Exclusive breastfeeding frequency at 30 days of life: review of longitudinal studies

Frequência do aleitamento materno exclusivo aos 30 dias de vida: revisão de estudos longitudinais[1]

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Abstract

Early life feeding can affect children's development and survival. Adherence to breastfeeding practices and regular monitoring is essential. This study aims to conduct an integrative review of longitudinal studies on the frequency of exclusive breastfeeding (EBF) at 30 days of life. Articles were retrieved from the PubMed and LILACS databases. The combination of descriptors used was: "prospective study" and "breast feeding." The search was limited to articles published between 2015 and 2020 in English, Spanish, and Portuguese. We selected 17 original studies. Despite their methodological differences regarding sample size and type, follow-up period, and EBF definition and measurement method, results indicated a high rate of breastfeeding initiation (86%) and a wide variation in the occurrence of EBF at 30 days of life (4.5% - 86%) with substantial decline (<60%) in 63% of the investigated areas. These results are far from complying with the recommendation from the World Health Organization of maintaining EBF up to the sixth month of a child's life and point to the need for further investigations with a standardized methodology to allow for comparisons within and between countries, aiming at planning actions which support breastfeeding.

Keywords: Breast feeding, Lactation, Review, Longitudinal Studies, Cohort Studies.

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Resumo

A nutrição adequada no início da vida pode afetar o desenvolvimento e a sobrevivência infantil, por isso a adesão às práticas de aleitamento materno e o seu monitoramento regular tornam-se essenciais. Este artigo objetiva realizar uma revisão integrativa da literatura sobre a frequência do aleitamento materno exclusivo (AME) aos 30 dias de vida, divulgada em estudos longitudinais. Para isso, foram identificados artigos nas bases de dados PubMed e LILACS. A combinação dos termos de pesquisa foi "estudo prospectivo" e "aleitamento materno". A busca limitou-se aos artigos em inglês, espanhol e português, e compreendeu as publicações entre os anos 2015 e 2020. Foram selecionados 17 estudos originais. Apesar das diferenças metodológicas entre eles, em relação ao tipo e tamanho de amostra, a definição do AME e método de mensuração, os resultados indicam alta taxa de início da amamentação (86%) e ampla variação da ocorrência de AME aos 30 dias (4,5%-86%), com declínio substancial (<60%) em 63% dos locais investigados. Esses resultados distam do cumprimento da recomendação da Organização Mundial da Saúde de AME até o sexto mês, e indicam a necessidade de investigações, com metodologia padronizada, para comparação dentro dos e entre os países, visando ao planejamento de ações para incentivo da amamentação.

Palavras-chave: Aleitamento Materno; Lactação; Revisão; Estudos Longitudinais; Estudos de Coorte.

Introduction

The period from conception up to the first two years of a child's life is considered a window of opportunities for the improvement of mother-child health (Bhutta et al., 2008). At the beginning of postnatal life, adequate nutrition is essential to ensure a child's growth, health, and development (WHO, 2009). Thus, the World Health Organization (WHO) recommends for breastfeeding (BF) to begin within the first hour of life and for exclusive breastfeeding (EBF) to be maintained until the child's sixth month (WHO, 2002).

Regardless of socioeconomic status and living conditions (Victora et al., 2016), the strategy of breastfeeding exclusively at the beginning of life reduces, in the short term, mortality, morbidity, and hospitalization of children due to gastrointestinal and respiratory infectious diseases (Sankar et al., 2015; Payne; Quigley, 2017; Saeed; Haile; Chertok, 2020), in addition to benefiting the mother's health with longer periods of amenorrhea (Del Ciampo; Del Ciampo, 2018). Despite scientific evidence indicating the superiority of breastfeeding over other ways of feeding the child in the first months of life, the duration of EBF remains substantially shorter than the WHO global recommendation (UNICEF, 2019). According to data from the United Nations Children's Fund (UNICEF) in 2019, the overall prevalence of EBF in children under 6 months was 42% (UNICEF, 2019), with great variation among developed and developing countries.

Early initiation and longer duration of exclusive breastfeeding positively influence the total duration of BF (Vehling et al. 2018; Dozier et al., 2018). The unnecessary introduction of bottle or food into an infant's diet reduces the lactogenic stimulus (sucking), lactation, and, consequently, favors early weaning (WHO, 2009). The neonatal period - which comprises the first 4 weeks after delivery - is the phase in which breastfeeding is established, with an immense vulnerability to the introduction of water, teas, juices, and other milks (Ministry of Health, 2009). In a population-based longitudinal study conducted in Cruzeiro do Sul, in the State of Acre, Brazil, the authors found that 63% of the children had received foods or liquids other than breast milk in the first month of life, such as tea (39%), water (31%), non-human milk,

and infant formula (30%), in addition to cassava mass (10%) (Mosquera et al., 2019). Most studies on this subject, however, focus their estimates in the sixth month of life or among children under 6 months, even when the WHO recommends stratifying breastfeeding indicators into smaller age groups, since children's feeding practices can change significantly as they grow (WHO, 2021).

To assess the situation of breastfeeding within and between countries, in addition to monitoring the progress of efforts to support breastfeeding, the WHO proposes to regularly monitor the frequency and duration of breastfeeding practices for up to the first two years of life (WHO, 2021). The measurement of EBF, however, is complex, since the occurrence may vary in relation to maternal recall, the way the question is posed, the age of the infant, and the definition adopted (Greiner, 2014). Studies to estimate the prevalence of cases use predominantly the 24-hour recall method (24hR), in order to estimate the proportion of infants, from 0 to 5 months of age, who received only breast milk during the day prior to the interview (WHO, 2021). However, when compared to the dietary recall method since birth, 24hR is not sufficient to identify the common eating practices, and it may lead to an overestimation of the prevalence of EBF (Khanal et al., 2016). Thus, the best estimate for the duration of exclusive breastfeeding would result from studies with a prospective cohort design, based on recall since birth and on repeated measurements with short intervals between evaluations, to collect information on infant feeding (Khanal et al., 2016).

