described; and selection of variables for statistical analysis (A): gross estimates presented and selection criteria of variables for the final model described.

As the outcome for the majority of articles was "non-breastfeeding in the first hour of life", the results of all the studies were converted to this outcome. The variables that presented significant statistical association ($p < 0.05$) with the outcome in adjusted regression models were considered risk factors when they resulted in the increase of chance or prevalence of non-breastfeeding in the first hour of life and factors of protection when resulted in the reduction of the chance or prevalence of this outcome. The terms "opportune initiation" and "delayed initiation" were also utilized in this study to refer, respectively, to the start of breastfeeding at the first hour of life and after that period.

The variables associated with breastfeeding in the first hour of life were classified, according to its proximity to the outcome, in four hierarchical levels of determination:[51]

[a] PubMed: the bibliographic database [Internet]. Bethesda: National Library of Medicine; [s.d.]. Available from: http://www.ncbi.nlm.nih.gov/pubmed
[b] LILACS: Literatura Latino-Americana e do Caribe em Ciências da Saúde [Internet]. São Paulo: Bireme; [s.d.]. Available from: http://lilacs.bvsalud.org/
[c] Scopus [Internet]. Elsevier; Amsterdan; [s.d.].
[d] Web of Science [Internet]. Thomson Reuters Scientific. New York; [s.d.].
[e] Wells G, Shea B, O'Connell D, Peterson J, Welch V, Losos M, et al. The Newcastle-Ottawa Scale (NOS) for assessing the quality if nonrandomized studies in meta-analyses. Ontario; [s.d.] [cited 2013 Feb 1]. Available from: http://www.ohri.ca/programs/clinical_epidemiology/oxford.htm

contextual (occasion of birth and geographical location), distal (familiar and maternal characteristics), intermediate (pregnancy and prenatal care characteristics) and proximal (delivery care and newborn characteristics).

RESULTS

The electronic search produced a total of 323 references, of which 168 were removed due to repetition. Of the 155 titles/summaries evaluated, 107 were excluded for not meeting the pre-established criteria and 48 were selected for full text reading (Figure 1). Five articles were added from the reference lists of the articles read, resulting in a total of 53 studies read completely. Two thirds of the studies (35) were excluded for not being observational (four), utilizing another definition for opportune initiation (over one hour) (nine), not describing the regression model used (one), not presenting adjusted association measurements (nineteen), or presenting incomplete results (two). In the last case, although the authors were contacted, the missing results were not obtained. At the end of this process, 18 studies fulfilled the inclusion criteria. Table 1 presents the main characteristics of the 18 articles that were included in ascending order according to the study period. Seventeen studies were sectional and only one[36] identified itself as a cohort.

Half of the studies (nine) were carried out in Asia, five in Africa, and four in South America (Brazil). These studies were conducted between 1999 and 2010. The majority of the studies analyzed information derived from residential surveys (11), six of which utilized data from the DHS, carried out between 2000 and 2010. The maximum age of the child, at the time of the interview, varied between two days and two years. The smallest sample was composed of 262 participants[35] and the largest had 10,317.[39]

The prevalence of breastfeeding in the first hour of life varied from 11.4% in a province of Saudi Arabia[10] to 83.3% in Sri Lanka.[45] Among the studies that were carried out in communities or in clinics, the smallest proportion of home births was found in Saudi Arabia (0.0%)[10] and the largest was found in a survey in Ethiopia (93,8%).[16] The number of cesarean sections varied from 2.1% in an survey performed in the rural areas of Ethiopia[48] to 49.3% in a hospital sample in the city of Rio de Janeiro.[1]

Most studies used logistic regression as the multivariate method of analysis. One of the studies utilized logistic

