

BREASTFEEDING AS PROTECTION AGAINST CHILD OBESITY: A LITERATURE REVIEW

ALEITAMENTO MATERNO COMO PROTEÇÃO CONTRA OBESIDADE INFANTIL: UMA REVISÃO DE LITERATURA

Mariana **Gularte** ^{*}, Breno Henrique de **Souza** , Gabrielli Garcia **Manzatti** , Mariana Domingos **Gonçales** , Luis Renato Manfredini **Hapner** 

UNINGÁ - Centro Universitário Ingá, Maringá, PR, Brasil.

*ra15318.16@uninga.edu.br

ABSTRACT

Among the most prevalent morbidities of the 21st century is obesity, which is one of the main topics addressed in the scientific community and with an impact on public health. Due to the significant increase of obese adults and children, the scientific community seeks to detect either protective or predisposing factors for obesity. This review article aims to understand the existence of an association between childhood overweight and obesity and not breastfeeding for an adequate time through epidemiological evidence. To verify this relationship, we used articles found on the following databases: Scielo, Medline, National Center for Biotechnology Information, and the EBSCOhost and Google Scholar platforms published after 2015. Among the analyzed literature - cross-sectional studies, cohort, case-control and randomized experimental trials - it was observed that eight of the eleven studies found a positive association between breastfeeding and reduction in the risk of childhood obesity; two studies did not find a significant association, and only one showed a negative relationship between these factors.

Keywords: Breastfeeding. Child obesity. Early weaning.

RESUMO

Dentre as morbidades mais prevalentes do século XXI está a obesidade, esse é um dos principais tópicos abordados no meio científico e de impacto na saúde pública. Devido ao aumento expressivo da população obesa, a comunidade científica busca detectar fatores protetores ou predisponentes de obesidade. Este artigo de revisão tem como finalidade compreender a existência de uma associação entre o sobrepeso e obesidade na infância e a não amamentação por tempo adequado através de evidências epidemiológicas. Para verificar tal relação, foram utilizados artigos encontrados nas bases de dados eletrônicas: Scielo, Medline, National Center for Biotechnology Information e as plataformas EBSCOhost e Google Acadêmico com data de publicação superior a 2015. Dentre as literaturas analisadas - estudos transversais, coorte, casos-controle e ensaios experimentais randomizados - foi observado que oito dos onze estudos encontraram associação positiva entre amamentação e redução no risco de obesidade infantil; dois estudos não encontraram associação significativa, e apenas um evidenciou relação negativa entre tais fatores.

Palavras-chave: Aleitamento materno. Desmame precoce. Obesidade infantil.

INTRODUCTION

According to the World Health Organization (WHO), 1.9 billion adults over 18 are overweight, of which 650 million are obese, with an estimated 2.3 billion overweight adults in 2025 (WHO, 2021). As for Brazil, there was an increase in this chronic disease by roughly 72% between 2006 and 2019. In the pediatric group, the Ministry of Health accounts for obesity in 12.9% of Brazilians aged between 5 and 9 years; among adolescents aged 12 to 17 years, this figure is 7% (ABESO, 2018).

The increase in childhood obesity becomes especially worrisome because the chance of an overweight child becoming an overweight adult is great (WEFFORT, 2019). Thus, in addition to the great psychological stress caused by social stigma, respiratory, dermatological, orthopedic complications that may occur in childhood, chronic degenerative diseases of adulthood are also expected for this population, such as high blood pressure, dyslipidemia and cardiovascular diseases (WHO, 2021).

The minimum period of exclusive breastfeeding recommended by WHO is up to six months of life and supplemented up to two years or more. According to the WHO, among the advantages of exclusive breastfeeding for up to 6 months is the reduction of infant mortality associated with intestinal infections and respiratory diseases (IBFAN, 2005). The concept of a thousand days, from intrauterine life up to two years of age, increasingly implemented in pediatrics, reinforces the importance of adequate nutrition in child development, with breast milk being the ideal food for nutrition, since it contains the necessary nutrients for the child's growth and development (CUNHA *et al.*, 2015).

Breastfeeding is one of the most debated issues regarding potentially modifiable risk factors for childhood obesity. Thereby, the aim of this study is to understand the existence of an association between overweight and obesity in childhood and not breastfeeding for an adequate period, through the analysis of epidemiological evidence.