Considering the increasing number of cohort studies in recent years and the importance of early adherence into the practice of exclusive breastfeeding, this study aims to conduct an integrative literature review of the published longitudinal studies on the frequency of EBF at 30 days of life.

Methods

This is an integrative literature review, which allows for a greater understanding on a given subject and a synthesis of available evidence, identifying gaps that underlie the development of future research. Thus, the following steps were considered: identification of the subject; establishment of the criteria for inclusion and exclusion of studies; search of publications in the database; determination of the information to be extracted from the selected studies; evaluation of the included studies; and interpretation and synthesis of the results (Mendes; Silveira; Galvão, 2008). The following question guided this review: What is the scientific evidence from the longitudinal studies on the frequency of EBF at 30 days of life?

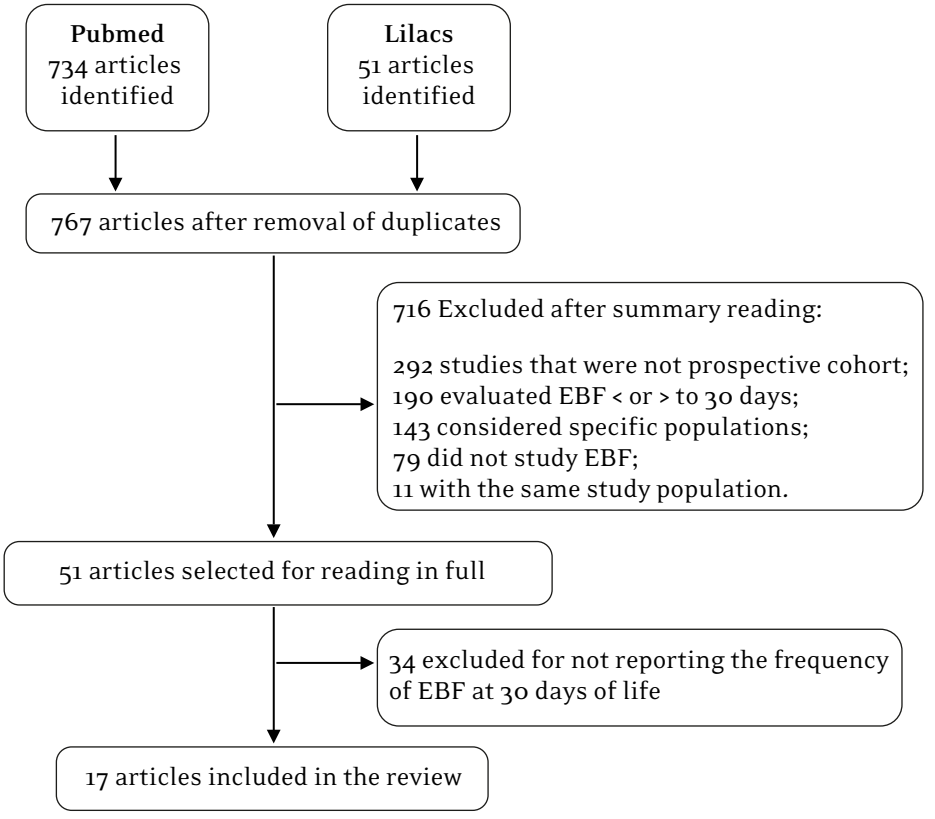
The articles were identified through search in the MedLine databases via PubMed (National Library of Medicine of the United States of America), since it is one of the largest online repositories of research published in scientific journals of life and biomedical sciences; and LILACS, since it is the most comprehensive database of scientific and technical literature in health sciences in Latin America and the Caribbean. Cohort studies published between January 1, 2015, and January 31, 2020, in English, Portuguese and Spanish, were included when there was a prospective evaluation of the duration and occurrence of EBF at 30 days of life. Studies were excluded if they considered only specific populations, such as twins, preterm or newborns with medical complications, adolescent mothers or HIV positive. Animal studies and research with methodology that were not prospective cohorts (bibliographic reviews, qualitative, retrospective, cross-sectional, experimental, case control studies, and case studies) were also excluded. As for studies using the same population (same database), only one was included in this review.

The search was conducted in February 2020. In both databases, a combination of the search terms was used in English: prospective study and breast feeding – identified from the terms of the Medical Subject Headings (MeSH) and the Descriptors in Health Sciences (DeCS) – and the free words: cohort and exclusive, since they are considered essential to increase the sensitivity of the search. The "publication date" filter was used to limit the search to articles published in the last five years. This cutoff period was established to describe the current situation of EBF during a child's first month in studies, of which the scientific methodology (prospective cohorts) has grown in recent years.

The combination of search terms in advanced search in PubMed were: ((((prospective study[Title/Abstract] OR (cohort[Title/Abstract])) AND (breastfeeding[Title/Abstract])) OR (breast feeding[Title/Abstract]) AND (exclusive) AND ((english[Filter] OR portuguese[Filter] OR spanish[Filter]) AND (2015:2020[pdat])). And in the Virtual Health Library, in the LILACS database: (tw:(prospective study)) OR (tw:(cohort)) AND (tw:(breast feeding)) OR (tw:(breastfeeding)) AND (tw:(exclusive)) AND (db:("LILACS") AND la:("pt" OR "en" OR "es")) AND (year_cluster:[2015 TO 2020]).