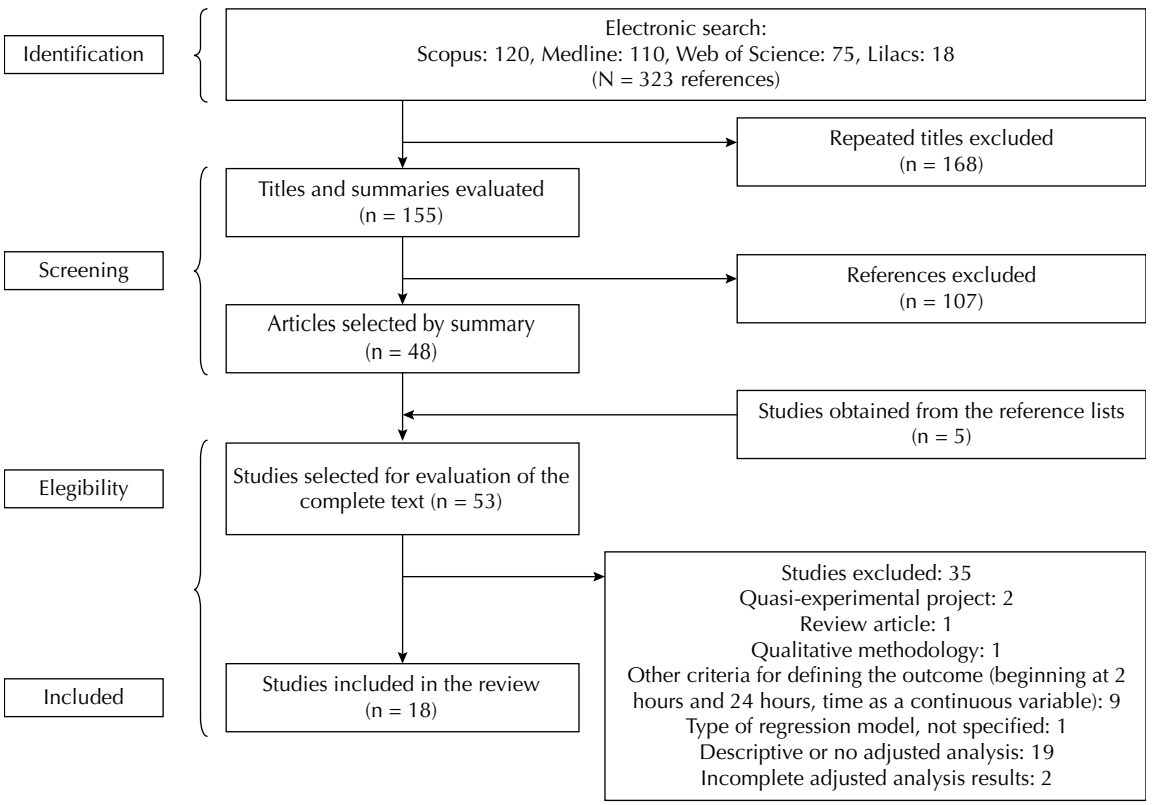


Figure 1. Flow Chart of the Selection Process for the Studies to be Included in the systematic review on the risk factors for non-breastfeeding in the first hour of life.

Table 1. Characteristics of the studies on risk factors for non-breastfeeding in the first hour of life selected for inclusion in the systematic review.