METHODOLOGY

This work was carried out as an integrative literature review design. In this type of research, we seek to identify, analyze and synthesize results of independent studies on the same subject (SOUZA; SILVA; CARVALHO, 2010). The search for studies was performed through a literature search in the following databases: Scientific Electronic Library Online (SCIELO), National Library of Medicine (MEDLINE), National Center for Biotechnology Information (NCBI); and on the EBSCOhost and Google Scholar search platforms. Based on the objective of the study, we defined the Portuguese keywords used to select the studies: *amamentação, obesidade infantil and desmame precoce*, along with their English counterparts: breastfeeding, child obesity and early weaning. The Boolean operator AND was used to combine these descriptors.

Full scientific articles found in this research, carried out between February and July 2020, in Portuguese and English, with publication date after 2015 were included in this review. Other articles were also used, cited by those found, but which do not appear in the original search, although they fit the purpose of the study. As of a critical analysis of the found articles, in order to reach the best possible level of evidence, studies with an experimental design were selected first, and then descriptive studies. The exclusion criteria for articles were the absence of descriptors of interest or non-coverage of the topic, and an older date than the stipulated one. Works with a low level of evidence were also excluded – case and experience reports, and evidence based on expert opinion. A total of 5 cross-sectional, 3 cohort, 2 randomized clinical trials and 1 case-control studies were selected.

RESULTS AND DISCUSSION

The cross-sectional studies analyzed had the same basic methodological structure. Data were gathered through a questionnaire applied to parents. Some studies complemented the information with that obtained in the hospitals where the births took place. The surveys collected anthropometric parameters, information about the duration of lactation and whether it was carried out exclusively or in addition to other specific parameters of each study. The selection and randomization of participants, as well as the sample size, varied in each survey.

Two randomized experimental studies were analyzed in this review. Both had the intervention of promoting increased duration and exclusivity of breastfeeding. The three analyzed cohort studies were carried out prospectively. Follow-up started at birth and continued for at least one year. Anthropometric data were collected during the first year of life, using information provided by the participating mothers in the study. Table 1 summarizes the analyzed works, as well as its objective and results.

WHO recommends exclusive breastfeeding until 6 months of age, which provides infants with numerous benefits. According to Antunes *et al.* (2008), some are better known, such as protection against infections and allergies, but there are also hypothesis that are still under discussion in the medical field, such as the protection of breastfeeding against overweight. Several types of studies have already been carried out, some have had confirmatory results, while others have not found significant associations.

Most of the studies included in this work confirmed the relationship between breastfeeding and reduced rates of childhood overweight and obesity. Specifically, in cross-sectional studies, this association was evidenced both in studies that interpreted breastfeeding as a protective factor, and in those that related breastfeeding for a short period or non-breastfeeding to a higher risk of developing overweight/obesity in childhood. Results that corroborate the hypothesis were also found in the cohort studies and in the randomized experimental trials included in this work, all of which showed a significant association between the reduction in the risk of childhood obesity and breastfeeding. Likewise, the case-control study carried out in 2019 in the Czech Republic showed that children who were breastfed for at least 6 months had a lower overweight/obesity rate than the country's references.

Only two of the studies analyzed, using a cross-sectional methodology, did not find a statistically significant association. Both studies claim to have corrected potential confounding factors, but residual interference such as recall bias or unreliable birth data is possible. In the Norwegian study specifically, Bjertnæs *et al.* (2019) point out that the finding may be related to better socioeconomic status and homogeneity in the country. Another reason would be that the correlation seen in most studies may not have been found due to the occurrence of a type II statistical error, a false negative. This is due to the fact that a minority of participants had never been breastfed or had been breastfed for less than four months, making it impossible to establish a statistical significance.

Concerning the quality of the found articles, it is necessary to keep in mind that most are of cross-sectional design. Because they have such design, it is not possible to affirm causality between exposure (early weaning or non-breastfeeding) and outcome (obesity), although there is evidence of a relationship between them. In addition, the analyzed cohort and case-control studies collected their data based on information from the mothers. As such, all these researches are subject to recall bias.

As for the two randomized clinical trials analyzed, both had the promotion of breastfeeding as an intervention. This was probably done because of the difficulty in establishing an ethically acceptable intervention, as carrying out an experimental study with a "non-breastfeeding" group is not considered correct. The main reason for this is that the principles of beneficence and non-maleficence must be followed. The positive effects of breastfeeding are proven and recommended by WHO, so preventing it for experimental purposes is contrary to the best interests of children (BINNS; LEE; KAGAWA, 2017).