For the selection of studies, the list of references of each database (Pubmed: n=734, LILACS: n=51) was stored on the online platform for systematic reviews *Rayyan QCRI* (Ouzzani et al., 2016). Duplicate publications (n=18) were eliminated and then, by reading the titles and abstracts, the studies unrelated to the objective of the review were excluded (n=716). To confirm eligibility, the selected surveys were read in full (n=51) and excluded if, despite containing the keywords in the title or abstract, they did not inform the data of interest for this review. In the end, 17 original articles that met the inclusion criteria comprised this ILR (Figure 1).

Figure 1 – Descriptive flowchart of the review steps for selection of articles in PubMed and LILACS databases



The information of the selected articles was obtained with the aid of a structured form, in which it was recorded: the author's name and the year of publication; place and year of conduct of the study; sample size and type; follow-up period; definition of EBF; measurement method; and main findings of interest for the purposes of this review (frequency of EBF at 30 days of life and, if available, the frequency of BF and/or EBF initiation in the first 24 to 96 hours of life). In some cases, we contacted the authors of the selected manuscripts to clarify doubts about the methodology of the study. The results of interest disclosed in the studies were synthesized in a chart, which is interpreted and discussed below.

To carry out this study, we selected articles of public access available in *online* databases, therefore, it was not submitted for approval by the Research Ethics Committee. The bibliographic references of the articles selected to write this review were included to protect the intellectual works and their authors.

Results

The main findings of the 17 publications that comprised this review are described in Chart 1. The selected publications included studies conducted between 2006 and 2017 and published between 2015 and 2020. These studies presented conclusions from 17 investigations conducted in different regions (n=6) of high-income countries (The World Bank, 2020), namely: Spain - Gipuzkoa (Oribe et al., 2015), United Kingdom - Southampton (Grimshaw et al., 2015), Italy -Milan (Verduci et al., 2017) and Sicily (Cernigliaro et al., 2019), Israel - Jerusalem (Noble et al., 2019), and Taiwan - Northern Region (Shao et al., 2019), ., 2018); in different regions (n=13) of upper-middle-income countries, including Malaysia - Kelantan (Tengku Ismail; Wan Muda; Bakar, 2016), Maldives - Male' (Raheem et al., 2019), China - Hunan (Wu et al., 2019), Ma'anshan (Tao et al., 2017), Shenyang, Wuhan and Guangzhou, with aggregated estimation (Mei et al., 2015), South Africa - Sale (Patil, et al., 2015), Brazil - Cruzeiro do Sul/ AC (Mosquera et al., 2019), Chapecó/SC and Porto Alegre/RS, with aggregated estimates (Margotti; Mattiello, 2016), and Fortaleza/CE (Patil, et al., 2015), and Peru - Loreto (Patil, et al., 2015); and in different regions (n=8) of lower-middle-income countries, including Iran - Shahroud (Mortazavi et al., 2015), Nepal - Rupandehi (Khanal et al., 2015) and Bhaktapur (Patil, et al., 2015), Democratic Republic of Congo - Kinshasa (Babakazo et al., 2015), Bangladesh - Dhaka, India - Vellore, Pakistan - Naushero Feroze, and Tanzania - Haydom (Patil, et al., 2015). Thus, in total, 24 estimates of EBF at 30 days of life were obtained for 27 regions of 18 countries.

Chart 1 – Frequencies of breastfeeding in the first month of life in selected cohort studies published from 2015 to 2020.

Author	Country – Region – research year	Sample characteristics (Follow-up period)	Definition of EBF	Method for Data Collection	BF practices (%)		
					BF initiation	EBF initiation	EBF 30 days
Oribe et al. 2015	Spain – Gipuzkoa 2006/2008	INMA birth cohort Population base with prenatal follow-up n=547 (14 months)	Feeding only with BM except for water and juices	Questionnaire on type of BF in the period, reasons for the onset of artificial feeding and who advised to discontinue EBF		84.8	76.2
Grimshaw and col. 2015	United Kingdom – Southampton 2006/2008	Birth cohort - "PIFA study" Population base n=718 (24 months)	WHO 2008	Registration of infant feeding practices in daily calendar	89.0		38.7
Verduci et al. 2017	Italy – Milan 2013/2014	Birth cohort Convenience sample in BFH n=1522 (12 months)	WHO 2008	Registration of infant feeding practices in daily calendar	95.9	86.1	61.2
Cernigliaro et al. 2019	Italy – Sicily 2017	IN Primis cohort of mother-child pairs Probabilistic sample n=1055 (6 months)	WHO 2008	24hR – Questionnaire based on previous survey used in Italy	86.0	33.7	37.9

continue...