Authors/Year of publication	Place/Country	Period of the study	Source of information	Age of the child at interview	Size of sample	Breastfeeding in the first hour	Home birth	Cesarean	Regression analysis model	Quality assessment			
						%	%	%		S	P	D	A
Boccolini et al[1] (2011)	Rio de Janeiro, RJ, Brazil	1999-2001	Public and private hospitals with more than 200 births/ano	Up to 2 days	8,379	16.1	NA	49.3	Poisson multi-level	1	1	1	1
Senarath et al[44] (2010)	Sri Lanka	2000	Demographic and Health Survey(DHS)	< 1 year	1,127	56.3	2.4	19.4	Logistics	1	1	1	1
Silveira et al[47] (2008)	Pelotas, RS, Brazil	2002-2003	All of the maternities in the town	Up to 2 days	2,741	35.5	NA	38.5	Logistics hierarchy	1	1	1	1
Horii et al[16] (2011)	Regions of Ethiopia	2003-2004	Baseline demographic survey for health projects	< 1 year	2,072	41.6	93.8	SI	Logistics	1	1	1	1
Mihrshahi et al[31] (2010)	Bangladesh	2004	Demographic and Health Survey(DHS)	< 1year	2,482	27.5	88.1	4.9	Logistics	1	1	1	1
Vieira et al[52] (2010)	Feira de Santana, BA, Brazil	2004-2005	All public and private hospitals in the town	Up to 2 days	1,309	47.0	NA	34.2	Logistics	0	0	1	1
Ogunlesi[35] (2010)	Nigeria	2005	Children's ambulatory linked to the BFHI	< 2 years	262	37.4	39.7[a]	SI	Logistics	1	0	1	1
Patel et al[39] (2010)	India	2005-2006	National family health survey (NFHS)	< 1 year	10,317	23.5	58.9	9.4	Logistics	1	1	1	1
Oliveira et al[36] (2010)	Rio de Janeiro, RJ, Brazil	2006	Mothers undergoing Rapid anti-HIV test at BFH	Up to 2 days	944	47.5	NA	32.5	Complete Multilevel	1	1	1	1
Pandey et al[38] (2010)	Nepal	2006	Demographic and Health Survey (DHS)	< 1year	968	35.4	80.3	3.3	Logistics	1	1	1	1
Senarath et al[45] (2012)	Sri Lanka	2006-2007	Demographic and Health Survey (DHS)	< 2 years	2,735	83.3	0.5	24.4	Logistics	1	1	1	1
Hazir et al[14] (2013)	Pakistan	2006-2007	Demographic and Health Survey (DHS)	< 2 years	3,013	27.3	61.3	9.0	Logistics	1	1	1	1
Patel et al[40] (2013)	India	2008	Tertiary BFH	Up to 2 days	500	36.4	NA	34.0	Logistics	1	1	1	1
El-Gilany et al[10] (2012)	Al-Hassa, Saudi Arabia	2009	Primary care centers (at the newborn's registration)	< 15 days	906	11.4	0.0	17.8	Logistics	1	0	1	1
Tamiru et al[48] (2012)	J. Arjo Woreda, Ethiopia	2009	Family health survey for rural communities	< 6 months	384	62.6	SI	2.1	Logistics	1	1	0	0
Victor et al[50] (2013)	Tanzania	2009-2010	Demographic and Health Survey (DHS)	< 1year	3,112	46.1	49.1	5.1	Logistics	1	1	1	1
Setegn et al[46] (2011)	District of Goba, Ethiopia	2010	Family health survey for urban and rural areas in the District	< 1 year	668	52.4	71.7	3.1	Logistics	1	1	1	1
Meshram et al[30] (2012)	Andhra Pradesh, India	No information	Family health survey for rural areas in the District	< 1 year	805	22.0	29.3	SI	Logistics	1	0	1	0

S: participant selection; P: loss; D: outcome (gauging); A: statistical analysis DHS: Demographic and Health Survey; BFHI: Baby-Friendly Hospital Initiative; BFH: Baby-Friendly Hospital; NFHS: National Family Health Survey; NA: does not apply; SI: No information

[a]Another in addition to the health unit.

regression in a hierarchal model[47] and another applied Poisson's multilevel regression.[1] Only the cohort study used a multilevel complementary log-log model.[36] With regard to the quality of the studies, 13 of the 18 articles obtained the maximum score for the criteria evaluated.

Table 2 shows the variables classified as risk or protection factors or not associated to non-breastfeeding in the first hour of life, as well as the number of times each variable has been investigated.

At the contextual level, breastfeeding in the first hour of life has been associated to the geographical residence zone in most of the studies that investigated this variable. Living in a rural area was a risk factor in two studies carried out in African countries[46,50] and a protection factor in two Asian studies.[10,31]

At the distal level, which reflects the maternal familiar and sociodemographic characteristics, the following were identified as independent risk factors: low family income (3/13),[30,31,45] maternal low schooling level (4/17),[39,40,48,50] and maternal low income (1/1).[36]

A brazilian study has associated low schooling to protection (1/17).[47] Maternal employment was found to be a risk factor in two studies[14,50] and a protection factor in one out of nine studies.[39] Maternal age was not associated to the outcome in the majority of the studies (11/14). However, extreme (higher and younger) maternal ages were occasionally associated with larger risk.[39,47,50]

At the intermediate level (pregnancy and prenatal attention), three studies[31,35,39] identified the access to antenatal clinic visits as a protection factor for breastfeeding in the first hour of life. Other factors, such as the mother receiving a prescription for iron[16] and guidance about breastfeeding[40,52] at the consultations as well as receiving home visits, were also eventually identified as factors of protection.