Chart 1 - List of analyzed studies, with authors, study design, objective and conclusion, ordered by year of publication

Authors and year	Study design	Main goal	Results / conclusions
Grube <i>et al.</i> (2015)	Cross-sectional	Examine the impact of breastfeeding on obesity/overweight in children aged 3-17 in Germany using a representative questionnaire.	Preschool children breastfed for more than 4 months had a 37% lower risk of overweight and 46% of obesity than those not breastfed or breastfed for less than 4 months.
Djalalinia <i>et al.</i> (2015)	Cross-sectional	Estimate the association between breastfeeding and weight with anthropometric measurements in children aged 6-18 years from Iran.	Breastfeeding and its duration were not significantly associated with anthropometric measurements and blood pressure.
Carling <i>et al.</i> (2015)	Cohort	Check whether breastfeeding for less time influences the chance of obesity/overweight in children aged 0 to 24 months.	Breastfeeding for less than 2 months corresponded to 2.55 times more chance of belonging to the group with weight gain over time than those breastfed for more than four months.
Contarato <i>et al.</i> (2016)	Cohort	Assess the effect of type of breastfeeding on the risk of overweight at age 12-24 months.	Children not exclusively breastfed had a 60% higher risk of excess body weight.
Martin <i>et al.</i> (2017)	Randomized controlled trial	Investigate whether the promotion of breastfeeding has an influence on anthropometric data from birth to 16 years.	The intervention was associated with faster weight gain in the first 3 months, with a low magnitude. The difference disappears after 12 months and remains absent.
Azad <i>et al.</i> (2018)	Cohort	Evaluate the association of breastfeeding, weight gain and body composition from 0 to 12 months.	Ceasing to breastfeed before 6 months was associated with a 2 times greater risk of rapid weight gain and 3 times greater risk of overweight compared to those breastfed for more than 6 months.
Tambalis <i>et al.</i> (2018)	Cross-sectional	Explore the effect of exclusive breastfeeding and its duration on the development of obesity in childhood (8 years) and young adults (15-25 years) in Greece	Exclusive breastfeeding for 6 months or more reduced overweight by 11% and 13%, respectively, in children and young adults, and obesity by 30% and 38%.
Rito <i>et al.</i> (2019)	Cross-sectional	Investigate the association of exclusive breastfeeding, birth weight and obesity in children.	The chances of a child being obese were 22% higher if never breastfed and 12% higher if breastfed for less than 6 months.
Bjertnaes <i>et al.</i> (2019)	Cross-sectional	Check whether breastfeeding practices are associated with body mass index and risk of obesity/overweight in schoolchildren (6-9 years)	There was no significant association between breastfeeding or its duration with reduced risk of obesity or overweight.
Riedlová <i>et al.</i> (2019)	Case-control	Assess the prevalence of obesity/overweight in children with exclusive or predominant breastfeeding for more than 6 months in the Czech Republic at 6, 12 and 18 months.	The proportion of overweight/obese children was much lower in those who were breastfed for at least 6 months compared to those who were not.
Reifsnider <i>et al.</i> (2019)	Randomized controlled trial	Check whether the encouragement of breastfeeding would reduce the incidence of overweight infants (0-12 months).	The odds of developing overweight or obesity at 12 months were 2.7 times greater in infants who were breastfed for less than 2 months or formula-fed.

Source: the authors.

Regarding the study by Martin *et al.* (2017), it is possible that mothers in the intervention arm, knowing that infants were completely dependent on breast milk for their nutrition, deliberately increased the duration and frequency of feedings leading to weight gain in the first 3 months of life; this may also explain why this effect disappears at 12 months.

FINAL CONSIDERATIONS

This integrative review analyzed the relation between the length of time breastfeeding was offered and childhood obesity in several study designs in different countries. The difficulty in establishing an ethically acceptable intervention that allows an experimental study, which would bring a higher level of evidence for the raised hypothesis, justifies the greater number of cross-sectional and observational studies recruited.

Most of the analyzed evidence demonstrates that there is a beneficial association between the offer of breastfeeding and the time for which it was offered and the risk of childhood obesity. Therefore, this study supports the encouragement of breastfeeding, as indicated by the WHO, by adding to the discussion another probable positive effect of breastfeeding.

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