Chart 1 – Continuation

Author	Country – Region – research year	Sample characteristics (Follow-up period)	Definition of EBF	Method for Data Collection	BF practices (%)		
					BF initiation	EBF initiation	EBF 30 days
Shao et al. 2018	Taiwan – Northern Region 2014/2016	Cohort of women who gave birth at a medical center Convenience sample n=461 (6 months)	Only BM from birth[a]	Questions about type of feeding (BM exclusively, BM and formula, or only formula) and method (direct breastfeeding, bottle, or both)[a]			41.2
Tengku et al. 2016	Malaysia – Kelantan 2011/2012	Cohort of pregnant women Probabilistic sample in 2 districts of the State n=200 (6 months)	WHO 2008	Maternal report on the duration of EBF			53.0
Raheem et al. 2019	Maldives – Male' No information on the year the research was performed	Cohort of pregnant women Population base n=458 (6 months)	WHO 1991	Infant feeding attitude Scale used in previous studies on breastfeeding			26.9
Mortazavi et al. 2015	Iran – Shahround 2011/2013	Birth cohort Convenient sample from prenatal in ten health centers n=358 (24 months)	WHO 2008	Dietary recall from birth	100.0		33.1
Noble et al. 2019	Israel – Jerusalem 2013/2014	Birth cohort Convenience sample from a medical center n=358 (1 month)	BM only via breast or pumped	feeding recall of the 7 days prior to the interview	97.0	45.0	73.9
Khanal et al. 2015	Nepal – Rupandehi 2014	Mother-child binomials Community base in 2 municipalities in the district n=649 (6 months)	WHO 2008	Dietary recall from birth			66.9
Wu et al. 2019	China – Hunan 2015	Birth cohort Community-based in 3 randomly selected geographic areas† n=948 (6 months)	WHO 2008	Maternal report of the child's feeding practices	100.0		74.4
Tao et al. 2017	China – Ma'anshan 2013/2014	Ma'anshan birth cohort Population base n=3196 (12 months)	WHO 2008	Questionnaire on frequency of BF practices	95.9		43.8
Mei et al. 2015	China – Shenyang, Wuhan, Guangzhou 2009/2010	Birth cohort Community base in 3 urban areas† n=2220 (24 months)	WHO 2008	Questionnaire on type of feeding			36.7

continue...

Chart 1 – Continuation

Author	Country – Region – research year	Sample characteristics (Follow-up period)	Definition of EBF	Method for Data Collection	BF practices (%)		
					BF initiation	EBF initiation	EBF 30 days
Babakazo et al. 2015	Democratic Republic of the Congo – Kinshasa 2012/2013	Cohort of mother-child pairs Probabilistic sample in 2 districts of the city n=422 (6 months)	WHO 2008	24hR (If another food was mentioned besides the BM, the mother informed the age at which the baby received this food)	100.0	87.5	75.0
Mosquera et al. 2019	Brazil –Cruzeiro do Sul 2015/2016	MINA birth cohort Population base n=962 (1 month)	WHO 2008	Dietary recall from birth	95.1[a]	93.9[a]	36.7
Margotti and Mattiello 2016	Brazil– Chapecó and Porto Alegre 2012/2013	Birth cohort Random[a] sample from 2 urban hospitals n=300 (4 months)	WHO 2008[a]	Dietary recall from birth	100.0	100.0	86.0
Patil et al. 2015	Bangladesh – Dhaka India – Vellore Nepal – Bhaktapur Pakistan* África do Sul–Venda Tanzânia–Haydom Brazil – Fortaleza Peru – Loreto 2009/2012	Birth cohort MAL-ED study Community convenience sample n = 2053 (24 months)	Labbok; Krasovec 1990	24hR applied weekly + monthly questionnaire on child feeding practices and use of supplements	100.0 100.0 100.0 100.0 97.8 100.0 100.0 100.0		84.7 81.0 55.5 4.5 29.5 55.9 59.7 38.2

Note: BF: breastfeeding; EBF: exclusive breastfeeding; BM: breast milk; BFH: Baby-friendly hospital; WHO: World Health Organization; 24hR: 24-hour recall; *Naushero Feroze; [a]data requested from the author; INMA: Childhood and the Enviroment Project; PIFA: Prevalence of Infant Food Allergy; IN Primis: Primal Health, the first thousand days of a child; MINA: Maternal and Child Health in Acre Project; MAL-ED: Malnutrition and enteric infections: consequences for child health and development; †geographical areas: communes, provinces, villages, streets, communities.

With the exception of studies by Veduci et al. (2017), Shao et al. (2018) and Mei et al. (2015) - who analyzed the duration of EBF as an exposure variable for wheezing during the first year of life, postpartum maternal weight retention in the first and sixth months, and the body mass index of children in the first and second year of life, respectively - the other selected articles investigated the frequency and/or factors associated with EBF at 30 days and at different ages as primary or secondary outcome (data not shown table). Thus, the practice of exclusive breastfeeding was evaluated in all studies, however, the classification criteria varied between authors. The different definitions of EBF were based on:

- Only breast milk (BM), without other liquids or solids, except for drops or syrups containing vitamins, oral rehydration salts, mineral supplements, or medications (WHO, 2008);
- BM only (direct from breast or pumped), which prevents any other liquid or solid food, except syrups/drops of vitamins, medicines, or mineral supplements (WHO 1991);
- Breastfeeding without the introduction of other foods or liquids (not even water), with the exception of drops or syrups consisting of vitamins, mineral supplements, or remedies (Labbok; Krasovec, 1990);
- Definitions without bibliographic reference: feeding only with BM, except water and juices (Oribe et al., 2015); only BM since birth (Shao et al., 2018); only BM from the breast or pumped (Noble et al., 2019).

Thus, it is emphasized that 30% of the selected studies (n=5) used definitions of EBF that were incomplete, existed prior to the most recent WHO classification published in 2008, or definitions without citation of the bibliographic reference used.

To measure EBF, different evaluation methods were used: daily recording calendar (n=2); dietary recall from

birth (n=4) or from the 7 days prior to the interview (n=1); 24hR (n=2) or 24hR applied weekly combined with monthly questionnaire on infant feeding practices (n=1); and 41% of the studies (n=7) did not detail the method used or applied other surveys than those recommended by the WHO. Based on these investigations and for the purposes of this review, it was possible to obtain information on the occurrence of EBF at 30 days of life for all studies; and, less frequently, the data referring to the beginning of BF and/or EBF, commonly presented as the rate of onset on the first day or hospital discharge, was also obtained.