At the proximal level, defined by the newborn's characteristics and the care received during labor, the variables related to labor were most frequently associated with non-breastfeeding at the first hour of life. Home delivery was a risk factor for delayed initiation of breastfeeding in four out of 11 studies.[35,39,45,50] Delivery assisted by a family member, when compared with delivery assisted by health professionals, increased the risk of non-breastfeeding during the first hour of life in Tanzania,[50] while delivery assistance by family members or trained midwives was associated to timely initiation of breastfeeding in a study done in Ethiopia.[16]

Cesareans showed to be a risk factor for non-breastfeeding in the first hour of life in 11 of 14 studies investigated. In hospital-based studies, the hospitals characteristics, such as the source of financing[1] and its certification by the Baby-Friendly Hospital Initiative (BFHI),[47] have also been associated with the outcome. Mothers receiving the results of the rapid anti-HIV test after birth was identified as a risk factor in the only study in which variables related to the anti-HIV tests were investigated.[36] The baby receiving prelacteal food[10] and the mother having breast issues (pain, engorgement, cracks)[10,48] were factors associated to delayed initiation of breastfeeding in some studies.

Among the variables related to the child, the following were identified as risk factors: prematurity (2/3),[40,52] low

Table 2. Risk and protection factors and those not associated to non-breastfeeding in the first hour of life in the selected articles.

Variable	Risk	Protection	Not associated	Number of studies
Contextual level				
Rural residential area	46,50	0,31	14,35,38,39,44	9
Residential geographic area	14,39,50	31,38,39,45	44	8
Child's highest age on the date of the interview	45	39	14,30,31,44	6
Distal level				
Low family income	30,31,45		10,14,36,38,39,40,44,47,50,52	13
Nuclear family		30		1
Father's schooling level			14,31,38,39,47	5
Mother's age (in years)				14
< 20 or < 25	39,50		1,52	
≥ 35 (*versus* 20-34)	47		10,14,31,35,36,38,44-46	
Mother's highest schooling level	47	39,40,48,50	1,10,14,30,31,35,36,38,39,44-46,52	17
Low maternal income	36			1
Non-white ethnicity	36	47	1	3
Caste (scheduled[a])		30		1