Regarding the design of the studies, most authors analyzed data from birth cohorts. Only five, however, used a population-based sample (Oribe et al., 2015; Grimshaw et al., 2015; Raheem et al., 2019; Tao et al., 2017; Mosquera et al., 2019), among which two were conducted in developed countries (Oribe et al., 2015; Grimshaw et al., 2015). Regarding the populations studied, the analyses of the articles included from 200 to 3196 infants and the follow-up period ranged from 1 to 24 months after birth.

The prevalence of BF initiation was presented in 11 of the 17 articles; furthermore, seven studies differentiated the proportion of babies who started exclusive breastfeeding. Among the selected articles that disclosed the information on the onset of BF in the first 24 to 96 hours of life, it can be seen that there was a high prevalence in all regions studied, ranging from 86% in Italy (Sicily) to 100% in Asia (China-Hunan, Iran-Shahround, Bangladesh-Dhaka, India-Vellore, Nepal-Bhaktapur, and Pakistan-Naushero Feroze), Africa (Tanzania-Haydom and Democratic Republic of Congo-Kinshasa), and Latin America (Brazil-Fortaleza and Chapecó/Porto Alegre; and Peru-Loreto). However, less than 50% of the children started breastfeeding exclusively in Italy (37.9%), according to a study with a probabilistic sample in the Sicily region, and in Jerusalem (45%), according to a study in an important teaching and referral center in Israel (the Hadassah Medical Center). Evidence for proportions greater than 50% of children in EBF in the first hours of life was found in Spain (84.8%), in a study on mothers and babies recruited from a hospital in the province of Gipuzkoa; in Italy (86.1%), in an investigation carried out in a Baby-friendly hospital (BFH) in the city of Milan; and in the Democratic Republic of Congo (87.5%), in a research conducted with a probabilistic sample in two districts of Kinshasa city. Brazil, in turn, presented the highest percentages of EBF initiation in a population-based study in Cruzeiro do Sul, Acre (93.9%) and in a research that combined data from two hospitals in the urban area of Chapecó, State of Santa Catarina, and Porto Alegre, State of Rio Grande do Sul (100%).

In relation to EBF at 30 days of life, there was variation between the different regions studied (from 4.5% to 86%). Except for Naushero Feroze, Pakistan, in the regions of countries with low-middle income, the indicator remains higher than in regions of high-income countries. Notably, 63% of the estimates presented (15 of the 24 estimates) indicate that, in some places, less than 60% of children are exclusively breastfed at 30 days of life, and among them, 11 estimates pointed to rates below 50%.

In Europe, studies conducted in Spain-Gipuzkoa (76.2%) (Oribe et al., 2015) and Italy-Milan (61.2%) (Verduci et al., 2017) showed the highest frequencies of the EBF indicator at 30 days of life. However, the estimate of EBF in the INMA birth cohort (Oribe et al., 2015) included infants who received water and juices; and that of the Milanese baby cohort (Verduci et al., 2017), despite having adopted the most recent WHO definition of EBF, comes from a convenience sample in BFH. In Asia - with the exception of the high rate of EBF at 30 days of life seen in Nepal-Rupandehi (66.9%), Israel-Jerusalem (73.9%), China-Hunan (74.4%), India-Vellore (81%), and Bangladesh-Dhaka (84.7%) - lower frequencies of the indicator, ranging from 55.5% (Nepal-Bhaktapur) to 4.5% (Pakistan-Naushero Feroze), were observed in most regions of the continent (8 out of 13 estimates). However, among the investigations, we observed heterogeneity in relation to the size and type of sample, definition, and method of measurement of EBF. Similarly, in Africa, the occurrence of exclusive breastfeeding at 30 days of life varied widely from 75%, in a study with a probabilistic sample in the city of Kinshasa (Democratic Republic of Congo) to 29.5% in Venda (South Africa), in a multinational study with a community convenience sample. In Latin America, studies conducted in Brazil recorded 59.7% and 86% of children exclusively breastfed at the end of the first month in the Northeast (Fortaleza, State of Ceará) and in the South region (Chapecó, State of Santa Catarina, and Porto Alegre, State of Rio Grande do Sul), respectively. Regarding the Brazilian Amazon region, the observed prevalence of EBF at 30 days of life in the State of Acre

(Cruzeiro do Sul: 36.7%) remained at a level equivalent to that observed in Peru, in the State of Loreto (38.2%).

Discussion

Based on the longitudinal studies selected, the percentage of children exclusively breastfed at 30 days of life, usually reported below 60%, may be considered below WHO recommendations (WHO, 2002).

According to an analysis of the global trend of EBF in children under six months, conducted with data from low- and middle-income countries, there was an increase in the indicator from 25% in 1993 to 35% in 2013 (Victora et al., 2016). However, according to parameters established by the WHO, a country is classified as **good** when the prevalence of EBF in children under six months reaches between 50% and 89% (WHO, 2003), which places most of the regions presented in this review in an unfavorable situation, since it was verified, through the analysis of data collected at different points in time, substantial drop in exclusive breastfeeding already at 30 days of life in most territories.