Continue

Continuation

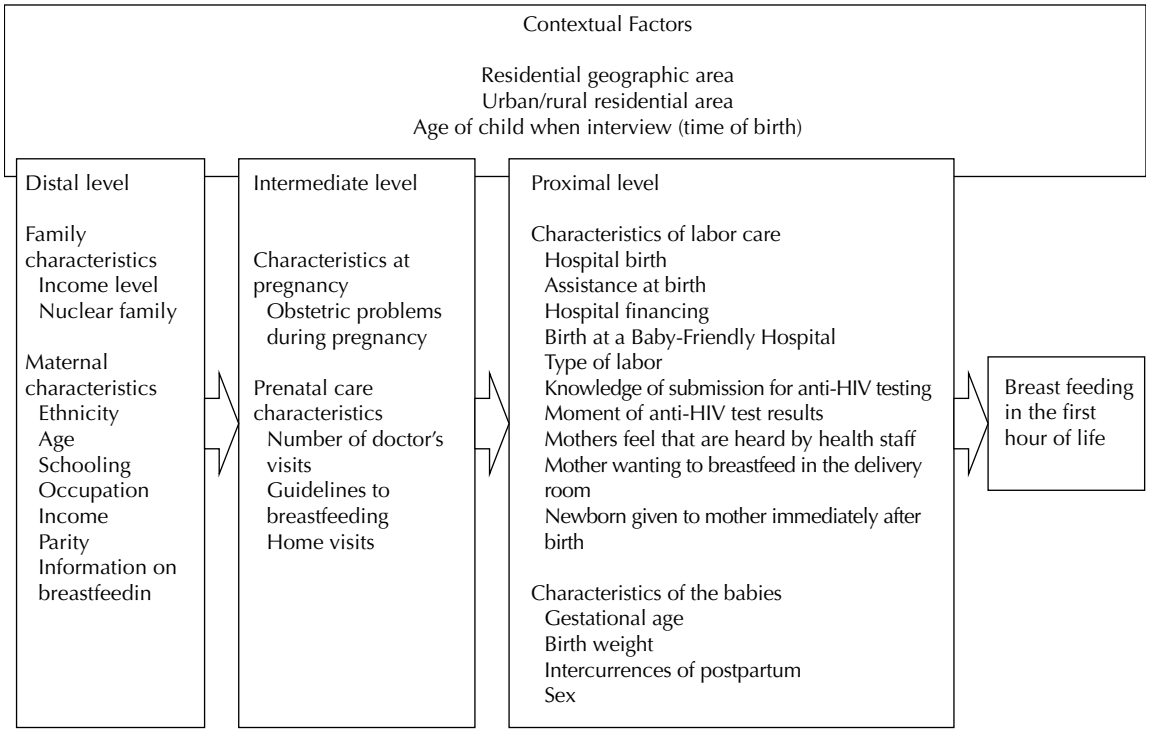
Mother's profession	14,50	39	10,31,36,38,44,45	9
Mother's occupation			35,38,46	3
Body mass index			31,38,39,45,50	5
Mother's decision-making power		38	31,39,44,45,50	6
Listens to the radio		39	31,48,50	4
Watches television			31,39,50	3
Reads the newspaper			31,39,50	3
Marital status			1,14,31,36,38,39,44,48,50	12
Multiparous		10	1,14,16,31,35,36,38,39,44-47,50,52	15
Interval between births			14,31,38,39,45,46	6
Intermediate level				
Obstetric problem (toxemia or hemorrhaging)	40			1
Smoking while pregnant			1,47	2
Access to prenatal health care		31,35,39	14,16,36,38,40,44,45,47,48,50	13
Iron prescribed at dr. visit		16		1
Orientations regarding breastfeeding		40,52	1,16,46	5
Home visit		44	45,46	3
Proximal level				
Home birth	35,39,45,50		14,16,30,31,38,44,46	11
Birth assisted by family member[b]	50	16	31,38,39,44,48	7
Birth assisted by trained midwife		16	50	2
Cesarean	1,14,36,38-40,44,45,47,50,52		10,31,46	14
Private hospital birth	1		10	2
BFH birth		47		1
Postdelivery breastfeeding counseling		46		1
Unaware of undergoing rapid anti-HIV test		36		1
Unaware of the anti-HIV test results		36		1
Receiving anti-HIV test result post birth	36			1
State that health care professionals do not listen to her	36			1
I don't want to breastfeed in the labor	36			1
Newborn received prelacteal foods	10			1
Newborn was not presented to the mother once born	1			1
Time until postnatal check-up			31,38,39	3
Breast problems (pain/fissures)	10,48			2
Female sex		45	1,10,14,16,30,31,38,39,44,46,50	12
Size of newborn (mother's perception)			14,39,40	3
Prematurity	40,52		10	3
Low birth weight	45		10,40,44,52	5
Apgar 0 to 7 in the 5th minute	48			1
Inter-occurrance immediately postpartum	1			1

BFH: Baby-Friendly Hospital

[a] Scheduled castes: set of disfavored and catalogued castes as determined in the Constitution of India as potential beneficiaries of affirmative actions.

[b] Births not assisted by health professionals.

Variables evaluated in only one study, with no significant association included: basic sanitation, relationships between people and items, desire to become pregnant, abortion attempt, father's support during pregnancy, physical abuse during pregnancy, prenatal adaptation (opportune start and number of visits), company in the delivery room, use of oxytocin during the during labor, assessment of care at delivery, multiple births, congenital anomaly;[1] mother brought a bottle to the hospital and intends on using it;[47] socioeconomic level (chronic malnutrition);[16] father's occupation;[50] information about breastfeeding in the media, newborn cried immediately at birth;[40] prior breastfeeding experience, educational sessions;[52] trimester of pregnancy in which anti-HIV test was performed, receiving result of pre-natal anti-HIV test before birth;[36] family planning and health education;[48] admission to neonatal ICU.[10]



[a] Adapted from Boccolini et al[1] (2010).

Figure 2. Representation by hierarchical level of the risk factors for breastfeeding in the first hour of life.[a]

birth weight (1/5),[45] immediate postpartum complications (1/1),[1] and an Apgar index below eight on the fifth minute (1/1).[47] Being of the female sex has proved be a protection factor in one of the studies (1/12).[45]

The graphic representation of the variables defined as associated with the outcome in at least one study is depicted in Figure 2 for better comprehension of the determination levels and the relationships among them.