A study conducted with national surveys data from 153 countries analyzed different indicators of breastfeeding, according to income groups in the country (Victora et al., 2016). The authors concluded that most mothers start breastfeeding, but early initiation (within the first postpartum hour) was unsatisfactory in all groups. Furthermore, the authors observed that, for the other breastfeeding indicators studied – including EBF in children under 6 months – the prevalence decreases with the increase in the country's wealth, although the occurrence of EBF is also insufficient in low-income countries. In this review, only six of the 24 estimates here presented came from high-income countries, reflecting the limited number of publications on the subject in these countries. Similarly, we observed a high prevalence of initiation of breastfeeding (86%) in all regions studied, in addition to low frequency of EBF at 30 days (<60%) in most of the presented sites (63%). This indicator remained even higher in the regions of lower-middle-income countries. However, the different methodological approaches, definition of EBF, and measurement method of the studies made it difficult to compare the estimates between the studied regions.

The first month after delivery is of fundamental importance for the success of breastfeeding. The neonatal period is characterized by numerous challenges and difficulties of adaptation for the mother-child binomial that, when not readily addressed, can lead to greater anxiety (Chemello et al., 2021) and result in the interruption of EBF in the first weeks of life. In this phase, specifically, problems directly related to lactation (delay in milk secretion, flat or inverted nipples, incorrect handling of the baby to the breast, little milk/hyperlactation) may converge with the different factors known to affect the exclusivity of breastfeeding, among them: maternal and family sociodemographic characteristics (maternal age, schooling, family income, parity), factors related to pregnancy and prenatal care (maternal nutritional status, smoking, number of prenatal visits), the perinatal factors (type of delivery, birth weight, time till the initiation of BF), the characteristics of the child (baby health, pacifier use), the characteristics of health services (type of healthcare unit, BFH, guidelines on BF), among others (Boccolini et al., 2015). Nevertheless, several of the aspects that permeate this phase are susceptible to interventions in favor of breastfeeding (Rollins et al., 2016).

Early interruption of EBF points to inappropriate infant feeding practices, with the introduction of liquids and/or solids at the beginning of postnatal life, which allow premature weaning (WHO, 2009) and generate concern about the impact on maternal and child health. Kramer and Kakuma (2012), in a systematic review regarding the ideal time for the introduction of these foods, concluded that such practice before six months can be harmful since it increases the risk of infectious and gastrointestinal diseases. Thus, to support women and their families in adequate breastfeeding, successful strategies for promoting, protecting, and supporting breastfeeding require measures at various levels (Rollins et al., 2016). National and international initiatives should be considered by countries to increase the global EBF rate in the first 6 months of life by up to at least 50%

by 2025, as established by the World Health Assembly in 2012 (WHO, 2014).

The evaluation of the processes and the impact of the strategies implemented to increase the EBF rates is one of the fundamental parts of the "breastfeeding gear model," developed as a guide for politicians, managers, decision makers, and civil society of low- and middle-income countries in the process of expanding breastfeeding programs (Pérez-Escamilla et al., 2012). For this purpose, countries use cross-sectional surveys with national representativeness, which assess the nutritional intake of infants under 6 months in the 24 hours prior to the interview. However, this method is not sufficient to estimate the proportion of infants who were exclusively breastfed up to a certain age (Greiner, 2014). In turn, studies with longitudinal design of data collection, although costly to be performed in national research, are particularly useful to evaluate the relationship between risk factors and outcome development (Szklo; Nieto, 2014), in this case, the maintenance or interruption of EBF at different ages.

Considering that the practice analyzed is influenced by contextual factors (Boccolini et al., 2015), conducting more studies in different regions and population groups with a variety of groups according to socioeconomic level, schooling, cultural origins, among other characteristics, is essential to protect, promote, and support breastfeeding in a more sensitive way (WHO, 2017). Therefore, we suggest for future studies to conduct longitudinal analysis of specific population groups, with sample size that facilitates prospective evaluation (preferably population-based) and with the use of recalls, collected at different points close in time, to investigate breastfeeding and nutritional practices from birth, since it allows for a more accurate portrayal of the EBF situation within each population subgroup. Thus, the comparison, within and between countries, of the prevalence of EBF at a certain age, measured longitudinally in different stages of sequential data collection, will be possible with uniform and updated definition of EBF, as well as if the research methodology, sample selection, and measurement period are strictly defined.

The conclusions of this review should be interpreted with caution. Selection bias is the main limitation of this study, which may have unknowingly disregarded potentially important articles on the subject addressed in this review.

Final considerations

The importance of the evaluation (frequency, duration, and associated factors) of exclusive breastfeeding in early life is emphasized, as well as the need for investigations with standardized methods, enabling the comparison of this indicator within and between countries. The identification of populations that are more vulnerable to early interruption of exclusive breastfeeding is fundamental for the expansion of breastfeeding promotion strategies, aiming at the short, medium, and long term evolution of maternal and child health indicators.

References

BABAKAZO P. et al. Predictors of discontinuing exclusive breastfeeding before six months among mothers in Kinshasa: a prospective study. *International Breastfeeding Journal*, New York, v. 10, n. 19, 2015. DOI: 10.1186/s13006-015-0044-7

BHUTTA, Z.A. et al. What works? Interventions for maternal and child undernutrition and survival. *The Lancet*, London, v. 371, n. 9610, p. 417-440, 2008. DOI:10.1016/S0140-6736(07)61693-6

BOCCOLINI, C.S.; DE CARVALHO, M.L.; COUTO DE OLIVEIRA, M. I. Factors associated with exclusive breastfeeding in the first six months of life in Brazil: A systematic review. *Revista de Saúde Pública*, São Paulo, v. 49, 2015. DOI:10.1590/S0034-8910.2015049005971

CERNIGLIARO, A. et al. Association of the Individual and Context Inequalities on the Breastfeeding: A Study from the Sicily Region. *International Journal of Environmental Research and Public Health*, Basel, v. 16, n. 19, p. 3514, 2019. DOI: 10.3390/ijerph16193514

CHEMELLO, M. R. Ansiedade materna e relação mãe-bebê: um estudo qualitativo. *Revista da SPAGESP*, Ribeirão Preto, v. 22, n. 1, p. 39-53 2021. Disponível em <http://pepsic.bvsalud.org/scielo.php?script=sci_arttext&pid=S1677-29702021000100004&lng=pt&nrm=iso>. Acesso em: 10 fev. 2022.