DISCUSSION

Cesarean was the risk factor most consistently associated to non-breastfeeding in the first hour of life. Characteristics such as low family income, mother's age below 25 years, mother's low schooling level, absence of antenatal clinic visits, home birth, lack of prenatal guidance in regard to breastfeeding and prematurity were identified as risk factors in at least two studies.

Cesarean has been appointed as an important barrier to breastfeeding initiation (before or after the first hour)[41,43] and is usually associated to routines of postoperative care which delay or interrupt the contact between the mother and her newborn in the postpartum period.[27] Some authors suggest that behavioral factors are also involved in this relationship, in a way that mothers who have been submitted to cesareans would have lower predisposition for breastfeeding.[42,53] This hypothesis is reinforced by Prior et al's[42] (2012) meta-analysis, in which the largest risk of non-breastfeeding has been found only in elective cesareans.

Although the WHO advocates that the rate of cesareans should not surpass 10.0% to 15.0%,[56] rates much superior to this were reported in all hospital-based studies, while rates lower than 5.0% were found in places with poor access to health services.[14,31,39,46,48,50] Indeed, the rate of cesareans is on the rise in the entire world, having reached to 52.0% in Brazil in the year of 2010, motivating governmental politics with the intention of reducing elective cesarians.[32]

The professionals' knowledge and the practices applied by health services seem to be the most important factors determining the initiation of breastfeeding after deliveries at hospitals,[1,41] where the mother's decision-making power seems to be limited. In Brazil, private maternities have been associated to larger risks for delayed initiation of breastfeeding,[1] while BFHI[47] accreditation has been considered a protection factor. Inadequate routines, such as the delivery of anti-HIV rapid test result after child birth, have also contributed to delayed breastfeeding initiation among women who were submitted to these tests.[36]

In places where home delivery is more frequent, the knowledge and beliefs of the mother, family members, and midwives are factors that exert a larger influence on breastfeeding initiation. The inadequate knowledge of traditional midwives and family members concerning the benefits of early breastfeeding initiation is one of the possible causes for the worst performance of this indicator in home deliveries.[35,39,45,50] Negative cultural beliefs about the colostrum may constitute a barrier in rural parts of Africa[46,50] and India.[30,40] In the Setegn et al[46] (2011) study, 35.0% of mothers pumped and discarded the colostrum for believing that it would jeopardize the baby and cause cramps, and that it is hard to digest. The delayed breastfeeding initiation not only deprives the child from the protective properties of the colostrum but also becomes the reason for premature introduction to prelacteal feeding.[46]

Family income, schooling, and age of mother were not independent determinants in most studies, possibly for having their effects mediated by factors closer to the outcome, also included in the models. However, in the studies that found an association of breastfeeding with income, the larger risk for delayed initiation of breastfeeding occurred amongst women with low income. The same has been observed in relation to low schooling level, with exception to the study of Silveira et al[47] (2008), in which the higher schooling was identified as a risk factor for non-breastfeeding at the first hour of life. It is possible that this apparent disagreement is a result of the authors' adoption of a hierarchal model of analysis,[51] in which the effects of schooling have been adjusted by variables of the same levels, but not by variables related to birth, considered closer to the outcome. The use of private maternities and the larger rate of cesareans could explain, in part, the biggest risk of late initiation of breastfeeding among women with higher schooling levels.

The risk of delayed breastfeeding among younger women reported by two of the studies[39,50] concurs with other studies regarding the factors associated to the beginning of breastfeeding.[7] It is possible that this finding is related to the larger inexperience and insecurity among these mothers; however, the fact that there is no difference between multiparous and nulliparous challenges this hypothesis.

Prenatal assistance should comprise comprehensive care (attention, prevention, and promotion of health). In the present review, different indicators of access (number of consults) and quality (prescription of iron, guidance about breastfeeding, and home visits) of prenatal care have been identified as factors associated to the early beginning of breastfeeding. The information about breastfeeding that health professionals convey to the pregnant woman during prenatal period would favor the preparation for breastfeeding.[52] Bueno & Teruya[3] (2004) state that adequate prenatal follow-up, counseling for the practice of breastfeeding, encouragement and support may contribute to early breastfeeding in the delivery room.