DEL CIAMPO LA.; DEL CIAMPO IRL. Breastfeeding and the Benefits of Lactation for Women's Health. *A*leitamento materno e seus benefícios para a saúde da mulher. *Rev Bras Ginecol Obstet.* 2018;40(6):354-359. DOI:10.1055/s-0038-1657766

DOZIER, A. M. et al. Predicting Maintenance of Any Breastfeeding from Exclusive Breastfeeding Duration: A Replication Study. *Jornal de Pediatria*, Porto Alegre, v. 203, p. 197-203.e2, 2018. DOI: 10.1016/j.jpeds.2018.07.100

GREINER T. Exclusive breastfeeding: measurement and indicators. *International Breastfeeding Journal*, New York, v. 9, n. 18, 2014. DOI: 10.1186/1746-4358-9-18

GRIMSHAW, K. E. et al. Prospective food diaries demonstrate breastfeeding characteristics in a UK birth cohort. *Maternal & child nutrition*, Hoboken, v. 11, n. 4, p. 703-711, 2015. DOI: 10.1111/mcn.12052

KHANAL, V. et al. Postpartum Breastfeeding Promotion and Duration of Exclusive Breastfeeding in Western Nepal. *Birth*, Hoboken, v. 42, n. 4, p. 329-336, 2015. DOI: 10.1111/birt.12184

KHANAL, V. et al. Implications of methodological differences in measuring the rates of exclusive breastfeeding in Nepal : findings from literature review and cohort study. *BMC Pregnancy and Childbirth*, New York, v. 16, n. 389, 2016. DOI 10.1186/s12884-016-1180-9

KRAMER, M. S.; KAKUMA, R. Optimal duration of exclusive breastfeeding. *Cochrane database of systematic reviews*, Oxford, n. 8, 2012. DOI: 10.1002/14651858.CD003517.pub2

LABBOK, M; KRASOVEC, K. Toward consistency in breastfeeding definitions. *Studies in Family Planning*, Hoboken, v. 21, n. 4, p. 226-230, 1990.

MARGOTTI, E.; MATTIELLO, R. Fatores de risco para o desmame precoce. *Revista da Rede de Enfermagem do Nordeste*, Fortaleza, v. 17, n. 4, p. 537-544, 2016. DOI: 10.15253/2175-6783.2016000400014

MEI, H. et al. Interactive Effects of Early Exclusive Breastfeeding and Pre-Pregnancy Maternal Weight Status on Young Children's BMI - A Chinese Birth Cohort. *PLoS One*, San Francisco, v. 10, n. 12, 2015. DOI:10.1371/journal.pone.0144357

MENDES, K. D. S.; SILVEIRA, R. C. D. C. P.; GALVÃO, C. M. Revisão integrativa: método de pesquisa para a incorporação de evidências na saúde e na enfermagem. *Texto & Contexto – Enfermagem,* Florianópolis, v. 17, n. 4, p. 758-764, 2008. DOI: 10.1590/S0104-07072008000400018

MINISTÉRIO DA SAÚDE. Secretaria de Atenção à Saúde. Departamento de Ações Programáticas e Estratégicas. *II Pesquisa de prevalência de aleitamento materno nas capitais brasileiras e Distrito Federal.* Brasília, DF: Ministério da Saúde, 2009.

MORTAZAVI, F. et al. Breastfeeding Practices During the First Month Postpartum and Associated Factors: Impact on Breastfeeding Survival. *Iranian Red Crescent Medical Journal*, Dubai, v. 14, n. 4, 2015. DOI: 10.5812/ircmj.17(4)2015.27814

MOSQUERA, P.S. et al. Factors affecting exclusive breastfeeding in the first month of life among Amazonian children. *PLoS One*, San Francisco, v. 14, n. 7, 2019. DOI: 10.1371/journal.pone.0219801

NOBLE, A. et al. Breastfeeding Intensity and Exclusivity of Early Term Infants at Birth and 1 Month. *Breastfeeding Medicine,* New Rochelle, v. 14, n. 6, p. 398-403, 2019. DOI: 10.1089/bfm.2018.0260

ORIBE, M. et al. Prevalence of factors associated with the duration of exclusive breastfeeding during the first 6 months of life in the INMA birth cohort in Gipuzkoa. *Gaceta Sanitaria*, Barcelona, v. 29, n. 1, p. 4-9, 2015. DOI: 10.1016/j.gaceta.2014.08.002

OUZZANI, M. et al. Rayyan-a web and mobile app for systematic reviews. *Systematic Reviews*, New York, v. 5, n. 1, p. 1-10, 2016. DOI 10.1186/s13643-016-0384-4

PATIL, C. L. et al. Early interruption of exclusive breastfeeding: results from the eight-country MAL-ED study. *Journal of Health, Population and Nutrition*, New York, v. 34, n. 10, 2015. DOI: 10.1186/s41043-015-0004-2

PAYNE, S.; QUIGLEY, M. A. Breastfeeding and infant hospitalisation: analysis of the UK 2010 Infant Feeding Survey. *Maternal & Child Nutrition*, Hoboken, v. 13, n. 1, 2017. DOI: 10.1111/mcn.12263