Among the factors related to children, premature babies[40,50] or those born with low weight[45] had significantly lower chances of opportune breastfeeding than those born full term. The need for special care may justify part of this result, but it is important to recognize and avoid unnecessary hospital practices to which this group is particularly vulnerable. Studies have identified immediate complications with the baby postpartum[1] and an index of Apgar below eight in the fifth minute[29] as risk factors for the delay in breastfeeding initiation. However, most hospital studies have excluded newborns with health problems.

Except for one study conducted in Saudi Arabia,[10] all of the studies were conducted in low or medium-income countries,[f] which suggests that this subject has not received much attention amongst the rich countries, where child survival is not threatened by the use of breastmilk substitutes. Meanwhile, the prevention of childhood obesity and allergic diseases,[49] and even obesity and hypertension in adult life,[17] are configured in health benefits that may present particular importance to these countries.

With respect to the quality of the studies, it has been observed that all the studies scored in at least two of the four criteria evaluated and the majority presented maximum scores. While quality evaluation is a fundamental step during the elaboration of a systematic review, there is no consensus as to what is the best instrument that can be used,[19] making the evaluation of observational studies to be considered particularly complex. In the present review, an adapted instrument from the Newcastle-Ottawa Scale has been used, containing four items relative to sample selection, losses, information on outcome measurement and statistical analysis. Although very simple, the description of the obtained results in these criteria provides the reader with useful information for appreciation of the quality of the articles.

The current review did not investigate a specific exposure – outcome relationship, but covered different exposures, mapping the set of variables investigated as potential predictors of breastfeeding in the first hour of life and classifying them by hierarchical level of determination. Thereby, its results contribute to the comprehension of the involved processes for its occurrence in different contexts, but do not allow for a definite conclusion on the strength of the associations that were found.

[f] The World Bank. Country and lending group. Washington (DC);[s.d.] [cited 2013 Sept 1]. Available from: http://data.worldbank.org/about/country-classifications/country-and-lending-groups

There are certain limitations of the current study that should be considered. Although we elaborated broad search strategies, there is always the possibility of not capturing all the studies relevant to the case. Despite the quantitative synthesis by means of meta-analysis being the most objective form of presenting the results of a systematic review, it was not feasible in this case, as there was large heterogeneity among studies regarding the contexts in which they were produced and the variables that were analyzed.[21] Employing this method to combine study results would lead to imprecise and inadequate summary measures.

Another limitation is related to the design of the primary studies. Almost all of the studies included in this revision were sectional (17/18 = 94.4%), considered more fragile to the determination of causality for not guaranteeing the temporal cause – effect sequence.[12] In fact, some associations reported may represent a situation of reverse causality in which the supposed outcome is the cause of the alleged exposure. Thus, the associations of non-breastfeeding in the first hour of life with "pre-milk feeding"[10] and "breast problems"[10,48] probably reflect situations of this type, as these occurrences normally surge after the first hour of life. One last question refers to the validity of information regarding the outcome. The fact that it was obtained from mothers up to two years after birth increases the risk of measurement error and recall bias in many of the evaluated studies.

Besides hospital routines, in the current review, indicators referring to the low socio-economic level and lower access to health services were also identified as independent risk factors for non-breastfeeding in the first hour. Despite scientific evidence and international recommendations to put the newborn close to the mother's body to initiate breastfeeding right after birth,[57] the implementation of this practice still finds social and cultural barriers.

To reverse this situation, politics of breastfeeding promotion, appropriate to each context, must be developed and have the reduction in health inequality as its goal. In this sense, it is necessary to practice the WHO recommendations for the hospital routines[58] and expand the access to prenatal care, birth assistance, and health information.

Regarding health services, the discussion of care routines, in light of the current scientific evidence, may offer professionals the necessary safety to abandon practices now known as harmful to the health of newborns. Considering the importance of family and social support, information about the benefits and practice of breastfeeding should be given not only to pregnant women but also to the population in general. The training of midwives and health community agents is equally strategic. Interventions that blend educational actions, structural changes in health services, and media campaigns tend to present better results in the promotion of breastfeeding.[11]

It is expected that the results presented here significantly contribute to the debate on the timely initiation of breastfeeding, enabling the amplification of knowledge over its determinants and planning interventions that facilitate its practice.

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