PÉREZ-ESCAMILLA, R et al. Scaling up of breastfeeding promotion programs in low- and middle-income countries: the "breastfeeding gear" model. *Advances in Nutricion*, Oxford, v. 3, n. 6, p. 790-800, 2012. DOI: 10.3945/an.112.002873

RAHEEM, A. R.; CHIH, H. J.; BINNS, C. W. Maternal Depression and Breastfeeding Practices in the Maldives. *Asia Pacific Journal of Public Health*, Thousand Oaks, v. 31, n. 2, p. 113-120, 2019. DOI: 10.1177/1010539519836531

ROLLINS, N. C. et al. Why invest, and what it will take to improve breastfeeding practices? *The Lancet*, London, v. 387, n. 10017, p. 491-504, 2016. DOI: 10.1016/S0140-6736(15)01044-2

SAEED, O.B.; HAILE, Z.T.; CHERTOK, I.A. Association Between Exclusive Breastfeeding and Infant Health Outcomes in Pakistan. *Journal of Pediatric Nursing*, Amsterdam, v. 50, p. e-62-e68, 2020. DOI: 10.1016/j.pedn.2019.12.004

SANKAR, M. J. et al. Optimal breastfeeding practices and infant and child mortality: a systematic review and meta-analysis. *Acta Paediatrica*, Hoboken, v. 104, n. S467, p. 3-13, 2015.

SHAO, H. H. et al. Postpartum Weight Retention Risk Factors in a Taiwanese Cohort Study. *Obesity Facts*, Basel, v. 11, n. 1, p. 37-45, 2018. DOI: 10.1159/000484934

SZKLO, M.; NIETO, F. J. *Epidemiology*: beyond the basics. 3. ed. Burlington: Jones & Bartlett Publishers; 2014.

TAO, X-Y. et al. Pre-pregnancy BMI, gestational weight gain and breast-feeding: a cohort study in China. *Public Health Nutrition*, Cambridge, v. 20, n. 6, p. 1001-100, 2017. DOI: 10.1017/S1368980016003165

TENGKU ISMAIL, T.A.; WAN MUDA, W.A. M.; BAKAR, M.I. The extended Theory of Planned Behavior in explaining exclusive breastfeeding intention and behavior among women in Kelantan, Malaysia. *Nutrition Research and Practice*, Seoul, v. 10, n. 1, p. 49-55, 2016. DOI: 10.4162/nrp.2016.10.1.49

UNICEF – UNITED NATIONS INTERNATIONAL CHILDREN'S EMERGENCY FUND. The State of the World's Children 2019. *Children, Food and Nutrition*: Growing Well in a Changing World. New York: UNICEF, 2019.

VEHLING, L. et al. Exclusive breastfeeding in hospital predicts longer breastfeeding duration in Canada: Implications for health equity. *Birth*, Hoboken, v. 45, n. 4, p. 440-449, 2018. DOI:10.1111/birt.12345

VERDUCI, E. et al. Duration of exclusive breastfeeding and wheezing in the first year of life: A longitudinal study. *Allergologia et Immunopathologia*, Madrid, v. 45, n. 4, p. 316-324, 2017. DOI: 10.1016/j.aller.2016.08.013

VICTORA, C. G. et al. Breastfeeding in the 21st century: Epidemiology, mechanisms, and lifelong effect. *The Lancet*, London, v. 387, n. 10017, p. 475-490, 2016.

THE WORLD BANK. *World Bank Country and Lending Groups*. Washington (DC): The World Bank; 2020. Disponível em: <https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups>. Acesso em: 8 fev. 2022.

WHO – WORLD HEALTH ORGANIZATION. *Indicators for assessing breastfeeding practices*: reprinted report of an informal meeting 11-12 june 1991. Geneva, 1991.

WHO – WORLD HEALTH ORGANIZATION. *The optimal duration of exclusive breastfeeding*: report of the expert consultation. Geneva, 2002.

WHO – WORLD HEALTH ORGANIZATION. *Infant and Young Child Feeding*: a tool for assessing national practices, policies and programmes. Geneva, 2003.

WHO – WORLD HEALTH ORGANIZATION. *Indicators for assessing infant and young child feeding practices*: conclusions of a consensus meeting held 6-8 November 2007 in Washington D.C., USA. Geneva, 2008.

WHO – WORLD HEALTH ORGANIZATION. *Infant and young child feeding*: model chapter for

textbooks for medical students and allied health professionals. Geneva, 2009.

WHO - WORLD HEALTH ORGANIZATION. *Global nutrition targets 2025*: breastfeeding policy brief. Geneva, 2014.

WHO - WORLD HEALTH ORGANIZATION. *Guideline*: Protecting, promoting and supporting breastfeeding in facilities providing maternity and newborn services. Geneva, 2017.

WHO - WORLD HEALTH ORGANIZATION. *Indicators for assessing infant and young child feeding practices*: definitions and measurement methods. Geneva: WHO: New York: UNICEF, 2021.

WU, X. et al. Modifiable Individual Factors Associated with Breastfeeding: A Cohort Study in China. *International Journal Environmental Research Public Health*, Basel, v. 16, n. 5, 2019. DOI: 10.3390/ijerph16050820

Authors' contribution

Mosquera, Lourenço, and Cardoso jointly carried out the conception and planning of the study and the analysis and interpretation of the data. Mosquera developed the initial manuscript. Lourenço was responsible for the critical review of the content. And Cardoso carried out the final, critical and intellectual, review of the manuscript.

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